Women's Retirement Insecurity Across U.S. Birth Cohorts

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Dissertation submitted in partial fulfillment of
the requirements for the degree of Doctor
of Philosophy in the Department of
Sociology in the Graduate School
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ABSTRACT

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Abstract

Older women in the U.S. face greater risks of economic insecurity in comparison with other age groups and with men their own age. Although these risks have been documented in prior research, few studies investigate the life course mechanisms underlying women's retirement insecurity. This dissertation seeks to fill this gap by using a life course perspective and the theory of cumulative disadvantage to examine how women's earlier work and family experiences shape subsequent economic resources in retirement. The three major types of retirement resources in the U.S. – Social Security benefits, occupational pensions, and private retirement wealth – are considered. Analyses use a variety of modeling techniques and panel data from the Health and Retirement Study linked to restricted access Social Security Administration files. In addition, this dissertation specifically investigates retirement insecurity across birth cohorts of older women.

The first substantive chapter examines how Social Security benefit eligibility type is influenced by four major life course predictors: marital continuity, family timing, employment commitment, and cohort change. Social Security benefit type is an important indicator of retirement security for women because, despite nearly universal program coverage, benefit type is associated with differential economic security in retirement for women. Multinomial logit models demonstrate the importance of women's own paid employment histories for later benefit type. Receiving own worker Social Security benefits or being dually eligible for Social Security are more likely outcomes with increased employment experience. The second empirical chapter uses discrete-time even history models to examine

the timing of women's access to occupation pension income. The timing of pension income receipt is relevant for women's retirement security because delayed access indicates a missing source of economic resources. Results reveal significant cohort differences in the timing of first pension receipt as well as the important roles of marital continuity and family timing for older women's access to occupational pension income. The final empirical chapter employs age-based growth models to examine differential trajectories of private retirement savings in early retirement (ages 51-65) across U.S. birth cohorts of women. This analysis examines both initial retirement wealth and wealth accumulation over time to understand how life course processes advantage some older women, but contribute to ongoing disadvantage for others as part of this third, major source of retirement security. Results from growth models reveal variation across birth cohorts as well as the negative effects of divorce for initial wealth holdings and growth in retirement wealth. Overall, this dissertation illustrates the importance of women's work and family experiences across the life course for the cumulative disadvantages they face in retirement. Moreover, each type of major retirement resource interacts with different aspects of women's prior work and family roles to produce economic outcomes in retirement.

Contents

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Chapter 1. Introduction

Overview

Across most societies, older women are a vulnerable population. Researchers document how women are more likely to experience low income, low wealth, and poverty at older ages (Bajtelsmit 2006; Bianchi 1999; Brady and Kall 2008; Cawthorne 2008; Crown 2001; Munnell 2004; Rank and Hirschl 2001; Stone 1989). More generally, older women may be said to face social exclusion, a condition in which a group is omitted from or deprived of resources and protections available to the larger population (O'Rand et al. Forthcoming). In the U.S., Treas and Torrecilha (1995) describe older women's economic security as resting precariously on Social Security as a cane, rather than the three-legged stool of Social Security, occupational pensions, and private savings available to the broader elderly population.

Despite attention to the disadvantages that older women face, there has been less work examining the underlying causal mechanisms of their economic vulnerability. Existing research illustrates how access to retirement income from Social Security and occupational pensions differ by gender, with women at a disadvantage in comparison with men (Harrington Meyer 1990; Johnson 1999; Lee and Shaw 2003; Munnell 2004; Shaw and Hill 2001; Williamson and Rix 2001). Yet few studies go beyond cross-sectional comparisons of older men's and women's economic resources to consider how the cumulative, lifetime experiences of women impact their retirement resources. The latter issue supplies a particularly interesting research question because women across recent birth cohorts have faced new opportunities as well as new obstacles to retirement security. Significant changes

in women's education, employment, and marital and fertility experiences (Hughes and O'Rand 2004) have implications for access to and levels of Social Security, occupational pensions, and private retirement savings.

Although there are many cross-sectional studies comparing the "gender gaps" in paid employment, wages, and pensions between women and men (e.g., Blau and Kahn 1992, 2000, 2003; Charles and Grusky 2004; Johnson 1999; Shaw and Hill 2001), fewer studies follow the economic outcomes of individual women over time. The current study examines longer-term, age-based trends and intra-individual patterns of change in retirement security. These outcomes, which have been largely unexplored with high-quality data thus far, provide an understanding of the connection between economic risks faced by older women in retirement and their earlier employment and family roles. Moreover, these relationships are likely to differ for women born into different cohorts.

The main goal of this dissertation is to understand how the lifelong experiences of women in the labor market and the family contribute to economic outcomes in retirement. Building on previous research on gender stratification and using a life course perspective, this project looks across cohorts of women in the U.S. to understand women's access to and levels of specific retirement resources over time. Organized as three separate articles, this dissertation uses nationally representative and, whenever possible, longitudinal data along with a variety of modeling techniques to explore the cumulative importance of women's earlier work and family experiences for the three major types of retirement resources: Social Security benefits, occupational pensions, and private retirement savings.

Retirement Insecurity and the U.S. Retirement System

Retirement insecurity refers to a lack of access to economic resources in old age as well as low levels of these resources over the period of retirement. In market societies, individuals unable to engage in paid employment at older ages for a variety of reasons (e.g., health, disability, unemployment) experience a risk of poverty. Over the last century, most affluent countries have developed pension systems to deal with these risks (Thane 2006). Retirement provision in these countries may be conceptualized as a three-pillared institution, composed of public pensions from the state, occupational pensions from employers, and private savings (Clark et al. 2004; Crown 2001; Engelen 2006; Immergut et al. 2007; World Bank 1994). In the U.S., the three pillars (also referred to as "legs") of pension provision include the public Social Security program, income from employer-provided pensions, and personal savings vehicles such as IRAs (Kingson and Williamson 2001). Pension systems, including the American one, have two general functions: the prevention of poverty in old age and the replacement of income during retirement (Bonoli 2003).

Yet the degree to which poverty prevention and income maintenance are being provided for older women in the U.S. is open to debate. The issue of women's retirement insecurity is important for two reasons. First, despite large reductions in elderly poverty in the post-World War II period due to the growth of Social Security benefits (Engelhardt and Gruber 2004), older women in the U.S. still face a high risk of poverty (Cawthorne 2008). For instance, in 2006, 11.5 percent of all women ages 65 and over were living in poverty in the U.S. compared with 6.6 percent of all men in this age range (U.S. Social Security

Administration 2009b). An even larger percentage of unmarried, older women (13.9 percent) are living in poverty (U.S. Census Bureau 2007). Not only is the incidence of elderly poverty higher for both men and women in the U.S. compared with other affluent countries, but Williamson and Smeeding (2004) document a greater gender difference in poverty in the U.S., with women at a significant disadvantage. Thus, the U.S. retirement system may be failing to provide economic security for women in retirement.

In addition, the issue of women's economic insecurity in retirement is relevant to current public policy discussions. Perceived pressures from population aging, increasing retirement rates, de-industrialization, and globalization have created a larger context of reform for retirement systems in affluent countries (Bongaarts 2004; Bonoli 2003; Ebbinghaus 2006; Wise 1997). As policy analysts propose reforms to pension systems – such as increasing retirement ages and privatizing public components of retirement systems – it is important to understand how various features of retirement systems impact women with their unique employment and family histories. Additionally, the changing work and family roles occupied by women from different birth cohorts must be considered. These shifting roles, coupled with other demographic trends, are likely to have consequences for retirement insecurity. Along these lines, Treas and Torrecilha (1995) note important changes in the composition of the older population, including increasing proportions of older women as well as older racial and ethnic minorities and the oldest old. Such trends are likely to exacerbate older women's economic risks.

The retirement insecurity of women in the U.S. is connected to the structure and characteristics of the U.S. retirement system. In a comparative framework, the U.S. is classified as a "liberal" welfare state (Esping-Andersen 1990, 1999). Liberal welfare states tend to emphasize the role of the labor market and individuals' own employment histories, as well as private savings, in the provision of economic security in retirement (O'Rand et al. 2009). Liberal welfare states, such as the U.S., are often described as "residual." Public programs to ensure economic security are designed as back-up safety nets supporting the dominant market-based system, rather than generous, universal benefits guaranteeing the same standard of living for all citizens.

Retirement security in the U.S. is based on three pillars that conform to this liberal welfare state model. First, there is a public sector, pay-as-you-go (PAYGO) pension system: the Old-Age and Survivors Insurance (OASI) program, or "Social Security" as it is commonly called. Social Security, funded by the payroll taxes of current workers, pays benefits in retirement to workers who have accumulated at least 40 quarters of covered employment over their lives. The retiree worker benefits are based on earnings over the period of covered employment. In addition, Social Security pays out several types of auxiliary benefits. Spouses, widows, and divorced spouses/widows who meet certain requirements receive Social Security benefits through their dependent, marital relationships to Social Security-eligible retiree workers. Individuals, primarily women, may also be dually eligible for Social Security, meaning that they qualify for benefits based both on their spousal or widowhood status as well as their own lifetime work and earnings history. Social Security

coverage is almost universal in the U.S. In 2008, 91 percent of all Americans were fully insured through the Social Security program (U.S. Social Security Administration 2009a).

The second pillar of the U.S. retirement system is comprised of occupational pensions. Occupational pensions are voluntary, fringe benefits provided by employers. In 2008, 56 percent of all employees aged 21-64 worked for an employer that offered an occupational pension. This percentage was higher for full-time, year-round workers: 63 percent (Copeland 2009b). Among this latter group of workers – full-time, full-year, aged 21-64 – about 55 percent actually participated in an employer-provided pension plan with higher rates for older workers (63 percent for employees aged 54-64) (Ibid). These employer-provided pensions are not only conditional on paid employment, but they are also more likely to be offered to workers in higher-paying, higher-status jobs (Copeland 2009b; Employee Benefit Research Institute 2010; Shuey and O'Rand 2004). As will be described in more detail below, these characteristics of occupational pensions tend to disadvantage women.

The third and final pillar of the U.S retirement system is private savings. Wealth in retirement, like wealth across the life course, is highly unequally distributed (see Keister 2000a). Among the elderly, Crystal and Shea (1990) find higher levels of inequality in net worth (i.e., the value of assets, including home value, minus debt) in comparison to other adult age groups. The largest component of household wealth across all age groups is the value of a home (Keister 2000a; Wolff 1998). Yet for some older Americans, IRA and Keogh accounts also provide an important means for accumulating wealth. These savings

vehicles, regulated by the federal government, are tax-deferred accounts set up and owned by individuals. They are designed to promote retirement savings, especially for individuals without an employer-provided pension or for the self-employed, in the case of Keogh accounts. In 2002, assets held in IRAs/Keoghs made up the largest portion of total retirement assets in the U.S. (24 percent), greater than either defined benefit (15 percent) or defined contribution (19 percent) pensions when considered separately (Employee Benefit Research Institute 2004). In 2007, about 31 percent of all American families had an IRA/Keogh account (Copeland 2009a). Yet, to an even greater extend than occupational pensions, these tax-deferred retirement savings vehicles disproportionately benefit higher-income workers and households (Kingson and Williamson 2001).

Together these three retirement resources – Social Security, occupational pensions, and private wealth, including IRA/Keogh savings – constitute the U.S. retirement system. These sources of retirement income for older Americans are unevenly distributed across the population (O'Rand and Henretta 1999). Individuals and families at the top of the income distribution rely more heavily on the market (i.e., occupational pensions and private savings). The middle of the income distribution gets most of its retirement income from social insurance (i.e., occupational pensions and Social Security). And the bottom of the income distribution depends on the Social Security program and publicly-provided, means-tested relief. As this dissertation will examine, women's unique patterns of work and family responsibilities shape their access to and levels of each of these retirement resources.

Furthermore, because of changes in these responsibilities across cohorts, women born at different times are likely to experience retirement insecurity differently.

The Life Course Perspective and Cumulative Disadvantage

Women's interactions with the U.S. retirement system are best understood through a life course perspective. This framework – and, in particular, the theory of cumulative disadvantage – connects women's earlier work and family roles to subsequent economic outcomes in retirement. The life course perspective focuses on processes of development and aging for individuals. It also emphasizes the connections and interactions between biographical histories and larger social contexts in which they are embedded.

Elder and colleagues (2003) identify five general principles of the life course perspective. First, research in the life course tradition considers the aging and development of individuals as part of a *larger, lifelong process* with connections between various life stages. Second, the life course perspective recognizes the *agency* of individuals, who make choices within the context of the opportunities and constraints presented by prior history as well as present social context. Third, the experiences of individuals are influenced by the *historical periods and places* they experiences over their lives. Fourth, the life course perspective recognizes that events and transitions in life are *variable in their timing* for individuals. Finally, the life course perspective highlights the notion of "*linked lives*" between individuals, or the interdependent nature of life histories. The life course perspective provides a means of linking macro-level structure, such as the U.S. retirement system, with micro phenomena,

like women's individual retirement outcomes (George 2003). Overall, this perspective emphasizes the importance of pathways and trajectories across people's lives.

In the case of women's retirement insecurity, the life course framework connects labor market and family experiences across time with economic outcomes at older ages (Heinz 2003; O'Rand 2001; O'Rand and Henretta 1999). The theory of cumulative disadvantage furnishes a broad, life course mechanism for understanding how the prior work and family experiences of women may impact their eventual economic outcomes in retirement. Cumulative disadvantage highlights the manner in which prior inequalities may be amplified across the life course (Crystal and Shea 1990; Dannefer 2003; O'Rand 1996).

As this dissertation will demonstrate, the specific opportunities and constraints that women face earlier in life have consequences for later retirement security. For instance, limited or discontinuous participation in the paid labor force leads directly to earnings histories that disadvantage women in terms of limited access to retired worker Social Security benefits and occupational pensions as well as the accumulation of private savings. In addition, the limited participation of some women in paid employment means that women's access to economic security may be determined more by family roles than by their own employment histories (Lewis 1997; Orloff 1996). In terms of these family roles, marital dissolutions across the life course lead to instability with negative economic ramifications in retirement (Holden and Kuo 1996; Smock 1993). Finally, there is also an overlap between the work and family life course for women (Han and Moen 1999b). Women with substantial childcare responsibilities face more constraints to participation in paid work.

Thus, the theory of cumulative disadvantage leads to expectations of variation in economic outcomes as well as differential penalties among women, depending on prior life experiences. In this way, cumulative disadvantage supplies a connection between the labor market stratification women experience during prime ages and their economic insecurity at older ages. Work and family roles act to cumulatively constrain opportunities to access and build retirement resources. Moreover, different groups of women – as defined by birth cohort, in particular – are likely to accumulate distinct work and family experiences over their lives. Not all women have experienced large-scale shifts in these social roles in the same ways. And birth cohort is a particularly salient marker because of widespread changes in work and family roles for women over time. As introduced below, four specific life course predictors will be used in this dissertation to help account for the cumulative disadvantages that women face in retirement security: *marital continuity*, *family timing*, *employment commitment*, and *cohort change*.

Life Course Predictors of Women's Retirement Insecurity

Older women in the U.S. experience a high poverty rate in comparison with other age groups and with men their own age. Beyond this high poverty rate, older women are also less likely to have access to an occupational pension than men (Ginn and Arber 1996; Ginn et al. 2001, Johnson 1999; Shaw and Hill 2001) and more likely to experience economic insecurity across a variety of dimensions (Lee and Shaw 2003). Research in the field of gender stratification documents a number of empirical phenomena related to women's differential labor force participation and family caregiving responsibilities that are likely to

impact later retirement outcomes. Generally, researchers have concluded that the labor market status of women lags behind men's attainment in almost every affluent, Western democracy and across all time periods (see Gornick 2004). Women tend to have different experiences in the labor market in comparison with men. On average, they are more likely to work part-time and to work in lower status, lower paying jobs with limited benefits (Blossfeld and Hakim 1997; Gornick 2004; van der Lippe and van Dijk 2002). Additionally, women's marital and family experiences have important consequences for their earnings and economic status (Budig and England 2001; England 2004; Waldfogel 1998; Waldfogel and Harkness 1999). At the same time, however, both the work and family experiences of American women have changed dramatically across recent birth cohorts (Goldin 1990, 2004, 2006; Hughes and O'Rand).

Past studies add to our knowledge of the process that leads to inequality in the labor market for women. Yet less empirical attention has been given to the consequences of gender stratification for older women's economic resources. This is surprising considering women's experiences – particularly as they move in and out of the labor market during their working-age years – are likely to impact their later economic status through processes of cumulative disadvantage. Moreover, changes across cohorts in women's family arrangements (Blossfeld 1995), educational attainment, and labor market experiences (Bajtelsmit 2006; Blossfeld and Hakim 1997; O'Rand and Henretta 1999; van der Lippe and van Dijk 2002) suggest shifting patterns of employment and family structure that are likely to affect access to and levels of retirement resources differentially by cohorts of women. Below I review

existing literature on women's family and labor markets experiences with an emphasis on their relevance to retirement insecurity outcomes. From these studies I develop a set of life course predictors to be used in the subsequent analyses.

Women's Labor Market Experiences

Sociologists and economists have investigated a number of mechanisms that appear to be tied to women's economic insecurity over their lives. In some cases, this research explicitly connects earlier life experiences to retirement outcomes. More often, however, such studies link women's prior experiences in ways that leave consequences for older age to be inferred. For instance, the existing gender stratification literature documents the role that women's own labor market experiences play in their access to economic resources. Yet these studies have largely ignored the impact of these experiences for older women's retirement insecurity. Several dimensions of the labor market have received particular attention, including employment rates and patterns, earnings, and access to pensions.

Women, at an aggregate level, tend to work differently than men. Although women's paid employment rates are higher in the U.S. than many other affluent countries, women are still more likely to work part-time than men (Drobnic and Wittig 1997; U.S. Department of Labor 2008). Gornick and Meyers (2003) calculate that 21 percent of working-age women hold part-time jobs compared to only 3 percent of men. In addition, U.S. women make up a larger share of individuals holding non-standard or contingent jobs: 31 percent of employed women hold non-standards job versus 23 percent of men (Wenger 2003). Finally, women

often accumulate discontinuous work histories as they move in and out of the paid workforce to accommodate childcare and other family responsibilities (Stier et al. 2001).

Partly as a result of differential employment rates and patterns, women tend to experience lower earnings than men. This difference in earnings, often called the "gender gap," has been extensively studied. Across all affluent countries, women's earnings lag behind men's earnings (Blau and Kahn 1992, 2000, 2003; Gornick 2004). England (2005) proposes two main explanations for the gender wage gap. First, women's childrearing responsibilities have earnings consequences that lower their wages relative to men. Second, the occupational sex segregation of women into lower-paying jobs contributes to the gender wage gap. In the U.S., Marini (1989) finds a stable earnings wage gap from the 1920s to the 1980s with women earnings less than men at all ages. In a study of the long-term earnings gap, using 15 years of longitudinal data, Rose and Hartmann (2004) find that women earn only 62 percent of male wages, which is less than the conventional gap measured at any one point in time (72 percent for full-time employees only).

In addition to inequality in earnings, researchers document that women are less likely to have access to employer-provided pensions than men. Women have lower rates of participation in employer-sponsored pensions (Ginn and Arber 1996; Ginn et al. 2001; Hardy and Shuey 2000). Moreover, women's pension disadvantages are linked to their previous, and often limited or discontinuous, experiences in the paid labor market (Ginn and Arber 1996; Ginn et al. 2001). Johnson (1999) concludes that the gender gap in pension coverage has actually worsened over the last quarter century. This worsening situation, in the

face of other economic improvements for women, is likely the result of decreased selectivity in the composition of working women as overall female labor force participation has risen. This study attributes two-thirds of the pension coverage gender gap to women's lower earnings at their current jobs. In another study comparing women's access to pensions over time, Farkas and O'Rand (1998) find that although women from younger birth cohorts (born 1944-1953) are more likely to have an employer-sponsored pension than older women (born 1928-1937), they are also more likely to have a defined contribution pension available to them, which involves additional economic risk. Shaw and Hill (2001) find near gender equality in employer pension access among full-time workers; but part-time workers, who are disproportionately women, are still at a disadvantage in terms of pension access. Among older workers (aged 45-64), 35 percent of women in this study report that they work too few hours to be eligible for a pension from their employer and 44 percent of older female employees lack a pension compared with 35 percent of male employees.

Thus, across a number of labor market outcomes – hours, earnings, and pensions – women experience disadvantages that place them at risk of economic insecurity. With lower earnings and less access to employer-sponsored pensions, women's economic resources in retirement may be limited. Generally, these studies highlight the importance of *employment commitment* for women in terms of their later retirement outcomes. Because of the link between longer, more continuous employment in the paid labor force and higher wages and access to employer benefits, women with more experience in the paid labor market over

time are likely to fare better in terms of economic insecurity later in life. Additionally, however, this mechanism itself has changed over time.

Changes in Women's Labor Market Experiences

At the same time that scholars have been studying women's labor market experiences, there have been major, macro-level shifts in the American labor market itself. Two main trends in labor market change seem likely to influence women's economic insecurity. First, there has been a dramatic increase in women's labor force participation over the twentieth century. Between 1970 and 2007, women's labor force participation rate for full-time, year-round work rose from 43 to 59 percent in the U.S. (U.S. Department of Labor 2008). In addition, the increase in labor force participation for U.S. mothers has been even more remarkable. According to one recent research account, between 1970 and 2001, the percentage of mothers in the workforce rose from 38 to 67 percent (National Research Council and Institute of Medicine 2003). For women with children under age six, the increase in labor force participation has more than doubled – from 24 percent in 1960 to 65 percent in 2000 (Chaudry 2004). Goldin (1990) identifies two historic phases of women's employment in the U.S. First, there was an era of single women's work that saw increases among this demographic group until the 1920s. Next, there was an era of married women's work in which labor force participation of this group rose slowly from the 1920s to the 1940s and accelerated after World War II. Thus, although some women – particularly, low-income women and women of color (Kessler-Harris 2003; Tienda and Glass 1985) – have

been participating in the paid labor force for longer periods of time, overall female labor participation has increased significantly over recent decades.

Demographic and economic factors provide key explanations for this phenomenon (Casper and Bianchi 2002; Goldin 1990; Leibowitz and Klerman 1995; Rosenfeld 1996; Smith and Ward 1985). For instance, scholars attribute the postwar rise in female labor supply to real wage growth for women as well as their increased levels of education and decreased fertility (Leibowitz and Klerman 1995; Smith and Ward 1985). In her discussion of the changing economic role of married women in the U.S., Goldin (1990) highlights the role of demand-side factors, such as an increased need for white collar workers, which pulled married women into the workforce. Additionally, as female cohorts moved through time and increasingly acquired the educational and other prerequisites for paid employment, they were better able to respond to the labor demands over time periods. Wetzel (1995) also emphasizes the role of an expanding U.S. service sector in the early 20th century as a factor in the increased demand for female labor.

As a supply-side explanation for college-educated women's entrance into the paid labor force, Goldin (2004; 2006) finds changing preferences for the patterning of work and family roles across birth cohorts. For instance, college-educated women born in the 1930s sought a family first and then a job later in life. College-educated women born in the 1940s and 1950s, on the other hand, first pursued a career after college before having a family. Additionally, Goldin (2006) identifies a "quiet revolution," which occurred after the 1970s, that shifted women's horizons and expectations to include lifetime employment and an

identity based on work roles. This large-scale shift in women's commitments to work began with the cohort born in the late 1940s, but preceding birth cohorts led up to this shift. Thus, women's expectations for participation in the paid labor force have changed dramatically across recent birth cohorts.

A second, macro-level labor market change over the past forty or so years is a rise in economic inequality in the U.S. De-industrialization (Bernhardt et al. 2001; Levy 1998), the decline of unionization (Gordon 1996; Levy and Temin 2007), and the rise of contingent work (Kalleberg 2000) have all contributed to increased inequality in the U.S. In particular, researchers have documented the declining fortunes of younger, male workers since the 1970s (Duncan et al. 1996). During this period, men's wages stagnated even for full-time, year-round workers (Morris and Western 1999). Rising income inequality post-1970 has been attributed not only to increased inequality in men's earnings, but also to women's rising earnings and the growing correlation between husbands' and wives' earnings (Karoly and Burtless 1995). There has been an increase in both female-headed households and two-earner, high-income families in the U.S., leading to diverging economic outcomes and increased inequality (Levy 1995; McLanahan 2004). Overall, these changes in the labor market are likely to influence women's economic insecurity at older ages. More specifically, older women from different birth cohorts are likely to have experienced these shifts differently. *Cohort change*, in terms of labor market experiences, is therefore a second life course predictor that affects women's retirement resources.

Women's Family Experiences

In addition to women's own labor market participation, family experiences are also likely to affect women's economic insecurity across their lives, including at older ages. Although the above discussion outlines the ways that women's own labor market experiences help to determine their economic insecurity, most women live in larger households and derive economic resources from partnerships (usually marriage for the cohorts being studied) with men. Researchers have studied the ways in which marital status, including marital dissolution, and parenthood impact women's economic well-being. In this literature, marriage has been consistently documented as beneficial for women (Light 2003; Waite 1995, 2000). Waite (1995, 2000) attributes women's financial advantages in marriage to a number of factors, including economies of scale through resource pooling in marriage; economic specialization between married partners that produces more than single individuals (i.e., increased efficiency via higher wages for men); and the institutionalization of marriage, which encourages savings for family expenses such as children's education. Light (2003) finds a 55 percent gain in needs-adjusted total family income for women upon marriage or cohabitation (although men's income levels remain unchanged). Additionally, some scholars even promote marriage for women as an anti-poverty strategy (see Thomas and Sawhill 2002).

Although marriage appears to be economically advantageous, there are a number of other family events that seem to have negative economic consequences for women. For instance, there is a well-established wage penalty for motherhood (Budig and England 2001;

Correll 2007; England 2005; Korenman and Neumark 1992; Waldfogel 1997, 1998). Budig and England (2001) find a wage penalty of 7 percent per child for mothers in comparison with other women. Adding controls for job experience into their models reduces the motherhood penalty to 5 percent per child. There is also some evidence that the wage penalty for motherhood differs across educational attainment – with college-educated mothers experiencing significant penalties for childbearing, but lower-earning mothers suffering small or no earnings cut (Anderson et al. 2002). Yet Avellar and Smock (2003) find consistency in the motherhood penalty across time. They conclude that earnings loss due to motherhood has not diminished in size between two birth cohorts born 1944-1954 and 1957-1969.

Along with motherhood, marital dissolution also leads to declines in economic status for women. Unlike marriage and fertility, however, there is a large body of literature investigating the consequences of marital dissolution for economic well-being in retirement. Two types of martial dissolution – widowhood and divorce – have been studied with respect to economic vulnerability at older ages. Using data from the first two waves of the Health and Retirement Study (HRS), Angel and colleagues (2007) identify large drops in income and net worth for widowed women, with greater relative losses for black women (54.6 percent of income) than Hispanic (27.1 percent) and non-Hispanic white women (39.7 percent) net of other demographic controls. Karamcheva and Munnell (2007) find that the economic vulnerability of widows is linked to drops in Social Security and employer-sponsored pension benefits. Zick and Holden (2000) also document decreases in wealth at widowhood for

women using data from the Survey on Income and Program Participation (SIPP). They confirm a wealth disparity among widows, suggesting that declines in wealth associated with widowhood may happen over a period of time (even before the event) rather than suddenly at the time of spousal death. Cross-nationally, Burkhauser and colleagues (2005) establish declines in total household income after the death of a husband among affluent countries, including the U.S.

Divorce appears to have similarly negative economic consequences for U.S. women. Burkhauser and others (1991) identify significant declines in women's living standards with more than one third of divorced women experiencing drops of 50 percent or more. Using income simulations, Butrica and Iams (2000) find that, with fewer women projected to meet the 10-year marriage requirement for Social Security non-contributory benefit eligibility, there will likely be a rise in economic insecurity among older women from the Baby Boom cohort. In another simulation study of the consequences of divorce for women, Smock and colleagues (1999) conclude that if divorced women remained married, their economic well-being would be greatly improved – although they would not attain the same status as always-married women. They also observe that if married women divorced, their economic well-being would decrease to the level of divorced women, suggesting the universality of women's economic insecurity outside of marriage.

