DIVORCE AND RETIREMENT SECURITY*

Angela A. Hung and David Knapp†

We consider the implications of divorce on retirement security. We introduce a theory that highlights how specialization within a divorcing household and timing of divorce relative to planned timing of retirement savings can have a negative impact on retirement security. Using panel data from the Health and Retirement Study (HRS), we evaluate differences in accumulated wealth at retirement ages. Consistent with our theory, we find that the negative relationship in our sample between wealth and divorce without remarriage is worse for women who divorce in their 30s than for women who divorce in their 50s whereas for men the relationship is worse for men who divorce in their 50s compared to men who divorce in their 30s. Finally, we develop a methodology to evaluate whether near-retirement divorce impacts retirement decumulation. We conduct a differences-in-differences matching analysis that assigns individuals who eventually divorce within the HRS to similar, but non-divorcing, individuals at first interview. This analysis controls for observed differences between the average divorcee and the average continuously married person, as well as permanent unobserved differences. We find that separated women are more likely to delay Social Security retirement benefit claiming until age 65 or 66 and work longer, but otherwise find no significant evidence that divorce is associated with differential decumulation of liquid retirement assets.

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† Corresponding author. *Address:* 1200 South Hayes Street, Arlington, VA 22202. *Phone*: +1 (703) 413-1100 x5143. *Email:* dknapp@rand.org

I. INTRODUCTION

Divorce is considered one of the most stressful transitions in a person's life (Booth and Amato 1991). When a marriage ends, it can be an extremely difficult event, both emotionally and financially. There are immediate financial repercussions, such as the actual costs of the legal proceedings, but there are also financial consequences that result from dividing household assets. Also, divorce is becoming increasingly common at older ages (for example, see Wu and Schimmele 2007). Even though the overall divorce rate in the United States remained relatively flat from 1990 to 2010, from 19.0 per thousand to 18.9 per thousand, the divorce rate among adults aged 50 and older doubled from 4.9 per thousand married persons in 1990 to 10.1 per thousand married persons in 2010 (Brown and Lin 2012).

Retirement security is largely determined by wealth accumulation. This wealth accumulation can take the form of retirement accounts, housing wealth, investments, or other savings and assets. Because assets are split at divorce and because individual households lose the economies of scale that come with a shared household, wealth often declines after a divorce. Post-divorce, individuals can take different actions to mitigate financial hardships that result from divorce, such as returning to or continuing a career or remarriage. Individuals who divorce when they are young have a long horizon to work, save, and accumulate wealth for retirement. But individuals who divorce when they are approaching retirement age have a much shorter horizon to recover from the financial hardship divorce entails and may have saved jointly when married. Retirement insecurity among those who divorce near retirement age—marked by lower monthly pension levels (Social Security or private), cashing out or early withdrawal of retirement plans, or low savings—can arise after the division of assets because of limited short-term liquidity or limited annuitable income to protect against outliving one's assets. The growing trend of near-retirement divorce has important implications for retirement security and

decumulation. Furthermore, retirement insecurity is often more problematic for women after divorce. Divorcing women in the Health and Retirement Study (HRS) lose, on average, $161,000 in non-housing assets, leaving them with an average of $199,000 in non-housing assets. Post-divorce, these women retain between 35 and 43 percent of the before-separation non-housing, household net assets (Knapp 2014).

In this project, we study the impact of divorce, particularly late-in-life divorce, on retirement security. In particular, our key research questions are:

1. How do those who divorced when older differ from those who divorced when young in terms of retirement wealth once they reach age 65 and later? How do factors such as remarriage or post-divorce employment impact retirement wealth?
2. Do individuals who divorce after 50 differ from continually married households in their retirement decumulation behavior, including Social Security claiming patterns?

We introduce a simple theory that indicates in the case of a divorce that (1) household specialization places the household member with lower potential earnings at greater risk for retirement insecurity, and (2) the timing of divorce relative to planned retirement savings can negatively affect retirement security.

For our empirical analysis, we use data from the biennial HRS, a nationally representative sample of households with at least one household member over the age of 50. The rich set of longitudinal data available in the HRS will allow us to observe wealth trajectories while controlling for permanent and time-varying differences between households. The HRS's retrospective marital and work histories allow us to contrast how retirement outcomes differ by age at divorce and, particularly, differences in outcomes by whether these individuals remarried and whether they were working before their divorce. The time period covered by the HRS represents a unique opportunity to follow the retirement wealth accumulation of households as

they approach retirement. For the small, but growing number of households that divorce after 50, it can shed light on how this disruptive life event impacts retirement preparedness.

Our descriptive analysis shows that those who are continuously married have higher total wealth and retirement wealth at age 65 and older than those who have been divorced, even if they remarry. A larger percentage of continuously married individuals have positive retirement wealth than ever-divorced individuals, and a greater percentage of men have retirement assets compared to women, regardless of marital history. Divorce timing also looks to have implications for long-term wealth: generally, those who divorce in their fifties have less wealth at age 65 than those who divorce in their thirties, but there are important differences by current marital status and labor force status. Remarriage reduces the negative effects of divorce, especially for early divorces.

Multivariate regression results confirm our descriptive analysis results. We find that ever having been divorced is associated with lower household assets and lower retirement assets when compared to those who have been continuously married. We find that timing of divorce has important differences by gender: the negative relationship in our sample between wealth and divorce without remarriage is worse for women who divorce in their 30s than for women who divorce in their 50s whereas for men the relationship is worse for men who divorce in their 50s compared to men who divorce in their 30s.

In considering the impact of divorce on retirement decumulation, we use the longitudinal nature of the HRS covering over 20 years. We use a propensity score matching technique that compares men and women who go on to divorce with observationally similar individuals at his or her first interview wave but who remain continuously married. Expecting that this may not fully capture pre-separation differences in unobserved characteristics, we difference outcomes over time to control for permanent unobserved differences (Heckman et al. 1998). This analysis

controls for observed differences between the average divorcee and the average continuously married person, as well as permanent unobserved differences. We find no significant evidence that divorce is persistently associated with measures of liquid retirement assets accumulation or decumulation after controlling for these differences. We find that separated women are more likely to delay Social Security retirement benefit claiming until age 65 or 66 and to be working at ages 62/63.

We summarize the research literature on the impact of divorce on retirement wealth in the next section. Section 3 presents a model of asset accumulation and the impact of a disruption such as divorce on asset accumulation. We describe the data we use for our analysis in Section 4. In section 5, we examine the relationship between marital history and savings. In Section 6 we examine the relationship between divorce and asset decumulation for those divorcing after 50 and after their first HRS interview. Section 7 summarizes our findings.

II. Previous Literature

The impacts of divorce, both economic and other, have been well documented in the research literature (see, e.g., Kitson and Morgan 1990). Financially, women fare worse after divorce than men (Smock, Manning, and Gupta 1999, Lavelle and Smock 2012), particularly when women have custody of children (Bartfield 2000, Bianchi, Subaiya, and Kahn 1999). Divorced women, aged 65 and older, are more likely than divorced men, aged 65 and older to live in poverty (Government Accountability Office 2014).

In this section, we review previous literature that examines the impact of divorce on retirement wealth (or total wealth at retirement) or the impact of divorcing at later ages. These previous studies find that those who have ever divorced have less wealth at older ages than those who are continuously married. This negative differential is greater for divorced women than for

divorced men. However, previous work has not looked at whether the timing of divorce—earlier in life vs. later in life—has a impact of retirement wealth.

Using 1992 HRS data, Wilmoth and Koso (2002) find that, compared to those who are continuously married, those who have divorced have substantially less wealth at age 51-61. Individuals aged 51-61 who are currently unmarried and have been divorced once have 73 percent lower wealth compared to those who are continuously married (controlling for demographic, work, and health-related factors). This negative association is greater for women and for those who have been divorced more than once. They also find that previous divorce can have a long-term impact, even for those who remarry: individuals who have divorced once or twice but are currently remarried have 24 percent and 52 percent less wealth, respectively, than the continuously married.

Sharma (2015) uses RAND HRS data to estimate a fixed-effects model of change in wealth. Like Wilmoth and Koso, he finds that HRS respondents who divorce between the 2004 and 2010 HRS interviews have less average wealth in 2010, when compared to those who did not divorce, and women are more negatively affected. According to his analysis, divorced women lose almost three times as much wealth as divorced men.

The Government Accountability Office (2012) analyzed HRS data from 1992 through 2010 to study the impacts of divorcing after age 50 on assets and income. Similar to Wilmoth and Koso (2002) and Sharma (2015), GAO finds that the negative financial impact of divorce is greater for women than for men. Women who divorced after the age of 50 had incomes on average 41 percent below women who did not divorce. Divorced men in the same cohort only had incomes 23 percent below men who did not divorce. Women who were divorced after 50 experienced a 41 percent decrease in household assets than women who did not divorce, and men who were divorced after 50 experienced a 39 percent reduction in assets. This analysis did not

consider remarriage, or the pre- and post-divorce trajectory in asset accumulation, or the role of employment around the time of divorce.

Addo and Lichter (2013) similarly find that women in the HRS who have ever divorced have lower wealth at older ages than women who are continuously married, and this differential is even greater for black women than for white women.

Frech, Painter, and Vespa (2017) use data from the National Longitudinal Survey of Youth 1979 and find that after controlling for selection, women who divorce and then remarry have similar levels of wealth at age 40 to women who are continuously married.

Perhaps the most closely related paper to our current paper is that of Zissimopoulos, Karney, and Rauer (2008), in that they also investigate whether timing of divorce has differential impact on wealth at retirement age. In particular, they find that a first divorce when one is over 45 years of age has a negative impact on wealth relative to a first divorce between ages 26 and 35, but these differences are not statistically significant.

In summary, divorce has a long-term impact on economic well-being. Divorce at age 50 or older is associated with lower assets and income, with the differences being particularly acute for women. Cross-sectional analysis controlling for other factors occurring between the time of the divorce and the survey find limited statistical significance and reduced differences in these relationships suggesting the actions taken following divorce may mitigate the financial consequences of divorce. In Sections 5 and 6, we contribute to this literature by exploiting the panel nature of the HRS to clarify how assets at ages 65 and older differ by the timing of the marital disruption.

III. Simple Model of Asset Accumulation

In this section, we present a simple model of asset accumulation for retirement. The model assumes individuals have homogeneous preferences for retirement security and there is no uncertainty: everyone marries at the same age, works for the same number of years, retires at the same point in the lifecycle, and dies some number of years after retirement. The model compares the lifecycle of someone who does not marry to someone who does marry, and considers the implications for his or her retirement security. The model focuses on

- asset accumulation over the life cycle,
- the role of each household member in contributing to asset accumulation, and
- the timing of divorce.

The simple model demonstrates potential empirical regularities we might observe and provides a framework for thinking about the role of divorce in impacting retirement security.[1] In the next two sections, we will use panel survey data to investigate if the theoretical implications from this simple model are observed empirically.