Several researchers have considered the consequences of widowhood and divorce for older women together. Holden and Kuo (1996) conclude that currently divorced and widowed women in the first wave of HRS both have significantly lower income-to-needs

ratios and assets. Additionally, Wilmoth and Koso (2002) find higher levels of wealth among continuously married households although remarriage offsets some of the negative effects of divorce and widowhood. They also observe that the effects of divorce are greater for women than men. In a comparison of the effects of divorce and separation across two birth cohorts of women, Smock (1993) documents stability in the costs of marital disruption over time. She explains that although women in more recent cohorts have acquired more labor force experience before marital disruption, they still experience costs similar to older cohorts. Finally, in a review of the decline in economic status for women following divorce and widowhood, Holden and Smock (1991) emphasize the way that short-term and longer-term costs of parenthood for women are linked to economic insecurity. Overall, this literature on women's family experiences and economic outcomes stresses the benefits of *marital continuity*. Being married, and staying in a married partnership over the life course, seems likely to lead to better access to retirement resources. Therefore, this dissertation examines the effects of marital continuity as a third life course predictor of older women's retirement insecurity.

Changes in Women's Family Experiences

Much like the labor market, the American family has experienced dramatic changes over the last forty years. These changes have been experienced by older U.S. women, to different degrees, across birth cohorts. Major changes in the family include shifts in marriage patterns as well as changes in fertility. Broadly, these shifts may be understood as a second demographic transition (Lesthaeghe and Moors 2000), which involves postponement of

childbearing; heterogeneity in household formation with delays and decreases in marriages; and differences in family patterns by income and education levels.

Scholars have identified declines in marriage, increases in non-marriage, and rising rates of marital disruption after the 1970s in the U.S. (Cherlin 1992; Hughes and O'Rand 2004; McLanahan and Casper 1995; Teachman et al. 2000). Cherlin (1992) concludes that adults coming of age after World War II exhibited the highest lifetime percentage of being married (96.4 percent for women and 94.1 percent for men). Yet there has been rising cohabitation, rising divorce, and decreased remarriage since then. According to one study, about two-fifths of all children live some part of their lives in cohabiting families in the U.S. (Bumpass and Lu 2000). Cherlin (1992) suggests that changes in women's roles, including increased female labor force participation, allow women alternatives to marriage, thus contributing to divorce and delayed marriage. By the 1970s, 40 percent of children had experienced their parents' marital disruption by age 16 (Cherlin 1992). Additionally, there appear to be some differences in these marriage shifts across demographic subgroups. In an examination of the patterns and determinants of first marriage in the U.S., Bennett and colleagues (1989) find that lower proportions of blacks than whites are marrying; and that this decline has been substantial across cohorts for blacks, but more modest for whites.

Sweeney (2002) accounts for these changing marital patterns with an explanation of the "shifting economic foundations of marriage." She notes that marriages seem to have transformed from unions built on the specialization by gender (see Becker 1985) to a "career-entry" model, in which the positive effect of women's earnings on marriage

formation increases over time. This changing context of marriage has been influenced by a number of demographic and economic factors, including greater income growth for women since 1960; the increased proportion of women in the labor force; the decline in men's labor supply during the same period; more egalitarian gender role attitudes; and changing family consumption patterns that require additional sources of income. Furthermore, Lichter and colleagues (1992) find no evidence that the increasing economic independence of women is related to declines or delays in marriage; women's education, earnings, and current employment are all positively associated with entry into marriage.

Fertility patterns have changed as well. After the historic "baby boom" that occurred from 1946-1964, the fertility of American women has declined. Morgan (1996) identifies a decrease in the pace at which American women have had a second child and/or a third birth over the last 40 years. Oppenheimer (1994) attributes this decreasing fertility to women's increased labor market participation as well as the deterioration of men's earnings after 1970. Finally, there have also been increases in non-marital childbearing over the last forty years. By the late 1990s, 1 in 3 births were nonmarital, with a large proportion to cohabiting couples (Wu and Wolfe 2001). Because of these significant changes in marriage, divorce, and fertility, women's family experiences probably vary across birth cohorts, as is the case with women's labor market experiences. Changes in the American family over recent decades again suggest the importance of *cohort change* as a useful life course predictor for understanding women's retirement insecurity.

The Interrelationships between Family and Work

The labor market and family experiences of women are both likely to have consequences for older women's retirement insecurity. Yet these factors are often difficult to separate. Women's family and work histories are interrelated in several ways. First, work and family responsibilities for many women may be incompatible. Holding a full-time job out of the home may not be possible for women with young children (van der Lippe and van Dijk 2002). Drobnic and colleagues (1999) study how marriage and childbearing significantly influence the exit and entry of women into paid work. They find that women with higher education are less likely to leave full-time employment and more likely to reenter the labor force if they stop working in the U.S. Additionally, Han and Moen (2001) conclude that women working in the paid labor force experience more marital instability than men. In their study, wives' employment sequences are highly contingent on their husbands' careers. In an examination of women's future career plans, Cherlin (1980) observes a sharp decrease in the proportion of single women planning to be housewives from 1969-1975, possibly due to changes in future work plans.

Additionally, there may be an interrelated timing component to how women attempt to organize their work and family experiences. The sequences of work and family roles, or social timing, can be described as, ". . . the pace and flow of individual role development determined by historical events and social change" (Forest et al. 1995, p. 317). Prior research links the timing of family events to economic outcomes. Hanson (1983) finds significant relationships between the timing of a woman's first birth and first marriage in relation to

later status attainment: a positive association between early marriage and higher attainment, but a negative relationship between early childbearing and attainment. Blackburn and colleagues (1993) also conclude that women who have children at later ages earn higher wages. The study authors attribute this finding to both greater human capital accumulation for those women who wait longer to have children as well as differences in unobserved human capital investment. In an investigation of life cycle income trajectories, Browning (1992) determines that patterns of birth timing in households are correlated with life cycle income trajectories: professional/white collar families start families later and experience steeper increases in income over time than families with less-educated parents. Chandler and others (1994) confirm the significance of the timing of family events for earnings. In their study, delayed marriage increases married women's wages, but does not significantly affect married men's wages. Delaying childbearing increases both married women's and men's wages. Yet the positive effects of delayed marriage and childbearing appear to erode over time. Not only is there evidence that the work and family experiences of women are linked to economic insecurity across the life course, but the interrelationships – including work-family incompatibility and the timing of family events – may also be important for understanding women's access to economic resources in retirement. Therefore, this dissertation evaluates the effects of *family timing* for women as a fourth and final life course predictor of retirement insecurity.

Gaps in Existing Literature

Although retirement insecurity has been examined in the sociological and economic literatures, existing studies are characterized by several limitations. First, prior literature on women's retirement contains a narrow focus on marital status, and marital dissolution in particular, as a stratifying condition for retirement outcomes. As outlined above, older women who experience widowhood or divorce have long been considered a population at risk by scholars studying retirement (Smock 1993). Yet the consequences of retirement insecurity due to longer family histories and changes, such as marital continuity and family timing, have not been fully explored. Additionally, the role of women's own work histories as sources of economic disadvantage in old age needs to be examined. Specifically, the low lifetime earnings and lack of access to employer-provided pensions experienced by women may lead to economic insecurity after retirement.

Existing studies that explore older women's economic insecurity are often missing key sources of retirement income or using retirement outcomes that combine pillars of the U.S. retirement system. For instance, some of the recent literature on women's retirement insecurity considers the financial wealth of women, excluding important sources of retirement security such as Social Security and defined benefit pension annuities (Schmidt and Sevak 2006; Yamokoski and Keister 2006; Zick and Holden 2000). These studies of wealth inequality in retirement suggest that younger cohorts of women may not be as disadvantaged as older cohorts relative to men. Yet without including all sources of retirement income, this issue remains unresolved. At the same time, however, lumping all

retirement resources together can also be problematic. Estimates of retirement wealth that aggregate the value of Social Security, occupational pensions, and private savings (Bridges and Choudhury 2005, 2007; Love et al. 2008a, 2008b) may mask the interactions between women's experiences and the specific, yet distinct, features of each pillar of the U.S. retirement system. It is important to understand possible differences in these relationships across retirement resources.

Furthermore, studies that have looked specifically at women's economic insecurity in retirement (Levine et al. 1999; Willson 2003; Willson and Hardy 2002; Wilmoth and Koso 2002) tend to use data on just one cohort of women – often the first cohort of the HRS or one cohort from the National Longitudinal surveys. In such studies, the sample women were born before World War II. These individuals are largely the mothers of the Baby Boom generation (born 1946-1964), who were less likely to have participated in the paid labor force and were not affected by many of the societal changes – especially changes in families and labor markets – occurring in the U.S.

The current analysis attempts to overcome these limitations in a number of ways. First, economic resources in retirement will be studied using a broader set of work and family determinants over the life course. In addition to becoming widowed or divorced, the effects of marital continuity, family timing, and employment commitment are modeled. Additionally, this dissertation tests the effects of this set of life course predictors across all three major retirement resources outcomes – Social Security, occupational pensions, and retirement savings – in order to give a fuller picture of resources available to older women in

the U.S. Rather than aggregating all retirement income and wealth together, however, I examine each retirement resource separately. Finally, analyses will explicitly compare retirement insecurity outcomes across birth cohorts of older women.

Outline of Dissertation

In chapter 2, I analyze the ways in which older women access the U.S. Social Security program. Social Security coverage is nearly universal, yet women may receive three types of benefits, based on their employment and marital histories: worker benefits, auxiliary benefits, or dually eligible benefits. Using HRS data and multinomial logistic models, I examine the likelihood of receiving own worker benefits or being dually eligible for Social Security, in comparison with receiving auxiliary benefits. In addition, multiple imputation techniques are employed to address the widespread missing data from Social Security Administration (SSA) restricted access data, which provide information on both eligibility type as well as respondent labor market history. Several of the life course predictors considered – marital continuity, family timing, employment commitment, and cohort change – significantly influence women's Social Security benefit type. Marital continuity, in the form of longer marriages, decreases the likelihood of own worker benefits, but increases dual eligibility. Divorce, on the other hand, increases both worker benefits and dual eligibility. Delayed marriage, one of the family time covariates, increases the likelihood of receiving own worker benefits, while decreasing dual eligibility. By far, however, employment commitment has the largest impact on Social Security eligibility type. Being out of the labor force for long periods of time decreases the likelihood of own worker benefit receipt and dual eligibility, while

having a significant earnings history increases the likelihood of both of these outcomes. Yet receiving own worker benefits is likely to be a mixed blessing for older women. Women's average lifetime earnings tend to be low enough that own worker benefits provide smaller Social Security payments than dual eligibility or auxiliary benefits. Finally, there is a general lack of significant cohort effects in these models. However, the narrow comparison (i.e., women born in the early 1930s are compared to women born in the late 1930s) may account for this finding.

Chapter 3 investigates access to occupational pension income for women ages 51-65. This chapter uses discrete-time even history models to examine the timing of women's access to occupation pensions across U.S. birth cohorts with HRS longitudinal data linked to SSA restricted access files. Results reveal significant cohort differences in the timing of first pension receipts as well as the important roles of marital continuity and family timing for older women's access to occupational pension income. Divorce decreases the rate of pension income receipt. Yet marriage length increases this rate only for the older birth cohort (born in the 1930s, in comparison with a younger cohort born in the 1940s/1950s) since models show a small negative relationship for the younger birth cohort. Delays in first birth significantly increase the rate of pension receipt, but delays in marriage for sample women have the opposite effect. Limited work history does negatively affect the timing of pension receipt, but an alternative employment commitment measure does not. Overall, the life course predictors associated with delays in pension income receipt indicate disadvantage for older women via a missing source of retirement security. Finally, significant cohort

effects persist throughout models. Women from the younger birth cohort experience higher rates of pension receipt.

In chapter 4, I examine age-based growth trajectories of IRA/Keogh wealth for older women ages 51-65. Again this analysis makes use of both longitudinal HRS data as well as SSA restricted access data on respondent work history. Using the four life course predictors outlined above, I find several significant effects for initial wealth holdings as well as their linear trajectories. First, divorce negatively impacts both initial wealth as well as increases in wealth, net of a series of controls. There are also significant findings for the role of family timing. Delays in marriage increase initial wealth holdings, but only for women in the younger birth cohort (born in the 1940s/1950s, compared with an older birth cohort born in the 1930s). Delays in fertility, however, increase initial wealth for all sample women. At the same time, there are no significant effects of women's prior employment commitment on IRA/Keogh wealth trajectories. Finally, despite a lack of significant effects of birth cohort on the accumulation of retirement wealth across age, being a member of the younger birth cohort significantly increases initial wealth holdings.

Overall, this study makes three types of contributions to the literature on gender stratification at older ages. Theoretically, it focuses on processes of cumulative disadvantage in terms of life course predictors of women's retirement insecurity. Substantively, it examines all three major sources of retirement resources: public pensions from the state (Social Security), occupational pensions, and private retirement savings. Methodologically,

the study examines cohort differences in access to and change over time in retirement resources at older ages.

Chapter 2. Life Course Determinants of Women's Social Security Benefit Type

Introduction

In the U.S., the federal Social Security program is the primary resource for retirement security among older women. Retirement insecurity refers to a lack of income and wealth in old age as well as low levels of these income and wealth streams over the period of retirement. Individuals who are unable to work in the paid labor force due to range of obstacles – such as poor health, disability, or unemployment – are at risk of retirement insecurity in market-based economies. Women, in particular, are exposed to retirement insecurity. Older women in the U.S. face a high poverty rate: 11.5 percent of women ages 65 and older had incomes below the federal poverty level in 2006, in comparison with 6.6 percent of similarly-aged men. The poverty rate for unmarried, older women, 16.8 percent, is even higher, with 17.2 percent of divorced, older women and 26.1 percent of never married, older women experiencing poverty (U.S. Social Security Administration 2009b). Additionally, older women of color also exhibit disproportionately high poverty rates in the U.S. In 2006, 26.7 of black women ages 65 and older were poor. This figure is also substantial for older women of Hispanic origin: 20.8 percent (Ibid).

The Social Security program is a crucial source of economic support for older Americans. Coverage of Social Security across the population is very high; 89 percent of married couples and unmarried individuals age 65 and older receive Social Security benefits, amounting to 49.9 million people (U.S. Social Security Administration 2008). Moreover, Social Security benefits provide the major source of income for many elderly persons. These

benefits amount to more 50 percent of total income for 64 percent of older Americans and more than 90 percent of total income for 32 percent (Ibid). Social Security is an especially important economic resource in retirement for population subgroups, such as women, who are less likely to have access to other types of retirement income and wealth like occupational pensions and private savings wealth. Several studies demonstrate that median Social Security wealth is actually greater for women than men, mostly due to women's disproportionate longevity (Bridges and Choudhury 2005, 2007). Thus, Social Security benefits play an important role in fighting retirement insecurity for women.

At the same time, however, policy analysts are concerned over the future viability of the Social Security program due to financing problems created by population aging, increasing retirement rates, de-industrialization, and globalization. These perceived pressures have created a context for reform of retirement systems not just in the U.S., but across other affluent countries as well (Bongaarts 2004; Bonoli 2003; Ebbinghaus 2006; Wise 1997). Proposed reforms to Social Security include full or partial privatization of the overall system, increases in the retirement age to qualify for benefits or in the payroll taxes financing the program, changes in the calculation of Social Security benefits, as well as schemes for earnings sharing among married couples (Harrington Meyer 1990; Harrington Meyer and Herd 2007; Kingson and Williamson 2001).

Within this context of Social Security reform, it is important to understand how the institutional features of retirement systems impact older women with their unique employment and family histories. This study will focus on one feature of the Social Security

program, benefit type, which has implications for the retirement security of older women. As will be described in more detail below, there are three major types of Social Security eligibility – worker benefits, dual eligibility, and auxiliary benefits – among U.S. women. Benefit type is an important feature of the Social Security program because previous research has found it to be a predictor of overall economic security in retirement (Grad 1989; Weaver 1997). Retired worker beneficiaries tend to have lower poverty rates. Yet, due to women's typically limited work and earnings histories, there is some divergence between the average monthly benefits received by male ($1,299 in 2008) and female ($1,001 in 2008) retired workers (U.S. Social Security Administration 2009a). Thus, receiving own worker Social Security benefits is not always beneficial for women. Although their access to Social Security is not contingent on long-term, dependent, marital relationships, women who receive own worker benefits face lower Social Security payments, which place them at risk of retirement insecurity. Additionally, some types of auxiliary beneficiaries, such as aged spouses, fare well economically. Other auxiliary beneficiaries, like aged widows and divorced women, do not. In 2008, the average monthly Social Security benefit was $1,153 for retired workers, $569 for spousal benefits, and $1,112 for survivors of retired workers (Ibid).

This study investigates how older women interact with the federal Social Security program. In particular, I investigate how women's earlier work and family experiences as well their birth cohort influence these relationships. Although Social Security coverage of women is practically universal, as explained above, there is variation in the type of Social Security benefit received by women, which might be based on one's own work history

(worker benefit), a marital relationship to someone qualified for a Social Security worker benefit (auxiliary benefit), or both of these factors (dual eligibility). Using restricted access Social Security Administration data linked to a nationally representative dataset of older Americans, this analysis explores the effects of birth cohort and several sets of life course factors on the relative likelihood of Social Security benefit type for women.

Background

The U.S. Social Security Program

In 1935, the U.S. Congress passed the original Social Security Act, which created the Social Security program as part of the New Deal. Today, the Old-Age, Survivors, and Insurance (OASI) program, commonly referred to as "Social Security," pays monthly benefits to qualified retired workers and their dependents and survivors. Social Security is a pay-as-you-go program funded by the payroll taxes of current workers. Worker benefits are paid in retirement to individuals who have accumulated at least 40 quarters of covered employment.[1] These worker benefits are determined by the worker's earnings-based contributions over this period of covered employment.

The original Social Security legislation did not include benefits for non-workers. An amendment in 1939 established auxiliary benefits for spouses and widows of retired worker

[1] Full Social Security retirement benefits are paid out at the normal retirement age (NRA). For individuals born in 1937 or before, the NRA is 65 years. Subsequent reforms to the Social Security program have instituted a gradually rising NRA, so that individuals born in 1960 or later will have a NRA or 67. The earliest an individual may receive Social Security retirement benefits is age 62. These early retirement benefits are paid at reduced amounts. Unlike the NRA, the early retirement age has not been increased. For additional details, see www.socialsecurity.gov.

beneficiaries. Benefits for divorced spouses were introduced in 1950.[2] Social Security auxiliary benefits are disproportionately claimed by women. This type of eligibility is based on a dependent, marital relationship to a Social Security eligible worker. Auxiliary benefits are often called noncontributory benefits to distinguish them from contributory benefits paid to retired workers. The Social Security spousal benefit is equal to 50 percent of the spouse's covered work benefits. Individuals are eligible for spousal benefits either though a current marriage to an eligible worker or through a required number of years of marriage. Originally, the marriage length requirement for auxiliary benefits was 20 years, but a 1977 Social Security Act amendment reduced the marriage requirement to 10 years of marriage before divorce to an eligible worker.

Widow benefits are another major type of auxiliary benefit available through Social Security. This benefit requires either current marriage or at least 10 years of marriage before divorce (with forfeited claims on benefits linked to a previous spouse upon remarriage, unless an individual remarries after age 60). Widow benefits were originally equal to 82.5 percent of a spouse's covered work benefit. But this benefit was increased to 100 percent of a worker benefit in 1972. Finally, individuals may be dually eligible for Social Security, meaning that they qualify for Social Security benefits based on both auxiliary spousal or widowhood status as well as their own contributory lifetime work and earnings history.

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[2] See Martin and Weaver (2005) for a brief, but comprehensive overview of the history of the Social Security program.

Gender and Social Security

Older women in the U.S. depend heavily on Social Security. Among all adults receiving program benefits, 56 percent are women (U.S. Social Security Administration 2009a). Social Security benefits may be considered gendered in two main ways. First, women are more or less likely to receive certain types of Social Security benefits than men. In particular, women are less likely to receive retired worker benefits than men. Although 78 percent of all men collecting Social Security received retired worker benefits in 2008, this percentage was smaller for women (59 percent). Yet this figure represents a significant increase in own worker benefits for women over time. In 1940, only 12 percent of retired worker Social Security benefit recipients were women. Today, 49 percent of retired worker beneficiaries are women, a four-fold increase (Ibid). Researchers predict continuing increases in own worker benefits for women. By one estimate, about 60 percent of married women will receive own worker benefits by 2015 (Sandel and Iams 1996). And, according to Harrington Meyer (1996), the gender differences in the percent of Americans fully insured for Social Security benefits based on their own earnings is predicted to disappear by 2030. At the same time, however, when women do qualify for own worker Social Security benefits based on their work histories monthly payments tend to be lower than the average retired worker benefits received by men (U.S. Social Security Administration 2009a).

Women are also more likely to receive auxiliary Social Security benefits. Among women age 62 and older, about 28 percent were receiving spouse or widow benefits based only on their husbands' earnings records in 2008. This proportion has been declining over

time. In 1960, 57 percent of these older women received auxiliary Social Security benefits (U.S. Social Security Administration 2009a). For men, however, the figure is, and has always been, negligible. Finally, women's dual eligibility for Social Security benefits has increased over time. In 1960, among all women ages 62 and older, only 5 percent were dually eligible for Social Security benefits. Yet by 2008, this percent had increased to 28 (Ibid). The increase in the level, duration, and hours of women's paid labor force participation over recent decades has led to a shift in benefit eligibility for the Social Security program.

The second gendered aspect of Social Security involves the underlying structure of benefit eligibility itself. In particular, several aspects of the program disadvantage women and unmarried women, in particular. One key feature of Social Security program is its bias toward a "breadwinner-homemaker" family model. Inherent in the design of this program is its support for a couple or family in which one member (traditionally the man) works in the paid labor force, while the other member (usually the woman) works in the home.

Social Security benefits paid out to single-earner couples are actually higher than benefits paid to dual-earner couples when these couples have the same joint annual earnings over their lives (Clark et al. 2004; Harrington Meyer and Herd 2007). Because the Social Security benefit return on lifetime earnings is higher for single-earner couples the program implicitly encourages one member of the married couple to stay out of the paid labor force. The work of Harrington Meyer and colleagues documents how Social Security auxiliary benefits – spousal and widow benefits with 10 year marriage requirements – subsidize a traditional family form in which women marry and remain married throughout their lives

(Harrington Meyer 1996; Harrington Meyer et al. 2005, 2006; Harrington Meyer and Herd 2007). These studies highlight the problematic nature of Social Security eligibility rules for women who experience marital disruptions or never marry. In addition, women who receive Social Security auxiliary benefits are put in a precarious position because of their dependent eligibility status. Harrington Meyer and Herd (2007) note that in this system: "The former [i.e., men] tend to receive more generous and stable benefits that are considered social rights and the latter [i.e., women] smaller and more precarious benefits that are considered social favors" (p. 37).

Because of the traditionally limited or discontinuous labor market experiences of women, especially white women, their access to Social Security worker benefits is inherently insecure. When women do qualify for and receive own worker Social Security benefits their monthly checks tend to be a low, a result of lifetimes of discontinuous or low-paid work. And for women who are less likely to establish or maintain life-long marriages, their access to auxiliary benefits is uncertain. Despite these gender biases, older women in the U.S., as well as other lower-income groups, depend more heavily on Social Security benefits for retirement security than on other retirement resources (Clark et al. 2004; O'Rand and Henretta 1999). Thus, women in the U.S. are relying on the first pillar of a retirement system that incorporates earlier life disadvantages into later life Social Security benefits.

The Role of Life Course Factors in Shaping Women's Social Security Benefit Type

As elaborated above, there is ample descriptive evidence regarding the distribution of Social Security benefit types among older women in the U.S. At the same time, however, there has been less research examining the mechanisms underlying women's access to Social Security benefits. Although it is clear that prior work earnings and marital status directly influence the type of Social Security benefit received by women, this analysis makes use of a life course perspective to go further in understanding determinants of benefit type. Furthermore, the role of birth cohort for changes in these mechanisms will be examined.

The life course framework provides a means of connecting labor market and family experiences across other life events, such as retirement (Heinz 2003; O'Rand 2001; O'Rand and Henretta 1999; Stier et al. 2001). Women's prior work and family experiences interact and accumulate to produce outcomes in retirement, such as Social Security benefit eligibility type. This theory of cumulative disadvantage highlights the manner in which prior inequalities – such as women's difficulty in maintaining continuous participation in the paid labor force and securing adequate income – are amplified through the life course (Crystal and Shea 1990; Dannefer 2003; O'Rand 1996). In this case of Social Security eligibility type, women's prior family role commitments are likely to impede their ability to accumulate enough lifetime earnings to qualify for own worker benefits. Moreover, any marital disruptions are likely to impact women's access to auxiliary Social Security benefits.

This analysis investigates four specific, causal mechanisms that connect women's work and family experiences to later Social Security benefits through this process of

cumulative disadvantage. First, *marital continuity* is very likely to affect Social Security benefit type. More specifically, increases in the duration of marriage, as well as fewer marital dissolutions, ought to be positively related to the likelihood of receiving auxiliary benefits. Because of the 10-year marriage requirement to qualify for Social Security auxiliary benefits, marital dissolution should significantly lower the incidence of this benefit type. Research based on projections of declining marriage rates and rising divorce rates predicts this outcome (Harrington Meyer 1996; Harrington Meyer et al. 2005, 2006). Other studies use prospective data on marital patterns to look at changes in marriage patterns with implications for Social Security benefit eligibility (Tamborini and Whitman 2007).

At the same time, however, increased marital continuity, in the form of longer marriages, ought to have a negative impact on retired worker benefits since longer marriages traditionally have entailed family caregiving roles that conflict with paid employment (van der Lippe and van Dijk 2002). Yet when women do experience marital discontinuity, they may be more likely to accumulate earnings and work experience in the paid labor force. Overall, one failing of previous studies on this issue is that they look at women in the aggregate, without connecting women's own marital characteristics and histories to actual Social Benefit eligibility. This analysis seeks to fill this gap in understanding the consequences of marital continuity for later Social Security benefits.

> *Hypothesis 1:* Marital continuity is significantly related to women's type of Social Security benefit eligibility. Increases in marital continuity increase the likelihood of receiving auxiliary benefits and decrease the likelihood of own worker benefits and dual eligibility. Decreases in marital continuity increase the likelihood of own worker benefit receipt.

A second life course mechanism, *family timing*, is also likely to influence women's Social Security benefit type. For women, the timing of family events, such as the age at marriage and fertility, is likely to influence Social Security benefit type in two ways. First, earlier marriage and childbearing are linked to longer marriages in a direct way, which probably increases the likelihood of receiving auxiliary Social Security benefits. A second, and indirect, path is that earlier marriage and childbearing is associated with lower levels of work and earnings (Martin 2004; McLanahan 2004), which may decrease the likelihood that women would be able to qualify for own worker benefits or be dually eligible for Social Security benefits. Researchers have found significant and positive relationships between delays in women's family roles and economic status, in general. Delays in marriage and childbearing seem to yield benefits for earnings and income (Blackburn et al.1993; Chandler et al. 1994; Hanson 1983). In this way, delays in marriage and fertility likely lead to a higher incidence of own worker and dually eligible benefits.

> *Hypothesis 2:* Family timing significantly affects Social Security benefit type. Delays in family roles increase the likelihood of own worker Social Security benefits in comparison with other benefit types.

Third, *employment commitment* is another life course mechanism expected to impact women's Social Security benefit type. Much like marital continuity, earnings and employment history provides a primary conduit to benefit eligibility. Women, at an aggregate level, are more likely to work in part-time (Drobnic and Wittig 1997; U.S. Department of Labor 2008) or non-standard, contingent jobs than men (Wenger 2003). Although there are exceptions to these general patterns – among women of color, for example – women often accumulate

discontinuous work histories as they move in and out of the paid labor force to accommodate child care and other family responsibilities (Stier et al. 2001, van der Lippe and van Dijk 2002). These work history discontinuities put women at risk of failing to meet the Social Security eligibility requirements (i.e., 40 quarters of covered earnings) based on their own employment.

> *Hypothesis 3:* Increases in women's employment commitment significantly increases the likelihood of receiving own worker Social Security benefits and being dually eligible for benefits, in comparison with being eligible for auxiliary benefits only. Lack of employment commitment, however, is related to lower likelihood of both own worker and dual eligibility for Social Security.

C*ohort change* is a final life course mechanism that might help explain women's Social Security eligibility type. Across the last century, there have been significant, structural changes in the lives of women. These cohort changes are particularly evident in the work and family experiences of American women (Goldin 1990, 2004, 2006; Hughes and O'Rand 2004). Increases in education and paid employment as well as delays in marriage and childbearing across cohorts are likely to increase women's access to retired worker Social Security benefits.

Several prior studies, mostly focusing on the Baby Boomers, project that women's increased labor force participation across cohorts will result in increased own worker Social Security benefits and reduced auxiliary benefits (Butrica and Iams 2000; Butrica et al. 2003). Other projections predict that changes in marital patterns across cohorts – both increased divorce and an increased incidence of never marrying for particular subgroups, such as black women – will decrease the likelihood of satisfying the 10-year marriage requirement for

receiving Social Security auxiliary benefits (Harrington Meyer et al. 2005, 2006). If past trends continue, younger birth cohorts are also more likely to be dually eligible for Social Security benefits (U.S. Social Security Administration 2009a).

> *Hypothesis 4:* There are significant differences in Social Security benefit eligibility by birth cohort. Women from younger birth cohorts are more likely to receive own worker benefits or be dually eligible for Social Security in comparison with women from older birth cohorts.

Methods

Data

This study addresses the hypotheses described above regarding the underlying mechanisms of women's access to Social Security benefits. To test these hypotheses this analysis makes use of two related data sources. First, demographic, family structure, income, wealth, and health variables come from the Health and Retirement Study (HRS). The HRS is a multi-stage area probability sample of households that includes about 12,650 respondents from nearly 7,600 households. It provides nationally representative data on the U.S. population over age 50 (National Institute on Aging 2007). The HRS was initiated in 1992 with a sample of individuals aged 51-61 and their spouses. Re-administered every two years, the HRS contains eight waves of data on five birth cohorts (i.e., the original HRS sample and four additional birth cohorts of older Americans who have been added to the study since 1992) as of 2006. The sample for this analysis includes all women from the original HRS birth cohort who were born 1931-1941 (N=5,459).

Most of the HRS measures for this analysis come from the RAND HRS Data file (Version H), a user-friendly version of the HRS that contains cleaned, processed variables and comes with extensive documentation (RAND 2008). As will be discussed in more detail below, measures used in models are taken from RAND data whenever possible. Several of the prior family experience variables, however, are unavailable in the RAND HRS Data file. In such instances, the raw HRS files are used instead. These publicly-available raw files contain noise and missing values.[3] Yet for these covariates, the raw HRS files are the only possible data source.

In addition to these HRS datasets, the analysis also draws on a second data source: restricted access program data from the Social Security Administration (SSA). The SSA restricted access files are available to be linked to HRS respondent data through special agreement with HRS administrators.[4] SSA files contain records of the work and earnings histories for individuals covered by the Social Security program as well as records of Social Security, Supplemental Security Income, and Disability benefit payments made to individual HRS respondents. As described below, SSA restricted data are used in the creation of both the categorical outcome variable for analyses (i.e., type of Social Security benefit eligibility) as well as key explanatory measures of respondents' prior work experiences.

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[3] For issues regarding the construction of marital histories form raw HRS data, see Holden and Kuo (1996) and Wilmoth and Koso (2002).

[4] Restricted data users must develop a data security protocol in order to protect respondent confidentiality since all HRS restricted access data contain sensitive and identifiable respondent information. In addition to several other key requirements (see: http://hrsonline.isr.umich.edu/index.php?p=faqs), this data security protocol must be approved by both the HRS and the researcher's own Internal Review Board.

SSA restricted data provide valuable information regarding not only respondent Social Security benefit type, but also about HRS respondents' comprehensive labor market histories. Publicly-available data from the HRS offer detailed employment measures limited to a respondent's current or past several jobs. The SSA data on years of covered earnings under Social Security, however, provide a comprehensive source of entire individual labor market histories. Unfortunately, the SSA restricted access data also pose several challenges for researchers. First, these data come from administrative records rather than social science surveys. Therefore, the SSA data files are user-unfriendly and poorly documented.[5]

The more significant challenge in working SSA restricted access records, however, involves missing data. HRS respondents have been asked to sign permissions to link their HRS data with SSA records at different points in time. The original HRS birth cohort (born 1931-1941) had the opportunity to sign SSA permissions in 1992, 1994, 1996, and 2004. More recent, younger study cohorts in the HRS, however, have experienced fewer chances to sign SSA permissions. Therefore, the rate of unmatched SSA records is very high for younger cohorts of women, which justifies limiting the sample to the original HRS cohort.[6] Even among the sample HRS cohort women, however, 3,271 out of 5,459 (59.9 percent) are missing matched SSA records for the outcome variable of interest, type of Social Security eligibility. In addition, 1,461 sample HRS cohort women (26.8 percent) are missing SSA records for key explanatory variables related to prior work history.

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[5] Mitchell et al. (1996) discusses the structure of initial 1992 SSA data files.
[6] Using the "Respondent Cross-Year Benefit" SSA restricted access data file, about 86 percent War Babies cohort women (born 1942-1947) and 88 percent of Early Baby Boomer cohort women (born 1948-1953) lacked HRS-matched SSA records. HRS cohort women have less missingness: about 60 percent.

As a result of this widespread missing data from the SSA restricted access records, multiple imputation techniques are used to impute 10 versions of the original sample data. Although there are other principled methods for addressing missing values in data – including weighted estimation and the expectation-maximization (EM) algorithm – multiple imputation provides a flexible, general tool to deal with missing data (Schaefer 1999). Prior to imputation, data from the HRS are linked to SSA restricted access data files. Time-invariant HRS measures (e.g., race, education) are linked to SSA records based on respondent identification number. Time-variant HRS measures (e.g., respondent earnings, self-rated health) are linked based on respondent identification number and the year of the SSA record match, creating addition missing values in the case of unmatched records.[7] Once assembled, this cross-sectional dataset is then multiply imputed.

Multiple imputation is an approach to missing data in which missing values are filled in (i.e., imputed) using Bayesian statistical theory; that is, a parametric model is specified for the complete data, a prior distribution is applied to the unknown model parameters, and 5-10 independent draws are taken from the conditional distribution of the missing data given the observed data to create 5-10 imputed datasets (Little and Rubin 2002; Schafer 1999). It is recommended that imputation models should exhibit the same associations between variables to be used in models (Ibid). Therefore, the multiple imputation models used in this study include all model variables and their interactions. Each of the imputed datasets is analyzed separately and then integrated. Parameter estimates are calculated by using the

[7] Unweighted descriptive statistics for sample data prior to imputation are available in Appendix Table 2A.

overall average of the individual estimates from each multiple imputation dataset. Standard errors are computed via "Rubin's rules", which account for both the within-imputation variance as well as the between-imputation variance (Rubin 1987).[8] For this project, Patrick Royston's ICE STATA module[9] is used for the creation of 10 imputed datasets as well as their subsequent modeling and analysis (Royston 2004, 2005). All multiple imputation datasets have a sample N of 5,459 women.

Outcome Measure

The outcome measure for this analysis is Social Security benefit eligibility type. As described above, this categorical variable comes from one of the SSA restricted access datasets. More specifically, I use the "Respondent Cross-Year Benefit" tracker file from the SSA data files for this measure, which contains the most recent Social Security eligibility

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[8] For *j* multiple imputation datasets (*j*=1, 2, . . . *m*), regression parameters are averaged across *j* using the formula:

$$\bar{Q} = \frac{1}{m}\sum_{j=1}^{m}\hat{Q}_j.$$

Overall standard errors are computed by, first, calculating the within-imputation variance:

$$\bar{U} = \frac{1}{m}\sum_{j=1}^{m}U_j.$$

And, second, calculating the between-imputation variance:

$$B = \frac{1}{m-1}\sum_{j=1}^{m}\left(\hat{Q}_j - \bar{Q}\right)^2.$$

The overall variance is:

$$T = \bar{U} + \left(1 + \frac{1}{m}\right)B.$$

And the overall standard error is the square root of *T*. See Rubin (1987) for more details.

[9] The ICE STATA ado files are available for download here: http://ideas.repec.org/c/boc/bocode/s446602.html (Accessed: 2/17/10).

across waves of SSA-HRS permissions. Respondents could be eligible and receiving Social Security benefits in one of three ways: based solely on their own work record (coded as "1"), based on dual eligibility as both a worker and a dependent spouse/widow (coded as "2"), or based solely as an auxiliary with a benefit derived from a dependent relationship as a widow/spouse and without eligibility based on one's own work record (coded as "3"). Averaged across imputed datasets, 62 percent of all sample women are eligible for Social Security benefits based on their own work records, 24 percent are dually eligible, and 14 percent receive only auxiliary benefits.

Covariates

Several types of covariates are used in models to investigate the hypothesized mechanisms underlying women's access to Social Security benefits. First, marital continuity is captured by two measures. First, *ever divorced* (coded "1" if yes) is a dummy indicator of whether or not a respondent woman has experienced one type of marital discontinuity, divorce, in her life. Second, analyses use *length of longest marriage*, a continuous indicator of the number of years of a respondent's longest marriage. Both of these marital continuity predictors originally come from the HRS RAND data files.

Two dummy variables are used to operationalize the family timing hypotheses. *First marriage after age 30* (coded "1" if yes) captures whether a respondent delayed marriage until after age 30. Similarly, *first birth after age 30* (coded "1" if yes) indicates whether or not a

sample woman delayed fertility past age 30. These family timing covariates come from the HRS raw files.[10]

The employment commitment hypotheses are addressed with two measures: *employment absence* and *earnings continuity*. Employment absence is the proportion (ranging from 0 to 1) of years with no Social Security-covered earnings during prime-ages (i.e., 20 to 55). Earnings continuity is a dummy indicator of whether or not a respondent had more than 20 years of earnings during prime ages (i.e., 20 to 55). These measures come originally from the SSA restricted access data files of quarterly earnings records.

Cohort change is included in models as a dummy variable coded as "1" for respondents who are *younger HRS* women (i.e., born 1936-1941) in comparison with older HRS women (i.e., born 1931-1935). Overall, the sample includes 2,308 older HRS respondents and 3,151 younger HRS women. In addition to the main effect of the young HRS indicator, possible interaction effects between cohort and the other work and family covariates are tested and included in models when they significantly improve model fit.

Finally, full models also include a set of controls for various socio-demographic characteristics of the sample. *Age*, a continuous measure, is included. Dummies for being *black* and *Hispanic* (for both indicators, the omitted reference category is non-Hispanic white)

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[10] There is missing data present in the original sample – prior to multiple imputation – due to issues with the HRS raw files. More specifically, there were 94 suspicious cases in the age at first marriage measure and 132 suspicious cases in the age at first birth measure. These cases involved incomplete or inconsistent reporting that made measure construction impossible. The magnitude of these suspicious cases is comparable to the level found by Holden and Kuo (1996) and Wilmoth and Koso (2002). Following these precedents, suspicious cases are treated as missing values in the original sample. The multiple imputation techniques carried out, as described above, impute these missing values. So final models based on imputed datasets have no missing data.

are used. A continuous measure of years of *education* and the *number of people in household* are also used. Marital status is captured in models with a dummy measure for being *unmarried* (married is the omitted reference category). Indicators for *self-rated health* (an ordinal measure, ranging from 1 to 5, with higher values indicating poorer health) and whether or not a respondent has employer-provided *health insurance* (coded "1" if yes) are also included. Two control measures capture the effects of other types of economic resources for respondents: *total respondent earnings* and *total household wealth* (i.e., the net value of total household wealth, including secondary residence, minus all household debt). Both of these variables are annual and measured in real 2008 dollars. The natural logarithmic transformations of both earnings and wealth are entered in models to reduce their skewed distributions. Descriptive statistics for all covariates used in models, including the outcome variable, are presented in Table 2.1.

[Insert Table 2.1]

The Model

This study uses multinomial logistic models to analyze the unordered, categorical outcome variable: Social Security eligibility type. All models treat the auxiliary Social Security benefit category as the base category. Therefore, models estimate the odds ratios of the effects of covariates on a) the likelihood of receiving own worker Social Security benefits in comparison with auxiliary benefits and b) the likelihood of receiving dually eligible Social Security benefits in comparison with auxiliary benefits. Multinomial logistic models are run separately on all 10 imputations. These estimates are then combined according to Rubin (1987, 2002).

Additionally, when employing multinomial logistic models, it is necessary to test the assumption that the odds of the various outcome categories are independent of each other. In order to test this "independence of irrelevant alternatives (IIA) assumption," I use the Small & Hsiao test on each multiple imputation dataset separately, finding evidence for the IIA assumption. Wald tests are also used on each of the 10 imputed datasets to test for the collapsibility of alternative categories. Again these tests provide evidence in support of the IIA assumptions and evidence against collapsing any of the three outcome categories.

Results

Table 2.2 contains the results of multinomial models that test Hypothesis 1 with the two marital continuity measures, ever divorced and length of longest marriage, and Hypothesis 4 with the birth cohort dummy. Model 1 presents estimates that include the ever divorced dummy indicator, the younger HRS cohort dummy, and the full set of control variables. When an interaction between cohort and the ever divorced dummy is added to this model, there is no significant improvement in model fit and the interaction parameters do not reach significance.[11] Consequently, Model 1 contains only the main effects of cohort and divorce.

As can be seen from the odds ratios, women who have ever experienced divorce are significantly more likely to be eligible for Social Security through both own worker benefits and dual eligibility, in comparison with auxiliary benefits. The effect of divorce is larger for

[11] The χ^2 difference between the deviance statistic, averaged across all 10 imputed datasets, of a model with and a model with this cohort-every divorced interaction is 4.27 with 2 degrees of freedom difference, which fails to achieve statistical significance at the $p<.05$ level.

the own worker benefit outcome; it increases the likelihood of receiving own worker Social Security benefits, in comparison with auxiliary benefits, by a factor of about 2.1. Experiencing divorce increases the likelihood of being dually eligible for Social Security benefits, rather than eligible for auxiliary benefits, by a factor of 1.5. These results provide mixed support for Hypothesis 1. On the one hand, decreases in marital continuity, via divorce, do increase the likelihood of receiving own worker Social Security benefits, which supports Hypothesis 1. At the same time however, divorce also appears to increase the likelihood of being dually eligible for Social Security, which was not predicted by Hypothesis 1. Model 1 also reveals a significant and negative relationship between being a member of the younger HRS cohort and the dual eligibility outcome. Younger sample women are less likely to be dually eligible in comparison with auxiliary benefits by a factor of about 1.6. This finding contradicts the prediction made in Hypothesis 4 that younger women would be more likely to qualify for Social Security benefits based, at least in part, on their own work histories.

Finally, several of the control variables in Model 1 have significant relationships with the outcome variables. For the most part, the significance of these effects is robust across all future models. Exceptions will be noted below. In general, being black significantly increases the likelihood of receiving own worker Social Security benefits by a factor of about 1.7 in Model 1. Yet the effect of being black is in the opposite direction for the dual eligibility outcome. Black women are less likely to be dually eligible for Social Security benefits, in comparison with auxiliary benefits, by a factor of about 1.6. The impact of being Hispanic is

also significant and greater in magnitude in terms of its effect on dual eligibility. Hispanic women are less likely to be dually eligible for Social Security benefits by a factor of about 2.0 in Model 1. These findings for different racial subgroups of women are likely rooted in existing patterns of stratification and inequality, which produce differential patterns of work and family history by race (Kessler-Harris 2003; Tienda and Glass 1985).

Each year of education also significantly increases the likelihood of receiving own worker benefits, in comparison with auxiliary Social Security benefits, by a factor of 1.1. Additionally, being unmarried decreases the likelihood of receiving own worker benefits (by a factor of about 1.5) and being dually eligible (by factor of about 1.4) compared with receiving auxiliary benefits. Finally, the number of people in a household significantly reduces the likelihood of dual eligibility, but increases in the self-rated health measure and household wealth are both associated with an increased likelihood of own worker benefits.

Model 2 presents the results of a multinomial logistic model that includes the measure of length of longest marriage, birth cohort, and the control variables. In addition, Model 2 contains a term that captures the interaction between cohort and the length of longest marriage because model statistics show that it significantly improves model fit.[12] Again, in this model, there are significant relationships between the marital continuity measure and the outcome types. Each year of a respondent's longest marriage decreases the likelihood of receiving own worker Social Security benefits, in comparison with auxiliary

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[11] The χ^2 difference between averaged models using multiply imputed datasets with and without this interaction is 6.79 with 2 degrees of freedom difference, which is significant at the $p<.05$ level.

benefits, by a factor of 0.98. The likelihood of being dually eligibility for Social Security, however, is increased with each year of marriage by a similar magnitude (1.0). Both of these findings – increases in dual eligibility and decreases in own worker benefits – support Hypothesis 1. The interaction between length of longest marriage and birth cohort is not significant. Yet the main effect of being a member of the younger HRS cohort again significantly decreases the likelihood of being dually eligible for Social Security benefits (by a factor of about 1.4), in comparison to receiving auxiliary benefits. There is no significant effect of birth cohort on the own worker benefit outcome. As in Model 1, this finding seems to contradict the expectation of Hypothesis 4 that younger cohorts are more likely to receive Social Security benefits through their own work histories. The control variables included in Model 2 have similar effects as those described above in Model 1.

[Insert Table 2.2]

The results of multinomial logistic models that evaluate the effects of the family timing variables (Hypothesis 2) and birth cohort (Hypothesis 4) on Social Security eligibility types are found in Table 2.3. Model 1 includes the dummy for experiencing a first marriage after age 30, the birth cohort dummy, the interaction between later first marriage and birth cohort,[13] and control measures. Again the family covariate of interest, later age at marriage, is significant in this model. Experiencing a first marriage after age 30 increases the likelihood of receiving own worker benefits by a factor of about 1.5 and decreases the likelihood of being

[12] With a χ^2 difference in averaged deviance statistics across imputed models of 9.63 with 2 degrees of freedom difference, this term improves model fit significantly ($p<.05$ level).

dually eligible for Social Security by a factor of about 1.8. Thus, the main effects of delays in marriage do support Hypothesis 1, which predicts that such delays should increase worker benefits, but decrease dual eligibility.

The interaction between birth cohort and later marriage fails to reach significance in Model 1. Yet the main effect of birth cohort, as in Table 2.2, is significant for the dual eligibility outcome in comparison with auxiliary benefit receipt: being a member of the younger HRS birth cohort decreases the likelihood of dual eligibility by a factor of about 1.5. Again, this result, in conjunction with the non-significance of the relationship between birth cohort and the own worker benefit outcome, contradicts Hypothesis 4. Finally, the effects of control measures are robust and display similar relationships the outcome measure, as described above.

Model 2 of Table 2.3 includes the dummy indicator for having experienced a first birth after age 30, the birth cohort measure, and the set of control variables. An interaction term between delayed fertility and birth cohort is not included, following evidence from model fit statistics.[14] In this model, there is no significant relationship between having a first birth after age 30 and the likelihood of either receiving own worker Social Security benefits or being dually eligible, in comparison with receiving auxiliary benefits. Therefore, Model 2 fails to find evidence in support of Hypothesis 2, which predicts a significant association between family timing and Social Security eligibility type.

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[13] The χ^2 difference in averaged deviance statistics between models with and without this interaction term is 4.38, which is not significant at the $p<.05$ level with 2 degrees of freedom difference.

Again in Model 2 there is a significant, negative relationship between being a member of the younger HRS birth cohort and dual eligibility (reduces the likelihood by a factor of about 1.5). This finding, consistent with prior models, contradicts Hypothesis 4. Finally, the control measures have effects similar to previous models.

[Insert Table 2.3]

The models in Table 2.4 examine the effects of the two employment commitment measures: employment absence and earnings continuity. Model 1 of Table 2.4 includes the indicator of employment absence (i.e., a measure of the proportion of prime-age years (20-55) with no Social Security covered earnings), the younger HRS birth cohort dummy, an interaction between employment absence and birth cohort,[15] and the control measures. The main effect of the employment absence measure is significant and very large in magnitude for both the own worker benefit and dual eligibility outcomes. For a change in the entire range of the employment absence variable (i.e., from 0 to 1), the likelihood of receiving own worker benefits, in comparison with auxiliary Social Security benefits, is reduced by a factor of about 250. For each 0.1-change in employment absence, the likelihood of worker benefit receipt decreases by a factor of 25. And for this same 0.1-unit change in employment absence, the likelihood of being dually eligible for Social Security benefits, in comparison with receiving auxiliary benefits, is reduced by a factor of about 12.5. Although the interaction between cohort and employment absence is not significant, the main effects of

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[14] A χ^2 difference in averaged deviance statistics between models with and without this interaction term of 17.89 with 2 degrees of freedom difference warrants inclusion of the interaction terms since it significantly ($p<.05$) improves model fit.

employment absence provide support for Hypothesis 3, which predicts lower likelihoods of own worker benefits and dual eligibility for women who low levels of employment commitment.

When controlling for employment absence in Model 1, the younger HRS cohort dummy is significant for both model outcomes, in comparison with auxiliary benefits: own worker benefit and dual eligibility. Younger HRS women are less likely to be receiving own worker Social Security benefits by a factor of about 1.5 and less likely to be dually eligible for Social Security by a factor of about 2.2. These cohorts findings differ from prior models and directly contradict Hypothesis 4, which suggests that younger women should be more likely to receive own worker Social Security benefits and be dually eligible for Social Security. Interestingly, some of the control measures, which had significant and robust effects across prior models, lose statistical significance in Model 1 of Table 2.4. The effect of being black is no longer significant for the own worker Social Security benefit outcome although it is still in the expected direction. This is also the case with the number of people in household measure for the dual eligibility outcome. Finally, the dummy indicator for having private health insurance (coded "1" if yes), which had been non-significant in previous models, significantly reduces the likelihood of being dually eligible for Social Security, in comparison with receiving auxiliary benefits, by a factor of about 2.1 in Model 1.

Model 2 of Table 2.4 tests the effects of the earnings continuity measure (i.e., a dummy for whether or not a respondent has more than 20 years of covered earnings during prime ages (20-55); coded "1" if yes). This model includes the earnings continuity indicator,

the birth cohort dummy, an interaction between earnings continuity and birth cohort[16], and the full set of control variables. As in Model 1, Model 2 demonstrates the significant and substantively large relationship between earnings continuity and Social Security eligibility type. Having more than 20 years of covered earnings increases the likelihood of receiving own worker Social Security benefits by a factor of about 20.2 and increases the likelihood of being dually eligible for Social Security by a factor of about 9.1, in comparison with receiving auxiliary Social Security benefits. These results provide strong support for Hypothesis 3. Accumulating substantial experience in the paid labor market has a dramatic impact on type of Social Security benefit eligibility.

At the same time, however, the younger HRS birth cohort dummy is significant and negative, reducing the likelihood of receiving own worker Social Security benefits, in comparison with auxiliary benefits, by a factor of about 1.7. For the dual eligibility outcome, there is not only a significant, main effect of birth cohort, but also a significant and negative interaction effect between birth cohort and earnings continuity. For women who are both members of the younger HRS cohort and have experienced at least 20 years of covered earnings, their likelihood of being dually eligible for Social Security is increased by a factor of about 3.4 (9.135+(1/0.426)+(1/0.296)). Older sample women, however, experience a larger increase in their likelihood of being dually eligible: a factor of about 9.1. Thus, birth cohort not only appears to negatively impact own worker benefits and dual eligibility, but it also

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[15] The χ^2 difference between averaged models using multiply imputed datasets with and without this interaction is 16.86 with 2 degrees of freedom difference, which is significant at the $p<.05$ level.

mediates the positive effects of earnings continuity for younger HRS women. All of these birth cohort results contradict Hypothesis 4, which anticipates the opposite relationship. The effects of control variables in Model 2 are very similar to the findings of Model 1. It would appear, in particular, that adding in measures of women's prior work histories absorbs the previously positive relationship between being black and having own worker Social Security benefits, in comparison with auxiliary benefits.[17]

[Insert Table 2.4]

To get a better sense of the implications of parameter estimates presented in the tables, Figure 2.1 displays the predicted probabilities from Model 2 of Table 2.1. This graph shows the predicted probabilities of each of the three outcome categories across the continuous, years-of-marriage measure. These predicted probabilities are presented separately for white and black women as well for younger HRS cohort women and old HRS cohort women. In addition, estimates are net of the full set of variables includes in the model.

Several observations may be made from Figure 2.1. First, black women (represented by solid lines) have higher probabilities of own worker Social Security benefits, for both the younger and older cohorts, than white women (represented by dashed lines). Second, the relationship between length of marriage and own worker benefits decreases over time for all

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[17] As a supplement to the models presented in Tables 2.2, 2.3, and 2.4, a full model that contains all covariates capturing the effects of the life course predictors – marital continuity, family timing, employment commitment, and cohort change – was run. The results of this model are broadly consistent with the findings already discussed. Moreover, collinearity between the marital continuity and family timing variables is problematic. Additionally, because adjudication between life course mechanisms is not the focus of this analysis the full model is not discussed in more detail here. Results of this full model are presented in Appendix Table 2B.

women: longer marriage decreases the probability of receiving Social Security benefits as workers. Third, Figure 2.1 demonstrates how dual eligibility increases with years of marriage; although white women always have higher probabilities of dual eligibility than black women. Finally, the trend line between auxiliary benefits and length of marriage is flatter than the two other outcomes. The probability of this outcome is especially low for black women and white women from the younger birth cohort.

[Insert Figure 2.1]

Figure 2.2 graphs similar results from Model 1 of Table 2.4. Again this figure presents predicted probabilities for each of the three outcome categories across the continuous measure of employment absence (i.e., the proportion of prime-age (20-55) years with no Social Security-covered earnings) net of all the full set of model control variables.[18] Estimates are graphed separately for older and younger cohort women and for black and white women.

As is evident in Figure 2.2, the probability of receiving own worker benefits decreases for all women as employment absence increases. Black women (again represented by solid lines) from the younger HRS cohort start off with the highest probability of receiving Social Security worker benefits at low levels of employment absence. Older black woman have the next highest probability of worker benefits, but at higher employment absence values (i.e., employment absence>0.5) the predicted probabilities of young and old

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[17] Figure 2 graphs probabilities only for the range of 0-0.75 for the earnings absence measure since empty cells were encountered when attempts were made to estimate probabilities all the way to 1.0.

black women appear to cross over. In terms of dual eligibility, there seems to be slight increase as employment absence increases, with higher levels for white women (again represented by dashed lines) and older white women, in particular. Finally, the probability of receiving auxiliary Social Security benefits increases with employment absence. And, interestingly, the probabilities of receiving auxiliary benefits are higher among the younger cohort of white women in comparison with older white women, but this relationship is reversed for black women. Older black women have higher probabilities of auxiliary benefit receipt than black women from the younger birth cohort. Thus, both of these figures demonstrate how prior work and family experiences and birth cohort impact Social Security benefit eligibility. Moreover, they also highlight the importance of considering racial differences in life course mechanisms and retirement security.