III.A. Model

Suppose that an individual plans to accumulate Y assets by retirement. Moreover, for now also assume that Y corresponds to the amount that makes the individual secure in retirement. If this individual marries, due to economies of scale e, his or her household will only need to accumulate $e \times Y$ by retirement.[2] If a household has no economies of scale, then $e = 2$, which means they will require twice as much assets at retirement as a single individual in order to be retirement secure. Alternatively, if the household has perfect economies of scale, then $e = 1$, which means they will require the same level of assets at retirement as a single individual in

[1] The strong assumptions above could be relaxed to consider the role of differential preferences within a household, delayed marriages, remarriages, and more.

[2] We do not consider consumption over the lifecycle in this simple model – it is assumed the household identifies Y, and adjusts consumption before retirement to ensure Y is achieved. A more complex model would consider tradeoffs in Y to maintain higher levels of consumption before retirement, but that additional complexity is not necessary to illustrate the key points of this chapter.

order to be retirement secure. Furthermore, we assume that marriage takes place only at the start of the asset accumulation phase.

Figure I presents a representation of this simple model of asset accumulation, where the household accumulates assets evenly over the work period (i.e., the period between the start of accumulation and retirement), and decumulates accrued assets evenly after retirement, achieving zero assets by death. The line between P1 and P2 in Figure I represents the asset accumulation path for the single household.

[Figure I]

Figure I suggests that if $e=2$, then both individuals contribute the same amount towards Y after a marriage as they would have without marriage (i.e., the slope from P1 to P3 would be twice the slope of P1 to P2). As economies of scale increase, each individual contributes less in order to achieve the amount required at retirement.

Now, consider a case where a divorce occurs as indicated in Figure I. Assume no behavioral responses to divorce.[3] In this case, the household accumulates *A* assets by the time of the divorce (represented by the growth in assets between P1 and P4). Assuming assets are divided equally at divorce, the now-divorced individual will have *A/2* assets after the divorce. If both members contributed to asset accumulation evenly, then:

- with no economies of scale, each could continue to save the same percent of income and accumulate *Y* assets by retirement (represented by P5 to P2), and
- with economies of scale, each would have to save a higher percent of income to accumulate *Y*.[4]

[3] The assumption of no behavioral changes is strong, but the purpose of the simple model is to reflect what behavior would have been had the household remained married. It reflects a lifecycle planning assumptions where the household establishes a plan for retirement at marriage and sets lifetime roles and contributions around that plan.

[4] Since we are assuming no behavioral responses to divorce in terms of a readjustment to *Y*, higher contributions are required.

III.B. Differential Roles

The example thus far has considered equal contributions by the married individuals to the household assets in order to achieve $e \times Y$ by retirement. However, marriage may result in household specialization. Figure II adds points to Figure I to clarify the effect of household specialization. If only one member contributed to asset accumulation before divorce, then after divorce (assuming no behavioral changes) he/she would continue on course to accumulate slightly less than $e \times Y$ assets by retirement (represented by a connection between P5 and P6, which is parallel to the line connecting P4 and P3).

For the other member who did not contribute to assets, absent a behavioral response (e.g., return to work) assets may not change post-divorce (represented by a connection between P5 and P7), or could even be drawn down (represented by a connection between P5 and P8) if assets are required to fund a minimal level of current consumption. This member would be considered retirement insecure, because his/her assets at retirement are less than Y.

[Figure II]

From this simple model, we see that the role of each household member in contributing to asset accumulation during the marriage impacts his or her retirement security after divorce.

III.C. Equity at Divorce versus Equity at Retirement

The model assumes assets are divided evenly at divorce. This provides equity at the time of divorce, but does not necessarily provide equity at retirement. If a couple specializes such that one does not work (e.g., raises children) and hence does not develop the ability to accumulate savings (e.g., work experience), then equitable separation of assets during a divorce ignores the compensation required to make the individual as well off at retirement had the couple not divorced. This results because the assets produced by the nonworking spouse are not easily monetized. If equitable division of assets considers the potential lifetime accumulation (i.e.,

equity at retirement) of a separating household, division of assets would be different. The mechanisms for division of assets (Hung and Knapp, 2017) focus primarily on division of assets at divorce.

In the case of division of assets to ensure lifecycle equity, or equity in retirement, both individuals have asset equity $(e \times Y)/2$ at retirement. If there are differential roles in asset accumulation within the marriage before divorce, then the member who is the higher contributor would pay a lump sum transfer or alimony payments over time to the member who is the lower contributor to ensure that the lower contributor has $(e \times Y)/2$ at retirement. In the case of no economies of scale, both individuals accumulate the same assets at retirement as if they had not married in the first place. However, with economies of scale, both individuals are equally worse off relative to Y. As economies of scale increase (i.e., e decreases), the divorced individuals are made worse off, due to the fact that the economies of scale from marriage reduced their perceived savings burden required to achieve retirement security.

The theoretical impact of household specialization's disproportionate burden on the low contributor to household assets was a policy concern during the divorce policy reform era of the 1970s and 80s. However, it is unknown how much individuals consider this when dividing assets at divorce, or how judges hearing contentious divorces consider the tradeoffs between equity at divorce versus equity at retirement. Another factor, perhaps much less considered, is how the timing of asset accumulation across the lifecycle may impact the difference between equity at divorce and equity at retirement.

III.D. Timing of Asset Accumulation

The timing of asset accumulation in relation to a divorce can exacerbate the consequences of household specialization. We consider an extreme example where the household plans to delay saving for retirement until well into the asset accumulation phase of the life cycle.

As shown in Figure III, suppose that a household accumulates no assets over the first half of the work life and divorces at this halfway point. Also, continue the assumption that the household specializes, and so only one member contributes to asset accumulation. If no assets are accumulated by divorce, then division of assets at divorce yields zero transfers. For the contributor, after divorce he or she will begin contributing, achieving $e \times Y$ by retirement (represented by a connection between P12 and P3).[5] In doing so, the contributor exceeds his or her retirement needs of Y. For the non-contributor, he or she remains with zero assets (represented by a connection between P12 and P13). This means that the non-contributor is made worse off under an asset accumulation scheme that delays the accrual of assets for retirement.

Alternatively, if division of assets ensured equity at retirement, then assets would be $(e \times Y)/2$ for each member of the divorcing household. This would require a transfer of $(e \times Y)/2$ to the non-contributor, requiring the contributor to go into debt, or the transfer could be made at retirement without requiring the contributor to go into debt.

In this example, the gap between equity at retirement ($(e \times Y)/2$) and equity at divorce ($A/2$) increases as assets at divorce (A) go to zero. Hence the timing of asset accumulation in relation to a divorce exacerbates the consequences of household specialization.

The timing of divorce also has implications for an individual's ability to rebuild assets lost in a divorce. Individuals divorcing early in working life may choose to undertake a new career, get re-trained, or make other human capital investment given the long horizon until retirement. The longer horizon allows early divorcees more time to rebuild assets lost in divorce. This becomes more important as household economies of scale increase, as this will cause the asset accumulation path to be substantially different between married and single households. Individuals divorcing near retirement have a shorter time period to rebuild assets. In lieu of a

[5] This assumes no behavioral response. It is likely that the primary contributor would decrease savings towards Y and consume more during his or her working life.

substantial behavioral response (e.g., significant reductions in current consumption), asset allocation at divorce is more deterministic of their retirement security (or insecurity).

III.E. Key Takeaways

The simple model of asset accumulation, setting aside the effects of economies of scale and behavioral responses, demonstrates that two factors

- the role of each household member in contributing to asset accumulation, and
- the planned timing of asset accumulation

can exacerbate the effect of divorce on retirement insecurity. The implications of the simple model include:

1. larger asset accumulation differentials between spouses will result in less assets at retirement for the low-contributing member (i.e., low earners in divorcing couple are more likely to be retirement insecure)
2. the timing of divorce will have a more significant impact if people delay savings for retirement

The simple model does not allow for behavioral responses to divorce such as changing labor supply after a divorce. If there is a higher probability of successfully making that transition at a younger age, then divorce may have an especially large effect on retirement security for older non-contributing members of households that have delayed asset accumulation.

IV. DATA

We use the biennial HRS (1992–2014) to examine the effects of divorce on economic outcomes. The HRS is a nationally representative sample of households where at least one member is age 51–61 in the original 1992 cohort, or age 51–56 in the new cohorts added to the study in 1998, 2004, and 2010. In 1998, the HRS added both younger and older cohorts. The additional cohorts made the HRS a representative panel study of people age 51 and over whose sample is added to every six years to capture newer cohorts of individuals ages 51-56. If the

household is comprised of a couple, then both individuals are interviewed, even if one of the individuals is younger or older than the targeted age group. If the couple separates, the HRS makes great efforts to follow both individuals, although attrition is higher among individuals whose most recent marital status is divorced relative to currently married individuals, for both men and women.

At a respondent's first interview, the HRS collects a retrospective marital history, including approximate dates of previous marriages start and end, and the reason for the marriages ending. This information can be used to look at outcomes of those who divorce at ages below 50 relative to outcomes of those who divorce after 50 (i.e., during the HRS interview range).

In each interview wave, the HRS collects information on demographics, health, wealth, income, insurance, family structure, and retirement plans and expectations. Wealth measures, other than employer-sponsored retirement plan data, are collected at the household level. Asset measures include self-reported value of housing wealth, value of investments, IRAs, employer-sponsored DC accounts, savings accounts (including CDs, government bonds), and the value of businesses, other residences, mortgages, and other debts. We supplement our data on DC wealth by using the imputed measures of Gustman, Steinmeier, and Tabatabai (2014) and updating these values through 2014.

Table I presents the demographic description of our sample. For these demographic characteristics we use responses from the survey wave conducted when the respondents are ages 65 to 66. For example, for respondents born in 1931, we use their responses from the 1996 survey wave; for respondents born in 1932 or 1933, we use their responses from the 1998 survey wave. Our tabulations in Table I are unweighted, as sample weights pertain to specific interview

waves and the results in Table I represent a comparison of outcomes at a specific age (65 or 66) corresponding to different interview waves for each individual.

The HRS weights are based on cross-sectional comparisons with the Current Population Survey (CPS) and the American Community Survey (ACS) for a given survey year. Consequently, using the weights across survey years would be inappropriate. More fundamentally the HRS weighting accounts only for current marital status and not for marital history, so the weights do not provide a nationally representative sample of divorce histories for comparative purposes. This concern is particularly important for our later analyses of retirement security based on different marital histories. Consequently, all of our results should be interpreted as reflective of the HRS sample's outcomes, and may not be nationally representative. However, there currently are not better surveys or administrative datasets that capture a large sample of households before and after a separation.