[Insert Figure 2.2]

Conclusion

Going beyond descriptive accounts of women's access to Social Security benefits, this analysis examines several underlying life course factors hypothesized to influence benefit type. Although prior work has addressed the importance of women's marital and earnings histories for later access to Social Security benefits, this study goes further than previous studies to consider more specific mechanisms of women's prior life course experiences. Rather than analyzing aggregate trends in marriage and employment, the current investigation looks at the effects of women's individual marital and work histories for actual, later-life Social Security benefits. The models provide support for several of the proposed

relationships between women's earlier work and family experiences and the type of Social Security benefit they receive at older ages. In some instances, however, the results contradict hypothesized influences, pointing to a need for further research.

This study finds support for marital continuity as a significant predictor of the type of Social Security benefit that women receive. Longer marriages serve to decrease the likelihood of receiving own worker benefits, yet increase the likelihood of being dually eligible for Social Security. The other marital continuity measure, having experienced divorce, does significantly increase the likelihood of own worker benefits, as predicted. But ever having been divorced also increases the likelihood of being dually eligible, which is an unanticipated effect of marital discontinuity.

The results of models that investigate the family timing hypothesis provide support only for the role of delayed marriage. Waiting until after age 30 to be married significantly increases the likelihood of receiving own worker Social Security benefits. At the same time, this marriage delay decreases the likelihood of being dually eligible. These results are in line with hypothesized predictions. The relationship between Social Security benefit type and delayed fertility, however, fail to reach significance for either of the outcome alternatives. Waiting to have a first birth until after age 30 does not impact benefit eligibility, as was predicted.

Employment commitment, measured by proportion of time spent out of the paid labor force as well as earnings continuity, is an important factor in determining Social Security eligibility type. The models investigating this hypothesis demonstrate significant

effects, which are very large in magnitude. Being absent from paid employment for larger stretches decreases the likelihood of both receiving worker benefits as well as being dually eligible, in comparison to receiving auxiliary benefits. Conversely, possessing a significant earnings history (i.e., more than 20 years) significantly increases both worker benefit receipt and dual eligibility. Additionally, the effects of these employment commitment measure appear to account for the previously significant racial differences in own worker benefits. More specifically, when employment commitment measures are included in models there is no longer a significant, positive effect of being black for the retired worker benefit outcome. This finding suggests that much of the black-white differences in this outcome are a result of differences in labor market histories between subgroups of women.

When placing the above findings in the context of retirement insecurity it is important to remember that women's receipt of own worker Social Security benefits may not always be beneficial. Increases in employment commitment, divorce, and delays in marriage increase the likelihood of receiving own worker benefits. At the same time, however, women's lower earnings on average also suggest that their own worker benefits are likely to be paid out in lower amounts than other types of Social Security benefits, particularly auxiliary benefits. Dual eligibility in the Social Security program means that women qualify for their own retired worker benefits, but that the auxiliary benefit to which they are also entitled through marriage provides a higher benefit than their retired worker benefit alone. Thus, until women's lifetime earnings approach the lifetime earnings of their

husbands, dual eligibility and auxiliary benefits are likely to provide more economic security in retirement than their own Social Security worker benefits.

Finally, one surprising finding in this analysis relates to the cohort change hypothesis. Across models, there is generally a lack of significant cohort effects on the worker benefit outcome in conjunction with significant, but negative cohort effects for the dual eligibility outcome. These results run counter to predictions that younger birth cohorts should be more likely to receive own worker benefits and to be dually eligible for Social Security benefits. This surprising finding is most likely a result of a less-than-ideal cohort comparison. Ideally, the theory of cohort change would be evaluated by comparing a wider range of birth years. This study uses an earlier birth cohort of HRS women (born 1931-1935) and a later birth cohort of HRS women (born 1936-1941). Unfortunately, these women may be more likely to be sisters within the same meaningful birth cohort rather than individuals who were born and aged through significantly different historical periods. Birth cohorts younger than the original HRS cohort are not considered, however, due to the extremely low match rates between HRS data and SSA restricted access files for women born after the 1940s. Yet the major cohort changes described by previous research are evident among Baby Boomer women.

Thus, a fuller evaluation of the cohort change hypothesis necessitates a comparison between the HRS cohort and the Baby Boomer cohort (born 1946-1964). As additional, HRS-SSA data permission waves become available, this wider comparison may be possible. Alternatively, other datasets could be used to test this hypothesis. The Survey of Income and

Program Participation (SIPP) has a much higher match rate for SSA earnings data (92 percent) and has been used by other researchers (see Bridges and Choudhury 2005, 2007) to look at the effects of respondents' prior work histories.

Despite HRS data limitations regarding the cohort comparison, the results of this analysis suggest at least one important direction for future research. Investigating the role of life course factors for women's Social Security eligibility type separately by population subgroup would be useful. In particular, the models in this study demonstrate the importance of race (i.e., being black or of Hispanic origin) for Social Security benefit outcomes. Further investigation would reveal whether life course factors operate differently among subgroups of women. Additionally, future research should focus on how cohort change may differentially impact these groups of women.

Chapter 3. The Timing of Women's Access to Occupational Pensions: Life Course Factors and Cohort Change

Introduction

Paid employment is the primary source of economic security for Americans. Jobs provide earnings during working ages. But other important forms of social protection, such as health insurance and pensions in retirement, are also linked to employment. Scholars classify the U.S. welfare system, based on its overall package of social policies, as a liberal model in which labor market institutions dominate the provision of social protections and public, state-financed programs are less prominent (Esping-Andersen 1990, 1999; Korpi 1990). Therefore, Americans with high-paying, high-status jobs, which also tend to come with health care and retirement benefits, are likely to fare well economically. Other individuals and groups who do not participate in the labor market or do not experience relative success in employment are not so fortunate.

Because of the importance of participation in the paid labor market for income security, women generally face disadvantages. On average, women's lower earnings (Blau and Kahn 1992, 2000, 2003; Gornick 2004), greater likelihood of part-time and non-standard employment (U.S. Department of Labor 2008; Wenger 2003), and discontinuous work histories (Stier et al. 2001) translate into poorer economic outcomes. These employment-related deficits not only impact women's working lives, but also lead to greater risks in retirement. Although poverty rates for men and women are similar at younger ages, the gap between men's and women's poverty widens over time, doubling by retirement (Cawthorne 2008; U.S. Social Security Administration 2009b).

One way to understand the precarious position of older women is through the concept of "retirement insecurity." Retirement insecurity refers to a lack of access to economic resources in old age as well as low levels of these resources over the period of retirement. Across affluent countries like the U.S., there are systems in place that attempt to mitigate the risks of retirement insecurity. These retirement systems are often conceptualized as having three pillars, composed of public pensions from the state, occupational pensions from employer, and private savings (Clark et al. 2004; Crown 2001; Engelen 2006; Immergut et al. 2006; Thompson 2006; World Bank 1994). In the U.S., the three pillars, (also referred to as "legs") of retirement provision include: 1) the public Social Security program; 2) employer-provided pensions; and 3) private, individual wealth, including wealth from savings vehicles like IRAs (Kingson and Williamson 2001; Thompson 2006). The Social Security program covers most older Americans. This first pillar, public program pays out benefits to 49.9 million, with about 89 percent of all married couples and unmarried individuals aged 65 and older receiving benefits (U.S. Social Security Administration 2008). Yet the near-universal coverage of Social Security contrasts with American's access to occupational pensions, the second pillar of the U.S. retirement system. As described in more detail below, there is substantial inequality, particularly across gender, in employer-provided pensions as a retirement resource.

Women's differential access to occupational pensions is part of the story of their retirement insecurity. To understand the processes through which these economic disadvantages in retirement are possible for older women in U.S., the current study uses

longitudinal data and discrete-time event history models to analyze the pattern of first receipt of employer-provided pension income for U.S. women ages 51-65. This study will attempt to understand how the earlier life experiences of women in the family and labor market lead to differential patterns of access to pension income in later life. Additionally, because of significant changes in work and family roles over the last century, this analysis will also consider the role of birth cohorts in the receipt of occupational pension income.

The current study seeks to make several contributions to the literature on older women's economic insecurity. First, an attempt is made to link women's earlier life family and work experiences to the rate of first pension receipt. Following a life course perspective, the cumulative effects of various types of social roles are considered. Second, the paper compares two U.S. birth cohorts. As described below there is reason to suspect structural changes in access to employer pensions between an older cohort of women born in the 1930s and a younger cohort born in the 1940s and early 1950s. Third, the models in this analysis go further than cross-sectional studies of access to pensions to investigate the timing of pension income receipt via event-history models. Although several prior studies have considered the role of prior work histories in relation to both access and type of employer pension received by women (Farkas and O'Rand 1998; Ginn and Arber 1996; Ginn et al. 2001), the current analysis adds a timing component through the use of hazard models, which provide findings on the rate of pension income access as well as the significance of predictors that influence this rate.

Background

Occupational Pensions in the U.S.

The second pillar in the U.S. retirement system is comprised of market-based, occupational pensions. Occupational pensions are voluntary benefits provided by employers. Consequently, these pensions do not cover the entire U.S. population. Currently, about 50 percent of private workers are covered by occupational pensions at their jobs (Federal Interagency Forum on Aging-Related Statistics 2008b; O'Rand et al. 2009). More specifically, Thompson (2006) finds that, in 2001, 62 percent of all wage and salary employees aged 21-64 worked for an employer that offered a plan (with a higher rate for full-time, full-year employees: 68 percent). Eighty percent (and 88 percent of full-time, full-year workers) of these employees participated in the occupational pension plans offered. Although occupational pensions are an important part of the U.S. retirement system, they are more unevenly distributed across the older population than other retirement resources, such as Social Security. To put these pensions in perspective, only the top income quintile of older Americans receive more income from employer-provided pensions than from Social Security, the public, first pillar retirement program in the U.S. (Thompson 2006).

After a period of general expansion of occupational pensions following World War II (Seburn 1991), more recently the U.S. has experienced major changes in the structure of this type of pension. There has been a large-scale shift from employer-provision of defined benefit (DB) pension plans to defined contribution (DC) pensions plans (e.g., 401(k) plans) over the last 30 years. Between 1974 and 2004, there was a 24 percent decrease in the

number of American workers participating in traditional DB pensions, and a 366 percent increase in the number of workers participating in DC plans (U.S. Department of Labor 2007). In 2001, 25 percent of Americans between the ages of 21 and 64 owned a 401(k)-type, DC account.

There are several important differences between DB and DC pension plans, including the structure of contributions, the allocation of investment risk, and the form in which benefits are paid (Clark et al. 2004; Shaw and Hill 2001; VanDerhei and Copeland 2001). In DC plans, contributions are made into pension accounts by both the employer and employee, neither of which is mandatory. Contributions to DB plans, however, are fully funded by the employer. There is also a shift in the investment risk of the contribution structure between DB and DC plans. This risk falls solely on the employer in DB plans. But employees assume an increased investment risk in DC plans (O'Rand et al. 2009; Shuey and O'Rand 2004). Finally, benefits in DB plans are typically awarded to workers upon retirement as lifetime annuities with benefit levels based on the number of years of employment and the employee's salary. In DC plans, however, benefits are often paid out in lump sums rather than lifetime annuities. The consequences of this structural shift in employer pension provision have important implications for women's access to pensions.

Gender and Occupational Pensions

Previous research demonstrates the disadvantages that women face in access to occupational pension income. Researchers have documented that women, in general, have lower rates of participation in employer-sponsored pension plans (Ginn and Arber 1996;

Ginn et al. 2001; Hardy and Shuey 2000). Among all workers age 16 and older, 44.3 percent of women currently were covered by an occupational pension in 2003, in comparison with 47.0 percent of men. Among retirees age 65 and older in 2003, 38.4 percent of women and 46.6 percent of men were ever covered by an occupational pension over the course of their lives (Verma 2006). In general, women's pension disadvantages are linked to their previous, and often limited or discontinuous, experiences in the paid labor market (Ginn and Arber 1996; Ginn et al. 2001).

Johnson (1999) concludes that the gender gap in pension coverage has actually worsened over the last quarter century. This study attributed two-thirds of the pension coverage gender gap to women's lower earnings at their current jobs. In addition, some of this gender pension gap is also a result of lower combination pension coverage (i.e., having both a DB and DC employer pension) for women (13 percent) than men (24 percent). Shaw and Hill (2001) find near gender equality in employer pension access among full-time workers; but part-time workers, who are disproportionately women, are still at a disadvantage in terms of pension access. Among older workers (aged 45-65), 35 percent of women in this study report that they work too few hours to be eligible for a pension from their employer and 44 percent of older female employees lack a pension compared with 35 percent of male employees. Not only has the gender gap in pension coverage widened, but women's median pension income did not significantly increase over the past 30 years although men's median pension income increased by 13 percent (Johnson 1999).

In another study comparing women's access to pensions over time, Farkas and O'Rand (1998) find that women from younger birth cohorts (born 1944-1953) are more likely to have an employer-sponsored pension than older women (born 1928-1937). Yet members of this younger cohort are also more likely to have a defined contribution pension available to them, which involves additional economic risk. Despite advances related to increased pension coverage among more recent birth cohorts, researchers also highlight the economic risks for women associated with this newer pension type (Hardy and Shuey 2000; Munnell and Sass 2005; Shuey and O'Rand 2004). These risks include smaller pension amounts due to women's lower wages, lower contributions, and lower employer pension matches. Additionally, defined contribution pensions are vulnerable to the financial risks inherent in market cycles. Women face longevity risks of outliving their defined contribution savings, as well as lower retirement income due to women's longer life expectancy in combination with different legal regimes for 401(k) plans, which allow for different monthly benefits via gender-graded annuities.

The Role of Life Course Factors in Shaping Women's Access to Pension Income

Much of the existing research on gender and occupational pensions is descriptive. Yet several mechanisms for understanding women's limited access to occupational pension income have been suggested. Most broadly, the disadvantages that women face when it comes to employer pensions may be understood through a life course perspective. The early-life economic disadvantages that women face in maintaining participation in the paid labor force and securing adequate income and employer benefits, such as occupational pensions,

are connected to late-life economic outcomes. Women experience a "gendered" life course (Moen 2001) in which the unpaid caregiving demands of family roles often conflict with the structure of paid formal employment. In this way, the effects of women's prior work and family experiences accumulate to produce their eventual outcomes in retirement. This theory of cumulative disadvantage highlights the manner in which prior inequalities are amplified through the life course (Crystal and Shea 1990; Dannefer 2003; O'Rand 1996).

Four specific, life course causal mechanisms help to explain the cumulative disadvantage that women face in access to pension income. First, *marital continuity* is linked to economic outcomes in retirement. More specifically, increases in the duration of marriage and fewer marital dissolutions may be positively related to increases in access to pension income at older ages. There is a large body of research investigating the consequences of marital dissolution for economic security at older ages. Women who have experienced widowhood (Angel et al. 2007; Holden and Kuo 1996; Karamcheva and Munnell 2007; Smock 1993; Wilmoth and Koso 2002; Zick and Holden 2000) or divorce (Burkhauser et al. 2005; Butrica and Iams 2000; Holden and Kuo 1996; Smock 1993; Smock et al. 1999; Wilmoth and Koso 2002) have lower levels of income and wealth. In a review of the decline in economic status for women following divorce and widowhood, Holden and Smock (1991) emphasize the way that short-term and longer-term costs of parenthood for women are linked to economic security. Therefore, because of the link between income/wealth and occupational pension benefits (O'Rand and Henretta 1999, Shuey and O'Rand 2004;

Thompson 2006), there is reason to believe that factors related to marital continuity will impact timing and access to occupational pension income.

> *Hypothesis 1*: Marital continuity is significantly related to the rate at which women first receive occupational pension income. Increases in marital continuity increase the rate of pension receipt, but decreases in marital continuity decrease the rate of pension income receipt.

Second, social timing, specifically *family timing*, is another life course mechanism likely to affect older women's access to pension income. In particular, the timing of events such as age at first marriage and age at first birth has changed over the course of the last century. Women have experienced delays as well as increased heterogeneity in the timing of these key events (Cherlin 1992, Forest et al. 1995; Hughes and O'Rand 2004; Morgan 1996). Most importantly, the timing of family roles in women's lives has consequences for later economic outcomes. For instance, Hanson (1983) finds significant relationships between the timing of a woman's first birth and first marriage in relation to later economic attainment: a positive association between early marriage and economic outcomes, but a negative relationship between early childbearing and attainment. Several other studies find that family timing delays, in marriage (Chandler et al. 1994) and childbearing (Blackburn and et al.1993; Chandler et al. 1994), also yield economic benefits for women. It seems plausible that these benefits to changes in family timing would extend to economic resources in retirement, such as pension income receipt.

> *Hypothesis 2*: Family timing significantly affects the rate at which women first receive occupational pension income via delays in family roles. Increases in the age at which women marry and give birth increase the rate of pension receipt.

Employment commitment is a third life course mechanism likely to impact access to pension income for women. As reviewed above, part of women's disadvantage in pension coverage is due to their differential patterns of employment (Johnson 1999). Women, at an aggregate level, are more likely to work in part-time (Drobnic and Wittig 1997; U.S. Department of Labor 2008) or non-standard, contingent jobs than men (Wenger 2003). These types of positions, in turn, are less likely to offer employer pensions and more likely to pay lower wages. Additionally, women often accumulate discontinuous work histories as they move in and out of the paid workforce to accommodate childcare and other family responsibilities (Stier et al. 2001). Research by Ginn and colleagues (Ginn and Arber 1996; Ginn et al. 2001) on women in the U.K. and by Farkas and O'Rand (1998) on U.S. women demonstrates a link between prior employment circumstances and access to employer-provided pensions. Thus, it is likely that employment commitment is also related to the timing of access to occupational pension income for women.

> *Hypothesis 3*: Employment commitment positively affects the rate at which women first receive occupational pension income.

C*ohort change* is a final mechanism that might help explain women's access to pension income. There have been significant structural changes across cohorts in the work and family characteristics of American women. For instance, Hughes and O'Rand (2004) highlight the increases in education and employment, delays in marriage and shifts in childbearing, as well as increases in social heterogeneity and inequality among the Baby Boom cohort (born 1946-1964). This cohort aged through life at a time of social change, but many of the trends evident in the Baby Boomer cohort began in the War Babies cohort,

born right before the Baby Boomers. Thus, cohort change is likely to impact the timing of access to employer pension income. For instance, Farkas and O'Rand detect a "changing opportunity structure for retirement saving" (Farkas and O'Rand 1998, p. 1008) among younger birth cohorts, in which changes in women's education, labor force attachments, and income impact retirement resources. Therefore, it is likely that the rate of occupational pension receipt varies by U.S. birth cohort.

> *Hypothesis 4*: There are significant differences across birth cohorts in the rate of access to pension income. Members of the younger cohort are likely to display an increased rate of first pension receipt.

Methods

Data

In order to examine older women's access to occupational pension income, longitudinal data are needed. Moreover, an investigation of the role of prior work and family statuses across birth cohorts for pension access requires comprehensive measures of women's work and family histories. This study makes use of both publicly-available and restricted access data from the Health and Retirement Study (HRS). The HRS is a multi-stage area probability sample of households. The full HRS sample includes about 12,650 individuals from nearly 7,600 households. African-Americans, Hispanics, and Floridians are over-sampled in these data. The HRS was initiated in 1992 with a sample of individuals aged 51-61 and their spouses. The survey is re-administered every two years and, as of 2006, contains eight waves of data. Additionally, four cohorts of older Americans have been added since 1992. The HRS is based on a "steady state" model that provides nationally

representative data on the U.S. population over age 50. It follows individuals and their spouses from survey entry until death. It also introduces a new 6-year birth cohort every 6 years (National Institute on Aging 2007).

The HRS contains extensive health, demographic, wealth, income, and family structure data on its respondents and their spouses. For this analysis, eight waves of data on female members of the three most recent HRS birth cohorts are utilized. These cohorts include: the initial Health & Retirement (HRS) cohort, in which respondents are born 1931-1941; the War Babies (WB) cohort, which includes respondents born 1942-1947; and the Early Boomers (EBB) cohort, in which respondents are born 1948-1953.

For the purposes of this analysis of timing and access to pension income, the original HRS cohort (born in the 1930s) is compared to a younger cohort that collapses the WB and EBB cohorts (born in the 1940s/1950s). The WB and EBB cohorts are combined for two reasons. First, empirically, a combined WB and EBB cohort allows for additional cases in the models. More importantly, when these cohorts are combined it is possible to construct an age range that is comparable to the HRS cohort. For the purposes of this analysis, the sample is composed of women aged 51-65 from both of these cohorts, thus enabling comparison between them. The second reason for collapsing the WB and EBB cohorts in models is theoretical. Many of the important changes that women have experienced in work and family roles over recent decades were first evident in the War Babies cohort and intensified with the Baby Boomers (Hughes and O'Rand 2004; Goldin 2006). Until future waves of the Health and Retirement Study are available, which provide information on

younger Baby Boomers who have aged into their 60s, combining the Early Boomers with the War Babies makes theoretical and empirical sense.

The bulk of the data for this analysis comes from the RAND HRS Data file (Version H). The RAND HRS is a user-friendly version of the HRS that contains cleaned, processed variables and offers extensive documentation (RAND 2008). Whenever possible, measures are taken from RAND data for use in models. When data were unavailable from the RAND file, two alternative sources were used. First, for several of the prior family experience variables the raw HRS files are used to provide measures. These publicly-available raw files contain substantial noise and missing values.[1] Yet for certain covariates, the raw HRS files are the only data source. Second, the project also draws on restricted access data for the work history measures. HRS restricted access data, which contain sensitive and identifiable respondent information, are available through special agreement with HRS administrators.[2] Access to one type of HRS restricted access data has been secured for this project: U.S. Social Security Administration (SSA) records that provide respondent earning and benefit information for study respondents who grant permission. In general, these SSA data contain 1) records of the work and earnings histories for individuals covered by the Social Security

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[1] For problematic issues regarding the construction of marital histories from raw HRS files, see Holden and Kuo (1996) and Wilmoth and Koso (2002).
[2] Among other requirements, restricted data users must develop a data security protocol, designed to protect respondent confidentiality, to be approved by both the HRS and the researcher's own Internal Review Board.

program and 2) records of Social Security, Supplemental Security Income, and Disability benefit payments.[3]

The advantage of these SSA restricted data is their comprehensive labor market history for respondents. The publicly-available HRS data contain measures related only to a respondent's current or past several jobs. Like many surveys, the HRS public files lack information regarding complete labor market experiences for participants. Therefore, the SSA data on years of covered earnings under Social Security provide a unique and comprehensive source of individual labor market histories.

At the same time, however, the SSA data provide several challenges. For instance, these data are administrative records rather than survey results. Consequently, the data files are inherently user-unfriendly.[4] Limited documentation increases the difficulty of working with these data. Additionally, there is an element of selectivity involved in using the SSA data. In the first place, in order for an HRS respondent to have a SSA record to link, she must have engaged in paid, SSA-covered employment at some point over her life. Second, it is reasonable to expect that HRS permissions to link with SSA records are not randomly distributed throughout the overall HRS sample.[5] Despite these difficulties, however, the benefits of the SSA restricted data argue for their inclusion.

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[3] At various points in time, HRS respondents have been asked to sign permissions to link their HRS data with SSA records. These permissions have been released in 1992, 2000, 2004, and 2008. The set-up of the data files at each of these four permission dates varies, increasing the difficulty of consistent coding across cohorts.
[4] See Mitchell et al. (1996) for details on initial 1992 SSA data files.
[5] As discussed below, in models that draw on SSA restricted access data, RAND HRS sampling weights are used when running models to address this selectivity problem.

Outcome Variable and Risk Set

The outcome variable for this study is a combination of two pieces of information: first, whether an event (i.e., onset of pension income receipt) happens; and second, how long (i.e., the duration, as measured by age) it takes for the event to happen. The event in question is women's access to occupational pension income. This time-varying measure comes from the RAND HRS dataset, which provides information on the sum of a respondent's income from all pensions and annuities. A binary measure is used, which takes on a value of "1" if the respondent receives any pension income in a given survey year and coded "0" if the respondent is not receiving pension income for that year.

Across all waves of data 20 percent of women are receiving any pension income; 24 percent for HRS cohort women and 14 percent for the combined WB/EBB cohort women. Although this measure does not distinguish between pension income received from a woman's own plan participation versus the possibility that she is drawing income from a husband's pension or annuity (e.g., to which she might be entitled based on widowhood status), the rates of women's pension receipt in these data are comparable to other estimates of women's own pension receipt. For instance, the Employee Benefit Research Institute (2009) calculates that, in 2008, 3.3 percent of women aged 50-55, 10.6 percent of women aged 56-60, and 19.4 percent of women aged 61-65 were receiving employment-based pensions.

The risk set for these data includes all respondents who are subject to the risk of beginning to receive a pension. Therefore, only respondents who have not yet experienced

the event of beginning access to pension income are included in this risk set. The risk set for this project includes an overall N of 9,114 women with 5,127 HRS cohort women and 3,987 combined WB/EBB cohort women.[6]

For this analysis, the time that it takes before a respondent receives any pension income is measured by respondent age. As the age of each respondent increases, the risk set evolves as respondents are excluded from the risk set when they first receive pension income. Alternatively, some respondents do not experience the event within the age range of the analysis. Such respondents are considered to be right censored, a situation that event-history models are designed to accommodate (Blossfeld et al. 2007; Singer and Willet 2003).

To understand the underlying patterns of the sample data, Figures 3.1 and 3.2 plot the survival and cumulative hazard functions, respectively, for the entire sample as well as respondents born in the 1930s (the HRS cohort) and respondents born in the 1940s/1950s (the combined WB/EBB cohort). The survival function plots the probability of surviving in a state of receiving no pension income at a given age. As can be seen from Figure 1, this survival function decreases over time. Specifically, respondents who are not receiving pension income by age 60 drops to around 93 percent for all respondents, 96 percent for respondents born in the 1930s, and 85 percent for respondents born in the 1940s/1950s.

[Insert Figure 3.1]

The cumulative hazard rate is a complement of the survival function. The shape of this cumulative hazard rate provides an overall impression of whether the hazard rate of

[6] This combined WB/EBB cohort contains 2,056 War Babies cohort women and 1,931 Early Boomer cohort women.

receiving pension income is constant (if the cumulative hazard rate is a straight line), increasing (if the cumulative hazard rate is a concave line), or decreasing (if the cumulative hazard rate if a convex line). Judging from Figure 3.2, the cumulative hazard rate of receiving occupational pension income is concave, implying an increasing hazard with age. Across the entire age range it seems that the cohort born in the 1940s/1950s face a higher cumulative hazard of receiving pension income.

[Insert Figure 3.2]

Covariates

In addition to understanding the descriptive patterns of the underlying survival and cumulative hazard rates presented above, this analysis will incorporate several types of covariates hypothesized to affect the timing of access to occupational pension income. First, *age* is the metric of duration used in the analysis. Sample respondents vary in age from 51 to 65. Additionally, four types of explanatory covariates capture marital continuity, family timing, employment commitment, and cohort change.

The marital continuity measures include a dummy variable for *ever divorced* (coded as "1" if yes) and a continuous indicator of the *length of respondent's longest marriage* (measured in years). Both of these predictors are time-varying and constructed from the HRS RAND data files. Additionally, the models include two measures of family timing: a dummy that captures whether a respondent had a *first marriage after age 30* (coded "1" if yes) and a dummy for *first birth after age 30* (coded "1" if yes). These family timing covariates have been constructed

using the HRS raw files and are time invariant.[7] Employment commitment is also operationalized by two measures: first, *employment absence*, the proportion of prime-age years (20-55) with no earnings at all, and, second, *earnings continuity*, a dummy measure of whether or not a respondent had more than 20 years of earnings during prime ages (20-55).[8] These time-invariant, employment commitment measures come from the SSA restricted access data files of quarterly earnings records. Cohort change is included in models as a dummy variable that attempts to capture the effect being in the younger cohort *born in the 1940s/1950s* (i.e., being a member of the combined War Babies/Early Boomer cohort as opposed to the original HRS cohort). In addition, possible interaction effects between cohort and the other work and family covariates are tested and included in models where model fit statistics warrant.