Table I describes the full sample, as well as the sample of those who have been continuously married and never divorced nor widowed, the sample of those who have been divorced at least once, and the sample of those who have never been married. By construction, the ages are similar across the groups. Continuously married couples tend to be very close in age, while divorcing individuals tend to remarry younger spouses. While the continuously married tend to be from very long marriages (43 years on average), the length of the most recent marriage for those who ever divorce is still 22 years on average, suggesting that many divorcees move on to long new marriages. Of the individuals who have ever divorced, 50 percent are currently married at ages 65 or 66, and an additional 10 percent are currently widowed, suggesting at least 60 percent of divorced individuals remarry. Additionally, as other studies have noted (Brown and Lin 2012), there is variation in divorce experience by race, with black individuals divorcing at greater rates relative to white individuals.

Those who are continuously married are less likely to be working full time, more likely to be retired at age 65 or 66, and less likely to report being in poor or fair health than those who are ever divorced or never married. Conditional on working full time, those who are continuously married have higher income at age 65 or 66 than those who are ever divorced or never married. Over 34 percent of those who are continuously married are in the 1931-1936 birth cohort, whereas 26 percent of those who have ever been divorced are in the 1931-1936 birth cohort. Those who have ever been divorced are more likely to be in the younger birth cohorts than those who have never been divorced.

[Table I]

Table I describes our sample in terms of differences in marital history, but does not account for timing of divorce. As mentioned in Section 3, the timing of planned asset accumulation during a marriage can alter the impact of divorce. Additionally, the timing of divorce may impact asset accumulation following a divorce because an individual's ability to respond to the divorce, such as work and savings, will depend on the need to change behavior relative to his or her pre-divorce household specialization. The marital histories in the HRS allow us to compare households that are married in a particular age range to households that experienced a divorce in a particular age range.[6] For our analyses, we consider two age ranges, 30 to 39 and 50 to 59, which are chosen to reflect two critical time points. With over 90 percent of the sample having children and the average age of these children currently being 38, ages 30-39 represent a critical time point where asset accumulation might have been relatively low due to the raising of children and individuals being relatively early on in their careers. At this point, divorce may have a larger negative impact on the individual in the household who has contributed the least to savings because he or she will be the least robust in terms of ability to

[6] Individuals married in an age range may divorce at a later time, and individuals divorcing during this age range may remarry within or after the age range.

accumulate savings once divorced. This can become a persistent detriment to asset accumulation if this individual retains responsibility for children, whose care may limit his or her work and savings response to the divorce.

We also consider the age 50-59 group. These individuals represent a different sample because their children are much older and the households have been together longer on average. Therefore, divorce for the individual in the household who has or would contribute the least to savings would be relatively better compared to this type of individual divorcing at ages 30-39 because he or she may have fewer persistent obligations after the marriage and because household asset accumulation for retirement will be further along. However, his or her situation could be relatively worse if his or her pre-divorce household specialization was such that it requires a dramatic response (e.g., re-entry into the labor force) after divorce in order to return to asset accumulation.

Table II provides a comparison of individuals who were married in these age ranges to individuals who divorced in these age ranges. Note that these comparison groups are not mutually exclusive: for example, an individual may become divorced in her thirties, and then again in her fifties, or an individual may be married in her thirties and then become divorced in her fifties. Individuals who divorced in these age ranges but are currently married at age 65 or 66 are married to younger individuals on average, and this gap widens for those who divorced between ages 50 and 59. As expected, those divorcing in either age range are less likely to be currently married, and if they are, the duration of the current marriage is shorter. Additionally, those who divorced between ages 50 and 59 are 21 percentage points less likely to be remarried by ages 65 or 66 than those who divorced between ages 30 and 39.

Regarding work and retirement, those who divorced between ages 30-39 are 3 percentage points more likely to be working full-time at age 65 or 66 compared to those who were married

during this age range, and this gap increases to 6 percentage points for those who divorced between ages 50-59. These gaps are larger than the 2.7 percentage point difference between the continuously married and ever divorced in Table I, which suggests that remarriage may play an important role in reducing full-time work at age 65 or 66. The fraction reporting being retired looks similar across the groups, despite the gaps in full-time work. The difference in full-time work is driven by lower rates of individuals not participating in the labor force in the married sample.

With regards to children, individuals who divorced in their thirties are less likely to have children than the other groups, and individuals who divorced in their fifties are likely to have younger children on average. Those who divorced during either age range, similar to what was observed in Table I, are more likely to be drawn from the younger HRS cohorts and have no systematic differences in education with their married counterparts. Interestingly, the fraction reporting poor or fair health is greater for individuals who divorced in their thirties compared to those who divorced later.

The descriptive statistics in Table II highlight some key differences between groups having alternative marital experiences during certain age ranges that were not clear from the current and ever-divorced experiential indicators in Table I. First, while divorced individuals are more likely to be working full-time at ages 65 or 66 relative to those who are married, this gap expands when divorce occurs at later ages. This is suggestive evidence that the timing of divorce may matter for retirement in order to achieve retirement security. Second, individuals who divorced at later ages are less likely to be remarried. Since marriage provides economies of scale, continued singlehood may result in greater risk for retirement insecurity. Third, more people report being in poor or fair health among individuals who divorced between ages 30 and 39. This could suggest that disruptive marital events early in life have persistent consequences. In the next

sections we will explore how asset accumulation among the groups in Tables 1 and 2 relate to the marital disruption, conduct multivariate analyses to see if these differences persist controlling for other mitigating risk factors, and analyze the impact of separation on decumulation behavior.

V. Differences in Wealth by Marital History

In this section, we address the question: How do older divorcees differ from those who divorced when young in terms of wealth once they reach age 65 and later? We begin by comparing wealth by marital history. We compare those who have never been divorced to those who have ever been divorced, and we also compare those who experienced a divorce earlier in life (between the ages of 30 and 39) to those who experienced a divorce later in life (between the ages of 50 and 59). Note that these comparisons do not control for demographic and behavioral differences between the groups, so differences may be the results of differences associated with, but not caused by, marital history. In comparing wealth, we focus on the differences in median wealth in order to prevent extreme values among our subsamples from driving the observed differences. The descriptive analysis is followed by multivariate regression analysis in which we explore the relationship between assets and divorce, considering also the roles of remarriage, children, marriage length, educational attainment, and work history.

Comparing wealth of married individuals who have never been divorced to wealth of individuals who have experienced divorce, it is apparent that, at the median, those who have ever been divorced have less median wealth at age 65 or 66 than married individuals who have never been divorced (Table III). This finding is consistent with the previous literature (Amato 2000). The difference in wealth between those who are continuously married and those who have ever been divorced is much greater for women than for men: median wealth at age 65 or 66 for men who have been divorced is more than 58 percent the median wealth of married men who have

never been divorced, whereas median wealth for women at age 65 or 66 who have experienced divorce is 32 percent of median wealth for women who have been continuously married. These differences are consistent with the simple model presented in Section 3, where men are the more significant contributors to household asset accumulation.

This negative impact of divorce on wealth also holds regardless of current marital status, although the impact is moderated for those who are currently married. Regardless of labor force status and whether the individual has children, those who are continuously married have more wealth at the median than those who have ever experienced divorce.

[Table III]

In addition to finding that those who ever divorce have lower wealth than those who are continuously married, we also find that there are important differences in wealth at age 65 or 66 depending on when individuals divorce during their lifecycle. Table IV compares total wealth at age 65 or 66 of those who divorced in their thirties with those who divorced in their fifties. Overall, median wealth for men and women who divorced earlier is greater than median wealth for men and women who divorced later. However, this result is not consistent across current marital status or labor force status. For example, of those who are currently divorced, men and women who were divorced later have greater median wealth than those who were divorced earlier. It is worth noting that, especially for those who were divorced in their fifties, many of these subgroups have very small samples. For example, only three men and 21 women who divorced in their fifties are widowed at age 65 or 66.

[Table IV]

V.A. Relationship Between Divorce and Assets: Multivariate Regression Analysis

In this subsection, we control for the interrelationships between explanatory variables (e.g., work history and number of children) in order to answer our first research question. The

bivariate comparisons of continuously married individuals and ever-divorced individuals indicate that those who are continuously married have greater median wealth at age 65 or 66. It is possible that these differences might exist because of systematic differences between the two groups that could otherwise explain this gap. For example, differences could exist in the timing of when assets were measured (macro-economic effects), the education level of different groups, or the health or retirement status.

In Table V, we present the key outcomes from a regression of log household assets on a number of explanatory variables. In Model 1, we account for just the relationship between being ever divorced and/or currently divorced. Following Kennedy (1981), we calculate a negative relationship between household assets and ever being divorced (-20 percent for both women and men).[7] Since the ever-divorced individuals could have potentially remarried, the cumulative effect of ever being divorced and being currently divorced speaks more to the consequences on household assets of persistent divorce. In this case, the negative relationship is substantially larger (-81 percent for women, and -74 percent for men), compared to those who have been continuously married. As noted, these differences could be driven, in part, by systematic differences between the groups such as those stated above.

Model 2 controls for the interaction of ever-divorced and current marital status, with indicators for the number of children (i.e., in case of nonlinear effects), retirement status, education, interview wave, and self-reported health. Controlling for these factors increases the negative effect on assets for women of ever being divorced, but mitigates it for men. This is consistent with the notion that women are more likely to take care of children, and controlling for the number of children, reveals a larger relationship between assets and ever being divorced

[7] Kennedy (1981) provides the correct transformation for calculating the marginal effects of dummy variables in a semi-log regression (i.e. where the dependent variable is a logarithm – here total wealth – and the explanatory variable is an indicator variable – e.g., divorced). For an estimated coefficient $\hat{c}$, the marginal effect is $\exp\left(\hat{c} - 0.5V(\hat{c})\right) - 1$.

for women and a smaller relationship for men. The cumulative relationship of ever being divorced and currently divorced is slightly smaller for women and men in Model 2 than in Model 1.

Having many children (4+) is associated with lower total assets for men and women. Women who are currently divorced with this many children have substantially fewer accumulated assets relative to the continuously married, while women who were previously divorced but currently married have more accumulated assets than the continuously married. For divorced men, the effect of having more children is insignificantly different from zero; however having no children is associated with less wealth accumulation for ever divorced men. Although additional covariates are not shown, Model 2 consistently finds that education and current health are significant and positively associated with total assets.

Model 3 considers the addition of log total self-reported years worked. Table V indicates that individuals who work longer have greater assets, but the relationship is only significantly and substantively positive for men. However, when interacted with currently divorced, the result for women is significant and substantively positive, suggesting a behavioral response to increase savings relative to continuously married or remarried women. Using the observed means of the sample for log total years worked, we can calculate the marginal effects of divorce and remarriage for a woman with the average number of years worked. The marginal effects are similar to Models 1 and 2, with divorcing women who do not remarry having 83 percent fewer assets at ages 65 or 66 than their continuously married counterparts, even with the same work experience. Women who remarry accumulate relatively more assets, but they still have 39 percent fewer assets at ages 65 or 66 than their continuously married counterparts.