Finally, full models used in this analysis also include a set of control variables. Measures of race are included. Full models contain two dummy variables capturing the effects of being *black* and *Hispanic* (in both cases, the omitted reference category is non-Hispanic white). Additionally, *education* is included with a measure of years of completed education. Marital status is captured in models using a dummy measure for being *unmarried*

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[7] There is missing data present in covariates constructed using HRS raw files. In addition, there were also 94 suspicious cases in the age at first marriage and 132 suspicious cases in the age at first birth measure. These cases involved incomplete or inconsistent reporting that made measure construction impossible. This magnitude of suspicious cases is comparable to the level found by Holden and Kuo (1996) and Wilmoth and Koso (2002). And, following these precedents, suspicious cases are treated as missing values.

[8] These two measures of employment commitment have a substantial amount of missing data: 24.4 percent missing for the entire sample, 6.0 percent among the HRS cohort, and 57.1 percent for the WB/EBB cohort. Due to this level of missingness, several steps are taken to correct for possible selectivity in models that use these two measures. As explained in more detail below, I explore the use of population weights as well as multiple imputation techniques.

(omitted reference category is married). A continuous measure of *number of people in household* is also used. An indicator of *self-rated health* (ranging from 1 to 5, with higher values indicating poorer health) and a measure of whether or not a respondent has employer-provided *health insurance* (coded "1" if yes) are also included. Finally, two control covariates measure the effects of other types of economic resources: the natural logarithmic transformations of the 2008 real values of *total respondent earnings* and *total household wealth* (i.e., the net value of total household wealth, including secondary residence, minus all household debt). With the exception the race and education measures, all other control variables are time-varying. Weighted, person-period descriptive statistics for all covariates used in models, including the outcome variable, are found in Table 3.1.

The Model

For this study, I use discrete-time event history models to analyze women's access to pension income across age. The discrete-time event history model deals with time by explicitly incorporating it as a function of the model. Discrete-time event history models are appropriate when the data are only updated on a discrete or infrequent basis (Blossfeld et al. 2007; Singer and Willet 2003). In this case, since data collected from the HRS waves is spaced two years apart, a discrete-time event-history model is preferable to a continuous model, such as a Cox regression. Like the cross-sectional logit model, the discrete-time event history model uses a logistic function to link binary variables to a set of linear predictors. The model, which may be written out as $\log[P(Y=1)/(1-P(Y=1))]=\beta' x(t)$, is estimated using maximum likelihood estimation.

In the first stage of analysis, various specifications for the functional form of the discrete-time event history model are examined and compared. After a preferred functional form has been identified models are run that include, first, explanatory covariates only (i.e., age, cohort, family and work variables) and, second, add in control variables.

[Insert Table 3.1]

Results

Before considering the effects of the predictors for the timing of women's access to pension income, this analysis first tests several functional forms to be used in the discrete-time history models. With age as the unit of time, a series of nested polynomials – constant, linear, quadratic, and cubic – were run to determine which form best fits the data. In addition, a more general functional form that includes dummies for various age periods (i.e., ages 51-65 split into three dummies for 1) ages 51-55, 2) ages 56-60; and 3) ages 60-65) was considered. Using deviance statistic comparisons for nested models and the BIC statistic for non-nested models, a linear form of age was preferred (Deviance=21700.96 with 2 degrees of freedom; BIC=21717.28) over a constant model (Deviance=23409.23 with 1 degree of freedom; BIC=23417.39 – the significant χ^2 difference in deviance statistics between the constant and linear models is 1708.27, which is highly significant for 1 degree of freedom difference), quadratic (Deviance=21699.66 with 3 degrees of freedom – which is not significantly better fit over the linear form with a non-significant χ^2 difference in deviance statistics of 1.31 for 1 degree of freedom difference; BIC=21724.13), or cubic form

(Deviance: 21698.3 with 4 degrees of freedom – which is not significantly better fit over the linear form with a non-significant χ^2 difference in deviance statistic of 2.67 for 2 degrees of freedom difference). Moreover, the non-nested, more general age-dummy form did not improve fit either with a larger BIC statistic (Deviance: 21838.01; BIC=21870.64). Therefore, age is entered into all models in a linear form.

Tables 3.2, 3.3, 3.4, and 3.5 contain all results of discrete-time even history models run for this analysis. Parameter estimates are displayed as odds ratios for predictors of rates of pension income receipt. Table 3.2 provides estimates of the effects of the birth cohort dummy without other work or family covariates. Model 1 of Table 3.2 contains no explanatory work or family covariates and no control variables. Model 2 in Table 3.2 adds in the control variables described above. In both of these models, each year of age significantly increases the rate of accessing pension income by about 24 percent. Additionally, being a member of the younger cohort born in the 1940s/1950s, in comparison with the older cohort born in the 1930s, significantly increases the rate of receiving pension income. With the full set of controls added in, being a member of the younger cohort increases this rate by 58 percent.

Net of the effects of birth cohort, many of the controls have significant effects that are fairly robust to the inclusion of additional explanatory covariates in other models. For instance, each additional year of education significantly increases the rate of receiving pension income by about 17 percent. Being black, in comparison to non-Hispanic white, also significantly increases the rate of first pension receipt by about 30 percent. The effect of

being Hispanic, however, is not significant across models. Being unmarried also has a large (more than 100 percent) and significantly positive effect on the rate of receiving pension income. Each additional household member decreases the rate of pension income access by about 9 percent. Poor health also has a significant and negative effect on the outcome (i.e., each unit increase in self-rated health, in which higher values indicate poorer health, decreases the rate of pension income receipt by about 4 percent). Having access to private health insurance, however, significantly increases the rate of access to pension income (by about 157 percent). Most likely, this finding suggests the health insurance is another indicator of high-quality jobs, in which employment-related benefits are bundled. Respondents' earnings have a significant and negative effect of the rate of outcome, but total household wealth increases the rate of pension income access.

[Insert Table 3.2]

Table 3.3 addresses Hypothesis 1 by including the two marital continuity covariates. Models 1 and 3 of Table 3.3 first exclude the set of control variables, which are added in Models 2 and 4. The effect of ever having been divorced in Model 1 is marginally significant and negative. Yet when control variables are added in Model 2 to account for compositional effects of the sample it becomes significant at the $p<0.01$ level. In this model, women who have ever experienced a divorce have 26 percent lower rate of access to pension income. As in prior models, each additional year of age increases the rate of pension receipt (by 25 percent in Model 2) and being a member of the younger birth cohort also increases the rate of the outcome in question (by 56 percent in Model 2). Additionally, in all of the marital

continuity measures the addition of an interaction term between the younger birth cohort dummy and marital continuity measure significantly improves model fit.[9] In Model 1, the interaction between cohort and ever experiencing divorce is significant and positive. But this effect is no longer significant in Model 2.

Models 3 and 4 of Table 3.3 include a measure of the length of a respondent's longest marriage. Additionally, as in Models 1 and 2, the inclusion of an interaction between cohort and length of marriage is included due to model fit improvement.[10] The main and interaction effects of cohort and length of marriage are significant and robust to the inclusion of control variables. Being a member of the younger cohort increases the rate of pension receipt by 114 percent. For members of the older cohort born in the 1930s each additional year of their longest marriage increases the rate of pension receipt slightly by almost 1 percent ((1.009-1) + (0)*(1-0.989)). For members of the younger cohort, however, each additional year spent in their longest marriage actually has a negative effect; each year spent in this marriage reduces the rate of pension receipt by 0.2 percent ((1.009-1) + (1)*(0.989-1)).

Based on these marital continuity models presented in Table 3.3, it seems that there are significant effects for older women's pension receipt related to the duration and constancy of their marital relationships. More specifically, divorce, a measure that captures the inverse of marital continuity, decreases the rate of pension receipt for all women. The

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[9] The significant $\chi 2$ difference in deviance statistics between uncontrolled models with and without this interaction is 5.29, which is significant for 1 degree of freedom difference at the $p<0.05$ level.
[10] Again, there is a $\chi 2$ difference in deviance statistics between uncontrolled models with and without this interaction of 17.46, which is highly significant for the 1 degree of freedom difference at the $p<0.01$ level.

main effects of the length of marriage, which measures duration, are also significant and in the expected direction, increasing the rate of occupational pension receipt in the full model. These findings provide strong support for Hypothesis 1. The results of these models also have implications for Hypothesis 4 on cohort change. The divorce models support Hypothesis 4 that younger women have an increased rate of pension income receipt. Specifically, the main effect of being born in the younger cohort and the interaction between ever having divorced and the younger cohort are both significant and positive. Yet the length of marriage models display mixed results for Hypothesis 4. Although the main effect of being born in the younger cohort is significant and positive, the interaction effects are in the opposite direction from what was expected. For the older cohort, the longevity of a marriage significantly increases the rate of pension receipt. Yet for the younger cohort, there is small effect in the opposite direction.

[Insert Table 3.3]

The two family timing covariates, relevant to Hypothesis 2, are included in the models in Table 3.4. In Model 1 of Table 3.4, the effect of later marriage (after age 30) is marginally significant without the inclusion of control measures. In the model with the full set of controls (Model 2), however, this effect is highly significant (at the $p<0.01$ level) and negative, reducing the rate of pension income receipt by 21 percent in the model with the full set of controls (Model 2). As in previous models, there is a significant and positive effect of age (each additional year increases the outcome hazard rate by 24 percent in Model 2) and of being a member of the younger birth cohort (an increase rate of 61 percent in Model 2).

For all models in Table 3.4, the addition of an interaction term between cohort and family timing covariate does not significantly improve model fit and does not produce significant parameter estimates.[11]

Models 3 and 4 investigate the effects of later fertility (first birth after age 30). Additional years of age and being a member of the younger birth cohort increase the rate of pension receipt at similar magnitudes to prior models. The effect of having a first birth after age 30 is significantly positive and robust to the inclusion of control variables. Later fertility increases the rate of pension receipt by 16 percent in Model 4.

Thus, the two sets of models in Table 3.4 that evaluate the effects of family timing highlight the significant roles of these measures in predicting pension receipt. At the same time, however, they provide mixed support for Hypothesis 2, which predicts that all delays in the timing of family roles, such as marriage and fertility, will increase the rate of pension income receipt. Delaying marriage appears to have negative consequences for the timing of pension access, which contradicts Hypothesis 2. Delaying childbearing, however, seems to have positive effects for older women in this sample, which provides evidence in support of Hypothesis 2. Additionally, the results of Table 3.4 are in agreement with Hypothesis 4 since younger cohorts experience higher rates of occupational pension receipt.

[Insert Table 3.4]

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[11] For Model 1, the $\chi 2$ difference in deviance statistics between uncontrolled models with and without this interaction is 0. In Model 3, this same $\chi 2$ difference is 2.21 with 1 degree of freedom difference, which fails to achieve significance.

Finally, Table 3.5 examines the effects of two measure of employment commitment: employment absence, measured via the proportion of prime-age years (20-55) with no earnings at all, and earnings continuity (i.e., whether or not a respondent has more than years of covered earnings during prime ages (20-55)).[12] These models address Hypothesis 3, which predicts that increases in employment commitment will increase the rate of employer pension income receipt. As in previous models, the effects of age, cohort, and control variables are significant and similar in direction and magnitude in all Table 3.5 models. The one exception is the greater magnitude of the effect of birth cohort. Being member of the younger birth cohort (born in the 1940s/1950s) increases the rate of pension receipt by about 96 percent in these models with the full set of controls in comparison to about 60 or 70 percent in most other models.

The effects of employment absence in Model 2 of Table 3.5 are significant and negative with the full set of controls. As the proportion of prime-age years with no earnings increases, the rate of occupational pension receipt decreases (by 17 percent for each unit increase). At the same time, however, the effect of earnings continuity is non-significant (although in the expected, positive direction in Model 3 with the full set of controls). Moreover, model fit statistics indicate that the addition of interaction terms between birth

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[12] Because of the missingness and possible selectivity of data from the SSA records described above, the parameter estimates in Table 3.5 are based on weighted models run using HRS RAND wave-specific, population weights. The use of these weights attempts to deal with possible selectivity due to missing earnings records for sample women. As an alternative to population weights, models were also run on multiply imputed data. Using techniques developed by Rubin (1987) and Little and Rubin (2002), sample data were imputed 5 times, estimates were averaged, and standard errors were calculated. In these models, parameter estimates for other variables are consistent with the weighted results presented here. Yet the parameter estimates for the covariates of interest – employment absence and earnings continuity – fail to achieve significance in models with controls. Full results are available upon request.

cohort and the employment commitment covariates fails to improve overall model fit.[13] Consequently, these parameters are not included. In general, Table 3.5 provides mixed support for Hypothesis 3. Although substantial employment absence does decrease the rate of pension receipt, which supports Hypothesis 3, there is no significant effect of increased employment commitment in Model 2. At the same time, however, the results of these employment commitment models confirm the findings of the rest of the models in support of Hypothesis 4. There are significant cohort differences in the rate of occupational pension receipt, with younger displaying higher rates than the older sample cohort.[14]

[Insert Table 3.5]

In addition to the parameter estimates presented in the tables, it also possible to graphically display the results of these discrete-time event history models. Figures 3.3 and 3.4 present selected results for the significant effects of marital continuity and social timing. Women's risk of pension income receipt is graphed by age, cohort, whether they have ever experienced divorce (Figure 3.3), and whether they had a first birth after age 30 (Figure 3.4). Both of these graphs present the results of models that contain the full set of control variables described above.

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[13] For Model 1, the $\chi 2$ difference in deviance statistics between uncontrolled models with and without this interaction is 2.43 with 1 degree of freedom, which is not significant. Similarly, in Model 3, the $\chi 2$ difference is 0.23 with 1 degree of freedom difference, which also fails to achieve significance.

[14] To supplement models presented in Tables 3.2, 3.3, 3.4 and 3.5, a full model containing all covariates that operationalize the effects of the life course predictors – marital continuity, family timing, employment commitment, and cohort change – was also run. Parameter estimates from this model are broadly consistent with findings explained above. Yet, due to modeling problems – for instance, collinearity between the marital continuity and family timing variables is problematic – and because adjudication between life course mechanisms is not the focus of this analysis, the full model is not discussed in more detail here. Full model results are available in Appendix Table 3A.

As can be seen in Figure 3.3, women with the highest estimated rate of pension receipt across all ages are sample women from the younger birth cohort who have experienced divorce. Right below this estimated hazard, women from the same cohort who have never been divorced experience the second-highest rate of occupational pension income receipt across all ages. The two consistently lowest-estimated rates are for the older cohort; although, unlike the ordering of the younger cohort, sample women born in the 1930s who have never been divorced have higher pension receipt rates than similar women from their cohort who have been divorced.

[Insert Figure 3.3]

Figure 3.4 displays slightly different patterns. Women from the younger birth cohort who have delayed their first birth experience the highest rate of pension receipt across ages. But women from this cohort who have first births before age 30 are more similar to the overall rates. Once again, women from the older birth cohort who have first births before 30 exhibit the lowest rate by age. But older birth cohort women who delay their first birth until after age 30 are also closer to the overall predicted hazard rates.

[Insert Figure 3.4]

Conclusion

Overall, the results of this study support several of the hypothesized relationships between women's work, family, and cohort experiences earlier in life and the timing of later-life access to occupational pension income. In some instances, however, the results contradict hypotheses and point to the need for further investigation of these relationships.

For instance, marital continuity does significantly impact the timing of women's access to pension income. In the case of divorce, there appears to be a penalty for marital continuity that applies to both cohorts. In terms of the duration of marriage, however, the results vary across cohorts. For older women born in the 1930s, there is a significant increase in the rate of pension receipt per year of marriage. Among younger women, born in the 1940s and 1950s, however, this relationship is small, but negative. These results challenge a straightforward interpretation of the effects of marital continuity for the timing of pension access. Moreover, they suggest a changing context of marriage and the effects of marital duration, in particular. It seems to be the case that longer marriages do not benefit more recently born women in terms of access to pension income.

The results of models that investigate the role of family timing present mixed support for hypothesized effects. Across both cohorts, delays in first birth do significantly increase the rate of pension income receipt for women. Yet delays in first marriage have the opposite effect for all sample women. Therefore, this analysis suggests that the type of social or family event in question, and not just its timing, may be important for understanding the timing of women's access to occupational pensions. In particular, although waiting to begin the life phase of parenthood seems to be beneficial for women in this cohort, postponing marriage has the opposite effect.

This study also presents mixed findings in terms of the effects of women's prior work experiences for the later timing of their occupational pension receipt. One of the employment commitment measures, employment absence, has a significant and negative

effect on the rate of pension income receipt. But the other covariate, employment continuity, fails to reach significance. Drawing on these results, it seems plausible that long periods of absence are more consequential for sample women than accumulating continuous paid employment. After all, female members of the cohorts in question were usually choosing between family and a work career in their lives rather than expecting both. Perhaps these findings would be different for even younger cohorts of women who have experienced higher rates of paid employment and been more continuously employed over the lives than women born in the 1930s, 1940s, and early 1950s.

Finally, the conclusions about the role of cohort change in the timing of access to occupational pensions are probably the strongest results from this study. Across all models, the younger birth cohort experiences higher rates of employer pension receipt. In the case of one of the marital continuity variables, there are also significant interaction effects. For the younger cohort, the main effect of marriage length increases the rate of pension receipt. Yet taking in account the interaction effect, overall, additional years of marriage for the younger cohort slightly decreased the outcome rate, in comparison to the older cohort. These significant findings are particularly robust since they are net of major compositional and demographic factors, such as race, education, and earnings, which might otherwise explain away the pension receipt outcome. Yet these cohort results persist with the addition of a full set of control variables.

In sum, the current study provides some evidence arguing for the importance of considering women's early-life work and family experiences in understanding later-life

pension outcomes. Divorce, delays in marriage, and longer periods of employment absence have particularly negative consequences for the timing of pension receipt, whereas delayed fertility increases this rate for the entire sample. The effect of marriage length, however, is more complicated and varies by cohort. These results extend previous work on women and pensions by considering the role of timing in access to occupational pension income. Factors that reduce the rate of pension receipt indicate delays in access to a crucial resource of economic security in retirement for women.

Although this study builds on previous research and provides some new findings it is limited in some ways by data availability. Because the HRS collects prospective data every two years as cohorts age into retirement, there is very little information available yet on Baby Boomers who are born more recently than 1947. With each additional HRS data release, this limitation will lessen. Moreover, starting in 2010 HRS will add a Middle Boomer sample of individuals born between 1954 and 1959. Yet until sample respondents achieve older ages, comparable age ranges extending into age 60 and beyond will not be available for the youngest cohorts.

Despite such data limitations, the findings from this study suggest further avenues for research in the field of retirement insecurity and women's life course. For instance, a wider variety of covariates and interactions might be explored, building on the current results. Different sequences of work and family roles might be important for understanding access to employer pensions. Additionally, these types of models could be used to uncover relationships between prior work, family, and cohort measures among subgroups of women.

Most likely, the timing of access to pension income varies by racial/ethnic group, education level, and health status. Finally, consideration of other possible sources of economic security in retirement – Social Security and private savings wealth – need to be considered in conjunction with access to occupational pension income to create a fuller picture of the economic circumstances faced by older women in the U.S.

Chapter 4. Cross-Cohort Trajectories of Retirement Wealth Among Older Women

Introduction

Private wealth is an important component of the U.S retirement system. In conjunction with other economic resources designed to support older Americans – Social Security benefits and income from occupational pensions – savings wealth provides a source of consumption in retirement, thus preventing economic insecurity. Like most affluent countries, the U.S. has developed a pension system to deal with the economic risks faced by the elderly (Thane 2006). These systems are often conceptualized as a three-pillared institution, composed of: 1) public pensions from the state; 2) occupational pensions from employers; and 3) private savings accumulated by individuals and households (Clark et al. 2004; Crown 2001; Engelen 2006; Immergut et al. 2006; Thompson 2006; World Bank 1994).

In the U.S., as a "liberal" welfare state (Esping-Andersen 1990, 1999), there is an emphasis on the role of the labor market and workers' own employment histories, as well as private savings, in the provision of economic security in retirement (O'Rand et al. 2009). Liberal welfare states, like the U.S., are considered to be "residual." Public programs to ensure economic security are designed to be residual safety nets supporting the dominant market-based system, rather than generous, universal benefits that guarantee the same standing of living for all citizens. Social Security, the first-pillar, public-sector retirement program in the U.S., replaces only about 43 percent of the average earnings of American workers (Thompson 2006). Therefore, older Americans must look elsewhere to abate

economic insecurity in retirement. Although most research on economic resources in retirement focuses on the public Social Security program and occupational pensions, it is also critical to understand the role of private wealth as the third pillar of the U.S. retirement system.

Moreover, despite large reductions in the economic insecurity of the elderly in the post-World War II period (Engelhardt and Gruber 2004), women in the U.S. still face economic disadvantage at older ages (Brady and Kall 2008; Cawthorne 2008; Federal Interagency Forum on Aging-Related Statistics 2008a). Women are more likely to experience low income, low wealth, and poverty at older ages in comparison with other groups of individuals (Bajtelsmit 2006; Crown 2001; Munnell 2004). In this way, the U.S. retirement system may be failing to provide economic security for women in retirement.

This study will investigate the role of wealth for women's retirement security. I will examine one stream of wealth, in particular: IRA/Keogh accounts. As described below, IRAs and Keoghs are private, financial savings vehicles designed to help individuals without access to occupational pensions save for retirement. Since women are disproportionately excluded from the employer-pension system, IRAs and Keoghs provide an important, alternative source of private retirement security for them. In addition, policy proposals to privatize Social Security or develop additional savings account to encourage private retirement savings often use the IRA/Keogh account structure as a model. Thus, understanding how life course factors, such as prior work and family experiences across birth cohorts, interact with IRA/Keogh wealth accumulation is important for women's

retirement insecurity. Using high-quality, longitudinal data and growth curve models, I will analyze intra-individual trajectories of wealth held in IRA/Keogh accounts for women aged 51-65. This study attempts to connect earlier-life family and work experiences to initial retirement wealth holdings, as well as changes in retirement wealth as women age. In addition, because of large scale shifts in women's work and family roles across recent decades, this study will also investigate changes in retirement wealth for women across birth cohorts.

The current analysis makes several contributions to the literature on older women's economic insecurity in the U.S. First, a life course perspective is employed to understand how various types of work and family roles cumulatively affect women's retirement wealth. Second, this study explicitly compares two birth cohorts: an older cohort of women born in the 1930s and a younger cohort born in the 1940s and early 1950s. Finally, the models used in this analysis go beyond cross-sectional studies of wealth or the distribution of wealth to investigate long-term patterns of intra-individual change in retirement wealth. Age-based growth curve models provide estimates of the shape of retirement wealth accumulation as well as the effects of predictors on initial values and rates of change in wealth.

Background

Retirement Wealth in the U.S.

The third pillar of the U.S. retirement system is private savings. Wealth in retirement, like wealth across the life course, is highly unequally distributed (Browning and Lusardi 1996; Gustman and Juster 1995; Keister 2000a; Wolff 1998). High-wealth households are more

likely to be found at the top of the income distribution and to be composed of individuals who have achieved advanced levels of education or exhibit other markers of social advantage. Among older Americans approaching retirement, Dushi and Iams (2008) find that about one-fifth possess little or no wealth, whereas about two-fifths exhibit substantial wealth holdings (~$180,000 or more); half of the value of private wealth holdings is accounted for by home equity. Inequality in net worth – the value of assets, including home value, minus debt – is greater among the elderly than other adult age groups (Crystal and Shea 1990).

The life cycle hypothesis in economics predicts that individuals accumulate savings, based on earnings and other income, until retirement, at which point they begin spending down their savings (Modigliani 1986; Modigliani and Brumberg 1954). According to this theory, wealth should decrease over retirement years in conjunction with declining years of life. In its simplest form, the life cycle hypothesis predicts that individuals are able to plan so that they die with no savings left (Clark et al. 2004). Browning and Lusardi (1996) document that average savings rates for households do increase until retirement at which point savings begins to decline. Yet other empirical research presents a more complicated pattern. Love and colleagues (2008a; 2008b) find that, despite declines in median wealth – and median financial wealth, in particular – at older ages, annualized wealth actually rises; that is, wealth holdings are decreasing more slowly than life expectancies shorten. Critics of the life cycle hypothesis point to bequest motives and intergenerational transfers as an explanation for wealth accumulation at older ages (Gale and Scholz 1994; Kotlikoff and Summers 1981).

Moreover, recent research highlights the role of uncertainty in longevity and medical experiences, in addition to possible bequests, as a rationale for incomplete dissaving in retirement (Dynan et al. 2002; Land and Russell 1996; Love et al. 2008a; Love et al. 2008b). Thus, overall, individuals and households accumulate wealth during the working years and then consume those savings in retirement. Yet, due to a number of uncertainties and a likely bequest motive, they do not fully spend all of these savings.

For the purposes of understanding women's retirement insecurity, this study will consider financial wealth from a specific category of retirement savings vehicles: IRAs and Keoghs. Housing wealth, the largest wealth component for U.S. households, and net financial wealth, have already been studied extensively by other researchers (Crystal and Shea 1990; Keister 2000a; Land and Russell 1996; Lupton and Smith 2003; Wolff 1998). Focusing exclusively IRA/Keogh wealth in order to understand retirement insecurity is important for several reasons. First, as described below, IRA and Keogh accounts are meaningful for older women's economic security. These accounts were originally designed as savings vehicles for individuals excluded from the occupational pensions. Since women are disproportionately unlikely to have access to an employer-provided pension IRA/Keogh wealth is a crucial alternative source of retirement security. Second, IRAs and Keogh accounts are an important wealth component that is specific to the retirement system. Their overall asset value among the American population is similar to each major type of occupational pension (i.e., defined benefit and defined contribution) (Employee Benefit Research Institute 2004). Moreover, since about a third of American families own IRA/Keogh account (Copeland 2009a),

IRA/Keogh wealth is not an obscure wealth stream. Instead, IRA/Keogh wealth requires a separate investigation in order to understand retirement insecurity in the U.S. Finally, new policy proposals suggest using the IRA/Keogh account structure either as an alternative or a supplement to the first pillar, Social Security program (White 2010).

Consequently, IRA/Keogh wealth is interesting and important to study independently of other types of wealth. These types of savings accounts are regulated by the federal government and enjoy certain tax advantages specifically designed to promote the accumulation of wealth for retirement. Individual retirement accounts (IRAs) are tax-deferred private savings accounts that individuals create themselves (unlike, for instance, defined-contribution, occupational pensions, which have to be set up and sponsored by an employer). Individuals who do not have access to an employer-sponsored pension – the self-employed, non-working spouses, and people with low incomes – are allowed to contribute funds to these accounts, up to a specified, annual limit.[1] The tax benefits of IRAs may take one of two forms. Initial contributions to IRAs may be tax-deductible with income tax on both this contribution and investment earnings deferred until the eventual withdrawal of IRA funds. The other option is that IRA contributions are made with after-tax income, but all subsequent withdrawals are exempt from income tax (Internal Revenue Service 2008;

[1] In 2008, the IRA contribution limit was $5,000 for individuals under age 50 and $6,000 for individuals 50 or older (Internal Revenue Service 2008).

Thompson 2006). There are also alternative private retirement accounts, known as Keogh plans, available to self-employed individuals that have higher contribution limits.[2]

In several ways, IRA/Keogh wealth is connected to another important source of economic resources in retirement, employer-provided pensions. First, IRA and Keogh accounts provide an important savings vehicle for individuals without access to an employer-provided pension. Women, in general, are less likely to be offered or to participate in an employer-provided pension than men (Ginn and Arber 1996; Ginn et al. 2001; Hardy and Shuey 2000). Much of the occupational pension disadvantage faced by women stems from a greater likelihood of part-time, limited or discontinuous paid work in conjunction with lower average earnings (Johnson 1999). Consequently, IRAs and Keoghs are an alternative savings vehicle for women, independent of pension coverage. In 2003, 26.3 percent of pre-retiree individuals aged 58 to 64 owned IRA accounts. For this same age range, 30.4 percent of all workers had IRAs (Verma 2006). Moreover, unlike occupational pensions, the distribution of IRA ownership is more equal across gender. For retired individuals, ages 65 and older, 32.2 percent of men owned IRAs in comparison with 26.0 of women. And among pre-retiree workers, ages 58 to 64, women are actually overrepresented in IRA ownership: 31.7 percent for women and 29.3 percent for men (Ibid).[3]

Second, IRA/Keogh wealth is connected to occupational pensions because employees who leave a job with an employer-sponsored, defined contribution pension plan

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[2] Annual contributions to Keogh plans are limited to 25 percent of net earnings from self-employment, up to $42,000 a year (Thompson 2006).