[Table V]

The simple model in Section 3 demonstrated the theoretical importance of divorce timing in asset accumulation. Table VI considers the same regression framework as Table V, but focuses on a subsample that was married in their thirties, and considers the role of a divorce in that age range on asset accumulation by age 65 or 66. Similar to Model 1 in Table V, we find that both men and women who divorce in their thirties and do not remarry accumulate substantially fewer assets (78 percent for women, 69 percent for men) than their counterparts who are married throughout their thirties. This effect persists even if they remarry. The similar qualitative results in Tables 5 and 6 are not surprising, since divorce is more likely to occur younger in working life, so a larger fraction of the ever divorced population is likely to look more similar to a sample of individuals who could have divorced in their thirties than a sample of individuals who could have divorced in their fifties.

Controlling for the additional covariates in Model 2 (i.e., education, interview wave, retirement and health status and interactions with children and race – the same as Model 2 in Table V), we find that divorce has persistent effects that are worse for women than men, even with remarriage. The results are qualitatively similar to those in Table V.

Controlling for total years worked in Model 3 of Table VI, we observe that the coefficient on years worked is significant at the ten percent level for women. However, controlling for the interaction of years worked with divorce and remarriage, we find that divorced women with longer careers accumulate more assets (coefficient of 0.673), and that remarriage mitigates this relationship (coefficient of -0.369). This suggests that careers and remarriage could represent alternative paths for retirement security.

[Table VI]

As discussed in our simple model in Section 3, divorce can be particularly challenging for individuals from households that specialize. The limited years remaining in the workforce

diminish the returns from pursuing an education or a career. Table VII focuses on a subsample that was married in their fifties, and considers the role of a divorce in that age range on asset accumulation by age 65 or 66. As done in the last two tables, we consider the implications of divorce and remarriage. Similar to the previous tables, we find a negative association of divorce with asset accumulation by age 65 or 66, but the effect is smaller. This is likely due to much of the lifetime asset accumulation occurring prior to divorce. We again find that the cumulative effect of divorce and remarriage on assets is negative relative to the continuously married sample (-30 percent for women and -28 percent for men).

Controlling for the other factors in Model 2, we find that the cumulative effect of divorce in their fifties followed by remarriage is worse (-43 percent for women and -40 percent for men). Additionally, while we find that having children in general affects overall asset levels, the interactions of number of children and divorce or remarriage are not significantly different from zero. This is not surprising as children for this subsample are much older and hence independent, requiring less time commitment that could otherwise influence the divorcee's work and savings response.

In Model 3, controlling for total years worked has the same positive effect on asset accumulation as in the previous two tables. It suggests that work experience improves asset accumulation among divorced women, but it does not eliminate the negative relationship between divorce and asset accumulation by age 65 or 66.

Comparing the marginal results in Tables VI and VII, we find that the negative effect on assets of divorce without remarriage is worse for women who divorce in their 30s (-86 percent compared to continuously married women) than for women who divorce in their 50s (-72 percent compared to continuously married women) whereas the negative effect on assets of divorce without remarriage is worse for men who divorce later in life than for men who divorce earlier in

life (-52 percent in for men divorcing in their 30s compared to -64 percent for men divorcing in their 50s).

[Table VII]

Tables V to VII consider the relationship between divorce, remarriage, kids, and work length on total asset accumulation by age 65. Total assets include liquid and illiquid assets, wealth intended for retirement and wealth used for current housing and transportation needs. In an earlier version of this paper, we also considered the role of divorce on liquid retirement assets, such as IRAs and 401(k)s (see Hung and Knapp, 2017). We found the same general pattern of results for these retirement assets. We find that the negative effect on retirement assets of divorce without remarriage is worse for women who divorce in their 30s than for women who divorce in their 50s whereas the negative effect on retirement assets of divorce without remarriage is worse for men who divorce later in life than for men who divorce earlier in life.

These findings bolster the theory presented in Section 3. Namely the timing of divorce relative to planned savings matters substantially for financial security in retirement. Women divorcing at young ages have persistently less wealth at retirement ages relative to their continuously married or remarried peers. However, the multivariate regressions are associative and not causal. Households that do not remarry could differ in initial conditions that we cannot capture since the HRS does not begin interviewing individuals until at least one member of the household is age 51. Additionally, divorcees take a number of actions to mitigate the impact of divorce on their financial security, with working and remarrying representing two potential pathways. Nevertheless, our results do indicate that women divorcing at young ages who do not remarry are more likely to have limited assets at retirement ages, raising the probability of being financially insecure in retirement. In the next section, we consider the implications of divorce on retirement security, namely asset decumulation through timing the claiming of benefits, spending

down liquid assets, and working longer. We focus on older divorcees, so that we can control for initial conditions by analyzing households that divorce after the start of the HRS interviews and for which an interview occurs both before and after the divorce. In this way, we can ascertain whether it was the divorce (and the choices that came after it) that altered decumulation behavior.

VI. Decumulation of Assets in Retirement

In this subsection we address our second research question: how do individuals who divorce after 50 differ from continually married households in their retirement decumulation behavior, including Social Security claiming patterns? First, we examine decumulation of retirement assets descriptively through simple summary statistics that do not account for correlated differences in characteristics. Then, we conduct a propensity score analysis the links divorcees with observationally similar non-divorcees.

VI.A. Descriptive Analysis

Differences in retirement wealth levels may reflect differences in decumulation behavior at ages 65 or 66. For example, single households do not need to set aside saving for a survivor, thus these household require less precautionary savings and hence assets can be drawn down faster. In this subsection, we compare retirement asset decumulation behavior based on divorce experience.

In Table VIII, we compare rates at which respondents draw down sources of retirement wealth at different ages, depending on whether they are continuously married or have ever been divorced. Table VIII presents rates of: 1) annuitizing, cashing out, or withdrawing from an IRA; 2) cashing out or annuitizing an employer sponsored DB or DC plan; 3) receiving DB income; and 4) receiving SS retirement benefits.

[Table VIII]

Overall, we observe that decumulation behavior is more frequent at older ages. At ages 62 to 63 and ages 65 to 66, we see that individuals who have ever been divorced are more likely to have taken assets out of an IRA employer sponsored retirement account, when compared to those who have been continuously married. However, men who have ever been divorced are less likely to be currently receiving DB or annuity income at each age group, compared with men who are continuously married. Also, ever divorced women are less likely to be collecting Social Security benefits at normal retirement age (ages 65/66) than continuously married women. Both of these results are consistent with those who have ever been divorced being more likely to still be working full time at age 65 or 66 than those who are continuously married, as seen in Table I. In Table IX, we compare rates at which respondents draw down sources of retirement wealth at different ages, depending on whether they divorced early in life (ages 30-39) or later in life (ages 50-59). At age 62 or 63, those who divorced while in their thirties are more likely to have cashed out or withdrawn from an IRA, DB or DC plan.

At each age group, men who divorced later in life are more likely to be receiving DB or annuity income, but less likely to have claimed Social Security retirement benefits, when compared to men who divorced earlier in life. This result is surprising. It could reflect strategic benefit election since most private benefit plans have retirement ages well before the earliest Social Security claiming age and delaying Social Security increases the monthly payment. Women who divorced later in life are also less likely to have claimed Social Security retirement benefits than those who divorced earlier in life, at each group.

[Table IX]

Simple comparisons like these conceal the great deal of variation in personal characteristics that could influence both asset accumulation and decumulation behavior between

the age at separation and retirement age.[8] For example, if divorcing individuals are more likely to be working prior to separation, then they may be more likely to still be working at ages 65 or 66. Next, we use regression analysis to evaluate accumulated retirement assets by divorce history. Later in this chapter, we will consider decumulation behavior using a matching analysis that links an individual who is married at the first HRS interview but will eventually divorce to similar individuals who do not. In doing so, we attempt to generate a comparison group that can serve as a more valid counterfactual for decumulation behavior had the household not separated.

VI.B. Propensity Score Analysis

To examine the impact of separation leading to a divorce on decumulation behavior we use a quasi-experimental approach known as propensity score matching. Table VIII considered differences in decumulation behavior for the continuously married relative to the ever divorced. We observed that the ever divorced were more likely to cash out or annuitize a DB or DC retirement plan compared to the ever divorced. Additionally, we observed that ever-divorced women were more likely to not have claimed Social Security benefits by the age of 65 or 66. The delay in Social Security benefit claiming could be the result of continued work required because of the divorce or because women who work have more outside options are therefore more likely to divorce in the first place.

A common criticism of divorce analyses is that the choice of a household to separate is endogenous, and so it is difficult to determine if the separation caused a difference in an outcome, or if the outcome was associated with another factor that happens to be correlated with divorce. The ideal analysis would compare the outcomes of a household that divorced to the same household had it not divorced. As this type of experiment is not possible, a quasi-experimental approach is required.

[8] For individuals divorcing after their first HRS interview, we use the age at separation. For individuals divorcing before their first HRS interview, we use the age as of their self-reported divorce year.

In order to approximate the random assignment of an experiment, we use propensity score matching. As part of this method, we estimate a probit model of separating after the first interview based on characteristics of a household before the separation. Following a procedure similar to Heckman and Smith (1999), we consider a number of specifications for predicting separation following the first HRS interview. After significant testing, we settled on a specification for predicting the likelihood of divorce that included full-time work status for each person, joint full-time work status, an indicator for Catholicism, indicators for educational achievement by person (less than high school, high school or equivalent, some college, college), a linear spline in marriage length, number of dependents, an indicator for the first interview wave, and an indicator for ever having an IRA. Furthermore, when estimating each probit model, we restricted the sample to the applicable group. For example, for individuals who cash out, withdraw, and annuitize an IRA, we estimated our probit model only on households that had an IRA prior to separation and use the model to predict a propensity of divorce. In this example, for women, the average predicted probability of divorce was 0.031, and 85 percent of those who will divorce exceed this value, whereas only 39 percent of the continuously married exceed 0.031. For men, the prediction is stronger, 88 percent of those who will divorce exceed the average predicted probability of divorce, whereas only 34 percent of the continuously married exceed this average. This highlights the overlap issue – in order to determine the effect of divorce, the comparison group should be reflective of those who do divorce. By restricting our sample to individuals who "look like" those who eventually separate, we are creating an artificial control group based on observed characteristics. Across all the results in this subsection, the range for those who will divorce exceeding the mean of the predicted average divorce rate ranges from 77 to 88 percent, while the range for the continuously married is 34 to 56 percent.

Using these estimated probabilities, also known as propensity scores, we calculate the difference between the individuals that divorce and their four nearest neighbors, as judged by their relative closeness in terms of propensity score. We conduct this analysis both at the first interview wave (when everyone in the sample is married) and at retirement age. Propensity score matching controls for observable differences between those who divorce relative to remaining continuously married, however, unobserved differences might remain. Heckman et al. (1998) demonstrate that selection bias based on permanent unobserved differences between the treatment and control groups can be reduced by differencing results with the pretreatment differences. We produce these results as well, and test whether they are statistically different from zero. The resulting difference estimate is an average treatment effect on the treated, i.e. the impact of separation on the outcome of interest.

In Table X, we report the estimated impact of separation on the probability of receiving Social Security retirement benefits by age X where X is ages 62/63, 65/66, and 70/71. In the first three rows of the table, we present the matched comparison between a divorcing individuals and similar but continuously married individuals at the first interview wave (before the separation). If there is no systematic difference between the divorcing and continuously married individuals, then the coefficient will be close to zero. Likewise, the next three rows compare this difference, but at age X, which could be 62/63, 65/66, or 70/71. The sample composition may change by age group, as not all HRS cohorts will have reached age 70/71 by the last interview wave, and attrition is cumulative, meaning that fewer people will continue with the HRS interview either because of death or nonparticipation. We find that there is no significant difference in men's claiming behavior at ages 62/63 or 65/66, but that men are 4 percentage points more like to have claiming by age 70/71 if they separated. For women, the results are more stark: women are 8 percentage points less likely to begin collecting their retirement benefit at age 62/63 if they

separate and 10 percentage points less likely at age 65/66. There is no significant difference in claiming behavior by age 70/71.

This difference is computed in the last three rows of Table X. For example, in Table X, at the first interview wave we observe for our age 70/71 group that men in the treatment group are 5 percentage points less likely to have claimed their Social Security retirement benefit in the first interview wave. By controlling for this initial difference, the behavioral impact of separation on claiming by age 70/71 is expanded to 9 percentage points. For the other categories of men and women's Social Security retirement benefit claiming, this method has less corrective impact.

Continued work may contribute to the delayed Social Security benefit claiming for women. Knapp (2014) demonstrated that divorcing women return to the labor force following their separation, and Couch et al. (2013) finds a similar result for women divorcing between ages 22 and 36. Repeating the analysis in Table X, but with full-time work as the outcome of interest confirms work at ages 62/63 is 11.6 percentage points greater for separating women. The estimated rate of full-time work for separated women at ages 65/66 and 70/71 remains greater compared to observationally equivalent, continuously married women. These results are included in the appendix.

[Table X]

Table XI considers the impact of separation on drawing income from a DB pension. While descriptively, ever-divorced individuals are slightly less likely to receive DB pension income, the results of the difference analysis suggests that individuals separated are no more likely to draw DB pension income than like households that are continuously married. This is true at each of the three ages we consider, as well as for both genders.

[Table XI]

Table XII considers the impact of separation on DB/DC cash-out. While descriptively ever divorced individuals appear more likely to cash-out their DB/DC pensions, the results of the difference analysis suggests that individuals separated are no more likely to cash out their pension than like households that are continuously married. This is true at each of the three ages we consider, as well as for both genders.

[Table XII]

Finally, Table XIII considers IRA decumulation in response to a separation. Across all age groups, separating men are more likely to decumulate their IRA accounts. However, men who go on to separate were also more likely to decumulate their accounts before separation, as demonstrated by the positive coefficient in the first interview wave. After accounting for this permanent difference, only decumulation behavior of men by ages 70/71 is statistically significant. A potential explanation for this is that separated men may no longer be concerned with providing benefits to a survivor, and hence decumulate these accounts faster.

Our propensity score matching analysis has revealed that separation at late ages encourages delayed Social Security claiming behavior for women. For women aged 62/63, they are 8 percentage points less likely to claim their Social Security benefit. Since 41 percent of married women claim their benefit by this age, the 8-percentage point reduction can also be interpreted as a 20 percent reduction in claiming at the earliest claiming age. Our analysis also suggest that separation has no statistically significant impact on DB/DC decumulation, but we do find elevated rates of IRA decumulation among separated men at older ages.

VII. Conclusion

This report represents an important step in understanding how retirement security is impacted by divorce, and if it has differential effects based on gender, work history, the timing of

divorce and other observable differences within the household. We introduced a simple theory that indicates in the case of a divorce that (1) household specialization places the household member with lower potential earnings at greater risk for retirement insecurity, and (2) the timing of divorce relative to planned retirement savings can negatively affect retirement security. Our findings are consistent with the theory.

Similar to previous research on divorce and retirement wealth, our analyses all demonstrate that having been divorced is associated with lower retirement assets and lower household assets at ages 65 and older when compared to those who have been continuously married. We find that women - the most likely to specialize in non-labor market work - are the most negatively impacted by divorce, and that this association persists until retirement. Additionally, our results suggest that extended careers and remarriage are important behavioral responses that mitigate the negative relationship between divorce and asset accumulation by 65.

To investigate the impact of timing of divorce, we compare those individuals who divorced later in working life with those individuals who divorce early on. In particular, we examined two groups: those divorcing in their thirties and those divorcing in their fifties. The descriptive analysis finds that, generally, those who divorce in their fifties have less wealth at age 65 than those who divorce in their thirties, but there are important differences by current marital status and labor force status. Indeed, the multivariate regressions control for current marital status and work history and finds more nuanced results. For example, for women who divorced in their thirties, divorce has persistent negative effects, that while mitigated by remarriage, are still persistently lower at ages 65 or 66 compared to continuously married households. The negative association is larger for women with more children. Women who divorced in their fifties also accumulate fewer assets compared to continuously married women, but this reduction in assets is smaller than for women who divorced earlier in life. For men, there is a negative

association of divorce with asset accumulation, but it is smaller than that experienced for divorcing women.

Remarriage represents an important lifecycle insurance mechanism, and those that are not remarried at age 65 or 66 are likely to be less secure in retirement than their married counterparts. Women that divorce and are not remarried at age 65 are significantly worse off than those who were continuously married. Women who divorced in their 50s have only 28 percent of assets of otherwise similar women who were continuously married. Women who divorced in their 30s have only 14 percent of assets of similar women who were continuously married (note that the comparison in a world with no economies of scale from marriage would be 50 percent). These results persist even after controlling for children and self-reported labor market experience. After controlling for these factors, men that divorce and are not remarried at age 65 are worse off than men who were continuously married. Men who divorce in their 50s have only 36 percent of assets of otherwise similar men who were continuously married. Men who divorced in their 30s have 48 percent of assets of otherwise similar men who were continuously married. However, the differences are notably less for men, particularly those divorcing in their 30s, suggesting that with sufficient lead time to retirement, they can build assets towards a more secure retirement.

We also consider the impact of divorce on retirement decumulation. Descriptive analysis finds that men who have ever been divorced are less likely to be currently receiving DB or annuity income at each age group, compared with men who are continuously married. Women who have ever been divorced are less likely to be collecting Social Security benefits at ages 65 and 66 than continuously married women. However, descriptive comparisons like these conceal the great deal of variation in personal characteristics that could influence both asset accumulation and decumulation behavior between the age at separation and retirement age. We also examine

decumulation behavior using a matching analysis that links an individual who is married at the first HRS interview but eventually divorces to similar individuals who do not divorce. This propensity score matching analysis controls for observed differences between the average divorcee and the average continuously married person. Following Heckman et al. (1998), we adapt the typical propensity score matching analysis to also control for permanent unobserved characteristics by controlling for pre-separation differences between individuals that go onto divorce and their continuously married counterparts. We find no significant evidence that divorce is persistently associated with measures of liquid retirement asset decumulation after controlling for these differences. We find that separated women are more likely to delay Social Security retirement benefit claiming until age 65 or 66.

The HRS's rich set of longitudinal data and retrospective marital and work histories allow us to contrast how retirement outcomes differ by age at divorce and, particularly, differences in outcomes by whether these individuals remarried and whether they were working before their divorce. The time period covered by the HRS represents a unique opportunity to follow the retirement wealth accumulation of households as they approach retirement.

The growing trend of near-retirement divorce has important implications for retirement security and decumulation, particularly for women. Our theory indicates that these include (1) low earners in divorcing couple are more likely to be retirement insecure, and (2) the timing of divorce will have a more significant impact if people delay savings for retirement. This suggests that policies related to asset division at divorce may benefit from considering the timing of lifecycle investments in the division of assets at divorce. For example, if a couple puts off retirement saving and/or specializes to support children, then that decision has long-term lifecycle implications for the retirement security of the low-earner. Consequently, if society deems lifecycle equity an important consideration during divorce proceedings, then the long-

term financial consequences of these household decisions should be considered during asset dissolution and also emphasized during early marriage when household specialization is considered and established. Alternatively, if society deems lifecycle equity as reasonably unforeseeable and broadly experienced, then social insurance could be expanded for divorcees in old-age. In this case Social Security benefits for divorced spouses could be enhanced or penalties for early claiming reduced, or eligibility for means-tested benefits could be expanded or the benefits could be made more generous for divorced spouses based on age of divorce, marital history, work experience, and/or number of children he or she raised.

APPENDIX

This appendix provides additional tables related to the propensity score matching analysis in the main text.

[Table A.1]

[Table A.2]

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TABLE I

SAMPLE DESCRIPTION AT AGE 65 OR 66

Demographic Characteristic (Percent of sample, unless otherwise stated)	Full Sample	Continuously Married	Ever Divorced	Never Married
Age	65.5	65.5	65.4	65.5
Average age difference with current spouse (age – spouse age, in years)	1.2	0.1	3.7	
Average length of current marriage (years)	36.1	42.7	22.3	
Male	47.0	52.7	47.4	42.8
Currently married	68.0	100.0	50.0	0
Currently divorced	13.5	0	34.2	0
Currently widowed	12.2	0	9.5	0
White, non-Hispanic	79.0	84.4	77.1	65.2
Black	16.4	11.1	18.6	27.8
Working full-time	17.9	17.2	19.9	19.2
Working part-time	4.5	4.4	4.5	6.4
Retired	66.4	66.7	66.5	64.6
Unemployed	1.5	1.3	1.8	0.3
Average income (conditional on full-time work, 2014 dollars)	$43,972	$46,440	$43,510	$41,923
Have children	93.0	96.0	95.0	27.0
Average number of children (conditional on having children)	3.6	3.2	4.1	2.8
Average age of children	38.2	38.0	38.2	38.6
1931-36 birth cohort (HRS1)	31.2	33.6	25.7	31.6
1937-41 birth cohort (HRS2)	45.4	44.9	46.4	41.2
1942-47 birth cohort (WB)	16.5	16.4	18.4	16.6
1948-53 birth cohort (EBB)*	6.9	5.2	9.4	10.5
Less than high school	22.8	20	22	26.2
High school diploma or some college	56.9	57	58.9	47
Undergraduate degree	11.3	13	10.3	12.5
Graduate degree	9	10	8.9	14.4
Self report poor or fair health**	27.2	22.1	31.2	31.9
Sample Size	8,808	4,142	3,159	313

Notes: Unweighted descriptive statistics of the sample of individuals aged 65 or 66 in the HRS surveys (1992-2014), using only age-eligible survey members for their respective birth cohorts (original HRS cohort, born 1931-41, abbr. HRS1 and HRS2; war baby cohort, born 1942-47, abbr. WB; early baby boom cohort, born 1948-53, abbr. EBB). Age 65 or 66 is chosen because the HRS is a biannual survey. If individuals had interviews at both ages, the response from the first was used. The full sample excludes observations where labor force status, age, gender, marital status, race, education, or assets are missing. The continuously married is a subset of the full sample reflecting respondents who are currently married and have had only one marriage. The ever divorced is a subset of the full sample reflecting respondents who report ever being divorced prior to the interview. The never married is a subset of the full sample reflecting respondents who report never being married. *EBB cohort will only reflect individuals born in 1948-49, because only these individuals will have reached age 65 or 66 by 2014. **Approximately 0-0.15% of observations are missing health status and are excluded from this percentage only.