[3] Despite the near-parity across gender, there is a substantial racial gap in IRA ownership. Among retirees ages 65 and older, 31.7 percent of whites own IRAs, but only 12.7 percent of non-whites have IRAs (Verma 2006).

can transfer their balances to an IRA with no tax consequences. This process is called a "rollover." Thompson (2006) calculates that "rollovers" are the source of about half of total IRA assets. Additionally, in 1999, the total assets held in IRAs ($2.47 trillion), exceeded assets held in either defined-contribution ($2.45 trillion) or defined-benefit ($2.21 trillion) plan assets (VanDerhei and Copeland 2001). Even more than occupational pensions – and far more than Social Security benefits – tax-deferred retirement savings vehicles disproportionately benefit higher-income workers (Kingson and Williamson 2001).

Gender and Retirement Wealth

Despite significant recent attention to wealth differentials by race (e.g., Conley 1999; Oliver and Shapiro 1995; Smith 1995), less empirical research has focused on gender and wealth. Existing studies that do examine women's differential wealth accumulation tend to focus on gender in conjunction with marriage and family structure.[4] Studies consistently document the higher wealth holdings of married households, in comparison with households headed by single women (or single men) (Levine et al. 2000; Lupton and Smith 2003).

Of the several studies that do explicitly examine gender differentials in wealth, there are mixed findings and suggestions of cohort differences in wealth accumulation among women. For instance, Schmidt and Sevak (2006) find that, controlling for observable demographic characteristics, single, female-headed households have significantly lower levels of wealth, as measured by net worth, than single, male-headed households. Yet when

[4] Part of this limitation is attributable to the fact that in all large-scale, survey datasets wealth is measured at the household level. Therefore, it is difficult to evaluate the wealth holdings of individual women and men, separated from their household context. See Deere and Doss (2006) for a discussion of this issue.

Schmidt and Sevak (2006) re-run their models on a sub-sample of households headed by younger respondents (born 1962-1976, ages 25-39), they do not find significant gender differences in households headed by unmarried men compared with unmarried women. The authors note that this latter result may be attributable either to a cohort effect (i.e., gender differences in wealth accumulation are not present for more recently born cohorts) or an age effect (i.e., gender differences in wealth accumulation do not appear until later in life).

Yamokoski and Keister (2006) investigate gender differences in wealth among another recent birth cohort, the younger Baby Boomers (born 1957-1964). They confirm the importance of marital status in wealth accumulation, but find only minimal gender differences in wealth among single individuals. At the same time, however, Yamokoski and Keister (2006) do present evidence of differences in wealth accumulation by parental status; that is, single mothers and fathers have significantly less wealth than adults without children. They find that divorced and never-married mothers fare the worst in terms of net wealth in comparison with any other gender-marital status-parental status group.

Thus, research to date supports the disadvantages in wealth accumulation faced by unmarried women – and unmarried mothers, in particular. The evidence on women in general, however, is less clear. Studies that investigate wealth among recent cohorts fail to find evidence of gender differences. Yet these results capture women at ages far younger than retirement. Moreover, all of these studies focus on net worth (e.g., total household assets minus household debt holdings) in conjunction with gender, marital status, and parenthood. The current study, however, uses private financial wealth in retirement – and

IRA/Keogh wealth in particular – as the outcome of interest. Therefore, it is an open question whether models will demonstrate significant gender differences or variation across birth cohorts.

The Role of Life Course Factors in Shaping Women's Retirement Wealth

Despite the scarcity of empirical research on gender and retirement wealth, the process of wealth accumulation, in general, and differentials in wealth holdings for women, in particular, may be understood through a life course perspective. Following a life course perspective, it is possible to link the early-life economic disadvantages that women face – such as maintaining participation in the paid labor force and securing adequate earnings – to later-life economic outcomes, like wealth in retirement. The theory of cumulative disadvantage highlights the manner in which prior inequalities are amplified through the life course (Crystal and Shea 1990; Dannefer 2003; O'Rand 1996).

For instance, women's experiences in the paid work force directly affect later retirement savings outcomes via earnings, benefits, and savings (O'Rand and Henretta 1999). The sequences of women's work and family roles, as well as the relationships between them, may cumulatively constrain opportunities to access and accumulate retirement resources, such as private savings wealth. O'Rand (1996) explains: "Thus, the inequality of aged populations is not an instantaneous phenomenon . . . rather is a production (interaction) of institutional arrangements and aggregated individual actions over time" (p. 232). More specifically, existing research highlights the positive relationship between income and education earlier in the life course and later wealth accumulation (Browning and Lusardi

1996; Gustman and Juster 1995; Keister 2000a; Yamokoski and Keister 2006). Better-educated women with higher lifetime earnings face advantages in retirement wealth. Lower-earnings women with lower education attainment experience disadvantages in retirement resources. Additionally, wealth tends to compound over time, so initial disadvantages in earnings, income, and wealth for women are like to increase at older ages.

Four specific, causal mechanisms drive the process of cumulative disadvantage that women face in the accumulation of retirement wealth: marital continuity, family timing, employment commitment, and cohort change. First, *marital continuity* is important for economic outcomes in retirement. As described above, prior studies have shown that net worth and financial wealth are significantly higher for married couples than unmarried individuals (Browning and Lusardi 1996; Wolff 2002). In addition, several researchers have identified declines in household wealth following divorce (Holden and Kuo 1996) or widowhood (Angel et al. 2007; Holden and Kuo 1996; Zick and Holden 2000) for older women. Wilmoth and Koso (2002) find lower levels of wealth for individuals who are not married in comparison with those respondents who are married throughout their adult lives. Moreover, in this study, the adverse effects of marital discontinuity are larger for women than men. Building on this prior research, it seems that increases in the duration of marriage and fewer marital dissolutions may be positively related to wealth accumulation for women.

> *Hypothesis 1*: Marital continuity is significantly related to retirement wealth accumulation for women. Increases in marital continuity increase both the initial amount of retirement wealth holdings at age 51 as well as the subsequent rate of retirement wealth accumulation. Conversely, decreases in marital continuity decrease initial retirement wealth and the rate of this wealth accumulation.

Social timing, specifically *family timing*, is a second life course mechanism likely to affect women's retirement wealth trajectories. The timing of events, such as age at first marriage and age at first birth, has changed over the course of the last century. Women have experienced more delays as well as increased heterogeneity in the timing of these key events (Cherlin 1992, Forest et al. 1995; Hughes and O'Rand 2004; Morgan 1996). Moreover, the timing of family roles in women's lives has been shown to have consequences for women's later economic outcomes. For instance, Hanson (1983) finds significant relationships between the timing of a woman's first birth/first marriage and economic attainment. She identifies a positive association between early marriage and economic outcomes, but a negative relationship between early childbearing and attainment. Several other studies find that family timing delays, in marriage (Chandler et al. 1994) and childbearing (Blackburn et al.1993; Chandler et al. 1994), also yield economic benefits for women. Delayed timing of these family roles is highly associated with increased educational attainment and employment experience early in the life course (Goldin 1990; van der Lippe and van Dijk 2002). These increases in education and employment, in turn, have consequences for later earnings. Thus, it seems plausible that the benefits to delays in family timing would extend to economic resources in retirement, such as retirement wealth.

> *Hypothesis 2*: Family timing significantly affects women's retirement wealth accumulation via delays in family roles. Increases in the age at which women marry and give birth increase both the initial amount of retirement wealth women possess at age 51 as well as the rate of retirement wealth increase.

Employment commitment is a third life course mechanism likely to impact women's retirement wealth. As reviewed above, there is a significant relationship between income

across the life course and subsequent wealth (Browning and Lusardi 1996; Keister 2000a; Wolff 2002). Yet, women, at an aggregate level, tend to have lower earnings over the life course. Across all affluent countries, women's earnings lag behind men's earnings (Blau and Khan 1992, 2000, 2003; Gornick 2004). Part of the reason for women's lower earnings is that women are more likely to work in part-time (Drobnic and Wittig 1997; U.S. Department of Labor 2008) or non-standard, contingent jobs than men (Wenger 2003). These types of positions, in turn, are more likely to pay lower wages. Additionally, women often accumulate discontinuous work histories as they move in and out of the paid workforce to accommodate childcare and other family responsibilities, which penalize their earnings (Stier et al. 2001). Lower earnings, therefore, likely lead to lower wealth for women in retirement.

At the same time, increases in women's employment and earnings over time may increase the salience of their own employment for later wealth accumulation. Some American women – particularly, women of color – have been participating in the paid labor force for longer periods. But a steady increase in women's formal employment has taken place across the twentieth century, with especially large increases for mothers (National Research Council and Institute of Medicine 2003) and mothers with young children (Chaudry 2004). Research by Schmidt and Sevak (2006) and Yamokoski and Keister (2006) suggests that one reason they fail to find evidence of a gender wealth gap for the recent birth cohorts they study is that younger women have more continuous labor market experiences than older women. Thus, it is likely that employment commitment, or women's increased attachment to the labor market, is related to wealth accumulation for women.

Hypothesis 3: Employment commitment positively affects initial retirement wealth at age 51 and its rate of increase over time for women.

C*ohort change* is a final mechanism that might help explain patterns of women's retirement wealth. Significant structural changes across cohorts are evident in the work and family experiences of American women. Hughes and O'Rand (2004) highlight the increases in education and employment for women, delays in marriage and shifts in childbearing, as well as increases in social heterogeneity and inequality among the Baby Boom cohort (born 1946-1964). This cohort aged and developed through life at a time of extraordinary social change. Yet, Hughes and O'Rand (2004) note that many of the trends evident in the Baby Boomer cohort actually began in the War Babies cohort, born right before the Baby Boomers. Thus, these large-scale cohort changes in education and work are likely to impact women's retirement wealth. For instance, although they are not looking at older women or retirement wealth, Schmidt and Sevak (2006) and Yamokoski and Keister (2006) both find evidence of cohort changes in wealth. Both of these studies suggest that increased paid employment experience across birth cohorts may account for this shift. Therefore, there is reason to believe that the women's retirement wealth accumulation varies by U.S. birth cohort.

Hypothesis 4: There are significant differences across birth cohorts in the initial retirement wealth holdings of women as well as the rate of retirement wealth accumulation. Members of the younger cohort are likely to have higher initial values as well as higher rates of retirement wealth growth.

Methods

Data

To investigate trajectories of retirement wealth for U.S. women, rich longitudinal data on wealth as well as earlier work and family experiences are required. This study draws on publicly-available and restricted access data associated with the Health and Retirement Study (HRS). Initiated in 1992, the HRS is a multi-stage area probability sample of households that began with a sample of individuals aged 51-61 and their spouses. The HRS has been re-administered every two years since 1992. As of 2006, eight waves of data are available for analysis. The full HRS sample includes about 12,650 respondents from nearly 7,600 households. Additionally, the HRS contains an over-sample of African-Americans, Hispanics, and Floridians. The HRS is based on a "steady state" model that provides nationally representative data on respondents and their spouses from survey entry until death. HRS adds a new six-year birth cohort every six years (National Institute on Aging 2007). Therefore, in addition to the original HRS cohort, four cohorts of older Americans augment the original sample.

Relevant to the current study, HRS contains extensive wealth, demography, income, health, and family structure data on its respondents and their spouses. For this analysis, eight waves of data on female members of the three most recent HRS birth cohorts are utilized. These cohorts include: the initial Health & Retirement (HRS) cohort (born 1931-1941); the War Babies cohort (born 1942-1947); and the Early Boomers (EBB) cohort (born 1948-1953).

Most of the data for this analysis, including the wealth outcome variable, comes from the RAND HRS Data file (Version H). This RAND dataset is a user-friendly version of the HRS that contains cleaned, processed variables and includes extensive documentation (RAND 2008). Because of the high-quality nature of this dataset, which uses imputation techniques to overcome missing data issues in the original HRS data, measures are taken from these RAND data whenever possible for use in models.

When data were unavailable from the RAND file, two other HRS-related data sources were used. First, the raw HRS files are used to provide several of the prior family experiences measures. The publicly-available raw HRS files contain substantial noise and missing values.[5] Yet for certain family covariates, to be described below, the raw HRS files are the only available data source. Second, this study also draws on restricted access data for measures of respondent employment history. HRS restricted access data contain sensitive and identifiable respondent information. These data files are available through special agreement with HRS administrators.[6] For the current study, access to the U.S. Social Security Administration (SSA) restricted access files was secured. These restricted access data files provide respondent earnings and benefit information for study respondents who grant permission. In general, these SSA data contain: 1) the work and earnings histories for

[5] For missing values and other problems regarding the construction of marital histories from raw HRS files, see Holden and Kuo (1996) and Wilmoth and Koso (2002).
[6] In order to access HRS restricted data, users must develop a data security protocol, designed to protect respondent confidentiality, to be approved by both the HRS and the researcher's own Internal Review Board, among other requirements.

individuals covered by the Social Security program and 2) records of Social Security, Supplemental Security Income, and Disability benefit payments.[7]

The advantage of SSA restricted data is the comprehensive labor market history information provided for HRS respondents. The publicly-available HRS data contain measures related only to current or past several job of respondents rather than complete labor market experiences. Therefore, the SSA data on years of covered earnings under Social Security provide a unique and comprehensive source of information on respondent labor market histories.

At the same time, however, the SSA data pose several challenges. Since these data are administrative records rather than survey results the data files are inherently user-unfriendly.[8] Moreover, limited documentation increases the difficulty of working with these data. Additionally, there is a missing data problem, as well as a possible selectivity issue, involved in the using the SSA restricted access data. In order for an HRS respondent to have a SSA record link, she must have engaged in paid, SSA-covered employment at some point during her life. Second, the granting of HRS permissions to link with SSA records may not be distributed completely at random through the overall HRS sample.[9] Yet, despite these

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[7] At various points in time, HRS respondents have been asked to sign permissions linking their HRS data with SSA records. These permissions have been released in 1992, 2000, 2004, and 2008. The set-up of the data files for each of these four permission dates varies, increasing the difficulty of consistent coding across cohorts.
[8] See Mitchell et al. (1996) for details on the initial 1992 SSA data files.
[9] There are sampling weights available in the RAND HRS dataset to restore comparability with the overall sample of respondents. Unfortunately, the growth curve models used in the later analysis do not allow for population weights. As discussed below, multiple imputation techniques are used for models that include SSA restricted access data. Models are run on multiply imputed datasets in order to address possible bias related to the selection effects of missing data from the SSA restricted access records.

difficulties, the benefits of the SSA restricted data argue for their inclusion in models that investigate the effects of earlier work experiences on wealth trajectories.

For the analysis of women's wealth trajectories, the original HRS cohort (women born in the 1930s) is compared to a younger birth cohort that collapses the WB and EBB cohorts (born in the 1940s/1950s). The WB and EBB cohorts are combined for two reasons. Empirically, a combined WB and EBB cohort allows for additional cases in the models. Also, collapsing these younger cohorts enables the construction of an age range that is comparable to the HRS cohort. Consequently, for the purposes of this study, the sample is composed of women aged 51-65 from the HRS and WB/EBB cohorts. The second reason for collapsing the WB and EBB cohorts is theoretical. Many of the important changes that women have experienced in work and family roles over recent decades were first evident in the War Babies cohort and intensified with the Baby Boomers (Hughes and O'Rand 2004; Goldin 2006). Until future waves of the Health and Retirement Study, which will provide information on younger Baby Boomers who have aged into their 60s, are available, combining the Early Boomers with the War Babies makes theoretical and empirical sense. Therefore, the overall sample for this analysis includes all women from the HRS cohort (N=5,397) and the combined WB/EBB cohort (N=4,000).[10] The overall sample contains 9,397 women.

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[10] This combined WB/EBB cohort contains 2,066 War Babies cohort women and 1,934 Early Boomer cohort women.

Outcome Measure

The outcome variable for this analysis is a measure of IRA/Keogh retirement wealth at the household level.[11] As discussed above, IRAs and Keoghs are tax-advantaged, private savings vehicles that allow individuals to accumulate wealth for retirement. IRA/Keoghs are of particular relevance to women because they provide alternative savings vehicles for individuals who lack access to employer-provided pensions. This measure, taken from the RAND HRS data files, varies at each wave. Therefore, all values are converted into real 2008 dollars. Additionally, to deal with the skewness found in this wealth measure, the natural logarithmic transformation of the values of IRA/Keogh wealth is entered into all models.

Covariates

This analysis includes several types of covariates hypothesized to influence trajectories of private retirement wealth. First, *age* is used as the measure of time in all models. Sample respondents vary in age from 51 to 65. Additionally, four types of explanatory covariates capture marital continuity, family timing, employment commitment, and cohort change.

To measure marital continuity, models include a dummy indicator for *ever divorced* (coded as "1" if yes) and a continuous indicator of the *length of respondent's longest marriage* (measured in years). These marital continuity predictors are both constructed from the HRS

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[11] Ideally, private retirement wealth would be measured at the level of the individual, female respondent. Due to data availability in the RAND HRS data files, however, all wealth measures are presented at the household level. Yet this disadvantage is shared by all large, longitudinal datasets on wealth (e.g., the Panel Study on Income Dynamics, the National Longitudinal Studies). See FN 3.

RAND data files and are time-varying. Additionally, this analysis uses two measures of family timing: a dummy variable that captures whether a respondent had a *first marriage after age 30* (coded "1" if yes) and a similar dummy for *first birth after age 30* (coded "1" if yes). These family timing covariates have been constructed using the HRS raw files and are time invariant.[12] Two measures operationalize employment commitment. First, relevant models include a measure of *employment absence*, the proportion of prime-age years (20-55) with no earnings at all. Second, models evaluating the role of employment commitment utilize *earnings continuity*, a dummy measure of whether or not a respondent had more than 20 years of earnings during prime ages (20-55). These time-invariant, employment commitment measures come from the SSA restricted access data files of quarterly earnings records. Cohort change is included in models as a dummy variable that captures the effect being in the younger cohort with a dummy indicator for being *born in the 1940s/1950s*; i.e., being a member of the combined War Babies/Early Boomer cohort as opposed to the original HRS cohort. In addition, possible interaction effects between cohort and the other work and family covariates are tested and included in models when supported by model fit statistics.

Finally, full models used in this analysis also include a set of control measures. Race is operationalized with two dummy variables for the effects of being *black* and *Hispanic* (in both cases, the omitted reference category is non-Hispanic white). Additionally, *education* is

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[12] There is missing data present in covariates constructed using HRS raw files. In addition, there were also 94 suspicious cases in the age at first marriage and 132 suspicious cases in the age at first birth measure. These cases involved incomplete or inconsistent reporting that made measure construction impossible. This magnitude of suspicious cases is comparable to the level found by Holden and Kuo (1996) and Wilmoth and Koso (2002). And, following these precedents, suspicious cases are treated as missing values.

included with a continuous measure of years of completed education. Marital status is captured in models via a dummy measure for being *unmarried* (omitted reference category is married). A continuous measure of *number of people in household* is also used. An indicator of *self-rated health* (ranging from 1 to 5, with higher values indicating poorer health) and a measure of whether or not a respondent has employer-provided *health insurance* (coded "1" if yes) are also included. Two control covariates measure the effects of other types of economic resources: the natural logarithmic transformations of the 2008 real values of *total annual household earnings* and *total household wealth* (i.e., the net value of total household wealth, including secondary residence, minus all household debt). Finally, there is a continuous measure of the number of HRS survey *waves* for each respondent participates. With the exception of the race and education measures, all other control variables are time-varying. Descriptive statistics for all covariates in the person-period dataset, including the outcome variable, are found in Table 4.1.

[Insert Table 4.1]

The Model

This study uses growth curve models to investigate trajectories of retirement wealth for older women in the U.S. Growth curve models are appropriate for the study of repeated measures over time that are clustered within individuals (Halaby 2003; Singer and Willett 2003).These models allow for the estimation of average trajectories of intra-individual change over time as well as the relationships between covariates, such as prior work and family experiences, associated with differences in trajectories between individuals. Growth

curve models are able to estimate the effects of predictors of both initial levels and rates of change in retirement wealth trajectories.

The dataset was first reorganized from a wave-based to an age-based format. This technique is known as an accelerated cohort design, which is most appropriate for the study of life course phenomena among an age-heterogeneous sample (Singer and Willet 2003). Therefore, age becomes the measure of time in all models, with respondents contributing observations over a possible 14-year age range (i.e., ages 51-65). For the purposes of this analysis, the hierarchical linear modeling approach to growth curve modeling is used since it is the preferred method for handling unbalanced data (Singer and Willett 2003). This mixed, multilevel model approach addresses both within-person and between-person variation. It calculates parameters based on repeated observations at level 1 that are nested within individual respondents at level 2. The level-1 submodel, or the individual growth model, captures individual-level change:

$$Y_{ij} = [\pi_{0i} + \pi_{1i} (AGE_{ij})] + [\varepsilon_{ij}]$$

The level-2 submodel captures inter-individual changes in the outcome measure:[13]

$$\pi_{0i} = \gamma_{00} + \gamma_{01}\text{COVARIATE} + \zeta_{0i}$$

$$\pi_{1i} = \gamma_{10} + \gamma_{11}\text{COVARIATE} + \zeta_{1i}$$

Moreover, to facilitate model interpretation, all covariates are mean-centered. Under this transformation, which presents results in a more substantively meaningful format, the fixed

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[13] The general growth model presented here has only intercept and linear slope parameters (i.e., a linear model). But the model can be extended to include additional parameters, such as a quadratic term.

effects parameters represent the average trajectory of individuals with mean values of continuous variables and zero values for dummy variables (Singer and Willett 2003).

The multi-level growth models specified for this analysis are estimated with a maximum likelihood (ML) estimator. ML has several attractive features. Because ML estimators are able to incorporate all available information to estimate model parameters, certain types of missing data are not a problem and do not bias parameter estimates (Bollen 1989; Little and Rubin 2002). Yet the two covariates that measure employment commitment in the models, employment absence and earnings continuity, both come from the SSA restricted dataset. As discussed above, there is substantial missingness (~24 percent) among these variables. Thus, for models that investigate the effects of employment commitment (see Table 4.5 below), multiple imputation techniques are employed. Multiple imputation is not the only principled method for dealing with missing values in data (i.e., alternatives include weighted estimation and the expectation-maximization (EM) algorithm). Yet the flexibility and generality of multiple imputation techniques justifies its use in this analysis (Schaefer 1999).

Multiple imputation fills in missing data using Bayesian statistical theory. First, a parametric model is specified for the complete data. Next, a prior distribution is applied to the unknown model parameters; and then 5-10 independent draws are taken from the conditional distribution of the missing data given the observed data to create 5-10 imputed datasets (Little and Rubin 2002; Schafer 1999). Ideally, imputation models should exhibit the same associations between variables to be used in models (Ibid). Therefore, the multiple

imputation models used as part of this analysis include all model variables and their interactions. For the purposes of this study, 5 imputed datasets were created. Growth curve models were then run separately on each imputed dataset. These separate analyses are then integrated by averaging parameter estimates and by using "Rubin's rules" to compute standard errors, which account for both the within-imputation variance as well as the between-imputation variance in the multiple imputation datasets (Rubin 1987).[14] For this project, I used Patrick Royston's ICE STATA module to create 5 imputed datasets (Royston 2004, 2005).[15] Unweighted, descriptive statistics for the multiple imputation dataset is available in Appendix Table 4A.

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[14] For *j* multiple imputation datasets (*j*=1, 2, . . . *m*), regression parameters are averaged across *j* using the formula:

$$\overline{Q} = \frac{1}{m}\sum_{j=1}^{m}\hat{Q}_j.$$

Overall standard errors are computed by, first, calculating the within-imputation variance:

$$\overline{U} = \frac{1}{m}\sum_{j=1}^{m}U_j.$$

And, second, calculating the between-imputation variance:

$$B = \frac{1}{m-1}\sum_{j=1}^{m}\left(\hat{Q}_j - \overline{Q}\right)^2.$$

The overall variance is:

$$T = \overline{U} + \left(1+\frac{1}{m}\right)B.$$

And the overall standard error is the square root of *T*. See Rubin (1987) for more details.

[15] The ICE STATA ado files are available for download here: http://ideas.repec.org/c/boc/bocode/s446602.html (Accessed: 2/17/10).

Results

In the first stage of analysis, various specifications for the functional form of growth curve models are considered. A series of nested, unconditional, age-based growth models – constant, linear, and quadratic[16] – are estimated. Deviance statistics are used to judge the significance of improvements in fit with the data. Based on deviance statistic comparisons, a quadratic model is preferred that includes parameters for the initial status (i.e., intercept), rate of linear change (i.e., slope), and rate of quadratic change (i.e., curvature).[17] Subsequent models test proposed hypotheses by adding in, first, age and explanatory covariates only (i.e., cohort, family, and work variables) and, second, the full set of control variables described above.

Table 4.2 contains growth curve parameter estimates for models that test the effects of the birth cohort dummy (Hypothesis 4) on women's age-based retirement wealth trajectories without (Model 1) and with control variables (Model 2). As can be seen in Model 1, sample women from the older birth cohort (i.e., born in the 1930s) have initial retirement wealth holdings at age 51 of about $45 ($e^{3.810}$=45.150) on average. Moreover, the retirement wealth of these older women increases significantly with positive, linear and negative, quadratic slopes of about 15 percent and -0.01 a year, respectively. The younger birth cohort,

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[16] A cubic functional form was also considered, but this type of model failed to converge using the xtmixed command in STATA 10.

[17] The deviance statistic for the constant model is 219635.1 with 3 degrees of freedom. The deviance statistic for the linear model is 218610.0 with 6 degrees of freedom. The improvement in model fit provided by the additional linear term is 1025.1 with 3 degree of freedom difference, which is highly significant. Finally, the deviance statistic for the quadratic growth curve model is 218341.9 with 10 degrees of freedom. Again, the χ^2 difference between the quadratic and linear growth curve models is 268.1 with 4 degrees of freedom difference, which is also highly significant. Thus, the quadratic functional form is preferred for all subsequent growth curve models.

on the other hand, begins with significantly more wealth than the older cohorts in Model 1: about $93 ($e^{3.810 + 0.725}$=93.224), which is a 106 percent higher than the older cohort (100 * ($e^{0.725}$ – 1)=106.473).[18] Yet the younger cohort accumulates wealth more slowly due to a linear slope that is about 9 percent lower (100 * ($e^{-0.094}$ – 1)=-8.972) than the older birth cohort and a quadratic curvature that is significantly higher (about 1 percent; (100 * ($e^{0.007}$ – 1)=0.702) than the value of the curvature for the older birth cohort.

Model 2 of Table 4.2 adds in the full set of control variables to account for compositional changes across cohorts in the sample. In this model, the parameter that measures cohort differences in initial retirement wealth maintains statistical significance, but is attenuated somewhat. In this model the older birth cohort still starts with about $42 ($e^{2.058}$=7.830) of retirement wealth at age 51 and the younger cohort starts with about $67 ($e^{2.058 + 0.437}$=12.122), which is an increase of about 56 percent (100 * ($e^{0.437}$ – 1)=54.806) over the older cohort. In Model 2 there are no statistically significant ($p<0.05$) cohort differences in the rate of either linear or quadratic change. Therefore, it appears that the two birth cohorts accumulate retirement wealth at the same rate. It is only their initial IRA/Keogh holds at age 51 that differ. Moreover, in Model 2 the parameter for the quadratic rate of change in retirement wealth accumulation is no longer significant, suggesting a lack of quadratic trend for the data when compositional control measures are taken into account.