TABLE II

SAMPLE DESCRIPTION OF DIVORCE HISTORY COMPARISON GROUPS AT AGE 65 OR 66

Demographic Characteristic (Percent of sample, unless otherwise stated)	Married while age 30-39	Divorced while age 30-39	Married while age 50-59	Divorced while age 50-59
Age	65.5	65.4	65.5	65.5
Average age difference with spouse (respondent age – spouse age, in years)	0.7	3.9	1.0	6.7
Average length of current marriage (years)	38.9	22.0	37.4	8.7
Male	46.9	47.5	50.8	52.5
Currently married	75.7	54.9	82.4	33.5
Currently divorced	9.3	31.0	7.4	53.5
Currently widowed	13.2	8.4	7.7	5.7
White, non-Hispanic	81.2	78.7	81.6	82.6
Black	14.5	17.2	14.1	12.4
Working full-time	17.5	20.3	17.8	23.3
Working part-time	4.3	5.1	4.5	3.7
Retired	66.6	66.2	66.5	66.2
Unemployed	1.4	1.8	1.3	2.8
Average income (conditional on full-time work, 2014 dollars)	$44,046	$43,686	$44,727	$46,025
Have children	97.0	93.0	96.0	97.0
Average number of children (conditional on having children)	3.5	4.1	3.6	4.0
Average age of children	38.2	38.3	38.2	36.6
1931-36 birth cohort (HRS1)	33.3	21.9	30.1	27.2
1937-41 birth cohort (HRS2)	44.9	48.8	47.9	48.7
1942-47 birth cohort (WB)	16.1	19.5	16.2	15.8
1948-53 birth cohort (EBB)*	5.7	9.7	5.7	8.3
Less than high school	22.1	19.6	22	17.6
High school diploma or some college	57.7	59.2	57.3	61.4
Undergraduate degree	11.5	11.2	11.7	12
Graduate degree	8.6	9.9	9	8.9
Self report poor or fair health**	25.6	30.5	25.8	25.6
Sample Size	6,704	1,208	6,908	493

Notes: Unweighted descriptive statistics of specific subsamples of individuals aged 65 or 66 in the HRS surveys (1992-2014). See notes to table 1 for a further description of the full sample. The "married while age 30-39" is a subset of the full sample reflecting respondents who report during their HRS interviews being married, but not divorced or widowed, while in their thirties. The "divorced while age 30-39" is a subset of the full sample reflecting respondents who report during their HRS interviews becoming divorced while in their thirties. The groups for ages 50-59 are similarly defined. *EBB cohort will only reflect individuals born in 1948-49, because only these individuals will have reached age 65 or 66 by 2014. **Approximately 0.07-0.24% of observations are missing health status and are excluded from this percentage only.

TABLE III

TOTAL HOUSEHOLD WEALTH AT AGE 65 OR 66 OF CONTINUOUSLY MARRIED INDIVIDUALS AND EVER-DIVORCED INDIVIDUALS

Median Total Household Wealth (2014 Dollars)	**Men**		**Women**	
	Continuously Married	Ever Divorced	Continuously Married	Ever Divorced
Overall	358,009	208,416	364,315	116,958
By Marital Status:				
Married	358,009	284,639	364,315	240,660
Separated or Divorced		104,000		64,481
Widowed		115,069		58,150
By Retirement Status:				
Working full-time	439,885	262,962	334,834	141,602
Not working full-time	336,949	195,963	366,500	112,002
By Children:				
Don't have children	408,920	152,293	381,620	193,047
Have Children	357,279	210,456	363,119	115,802
Sample Size	2,181	1,497	1,961	1,662

Notes: Unweighted median total household wealth in 2014 dollars for specific subsamples of individuals aged 65 or 66 in the HRS surveys (1992-2014). See notes to table 1 for a further description of the full sample and subsamples. Total household wealth is the net value of total wealth. It excludes annuitable wealth, such as defined benefit plans and Social Security. Total wealth includes the respondent's self-reported value of checking, savings, or money market accounts, CDs, government bonds, plus the net value of primary and other real estate, vehicles, businesses, IRA accounts, Keogh accounts, defined contribution plans (e.g., 401(k), 403(b), and TSP), stocks, mutual funds, investment trusts, bonds, and other savings, and less any others debts not accounted for in the net values of the other assets (e.g., credit card balances, medical debts, life insurance policy loans, loans from relatives).

TABLE IV

TOTAL HOUSEHOLD WEALTH AT AGE 65 OR 66 OF EARLY AND LATE DIVORCEES

Median Total Household Wealth (2014 Dollars)	Men		Women	
	Divorced while age 30-39	Divorced while age 50-59	Divorced while age 30-39	Divorced while age 50-59
Overall	213,798	191,000	126,002	121,276
By Marital Status:				
Married	291,897	279,541	243,269	206,000
Separated or Divorced	79,737	106,853	55,747	109,627
Widowed	57,901	165,000	47,131	17,027
By Retirement Status:				
Working full-time	207,486	278,775	214,303	110,850
Not working full-time	214,385	186,319	114,519	131,394
By Children:				
Don't have children	159,306	26,273	260,726	140,766
Have Children	214,894	193,618	120,000	121,276
Sample Size	574	259	634	234

Notes: Unweighted median total household wealth in 2014 dollars for specific subsamples of individuals aged 65 or 66 in the HRS surveys (1992-2014). See notes to table 1 for a further description of the full sample and subsamples, or table 2 for a description of the divorce categories, or table 3 for a description of what comprises total household wealth.

TABLE V

MULTIVARIATE REGRESSION RESULTS OF LOG TOTAL WEALTH COMPARING CONTINUOUSLY MARRIED AND EVER-DIVORCED INDIVIDUALS

	Women			Men		
	(1)	(2)	(3)	(1)	(2)	(3)
Ever Divorced	-0.224***	-0.447***	-0.614**	-0.225***	-0.150*	-0.176
	(0.0702)	(0.111)	(0.262)	(0.0610)	(0.0887)	(0.374)
[Marginal effect of ever being divorced]	[-20%]	[-36%]	[-39%]	[-20%]	[-14%]	[-15%]
Currently Divorced	-1.437***	-1.146***	-2.687***	-1.132***	-1.015***	-1.788***
	(0.0953)	(0.145)	(0.384)	(0.102)	(0.143)	(0.495)
[Cumulative marginal effect of ever and currently being divorced]	[-81%]	[-80%]	[-83%]	[-74%]	[-69%]	[-68%]
Children (baseline: 2-3 kids)						
Indicator for 0 kids		-0.203	-0.201		0.0833	0.0718
		(0.191)	(0.190)		(0.164)	(0.163)
Indicator for 1 kids		-0.219	-0.219		-0.0447	-0.0244
		(0.142)	(0.141)		(0.117)	(0.116)
Indicator for 4+ kids		-0.339***	-0.328***		-0.274***	-0.272***
		(0.0756)	(0.0754)		(0.0681)	(0.0675)
ln(Total years worked)			0.0502			0.263***
			(0.0334)			(0.0659)
Ever Divorced						
x with 0 kids		0.306	0.303		-0.571**	-0.440*
		(0.348)	(0.346)		(0.257)	(0.258)
x with 1 kids		0.482*	0.477*		-0.0644	-0.0670
		(0.270)	(0.269)		(0.241)	(0.239)
x with 4+ kids		0.272**	0.258*		-0.0275	-0.00880
		(0.137)	(0.137)		(0.118)	(0.117)
x with ln(Total years worked)			0.0405			0.00396
			(0.0718)			(0.0981)
Currently Divorced						
x with 0 kids		0.255	0.152		0.556	0.431
		(0.411)	(0.409)		(0.371)	(0.368)
x with 1 kids		-0.517	-0.426		-0.406	-0.393
		(0.325)	(0.323)		(0.320)	(0.317)
x with 4+ kids		-0.338*	-0.223		-0.267	-0.266
		(0.189)	(0.190)		(0.202)	(0.200)
x with ln(Total years worked)			0.451***			0.222*
			(0.105)			(0.131)
Observations	4,275	4,271	4,271	3,945	3,942	3,942
R-squared	0.132	0.332	0.342	0.074	0.312	0.325

Notes: Unweighted log total wealth in 1000s of 2014 dollars for specific women and men aged 65 or 66 in the HRS surveys (1992-2014). See notes to table 1 for a further description of the full sample and subsamples, and notes to table 3 for a description of what comprises total wealth. Model 1 is a regression log assets on the marital variables. Model 2 adds in covariates including interactions of marital status with children and race categories, as well as indicators for full-time work at 65, education, interview wave, and self-reported health. Model 3 adds log of the self-reported total years worked. Marginal values are calculated using the baseline group (e.g., never divorced, currently married, with 2-3 kids and average years worked). The sample sizes are smaller here then in table 2 because individuals without positive assets are excluded from the specification (395 women, and 203 men are excluded for this reason). Smaller sample sizes in models 2-3 are due to missing-ness in self-reported health.

TABLE VI

MULTIVARIATE REGRESSION RESULTS OF LOG TOTAL WEALTH COMPARING INDIVIDUALS DIVORCING IN THEIR THIRTIES TO THOSE MARRIED IN THEIR THIRTIES

	Women			Men		
	(1)	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
Divorced in thirties	-1.494***	-1.851***	-4.183***	-1.135***	-0.849***	-4.005***
	(0.154)	(0.207)	(0.693)	(0.245)	(0.329)	(1.435)
[Marginal effect of divorcing in thirties]	[-78%]	[-85%]	[-86%]	[-69%]	[-59%]	[-52%]
Remarried after divorce in thirties	1.213***	1.323***	2.625***	0.750***	0.430	4.007***
	(0.177)	(0.248)	(0.799)	(0.254)	(0.347)	(1.518)
[Cumulative marginal effect of divorcing in thirties and later remarrying]	[-24%]	[-41%]	[-43%]	[-32%]	[-34%]	[-34%]
Children (baseline: 2-3 kids)						
Indicator for 0 kids		-0.349**	-0.350**		-0.123	-0.0853
		(0.162)	(0.161)		(0.153)	(0.152)
Indicator for 1 kids		-0.458***	-0.459***		-0.129	-0.111
		(0.116)	(0.115)		(0.103)	(0.102)
Indicator for 4+ kids		-0.368***	-0.364***		-0.298***	-0.290***
		(0.0628)	(0.0627)		(0.0572)	(0.0569)
ln(Total years worked)			0.0505*			0.317***
			(0.0295)			(0.0568)
Divorced in Thirties						
x with 0 kids		1.283***	1.107***		-0.493	0.963
		(0.420)	(0.422)		(0.898)	(1.013)
x with 1 kids		0.927*	1.073**		0.0210	0.0326
		(0.529)	(0.529)		(0.578)	(0.575)
x with 4+ kids		-0.0957	-0.110		-0.765	-0.684
		(0.320)	(0.319)		(0.524)	(0.522)
x with ln(Total years worked)			0.673***			0.873**
			(0.192)			(0.385)
Remarried after divorce in Thirties						
x with 0 kids		-0.640	-0.568		0.322	-1.134
		(0.555)	(0.556)		(0.933)	(1.045)
x with 1 kids		-0.161	-0.365		-0.239	-0.264
		(0.621)	(0.621)		(0.638)	(0.635)
x with 4+ kids		0.407	0.434		0.908*	0.816
		(0.362)	(0.361)		(0.541)	(0.539)
x with ln(Total years worked)			-0.369*			-0.985**
			(0.222)			(0.406)
Observations	3,897	3,893	3,893	3,564	3,562	3,562
R-squared	0.025	0.262	0.267	0.012	0.254	0.263

Notes: Unweighted log total wealth in 1000s of 2014 dollars for specific women and men aged 65 or 66 in the HRS surveys (1992-2014). See notes to table 1 for a further description of the full sample and subsamples, and notes to table 3 for a description of what comprises total wealth, and table 7 for a description of models 1-3. The sample in this table is restricted to individuals married in their thirties, and hence have the possibility of divorcing. The sample sizes are smaller here then in table 2 because individuals without positive assets are excluded and not everyone in the sample is married in their thirties. Smaller sample sizes in models 2-3 are due to missing-ness in self-reported health.

TABLE VII

MULTIVARIATE REGRESSION RESULTS OF LOG TOTAL WEALTH COMPARING INDIVIDUALS DIVORCING IN THEIR FIFTIES TO THOSE MARRIED IN THEIR FIFTIES

	Women			Men		
	(1)	(2)	(3)	(1)	(2)	(3)
Divorced in fifties	-0.921***	-1.138***	-2.880***	-1.233***	-1.098***	-2.850***
	(0.174)	(0.226)	(0.745)	(0.190)	(0.271)	(0.747)
[Marginal effect of divorcing in fifties]	[-61%]	[-69%]	[-72%]	[-71%]	[-68%]	[-64%]
Remarried after divorce in	0.560**	0.580	-1.813	0.898***	0.586*	0.981
Fifties	(0.270)	(0.373)	(1.325)	(0.227)	(0.326)	(1.449)
[Cumulative marginal effect of divorcing in fifties and later remarrying]	[-30%]	[-43%]	[-67%]	[-28%]	[-40%]	[-42%]
Children (baseline: 2-3 kids)						
Indicator for 0 kids		-0.278*	-0.280*		-0.135	-0.112
		(0.150)	(0.150)		(0.127)	(0.126)
Indicator for 1 kids		-0.312***	-0.312***		-0.0839	-0.0737
		(0.115)	(0.114)		(0.0986)	(0.0980)
Indicator for 4+ kids		-0.356***	-0.354***		-0.305***	-0.297***
		(0.0604)	(0.0603)		(0.0537)	(0.0533)
ln(Total years worked)			0.0469			0.299***
			(0.0290)			(0.0520)
Divorced in Fifties						
x with 0 kids		-0.0292	-0.212		-1.211	-1.424*
		(0.750)	(0.751)		(0.772)	(0.768)
x with 1 kids		-0.377	-0.351		-0.805	-0.610
		(0.476)	(0.475)		(0.607)	(0.605)
x with 4+ kids		0.373	0.410		-0.420	-0.365
		(0.344)	(0.344)		(0.362)	(0.360)
x with ln(Total years worked)			0.519**			0.500***
			(0.213)			(0.194)
Remarried after divorce in Fifties						
x with 0 kids		--	--		1.050	1.395
		--	--		(1.074)	(1.072)
x with 1 kids		1.698	1.416		1.335	1.183
		(1.283)	(1.281)		(0.827)	(0.823)
x with 4+ kids		-0.172	0.126		0.561	0.536
		(0.516)	(0.521)		(0.429)	(0.427)
x with ln(Total years worked)			0.642*			-0.137
			(0.365)			(0.381)
Observations	3,664	3,661	3,661	3,673	3,670	3,670
R-squared	0.008	0.254	0.260	0.013	0.264	0.275

Notes: Unweighted log total wealth in 1000s of 2014 dollars for specific women and men aged 65 or 66 in the HRS surveys (1992-2014). See notes to table 1 for a further description of the full sample and subsamples, and notes to table 3 for a description of what comprises total wealth, and table 7 for a description of models 1-3. The sample in this table is restricted to individuals married in their fifties, and hence have the possibility of divorcing. The sample sizes are smaller here then in table 2 because individuals without positive assets are excluded and not everyone in the sample is married in their fifties. Smaller sample sizes in models 2-3 are due to missing-ness in self-reported health.

TABLE VIII

RETIREMENT WEALTH DECUMULATION OF CONTINUOUSLY MARRIED INDIVIDUALS AND EVER-DIVORCED INDIVIDUALS

Retirement asset decumulation methods used up to specified age, conditional on holding the corresponding asset	Men		Women	
	Continuously Married	Ever Divorced	Continuously Married	Ever Divorced
	Age 62 or 63			
Ever annuitized, cashed out, or took a withdrawal from IRA	32%	37%	38%	43%
Ever cashed out or annuitized DB/DC plan	21%	26%	22%	29%
Currently receiving DB or annuity income	41%	39%	32%	33%
Currently receiving SS retirement benefits	28%	30%	36%	36%
	Age 65 or 66			
Ever annuitized, cashed out, or took a withdrawal from IRA	44%	49%	50%	53%
Ever cashed out or annuitized DB/DC plan	24%	26%	25%	33%
Currently receiving DB or annuity income	55%	53%	45%	46%
Currently receiving SS retirement benefits	71%	71%	80%	71%
	Age 70 or 71			
Ever annuitized, cashed out, or took a withdrawal from IRA	67%	64%	78%	69%
Ever cashed out or annuitized DB/DC plan	22%	27%	24%	32%
Currently receiving DB or annuity income	67%	61%	56%	59%
Currently receiving SS retirement benefits	97%	96%	94%	96%

Notes: Each cell corresponds to the fraction of the sample holding an asset type that has engaged in the decumulation method referenced in each row by the specified age. Sample sizes vary depending on the number of households holding the retirement assets. These sample sizes are available from the authors upon request.

TABLE IX

RETIREMENT WEALTH DECUMULATION BY AGE GROUP OF EARLY AND LATE DIVORCEES

Retirement asset decumulation methods used up to specified age, conditional on holding the corresponding asset	Men		Women	
	Divorced 30-39	Divorced 50-59	Divorced 30-39	Divorced 50-59
	Age 62 or 63			
Ever annuitized, cashed out, or took a withdrawal from IRA	41%	37%	48%	41%
Ever cashed out DB/DC plan	27%	24%	33%	30%
Currently receiving DB or annuity income	38%	43%	32%	33%
Currently receiving SS retirement benefits	30%	28%	35%	32%
	Age 65 or 66			
Ever annuitized, cashed out, or took a withdrawal from IRA	51%	48%	55%	55%
Ever cashed out DB/DC plan	26%	26%	37%	37%
Currently receiving DB or annuity income	50%	64%	44%	41%
Currently receiving SS retirement benefits	72%	69%	72%	68%
	Age 70 or 71			
Ever annuitized, cashed out, or took a withdrawal from IRA	65%	63%	70%	67%
Ever cashed out DB/DC plan	28%	32%	37%	38%
Currently receiving DB or annuity income	60%	66%	59%	57%
Currently receiving SS retirement benefits	96%	95%	96%	94%

Notes: Each cell corresponds to the fraction of the sample holding an asset type that has engaged in the decumulation method referenced in each row by the specified age. Sample sizes vary depending on the number of households holding the retirement assets. These sample sizes are available from the authors upon request.

TABLE X

PROPENSITY SCORE MATCHING ESTIMATES FOR SOCIAL SECURITY RETIREMENT CLAIMING BY AGE 62/63, 65/66, AND 70/71

		Men			Women		
		Age 62/63	**Age 65/66**	**Age 70/71**	**Age 62/63**	**Age 65/66**	**Age 70/71**
First Interview Wave	Coefficient	0.00	0.00	-0.05***	0.00	-0.01	0.00
	Standard Errors	0.00	0.01	0.02	0.01	0.01	0.02
	Z statistic	0.00	0.00	-2.44	0.31	-0.80	-0.15
Age X	Coefficient	-0.03	-0.04	0.04**	-0.08**	-0.10***	0.00
	Standard Errors	0.04	0.04	0.02	0.04	0.04	0.02
	Z statistic	-0.79	-0.91	2.25	-2.18	-2.64	-0.14
Difference	Coefficient	-0.03	-0.04	0.09***	-0.08**	-0.09**	0.00
	Standard Errors	0.04	0.04	0.03	0.04	0.04	0.02
	Z statistic	-0.79	-0.88	3.16	-2.21	-2.29	0.00

Notes: *** p<0.01, ** p<0.05, * p<0.1. Propensity score matching technique uses a probit model to predict the probability of separating after the first HRS interview. The four nearest neighbors are used to calculate the average treatment effect on the treated.

TABLE XI

PROPENSITY SCORE MATCHING ESTIMATES FOR DB RECEIPT BY AGES 62/63, 65/66, AND 70/71

		Men			Women		
		Age 62/63	**Age 65/66**	**Age 70/71**	**Age 62/63**	**Age 65/66**	**Age 70/71**
First Interview Wave	Coefficient	-0.03	0.01	0.00	-0.02***	-0.05***	-0.07***
	Standard Errors	0.03	0.03	0.04	0.01	0.01	0.02
	Z statistic	-0.99	0.50	0.00	-2.38	-3.37	-3.20
Age X	Coefficient	0.00	-0.02	-0.02	-0.02	-0.04	-0.05
	Standard Errors	0.05	0.05	0.05	0.05	0.05	0.06
	Z statistic	0.05	-0.47	-0.44	-0.41	-0.89	-0.81
Difference	Coefficient	0.03	-0.04	-0.02	-0.002	0.00	0.03
	Standard Errors	0.05	0.05	0.07	0.05	0.05	0.06
	Z statistic	0.57	-0.73	-0.31	-0.05	0.06	0.44

Notes: *** p<0.01, ** p<0.05, * p<0.1. Conditional on being reporting having a DB plan at a current or past job. Propensity score matching technique uses a probit model to predict the probability of separating after the first HRS interview. The four nearest neighbors are used to calculate the average treatment effect on the treated.