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[18] In semilogarithmic models, such as the ones used in this study, the percentage difference associated with a dummy variable (i.e., being a member of the group in question vs. the omitted reference group) is equal to 100*[e^{β} – 1]. See Hardy (1993, pp. 56-63) for a fuller discussion.

Finally, Model 2 of Table 4.2 reveals significant effects of many of the control predictors. These findings are largely robust throughout subsequent models and tables. Their effects, therefore, are discussed at length only here, but are also relevant in later models with control variables included. Race has a significant effect in Table 4.2 of Model 2. The dummy variables for being black or Hispanic both decrease the initial retirement wealth holdings for women at age 51 in comparison with whites; by 89 percent ($100 * (e^{-2.233} - 1) = -89.279$) for black women and by 74 percent ($100 * (e^{-1.351} - 1) = -74.102$) for Hispanic women. Consistent with previous research, being unmarried also decreases initial wealth holdings at age 51 for women. Unmarried women have about 60 percent ($100 * (e^{-0.925} - 1) = -60.347$) lower retirement wealth than married women. The number of years of education attained by women significantly increases initial retirement wealth by 1.5 percent for each year in school ($e^{0.412} = 1.510$). Poor health also significantly decreases initial retirement wealth at age 51 by about 18 percent ($(1 - e^{-0.198}) * 100 = 17.963$)) for each unit increase in poor health. Increases in logged household earnings and logged total household wealth both increase initial retirement wealth holdings. Having private health insurance significantly increases the linear slope of retirement wealth accumulation by about 3.5 percent ($100 * (e^{0.034} - 1) = 3.458$), perhaps because households with access to private health insurance can avoid spending down wealth on out-of-pocket health expenses. Finally, the number of HRS study waves in which respondents participate significant decreases the linear rate of retirement wealth accumulation by about 1 percent ($(1 - e^{-0.013}) * 100 = 1.292$)) per wave. Overall, then, even net of control measures, model estimates from Table 4.2 provide some support for Hypothesis

4. Initial retirement wealth holdings do significantly differ by birth cohort, with younger women holding higher levels of retirement wealth. Yet, in a model with the full set of control variables, there is no significant cohort difference in the linear rate of retirement wealth accumulation.

[Insert Table 4.2]

The models in Table 4.3 add in the marital continuity covariates in order to evaluate Hypothesis 1. Model 1 includes the younger birth cohort measure, the dummy for ever having experienced a divorced, and a dummy measure that captures the interaction between being a member of the younger birth cohort and ever having divorced.[19] Model 2 adds in the full set of control measures. The significant effects of main covariates of interest – the younger birth cohort dummy and the ever divorced measure – are robust to the inclusion of control measures. There is a significant interaction between younger birth cohort and ever having divorced in Model 1. Yet the significance of this parameter is attenuated in Model 2. Therefore, the discussion of results focuses on parameter estimates from Model 2.

As in previous models, there are significant, positive age-based trends in initial retirement wealth and linear wealth accumulation in Model 2. Again, in this model being a member of the younger birth cohort increases initial retirement wealth holdings by 54 percent ($100 * (e^{0.432} - 1)=54.034$). The experience of divorce significantly decreases initial wealth holdings by about 28 percent ($100 * (e^{-0.325} - 1)=-27.747$). Members of both birth

[19] Interactions between marital continuity/family timing/employment commitment measures and the younger birth cohort dummy are included in all models as this parameter significantly improves model fit as determined by the χ^2 distribution of deviance statistic differences.

cohorts who have ever been divorced also experience a decrease of about 11 percent (100 * ($e^{-0.116}$ – 1)=-10.952) in the linear rate of retirement wealth accumulation, in comparison with women who have never been divorced. Finally, women from both birth cohorts who experience a divorce have a significantly, but substantively small increase in the quadratic rate of retirement wealth accumulation: about 1 percent (100 * ($e^{0.007}$ – 1)=0.702).

Model 3 evaluates the effects of the birth cohort dummy, the length of a respondent's longest marriage, as the well as interaction between these two measures. In Model 3 there are significant, positive effects of the length of longest marriage and younger birth cohort on women's initial retirement wealth. Additionally, there is a significant, negative effect of the interaction between birth cohort and marriage length on initial wealth. Yet these parameters are no longer significant in Model 4, which adds in control measures. Model 4 of Table 4.3 exhibits the significant, positive age-based trends in initial retirement wealth and linear wealth accumulation found in prior models. Yet there are no significant effects of birth cohort or length of marriage with the exception of significant, but substantively negligible, positive effect of marriage length on the quadratic slope of retirement wealth.

[Insert Table 4.3]

The marital continuity models presented in Table 4.3 evaluate both Hypothesis 1 and Hypothesis 4. In terms of Hypothesis 1, there is evidence supporting the negative relationship between retirement wealth and marital disruption in the form of divorce. Model 2 demonstrates the significant, negative repercussions of divorce for older women's

retirement wealth; both in their initial wealth holdings at age 51 and in the linear rate of wealth accumulation as they continue to age. Model 4, however, provides no support for either Hypothesis 1 or Hypothesis 4. Thus, it appears that only certain types of marital continuity are important for understanding trajectories of older women's retirement wealth. Marital interruptions, such as divorce, have negative consequences, but increases in marital duration, operationalized by the length of a respondent's longest marriage have no significant effects. Finally, these models provide some support for Hypothesis 4, which predicts differences in retirement wealth trajectories across birth cohorts. In Model 2, women from the younger birth cohort have significant higher levels of retirement wealth at age 51. In Model 4, however, the effects of birth cohorts are only marginally significant ($p<0.10$).

Table 4.4 addresses Hypothesis 2 by testing the effects of the two family timing measures – experiencing a first marriage or a first birth after age 30 – as well as the effects of birth cohort and the interaction between being a member of the younger birth cohort and the family timing measures. As with the prior table, estimates from models with the full set of controls (Models 2 and 4) will be discussed at length.

Models 1 and 2 of Table 4.4 include a dummy measure of whether or not a respondent experienced a first marriage after age 30. An interaction effect between later marriage and birth cohort is also included. In the uncontrolled model (Model 1), there are significant effects for all three key measures (birth cohort, late marriage, and the interaction between the first two variables) on both initial retirement wealth holdings as well as the

linear rate of wealth increase. Yet in Model 2 with the full set of controls, the main effect of having a first marriage after age 30 is no longer a significant predictor of initial retirement wealth. In addition, with full controls there are no longer significant effects of the main variables of interest on the rate of wealth accumulation. Nevertheless, several significant covariate effects persist in Model 2. As in all prior models, being a member of the younger birth cohort increases initial retirement wealth at age 51 by about 59 percent ($100 * (e^{0.461} - 1)=58.567$). Although the main effect of the late marriage dummy is no longer significant in Model 2, the interaction between this covariate dummy and birth cohort is significant and positive. For younger women, experiencing a first marriage after age 30 increases initial retirement wealth by about 63 percent ($100 * (e^{0.487} - 1)=62.743$).

Models 3 and 4 of Table 4.4 present uncontrolled and controlled estimates, respectively, of the effects of having a first birth after age 30. In Model 3, the parameter estimates for birth cohort, later first birth, and the interaction between the two measures are all significant in their impacts on initial wealth holdings. Additionally, the birth cohort dummy significantly increases the rate of retirement wealth accumulation and late birth dummy variable significantly decreases the rate of retirement wealth accumulation in the uncontrolled model.

In Model 4, several significant effects of key predictors remain, despite the addition of control variables that account for compositional differences across sample women. As in all prior models, being a member of the younger birth cohort significantly increases initial retirement wealth at age 51 by about 59 percent ($100 * (e^{0.464} - 1)=59.042$). In addition, for all

women, experiencing a first birth after age 30 increases initial retirement wealth by about 45 percent ($100 * (e^{0.371} - 1)=44.918$).

[Insert Table 4.4]

Overall, the family timing results presented in Table 4.4 provide support for both Hypotheses 2 and 4. Regarding Hypothesis 2, the effect of delaying fertility until after 30 is significant and positive for retirement wealth at age 51 for all sample women. Delaying marriage until after 30, however, operates only to increase initial retirement wealth for women in the younger birth cohort. All models in Table 4.4 confirm cohort differences in retirement wealth at age 51, which supports Hypothesis 4.

Finally, Table 4.5 addresses Hypothesis 3 regarding the role of employment commitment in older women's retirement wealth trajectories.[20] Models 1 and 2 investigate the effects of employment absence, measured as the proportion of prime-age years (ages 20-55) with no Social Security-covered earnings at all. As in all prior models, there evidence of significant and positive, age-based initial wealth holdings. In these models, however, there is no significant, linear increase in wealth with age. In Model 2, which includes the full set of controls, neither the effect of being a member of the younger birth cohort, the employment absence measure, nor the interaction between the two are significant.[21]

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[20] All models in Table 4.5 are estimated using multiply imputed data (m=5). Models are run separately on each of the 5 multiply imputed dataset. Parameter estimates are then averaged across models and standard errors are calculated following "Rubin's rules" (Rubin 1987).

[21] All results displayed in Table 5 are consistent with models run using the original, unimputed dataset with one important exception. In models run using the original data, the birth cohort dummy is consistently significant and positive in models that include employment commitment measures.

Models 3 and 4 of Table 4.5 explore the effects of the earnings continuity measure (i.e., whether or not a respondent has more than 20 years of covered earnings during prime ages (20-55). Much like Models 1 and 2, there are no significant effects of earnings continuity of retirement wealth or the birth cohort dummy measure.

[Insert Table 4.5]

In sum, there is no support for Hypothesis 3 to be found in Table 4.5. Neither the employment absence nor earnings continuity measure significantly impacts older women's retirement wealth. Therefore, there is no evidence linking women's earlier employment commitment to subsequent IRA/Keogh wealth at older ages. Perhaps this finding is not so surprising since IRA and Keogh accounts were developed for unemployed spouses and individuals without access to employer-provided pensions. Additionally, results from Table 4.5, unlike the bulk of prior models, fail to support Hypothesis 4. There are no significant effects of birth cohort in these models.[22]

As a supplement to the model parameter estimates presented in the tables, it is also possible to graphically display the results of growth curve models. Figure 4.1 presents the results of Model 4 of Table 4.3, which includes the full set of control variables. Women's retirement wealth trajectories (first, exponentiated to 2008 real dollars and, then, graphed on

[22] A full model with all explanatory covariates included was run as a supplement to the models presented in Tables 4.2, 4.3, 4.4 and 4.5. The results of this model are difficult to interpret. Many of the control variables and several of the life course predictors (i.e., ever divorced and cohort) are consistent with prior models. Yet, collinearity between the marital continuity and family timing variables as well as the overwhelming number of parameters estimated in the full model, seem to reduce or eliminate the significance of many of the coefficients. Additionally, because adjudication between life course mechanisms is not the focus of this analysis the full model is not discussed in more detail here. Results of this full model are presented in Appendix Table 4B.

a log-scale to better observe differences in trajectories) are presented by age, cohort, and whether or not a woman has experienced divorce. As can be seen here, women from the younger birth cohort start off with higher levels of retirement wealth at age 51. In addition, divorce has statistically significant and substantively large, negative consequences for women's age-based retirement wealth trajectories. The effects of divorce operate for both initial levels and the linear accumulation of retirement wealth; although these effects are smaller for initial wealth among the younger cohort. Women who experience divorce, in comparison with women who do not, exhibit significantly lower trajectories of retirement wealth over time rather than women who have never experienced divorce.

[Insert Figure 4.1]

Figure 4.2 graphs the results of Model 4 of Table 4.4, which shows changes in retirement wealth over time by age, cohort, and whether or not a woman's first birth occurred after age 30. Again, retirement wealth on the y-axis is converted to 2008 real dollars, but presented on a log-scale to facilitate group comparisons. In addition, the estimates used for Figure 4.2 are net of all control measures. Evident in this graph are the higher initial retirement wealth holdings for women born in the younger cohort and women who experienced a first birth after age 30. This graph demonstrates the lower levels of wealth held by older women with later births in comparison with younger women who experience a first birth after age 30. At the same time, however, the differences in retirement wealth trajectories graphed across age at first fertility in Figure 4.2 appear to be less dramatic than the differences in trajectories graphed across divorce in Figure 4.1.

[Insert Figure 4.2]

Conclusion

The results of this analysis support several of the hypothesized relationships between women's retirement wealth accumulation their earlier work, family, and cohort experiences. In general, models that fully control for other demographic characteristics demonstrate that women born in the 1940s and 1950s enter older ages with more IRA/Keogh wealth than women born in the 1930s. At the same time, however, the retirement wealth accumulation of both birth cohorts seems to follow similar patterns, net of control measures. There are no significant differences in the linear or quadratic slopes of wealth trajectories by cohort.

Marital continuity, as measured by divorce and length of marriage, does appear to significantly affect the trajectories of IRA/Keogh wealth. Ever having been divorced decreases both the slope of wealth accumulation as well as initial retirement wealth holdings at age 51. Yet increases in length of marriage do not significantly affect retirement wealth when models include a full set of controls.

Models evaluating the role of family timing also find some support for the importance of marital and fertility patterns on subsequent retirement wealth. Measures that capture delays in both marriage and fertility (i.e., postponing these events until after age 30) have consequences for initial IRA/Keogh wealth at age 51. In the case of later marriage, there is a significant and positive effect, but only for women from the younger cohort. Delays in fertility, however, seem to benefit initial retirement wealth holdings for all women. Despite the significance of marriage and fertility delays for initial retirement wealth holdings,

however, models fail to demonstrate any significant effects of these family timing measures for the linear slopes of retirement wealth for women.

Finally, results from models investigating the effects of women's own employment experiences on later IRA/Keogh wealth fail to find any significant effects. The measures of both employment absence and earnings continuity never achieve statistical significance in these models. One issue here may be the limited work experiences, in general, of many of the sample women. Additionally, IRA/Keogh wealth, like most wealth variables in survey data, is measured at the household level. Therefore, it may be the case that the effects of married women's husband's employment experiences are as important – or more important – than women's own work histories for retirement wealth accumulation.

In sum, this study provides some evidence highlighting the importance of women's early-life family experiences in understanding later-life retirement wealth accumulation. Although marital longevity does not significantly shape retirement wealth accumulation over time, divorce has negative consequences for both initial retirement wealth as well as the rate of linear accumulation of wealth. In addition, delays in fertility benefit initial levels of IRA/Keogh wealth at age 51 for all women and delays in marriage provide benefits in initial retirement wealth for younger women. These results add to the literature that attempts to understand older women's economic insecurity as well as the growing literature on gender and wealth.

Although this study provides new findings on women's retirement wealth, it is still limited by data availability. The HRS is a source of high-quality wealth data. Yet because the

HRS collects prospective data every two years, there is a lack of information available on Baby Boomers born more recently than 1947. Each additional HRS data release, however, will ameliorate this problem. Furthermore, beginning in 2010 a Middle Boomer sample of individuals (born 1948-1953) will be added. As sample respondents continue to age, it will be possible to construct age-based wealth trajectories across a wider and older age range and to compare the wealth accumulation of additional U.S. birth cohorts.

In spite of these data limitations, results from this analysis suggest several avenues for future research in the area of women's retirement insecurity and the role of life course factors in understanding retirement wealth outcomes. In particular, consideration of retirement wealth trajectories for women from different population subgroups would be useful. It seems likely that women from distinct racial, educational, and health status experience retirement wealth accumulation differently. The significance of measures of these status group characteristics as control variables argues for their further consideration. Additionally, the work histories of husbands or other joint characteristics of spouses would likely add to the understanding of retirement wealth accumulation as a household process.

Chapter 5. Conclusion

Despite the fact that the liberal welfare state in the U.S. does very little to ensure women's economic security earlier in life – in either childhood or during prime ages – researchers note that women's economic security in retirement is heavily dependent on the U.S. retirement system (Harrington Meyer and Herd 2007). Porter and colleagues (1999) find that 52.6 percent of older women aged 65 and over would have been living in poverty prior to receipt of federal Social Security benefits in 1997; after receipt of these benefits, however, this poverty rate was lowered to 14.7 percent. Much attention focuses on the role of this first pillar of the U.S. retirement system as a crucial, publicly-provided economic resource for older women. Yet the other pillars of the U.S. retirement system are also part of the public welfare state in the sense that they are supported by federal tax subsidies. Federal tax expenditures, in the form of tax-exemptions and tax-deferrals, on employer-provided retirement plans amounted to $96.7 billion in 2009, or 10.2 percent of total tax expenditures in the federal budget (Employee Benefits Research Institute 2008). Similarly, IRA accounts and Keogh plans were projected to consume $24.7 billion in tax expenditures in 2009 (Ibid). Thus, in reality, all three pillars of the U.S retirement system are publicly supported. Even the market-based second and third pillars – occupational pensions and private retirement wealth – are part of the welfare state.

At the same time, the pillars of the U.S retirement system have distinctive features. The structure of each major retirement resource in the U.S. interacts differently with women's earlier life experiences, particularly in the realms of work and family, to impact

retirement insecurity. Women's entitlement to Social Security, the first pillar retirement resource, comes either through long-term marital relationships or their own labor market histories. Yet, as other scholars observe, Social Security's benefit and eligibility schemes have failed to keep pace with changing patterns in marriage and paid work, particularly among women (Harrington Meyer 1996). Moreover, although prior studies examine aggregate trends in women's marriage and labor market participation (Harrington Meyer et al. 2005, 2006) or project benefits into the future (Butrica and Iams 2000; Iams et al. 2003), there has been less attention to a wider variety of life course processes that shape individual women's actual Social Security benefits. This dissertation attempts this type of analysis.

Women's own paid employment supplies access to the second, pillar of the U.S. retirement system, occupational pensions in some cases. Because of this link, however, some women lack access to second pillar retirement resources. Prior research has demonstrated that women's disadvantage in employer-provided pensions stems from their often limited, part-time, or discontinuous work histories (Farkas and O'Rand 1998; Ginn and Arber 1996; Ginn et al. 2001; Hardy and Shuey 2000; Johnson 1999). Since much of this labor market disadvantage is linked to women's roles as mothers and wives (England 2005; Gornick 2004), older women's family experiences are also likely to impact access to employer-provided pensions. This dissertation adds a timing component to the relationship between occupational pension access and women's prior work and family experiences to understand processes of cumulative disadvantage for women's retirement insecurity.

Finally, the third pillar of the U.S. retirement system, private retirement wealth, has rarely been studied in terms of gendered outcomes (see Schmidt and Sevak (2006) and Yamokoski and Keister (2006) for exceptions). Yet women's earlier-life work and family experiences are likely to affect their later accumulation of retirement wealth in unique ways. Earnings prior to retirement as well as other household economic resources, often acquired through marriage, are associated with later retirement wealth (Browning and Lusardi 1996). This dissertation goes beyond cross-section studies of older women's retirement savings to explore age-based trajectories of this third pillar retirement resource. In addition, the role of women's prior work and family experiences was examined in terms of not only initial retirement wealth holdings at older ages, but also for their ability to shape subsequent growth in retirement wealth as women age.

Consequently, one main contribution of this dissertation is that it examines all three pillars of retirement resource: Social Security, occupational pensions, and private retirement wealth. The distinctive structure, history, and gendered relationship to women of each of these retirement resources suggests the need to investigate separately their relationships with women's prior work and family life course experiences. Moreover, I consider the impact of women's earlier work and family experiences on subsequent economic resources in retirement through the lens of a life course perspective. In particular, the theory of cumulative disadvantage supplies the mechanism between the constraints and penalties faced by women earlier in life and later retirement insecurity. I consider a wider range of life course predictors than prior studies, which tend to focus on the effects of widowhood and divorce

for older women's economic insecurity. Finally, this dissertation examines cohort differences in retirement insecurity across the pillars of the U.S. retirement system. This cohort comparison is appropriate because of widespread changes in women's work and family roles across recent cohorts of older women (Hughes and O'Rand 2004).

I use HRS data linked to restricted access SSA files in Chapter 2 to investigate the relationship between four major life course predictors – marital continuity, family timing, employment commitment, and cohort change – and subsequent Social Security benefit eligibility type for women. These life course experiences attempt to capture the cumulative disadvantages that women face in work and family roles that might impact their later economic insecurity in retirement. The most important finding from this chapter is the role of prior employment commitment for women, which dramatically increases the likelihood of receiving both own worker Social Security benefits and being dually eligible for Social Security, in comparison with receiving auxiliary benefits as a spouse or widow. Yet Social Security benefits based on women's own labor market histories may not always be beneficial for retirement security. Low earnings and discontinuous employment histories, on average, suggest lower own worker benefit amounts for women in comparison with dual eligibility or auxiliary benefits. In other findings, marital continuity across the life course has mixed effects for women's Social Security benefit eligibility type. Longer marriages decrease the likelihood of receiving own worker benefits, but increase dual eligibility. Yet divorce increases both of these outcomes, compared with being dually eligible. Finally, one of the

family timing measures, delays in marriage, increases the likelihood of own worker benefits, but decreases dual eligibility.

In Chapter 3, I examine the timing of access to occupational pension income for older women (aged 51-65). Using panel data from HRS linked to SSA restricted access files, I run discrete-time event history models to understand how women's prior work and family experiences influence the timing of occupational pension receipt. In this chapter, cohort differences in pension access are among the strongest findings. The younger birth cohort in this analysis (i.e., born in the 1940s/1950s, compared to an older cohort born in the 1930s) displays higher rates of employer pension receipt across all models. In addition, the effects of a women's length of longest marriage varies by cohort. Women from the younger birth cohort experience an additional penalty for each year of marriage, significantly decreasing their rate of pension receipt in comparison with older women. Some of the other life course predictors also add to an understanding of occupational pension access. Waiting to have a first birth until after age 30 increases the rate of pension receipt. Yet divorce, marriage delays, and longer periods out of the paid labor force significantly decrease the rate of occupational pension receipt. Overall, life course predictors that delay the onset of employer pension income from women signal disadvantage and lack of access to this crucial, second-pillar retirement resource.

Chapter 4 uses age-based growth models to investigate trajectories of IRA/Keogh wealth for older women ages 51-65. As in the previous chapter, panel data from HRS linked to restricted access SSA data are used in analyses to examine the effects of the four life

course predictors for initial IRA/Keogh wealth holdings at age 51 as well as the growth in this type of retirement savings as respondents age. Many of women's earlier work and family experiences significantly impact initial retirement wealth holdings in models. Waiting to have a first birth after age 30 and being a member of the younger birth cohort both significantly increases IRA/Keogh wealth at age 51. Yet, waiting to marry until after age 30 increases initial retirement wealth only for women in the younger birth cohort. Women's prior employment histories do not seem to affect either initial retirement wealth or subsequent growth in retirement savings. Divorce, on the other hand, negatively impacts both of these parameters, suggesting continuing disadvantage in older women's economic resources

This dissertation finds support for the theory of cumulative disadvantage in women's retirement insecurity. Each of the three empirical chapters demonstrates the significance of women's earlier work and family experiences for later benefit type, access, and trajectories of the three major types of retirement resources in the U.S. Yet there is variation among each pillar of the retirement system in terms of which types of life course predictors matter most for women's economic insecurity in retirement. For the first pillar, the Social Security system, women's own work experiences and ability to accumulate years of Social Security-covered employment have the largest impact on their benefit eligibility type. Employment commitment increases the likelihood of receiving own worker benefits and being dually eligible for Social Security, in comparison with receiving auxiliary benefits. Yet, due to low earnings, own worker benefits may not always provide economic security in retirement for women.

The empirical chapter on occupational pensions, the second pillar of the retirement system, demonstrates the importance of variability in family timing as well as the changing context of marriage. Although fertility delays have positive effects on the rate of pension income receipt, delays in marriage have the opposite effect. This finding argues for the importance of separating out the effects of different family role for women in terms of their consequences for retirement insecurity. In addition, models investigating the role of life course predictors for the timing of women's access to occupational pensions suggest that longer marriages may have different consequences for women from different birth cohorts. Although the length of marriage increases the rate of pension income receipt for older women, the younger birth cohort actually faces a pension access penalty for longer marriages.

Findings regarding private savings wealth, the third pillar of the U.S. retirement system, suggest that divorce contributes the most to the cumulative disadvantage of women's retirement resources. Although several of the other life course predictors significantly affect initial IRA/Keogh wealth holdings at age 51, experiencing divorce is the only covariate that significantly impacts the linear trajectory of women's retirement wealth accumulation net of control variables. Thus, the negative shock of divorce on initial wealth and subsequent wealth accumulation provides strong evidence for the theory of ongoing, cumulative disadvantage.

Finally, analyses in this dissertation highlight the importance of birth cohort for women's retirement insecurity. Outcomes for retirement resources vary significantly across

cohorts, especially for occupational pensions and private retirement wealth, when older women born in the 1930s are compared with older women born in the 1940s/1950s. In general, the younger birth cohort faces less retirement insecurity in terms of higher rates of occupational pension receipt and greater initial retirement wealth holdings. Findings from the chapter on Social Security are less conclusive because the data only allow for a comparison of older women born in the earlier 1930s compared with women born in the late 1930s. Future releases of HRS or alternative data sources are need to fully explore this issue in Social Security eligibility benefit type.

Overall, this dissertation has three major types of implications for future research: methodological, public policy-related, and theoretical. In terms of methodology, the significant findings from this study highlight the importance of considering cumulative, lifelong processes in research. And in order to understand life course processes – such as the link between women's earlier work and family experiences and later economic insecurity in retirement – high-quality longitudinal data and appropriate modeling techniques are required. The HRS data used in this dissertation have been employed elsewhere. Yet the restricted access SSA data are seldom exploited by researchers. And I am aware of no other existing study that attempts such a wide-ranging cross-cohort comparison using restricted access data on lifetime earnings histories. Much of this gap is likely a result of selectivity and missing data problems inherent in these types of datasets. Yet the current project argues for taking missing data problems seriously and attempting to overcome them with techniques such as multiple imputation. Furthermore, in order to understand processes of cumulative

disadvantage, longitudinal modeling techniques such as event-history models and growth curve models are essential.

The findings from this dissertation also have implications for public policy and reform of the U.S. retirement system, in particular. Prior work has already commented on the problems associated with proposed privatization schemes for Social Security, the first pillar of the American retirement system (Harrington Meyer and Herd 2007; O'Rand et al. 2009), which are likely to increased economic insecurity for older women and other disadvantaged groups. Moreover, changing the eligibility rules for Social Security benefits to provide non-working women with "homemaker credits" or set up earnings sharing structures for couples further entrenches marital status as the basis for Social Security eligibility (Harrington Meyer et al. 2005, 2006).

Fresher ideas for retirement system reform in the U.S. include the addition of an "Automatic IRA."[1] Under this policy proposal, employers with at least 10 employers who do not already offer their employees an occupational pension would be required to enroll their workers in an opt-out IRA account. In other words, employees would be automatically enrolled in a private savings vehicle designed to help supplement retirement wealth. These IRA accounts would be privately administered and targeted to individuals who otherwise do not have access to an employer-provided pension or other types of retirement savings. Yet in considering these types of proposals to help Americans save for retirement, it is important to keep in mind how prior work and family experiences will interact with policy design.

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[1] For details, see the Administration's "Middle Class Task Force" website, available: http://www.whitehouse.gov/blog/2010/02/11/helping-workers-save-a-secure-retirement, Accessed: 2/25/10.

Reform ideas like "Automatic IRAs" might be intended to help disadvantaged populations, such as women, who are less likely to be currently saving for retirement through an occupational pension. At the same time, however, other life course experiences – in work and family roles – may prevent the accomplishment of these policy goals. For instance, this dissertation demonstrates the substantial negative impact of divorce on IRA/Keogh savings for women at older ages. These types of findings should inform policy discussions of the ways of ways to strengthen the U.S. retirement system and prevent retirement insecurity for women.