TABLE XII

PROPENSITY SCORE MATCHING ESTIMATES FOR DB/DC CASH-OUT BY AGES 62/63, 65/66, AND 70/71

		Men			Women		
		Age 62/63	**Age 65/66**	**Age 70/71**	**Age 62/63**	**Age 65/66**	**Age 70/71**
First Interview Wave	Coefficient	0.03	0.03	0.01	0.07	-0.03	0.03
	Standard Errors	0.04	0.04	0.04	0.04	0.04	0.05
	Z statistic	0.88	0.88	0.27	1.74	-0.72	0.58
Age X	Coefficient	0.00	0.02	-0.01	0.02	-0.03	0.01
	Standard Errors	0.04	0.04	0.06	0.05	0.05	0.06
	Z statistic	0.05	0.37	-0.16	0.50	-0.60	0.13
Difference	Coefficient	-0.03	-0.02	-0.02	-0.041	0.00	-0.02
	Standard Errors	0.03	0.03	0.04	0.03	0.04	0.05
	Z statistic	-1.16	-0.56	-0.57	-1.39	-0.12	-0.41

Notes: *** p<0.01, ** p<0.05, * p<0.1. Conditional on being reporting having a DB or DC plan at a current or past job. Propensity score matching technique uses a probit model to predict the probability of separating after the first HRS interview. The four nearest neighbors are used to calculate the average treatment effect on the treated.

TABLE XIII

PROPENSITY SCORE MATCHING ESTIMATES FOR IRA CASH-OUT, ANNUITIZATION, OR WITHDRAWAL BY AGES 62/63, 65/66, AND 70/71

		Men			Women		
		Age 62/63	**Age 65/66**	**Age 70/71**	**Age 62/63**	**Age 65/66**	**Age 70/71**
First Interview Wave	Coefficient	0.04*	0.04	0.04*	0.00	0.01	-0.01
	Standard Errors	0.02	0.03	0.02	0.02	0.02	0.01
	Z statistic	1.78	1.61	1.80	0.00	0.52	-1.25
Age X	Coefficient	0.12**	0.10**	0.15***	-0.05	-0.01	-0.11*
	Standard Errors	0.06	0.06	0.01	0.06	0.05	0.07
	Z statistic	2.01	1.73	13.43	-0.76	-0.17	-1.68
Difference	Coefficient	0.07	0.06	0.11***	-0.049	-0.02	-0.10
	Standard Errors	0.06	0.06	0.02	0.06	0.05	0.07
	Z statistic	1.23	1.00	6.52	-0.75	-0.42	-1.44

Notes: *** p<0.01, ** p<0.05, * p<0.1. Conditional on being reporting having an IRA currently or in the past. Propensity score matching technique uses a probit model to predict the probability of separating after the first HRS interview. The four nearest neighbors are used to calculate the average treatment effect on the treated.

TABLE A.I

PROPENSITY SCORE MATCHING ESTIMATES FOR FULL-TIME WORK BY AGE 62/63, 65/66, AND 70/71

		Men			Women		
		Age 62/63	**Age 65/66**	**Age 70/71**	**Age 62/63**	**Age 65/66**	**Age 70/71**
First Interview Wave	Coefficient	-0.02	0.00	0.02	-0.01	0.00	0.02
	Standard Errors	0.03	0.04	0.03	0.03	0.04	0.03
	Z statistic	-0.53	0.14	0.74	-0.44	-0.09	0.56
Age X	Coefficient	-0.01	0.05	-0.04	0.10	0.05	0.04
	Standard Errors	0.04	0.04	0.03	0.04	0.03	0.03
	Z statistic	-0.20	1.38	-1.11	2.83	1.52	1.42
Difference	Coefficient	0.01	0.05	-0.06	0.116	0.05	0.02
	Standard Errors	0.05	0.04	0.05	0.04	0.04	0.04
	Z statistic	0.18	1.15	-1.21	2.78	1.26	0.46

Notes: *** p<0.01, ** p<0.05, * p<0.1. Propensity score matching technique uses a probit model to predict the probability of separating after the first HRS interview. The four nearest neighbors are used to calculate the average treatment effect on the treated.

TABLE A.II

PROPENSITY SCORE MATCHING ESTIMATES FOR LIQUID RETIREMENT ASSETS BY AGE 62/63, 65/66, AND 70/71

		Men			Women		
		Age 62/63	**Age 65/66**	**Age 70/71**	**Age 62/63**	**Age 65/66**	**Age 70/71**
First Interview Wave	Coefficient	-0.02	0.00	0.02	-0.01	0.00	0.02
	Standard Errors	0.03	0.04	0.03	0.03	0.04	0.03
	Z statistic	-0.53	0.14	0.74	-0.44	-0.09	0.56
Age X	Coefficient	-0.01	0.05	-0.04	0.10	0.05	0.04
	Standard Errors	0.04	0.04	0.03	0.04	0.03	0.03
	Z statistic	-0.20	1.38	-1.11	2.83	1.52	1.42
Difference	Coefficient	0.01	0.05	-0.06	0.116	0.05	0.02
	Standard Errors	0.05	0.04	0.05	0.04	0.04	0.04
	Z statistic	0.18	1.15	-1.21	2.78	1.26	0.46

Notes: *** p<0.01, ** p<0.05, * p<0.1. Liquid retirement assets include DC plans and IRA account balances. Propensity score matching technique uses a probit model to predict the probability of separating after the first HRS interview. The four nearest neighbors are used to calculate the average treatment effect on the treated.

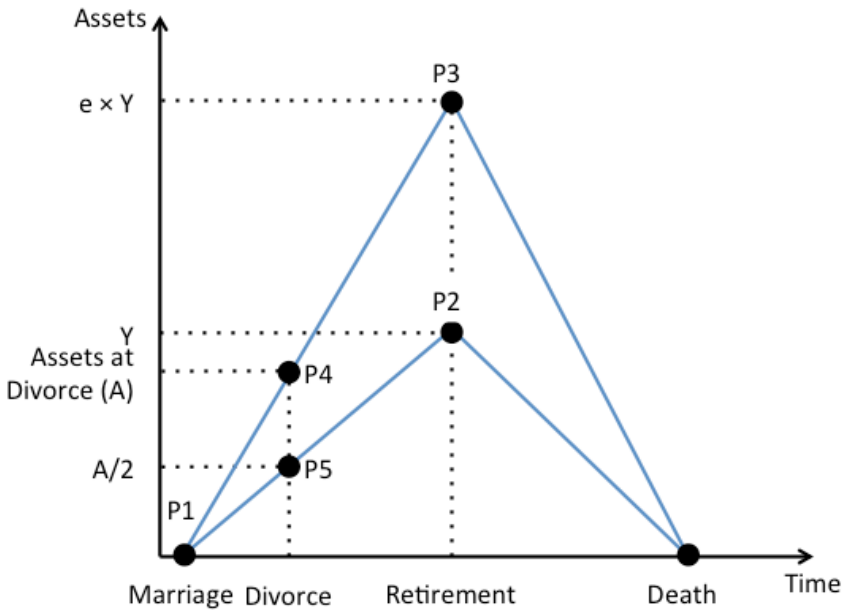

FIGURE I

Theoretical Model Relating Asset Accumulation and Retirement Security After Divorce

Caption: This figure depicts no economies of scale.

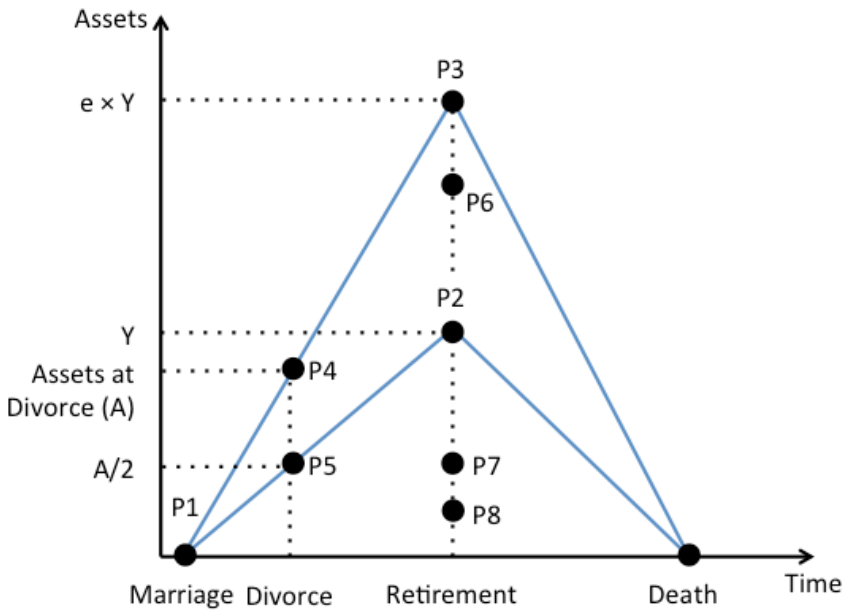

FIGURE II

Theoretical Impact of Household Specialization on Retirement Security After Divorce

Caption: This figure depicts no economies of scale.

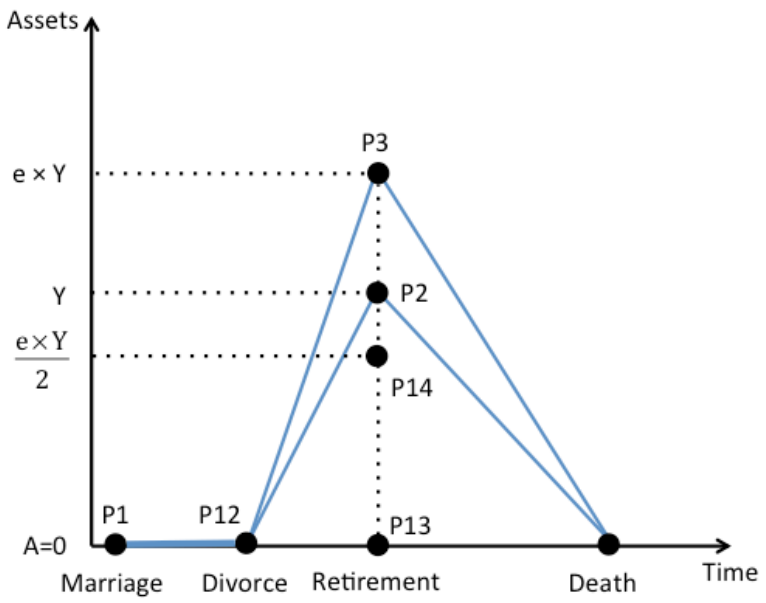

FIGURE III

Theoretical Impact of Deferred Asset Accumulation on Retirement Security After Divorce