In addition to informing future policy debates, this dissertation also has broad theoretical implications for research on 1) gender stratification and 2) retirement. First, this study adds to existing knowledge in the field of gender stratification. Specifically, it extends the analysis of how women's work and family characteristics impact economic outcomes to an analysis of women at older ages. As part of the existing literature on gender stratification, sociologists have focused on the mechanisms of gender stratification in the labor market. In particular, individual-level factors, such as marital status, women's roles as mothers, and educational attainment, have been studied by researchers (Budig and England 2001; England 2004; Waldfogel 1998; Waldfogel and Harkness 1999). These demographic and family characteristics are posited to influence women's capacities to participate in the paid labor force. They are also proposed as explanatory variables to understand women's lower earnings on average. In general, burdensome family obligations – child care demands, in particular – constrain women's paid employment and earnings.

At the macro-level, gender stratification scholars have also identified the important institutional role that the welfare state plays in women's labor force participation and economic outcomes (Esping-Andersen 1990, 1999; O'Connor 1993; Orloff 1993, 1996; Sainsbury 1999). These studies illustrate how the configurations of social arrangements and policies that constitute welfare states shape women's employment and affect their economic resources. In this literature, the welfare state is conceptualized as: "interventions by the state in civil social to alter social and market forces" (Orloff 1993, 304). Studies in this gender stratification research paradigm demonstrate how the welfare state mediates market forces for women, creating incentives and disincentives to work in the paid labor force. Some welfare state configurations encourage women's paid employment and earnings, yet other arrangements tend to discourage these outcomes.

All of these studies inform current knowledge of the process that leads to inequality in the labor market for women. Yet less empirical attention has been given to the consequences of gender stratification for older women's economic resources. This is surprising considering women's experiences – particularly as they move in and out of the labor market during their working-age years – are likely to impact their later economic status (Harrington Meyer 1990). Moreover, changes over time and across cohorts in women's family arrangements (Blossfeld 1995), education attainment, and labor market experiences (Bajtelsmit 2006; Blossfeld and Hakim 1997; Hughes and O'Rand 2004; O'Rand and Henretta 1999; van der Lippe and van Dijk 2002) suggest changing patterns of employment

that are likely to affect access to and levels of retirement resources differentially by cohorts of women.

This dissertation fills this gap in the gender stratification literature by considering the economic security of older women. The current study connects women's work and family experiences across the life course to later retirement. As is the case with prime-age women in the existing gender stratification literature, older women's family and work characteristics interact with the welfare state – the U.S. retirement system, more specifically – to produce economic outcomes. Thus, although the current study bolsters findings in the extant literature regarding the negative consequences of divorce and limited employment for women, for instance, it also goes further to examine the consequences of women's lifelong experiences. In particular, this study demonstrates the importance of the timing of early family events – including both marriage and childbearing – for women's access to economic resources in retirement. By demonstrating this link, as well as links between cumulative employment and marriage histories, this study shows the long-lasting economic impact of women life course events. Mid-life work and family experiences directly impact later retirement outcomes for all three pillars of the U.S. retirement system.

Despite this contribution to the gender stratification literature, there is clearly room for new avenues of research and future work. This dissertation is limited to an analysis of older women. It argues that events across the life course are experienced sufficiently differently by men and by women to justify the restricted sample. Future studies, however, might expand the current analysis in several ways. First, similar models could be run on a

sample of older men to understand how cumulative work and family experiences impact their retirement security. Furthermore, future research could be set up to look at gender gaps in Social Security eligibility type, in access to income from employer pensions, and in trajectories of private retirement wealth. Since much of the existing gender stratification literature employs gender gaps in earnings and income as an outcome measure of interest, it would be worthwhile to compare gender gaps in retirement income; as well as how life course predictors affect this gap. At the same time, there is plenty of heterogeneity among women themselves. Thus, future research needs to examine whether, and to what extent, life course predictors impact retirement security differently for different groups of women. Race, education, and health are particularly importance sources of variation among women that need to be explored.

This dissertation also adds to existing research on retirement in an important way. In particular, it helps expand the study of retirement from an analysis of single event (i.e., exiting the paid labor market) to an examination of retirement as a larger social process. By incorporating life course predictors into the analysis and using age-based, panel data in models, this dissertation shows that economic outcomes in retirement result, at least in part, from earlier life experiences. In addition, these economic outcomes unfold and evolve over time as individuals and households accumulate some resources, like wealth, and gain access to other resources, like occupational pensions and Social Security.

Henretta (2001) defines retirement as, "a shorthand term to refer to a labor force exit that is not reversed for a substantial period of time" (p. 256). In the academic literature,

retirement has been studied extensively as a life event or a decision (Quinn 2002). Variables such as health, savings, and individual preferences for leisure have been considered in terms of the timing of transitions into retirement. Additionally, macro trends in retirement, such as the declining average age at retirement and increased variability in retirement, have been documented by sociologists and economists (O'Rand and Henretta 1999; Quinn and Burkhauser 1994).

Broadly, however, there has been a shift in the sociological literature on retirement from an examination of retirement as an isolated event to the study of retirement as a more complex and protracted life course process. Two major approaches characterize this trend. First, several studies have examined the ways in which the retirement decision is embedded in larger social contexts (Atchley 1982). For instance, Han and Moen (1999a) consider the "temporal patterning of retirement", or the ways in which larger historical context, social heterogeneity, and individual biographical pacing influence retirement. Hayward and colleagues (1998) focus on the relationships between earlier career characteristics and retirement. O'Rand and Henretta (1982) document how labor market contexts influence the timing of retirement. Additionally, O'Rand and Henretta (1999) note the role of the welfare state in mediating retirement outcomes for individuals.

There have also been a number of studies that examine retirement as a joint decision-making process between married partners. Blau (1998) analyzes the joint labor force behavior of older couples, finding significant relationships between the labor force exit probabilities of one spouse and the other spouse's labor force status. Moen and colleagues

(2001) look at marital quality in the context of the retirement decisions of couples. They conclude that asynchronous retirement among couples contributes to marital dissatisfaction. Additionally, several scholars investigate how joint role investments between partners over the life course affect the timing of retirement (Henretta et al. 1993a, 1993b; Moen et al. 2005; O'Rand et al. 1982). These studies demonstrate the links between early family and work experiences and later retirement timing as well as the synchronization in retirement among couples. Additional studies document the coordination of retirement between spouses (Munnell and Soto 2005; Reitzes et al. 1998; Smith and Moen 1998).

Thus, the current study fits with this shift toward looking at retirement as a social process rather than a single event. Older women's retirement security in the U.S. implicates not just a single economic status at one point in time, but an age-based, life course process through which older women experience economic vulnerability because of limited access to and accumulation of retirement resources. Future retirement research would benefit from longitudinal models that incorporate not only individual-level work and family characteristics, but also information on the broader economic and labor market climate to understand how retirement security might evolve.

Tables

Table 2.1 Descriptive Statistics from Multiple Imputation Dataset (m=10) for Analysis of Women's Social Security Eligibility Type

	All Women			Born 1930-1935 (HRS)			Born 1936-1941 (HRS)		
	Mean	*SD*	*N*	*Mean*	*SD*	*N*	*Mean*	*SD*	*N*
Social Security eligibility status									
Own worker benefit	0.622	0.485	5459	0.577	0.494	2308	0.656	0.475	3151
Dual eligibility	0.240	0.427	5459	0.293	0.455	2308	0.201	0.401	3151
Auxiliary benefit	0.137	0.344	5459	0.129	0.336	2308	0.143	0.350	3151
Age	66.011	4.841	5459	68.890	4.217	2308	63.904	4.132	3151
Marital Continuity									
Ever divorced	0.343	0.475	5459	0.301	0.459	2308	0.373	0.484	3151
Length of longest marriage	32.437	15.252	5459	34.310	15.963	2308	31.065	14.558	3151
Family Timing									
First marriage after 30	0.316	0.465	5459	0.342	0.474	2308	0.298	0.457	3151
First birth after 30	0.169	0.375	5459	0.172	0.378	2308	0.167	0.373	3151
Employment Commitment									
Employment absence	0.411	0.262	5459	0.449	0.269	2308	0.383	0.253	3151
Earnings continuity	0.461	0.498	5459	0.447	0.497	2308	0.470	0.499	3151
Cohort Change									
Born 1936-1941	0.577	0.494	5459	0.000	0.000	2308	1.000	0.000	3151
Controls									
Black	0.187	0.390	5459	0.197	0.398	2308	0.180	0.384	3151
Hispanic	0.097	0.295	5459	0.086	0.280	2308	0.104	0.306	3151
Years of education	11.917	3.042	5459	11.717	3.104	2308	12.063	2.987	3151
Unmarried	0.455	0.498	5459	0.523	0.500	2308	0.406	0.488	3151
Number in household	2.175	1.230	5459	2.088	1.216	2308	2.239	1.242	3151
Self-rated health	3.024	1.148	5459	3.043	1.139	2308	3.009	1.171	3151
Total respondent earnings	23144.230	1989232.000	5459	19627.780	1718156.000	2308	25719.900	2166393.000	3151
Total household wealth	1.58E+10	3.36E+11	5459	3.460E+10	5.160E+12	2308	1.990E+11	1.890E+11	3151
Private health insurance	0.205	0.404	5459	0.187	0.390	2308	0.218	0.002	3151

Table 2.2 Odds Ratios from Multinomial Logit Models of Women's Social Security Eligibility Type – Marital Continuity Measures

Covariate	*Ever divorced*		*Length of longest marriage*	
	(1)		(2)	
	Own worker benefit[1]	Dual eligibility[1]	Own worker benefit[1]	Dual eligibility[1]
Covariate	2.096**	1.501*	0.982**	1.022**
	(0.303)	(0.248)	(0.004)	(0.005)
Born 1936-1941	0.890	0.638**	0.933	0.706*
	(0.134)	(0.102)	(0.136)	(0.118)
Covariate*Born 1936-1941			1.006	0.995
			(0.009)	(0.009)
Age	0.991	1.019**	1.005	1.005
	(0.005)	(0.007)	(0.006)	(0.007)
Black	1.654**	0.613*	1.505*	0.623*
	(0.314)	(0.131)	(0.291)	(0.133)
Hispanic	0.891	0.498*	0.841	0.515*
	(0.183)	(0.151)	(0.174)	(0.161)
Years of education	1.130**	1.019	1.128**	1.031
	(0.026)	(0.031)	(0.027)	(0.030)
Unmarried	0.667**	0.710*	0.581**	1.033
	(0.091)	(0.102)	(0.082)	(0.166)
Number in household	0.979	0.834**	0.972	0.815**
	(0.054)	(0.053)	(0.053)	(0.055)
Self-rated health	1.063**	1.023	1.066**	1.023
	(0.017)	(0.020)	(0.018)	(0.021)
Ln(total respondent earnings)	1.002	1.014	1.000	1.005
	(0.014)	(0.017)	(0.014)	(0.017)
Ln(total household wealth)	1.162**	0.934	1.182**	0.950
	(0.065)	(0.066)	(0.065)	(0.069)
Private health insurance	1.209	0.660+	1.208	0.685
	(0.286)	(0.154)	(0.286)	(0.159)
N	5459	5459	5459	5459
Pseudo R^2	0.212	0.212	0.225	0.225
Log Likelihood	-4671	-4671	-4601	-4601

** p<0.01, * p<0.05, + p<0.1

Notes: 1) Being eligible for Social Security as an auxiliary is the base outcome in all models

Table 2.3 Odds Ratios for Multinomial Logit Models of Women's Social Security Eligibility Type – Family Timing Measures

Covariate	*First marriage after 30*		*First birth after 30*	
	(1)		(2)	
	Own worker benefit[1]	Dual eligibility[1]	Own worker benefit[1]	Dual eligibility[1]
Covariate	1.467*	0.558**	1.211	0.902
	(0.241)	(0.115)	(0.205)	(0.188)
Born 1936-1941	0.964	0.666*	0.955	0.660*
	(0.141)	(0.111)	(0.141)	(0.107)
Covariate*Born 1936-1941	0.696	0.876		
	(0.252)	(0.357)		
Age	0.993	1.019**	0.993	1.020**
	(0.005)	(0.006)	(0.005)	(0.007)
Black	1.476*	0.645*	1.551*	0.597*
	(0.292)	(0.136)	(0.305)	(0.127)
Hispanic	0.829	0.539*	0.856	0.502*
	(0.176)	(0.167)	(0.185)	(0.154)
Years of education	1.133**	1.028	1.134**	1.025
	(0.026)	(0.031)	(0.025)	(0.031)
Unmarried	0.647**	0.931	0.758*	0.762+
	(0.086)	(0.159)	(0.098)	(0.106)
Number in household	0.955	0.836**	0.963	0.825**
	(0.053)	(0.054)	(0.053)	(0.054)
Self-rated health	1.066**	1.023	1.068**	1.024
	(0.018)	(0.020)	(0.018)	(0.020)
Ln(total respondent earnings)	0.997	1.008	0.995	1.010
	(0.014)	(0.016)	(0.014)	(0.017)
Ln(total household wealth)	1.181**	0.947	1.188**	0.943
	(0.065)	(0.065)	(0.067)	(0.067)
Private health insurance	1.213	0.687	1.232	0.666+
	(0.289)	(0.162)	(0.284)	(0.155)
N	5459	5459	5459	5459
Pseudo R^2	0.219	0.219	0.207	0.207
Log Likelihood	-4639	-4639	-4700	-4700

** p<0.01, * p<0.05, + p<0.1

Notes: 1) Being eligible for Social Security as an auxiliary is the base outcome in all models

Table 2.4 Odds Ratios for Multinomial Logit Models of Women's Social Security Eligibility Type – Employment Commitment Measures

Covariate	*Employment Absence*[1]		*Earnings Continuity*[2]	
	(1)		(2)	
	Own worker benefit[3]	Dual eligibility[3]	Own worker benefit[3]	Dual eligibility[3]
Covariate	0.004**	0.008**	20.174**	9.135**
	(0.001)	(0.003)	(4.592)	(2.491)
Born 1936-1941	0.644*	0.458**	0.598*	0.426**
	(0.121)	(0.097)	(0.126)	(0.094)
Covariate*Born 1936-1941	1.955	4.579+	0.405+	0.296*
	(1.712)	(3.889)	(0.190)	(0.152)
Age	1.041**	1.065**	0.985*	1.017*
	(0.007)	(0.009)	(0.006)	(0.007)
Black	1.373	0.536**	1.428	0.565*
	(0.318)	(0.129)	(0.320)	(0.131)
Hispanic	0.944	0.520*	0.983	0.521*
	(0.237)	(0.173)	(0.233)	(0.157)
Years of education	1.105**	0.996	1.123**	1.014
	(0.029)	(0.032)	(0.029)	(0.031)
Unmarried	0.659**	0.675*	0.629**	0.673**
	(0.101)	(0.108)	(0.098)	(0.100)
Number in household	1.086	0.917	1.035	0.865*
	(0.063)	(0.059)	(0.056)	(0.055)
Self-rated health	1.048*	1.009	1.050**	1.015
	(0.020)	(0.020)	(0.019)	(0.021)
Ln(total respondent earnings)	0.985	1.002	0.987	1.006
	(0.016)	(0.018)	(0.016)	(0.017)
Ln(total household wealth)	1.336**	1.044	1.287**	0.994
	(0.086)	(0.080)	(0.084)	(0.073)
Private health insurance	0.844	0.477**	0.982	0.571*
	(0.214)	(0.118)	(0.231)	(0.134)
N	5459	5459	5459	5459
Pseudo R^2	0.283	0.283	0.264	0.264
Log Likelihood	-4281	-4281	-4344	-4344

** p<0.01, * p<0.05, + p<0.1

Notes: 1) Employment absence: proportion of prime-age years (20-55) with no earnings; 2) Earnings continuity: whether respondent has more than 20 years of covered earnings during prime ages (20-55); 3) Being eligible for Social Security as an auxiliary is the base outcome in all models

Table 3.1 Descriptive Statistics for Analysis of Women's Occupational Pension Income Receipt

	All Women			Born in the 1930s (HRS)			Born in the 1940s/1950s (WB/EBB)		
	Mean	*SD*	*N*	*Mean*	*SD*	*N*	*Mean*	*SD*	*N*
Receipt of Pension Income	0.091	0.287	38467	0.103	0.304	24520	0.079	0.269	13947
Age	57.715	3.891	38467	59.455	3.813	24520	56.034	3.158	13947
Marital Continuity									
Ever divorced	0.099	0.299	38467	0.077	0.266	24520	0.121	0.326	13947
Length of longest marriage	26.939	12.668	38467	29.541	12.574	24520	24.426	12.246	13947
Family Timing									
First marriage after 30	0.387	0.487	38467	0.280	0.449	24520	0.490	0.500	13947
First birth after 30	0.220	0.414	38467	0.160	0.366	24520	0.278	0.448	13947
Employment Commitment									
Employment absence (% of prime-age years (20-55) with no earnings)	0.307	0.286	29036	0.305	0.286	23050	0.317	0.285	5986
Earnings continuity (> than 20 years of covered earnings during prime ages (20-55))	0.415	0.493	29036	0.416	0.493	23050	0.410	0.492	5986
Cohort Change									
Born 1940s/1950s	0.509	0.500	38467	0.000	0.000	24520	1.000	0.000	13947
Controls									
Black	0.108	0.311	38467	0.106	0.308	24520	0.111	0.314	13947
Hispanic	0.079	0.270	38467	0.073	0.260	24520	0.085	0.278	13947
Years of education	12.662	2.867	38382	12.260	2.868	24498	13.052	2.813	13884
Unmarried	0.343	0.475	38467	0.335	0.472	24520	0.351	0.477	13947
Number in household	2.379	1.203	38466	2.326	1.183	24519	2.431	1.221	13947
Self-rated health	2.645	1.154	38451	2.653	1.157	24512	2.638	1.150	13939
Respondent earnings	19561.700	28968.630	38467	15285.930	23844.170	24520	23692.340	32649.240	13947
Total household wealth	410393.80 0	1762628.000	33329	340946.600	1132493.000	20088	465231.300	2130922.000	13241
Private health insurance	0.409	0.492	37745	0.356	0.479	23983	0.459	0.498	13762

Notes: All descriptive statistics are weighted

Table 3.2 Odds Ratios for Predictors of Risk of Occupational Pension Income Receipt for Women Ages 51-65 – Birth Cohort

	Birth Cohort	
	(1)	(2)
Age	1.252**	1.236**
	(0.007)	(0.008)
Born 1940s/1950s	1.700**	1.584**
	(0.076)	(0.079)
Black		1.308**
		(0.075)
Hispanic		0.859
		(0.081)
Years of education		1.172**
		(0.011)
Unmarried		2.211**
		(0.106)
Number in household		0.910**
		(0.019)
Self-rated health		0.956*
		(0.019)
Ln(respondent annual earnings)		0.885**
		(0.004)
Ln(total household wealth)		1.065**
		(0.007)
Private health insurance		2.563**
		(0.127)
N	38467	32791
Log-likelihood	-10781	-8309

** p<0.01, * p<0.05, + p<0.1

Table 3.3 Odds Ratios for Predictors of Risk of Occupational Pension Income Receipt for Women Ages 51-65 – Marital Continuity Measures

	Marital Continuity			
	Ever divorced		*Length of longest marriage*	
	(1)	(2)	(3)	(4)
Age	1.252**	1.236**	1.264**	1.233**
	(0.007)	(0.008)	(0.007)	(0.009)
Born 1940s/1950s	1.654**	1.559**	2.375**	2.140**
	(0.077)	(0.080)	(0.218)	(0.220)
Covariate	0.868+	0.744**	0.992**	1.009**
	(0.075)	(0.075)	(0.002)	(0.002)
Covariate*Born 1940s/1950s	1.369*	1.276	0.988**	0.989**
	(0.186)	(0.190)	(0.003)	(0.003)
Black		1.293**		1.323**
		(0.074)		(0.076)
Hispanic		0.855+		0.873
		(0.080)		(0.082)
Years of education		1.172**		1.177**
		(0.011)		(0.011)
Unmarried		2.253**		2.382**
		(0.109)		(0.130)
Number in household		0.909**		0.909**
		(0.019)		(0.019)
Self-rated health		0.958*		0.959*
		(0.019)		(0.019)
Ln(respondent annual earnings)		0.885**		0.885**
		(0.004)		(0.004)
Ln(total household wealth)		1.064**		1.063**
		(0.007)		(0.007)
Private health insurance		2.572**		2.583**
		(0.127)		(0.128)
N	38467	32791	38467	32791
Log-likelihood	-10779	-8304	-10741	-8299

** p<0.01, * p<0.05, + p<0.1

Table 3.4 Odds Ratios for Predictors of Risk of Occupational Pension Income Receipt for Women Ages 51-65 – Family Timing Measures

	Family Timing			
	First marriage after 30		*First birth after 30*	
	(1)	(2)	(3)	(4)
Age	1.252**	1.235**	1.254**	1.238**
	(0.007)	(0.008)	(0.007)	(0.008)
Born 1940s/1950s	1.690**	1.610**	1.668**	1.576**
	(0.076)	(0.080)	(0.075)	(0.079)
Covariate	1.067+	0.792**	1.454**	1.160**
	(0.041)	(0.038)	(0.064)	(0.060)
Black		1.343**		1.312**
		(0.077)		(0.075)
Hispanic		0.880		0.845+
		(0.083)		(0.079)
Years of education		1.176**		1.167**
		(0.011)		(0.011)
Unmarried		2.413**		2.188**
		(0.123)		(0.105)
Number in household		0.912**		0.910**
		(0.019)		(0.019)
Self-rated health		0.958*		0.956*
		(0.019)		(0.019)
Ln(respondent annual earnings)		0.885**		0.885**
		(0.004)		(0.004)
Ln(total household wealth)		1.063**		1.065**
		(0.007)		(0.007)
Private health insurance		2.578**		2.555**
		(0.128)		(0.126)
N	38467	32791	38467	32791
Log-likelihood	-10780	-8297	-10747	-8305

** p<0.01, * p<0.05, + p<0.1

Table 3.5 Odds Ratios for Predictors of Risk of Occupational Pension Income Receipt for Women Ages 51-65 – Employment Commitment Measures

	Employment Commitment			
	Employment absence[1]		*Earnings continuity*[2]	
	(6a)	(6b)	(7a)	(7b)
Age	1.259**	1.249**	1.259**	1.249**
	(0.009)	(0.011)	(0.009)	(0.011)
Born 1940s/1950s	1.840**	1.962**	1.836**	1.957**
	(0.113)	(0.133)	(0.113)	(0.133)
Covariate	0.883	0.832*	0.952	1.010
	(0.070)	(0.077)	(0.044)	(0.053)
Black		1.300**		1.299**
		(0.094)		(0.093)
Hispanic		0.899		0.902
		(0.111)		(0.112)
Years of education		1.172**		1.172**
		(0.013)		(0.013)
Unmarried		2.395**		2.392**
		(0.156)		(0.156)
Number in household		0.908**		0.908**
		(0.025)		(0.026)
Self-rated health		0.967		0.968
		(0.024)		(0.024)
Ln(respondent annual earnings)		0.892**		0.892**
		(0.006)		(0.006)
Ln(total household wealth)		1.065**		1.065**
		(0.010)		(0.010)
Private health insurance		2.264**		2.266**
		(0.155)		(0.155)
N	27632	23111	27632	23111
Log-likelihood	-8381	-6384	-8382	-6386

** p<0.01, * p<0.05, + p<0.1

Notes: 1)Employment absence: proportion of prime-age years (20-55) with no earnings; 2)Earnings continuity: whether respondent has more than 20 years of covered earnings during prime ages (20-55)

Table 4.1 Descriptive Statistics for Analysis of Women's Household IRA/Keogh Wealth

	All Women			Born in the 1930s (HRS)			Born in the 1940s/1950s (WB/EBB)		
	Mean	*SD*	*N*	*Mean*	*SD*	*N*	*Mean*	*SD*	*N*
IRA/Keogh Wealth (2008 real dollars)	60463.140	227428.000	39649	53399.730	154763.700	25632	67598.100	282276.300	14017
Age	57.781	3.901	39649	59.505	3.797	25632	56.039	3.160	14017
Marital Continuity									
Ever divorced	0.377	0.485	39649	0.333	0.471	25632	0.421	0.494	14017
Length of longest marriage	26.962	12.668	39649	29.464	12.589	25632	24.436	12.240	14017
Family Timing									
First marriage after 30	0.388	0.487	39649	0.287	0.452	25632	0.490	0.500	14017
First birth after 30	0.219	0.413	39649	0.160	0.367	25632	0.278	0.448	14017
Employment Commitment									
Employment absence (% of prime-age years (20-55) with no earnings)	0.308	0.286	30139	0.306	0.286	24090	0.318	0.286	6049
Earnings continuity (> than 20 years of covered earnings during prime ages (20-55))	0.413	0.492	30139	0.414	0.493	24090	0.410	0.492	6049
Cohort Change									
Born 1940s/1950s	0.497	0.500	39649	0.000	0.000	25632	1.000	0.000	14017
Controls									
Black	0.109	0.311	39649	0.107	0.309	25632	0.111	0.314	14017
Hispanic	0.078	0.268	39649	0.071	0.257	25632	0.085	0.278	14017
Years of education	12.669	2.857	39564	12.291	2.852	25610	13.052	2.811	13954
Unmarried	0.347	0.476	39649	0.343	0.475	25632	0.350	0.477	14017
Number in household	2.372	1.206	39648	2.316	1.189	25631	2.430	1.220	14017
Self-rated health	2.643	1.153	39633	2.647	1.157	25624	2.639	1.149	14009

Table 4.1 (continued)

Total household earnings	77479.260	228126.300	39649	66819.430	109517.200	25632	88247.070	303758.800	14017
Total household wealth	407820.300	1745311.000	34251	338270.400	1110155.000	20949	465055.800	2128767.000	13302
Private health insurance	0.411	0.492	38869	0.362	0.480	25037	0.459	0.498	13832
Number of waves	4.996	2.253	39649	3.503	1.933	25632	6.503	1.381	14017

Notes: All descriptive statistics are weighted

Table 4.2 Retirement (IRA/Keogh) Wealth Trajectories for Women Ages 51-65; Random Coefficient Growth Models – Birth Cohort

		(1)	(2)
Fixed Effects			
Initial Status, π_{0i}	Intercept	3.810**	2.058**
	Born 1940s/1950s	0.725**	0.437*
	Black		-2.233**
	Hispanic		-1.351**
	Years of education		0.412**
	Unmarried		-0.925**
	Number in household		-0.041
	Self-rated health		-0.198**
	Ln(household earnings)		0.155**
	Ln(household wealth)		0.115**
	Private health insurance		-0.128
	# Waves		-0.009
Rate of linear change, π_{1i}	Intercept	0.148**	0.180**
	Born 1940s/1950s	-0.094*	-0.041
	Black		-0.030+
	Hispanic		-0.025
	Years of education		-0.003
	Unmarried		-0.022
	Number in household		-0.004
	Self-rated health		-0.007
	Ln(household earnings)		-0.005
	Ln(household wealth)		0.000
	Private health insurance		0.034**
	# Waves		-0.013**
Rate of quadratic change, $\pi 2_i$	Intercept	-0.008**	-0.002
	Born 1940s/1950s	0.007*	0.005+
Random Effects	Level 1 Residual	7.241**	7.530**
	Level 2 Intercept	20.4321**	13.825**
	Level 2 Age	0.381**	0.294**
	Level 2 Age^2	0.001**	0.001**
	N	39649	33676
	Number of groups	9397	9308
	Log Likelihood	-109156	-92313

** p<0.01, * p<0.05, + p<0.1

Table 4.3 Retirement (IRA/Keogh) Wealth Trajectories for Women Ages 51-65; Random Coefficient Growth Models – Marital Continuity Measures

	Covariate	*Ever divorced*		*Length of longest marriage*	
		(1)	(2)	(3)	(4)
Fixed Effects					
Initial Status, π_{oi}	Intercept	3.801**	2.090**	4.105**	2.088**
	Born 1940s/1950s	0.792**	0.432*	0.766**	0.405+
	Covariate	-0.673**	-0.325*	0.054**	0.001
	Covariate*Born 1940s/1950s	0.397*	0.302+	-0.016*	-0.005
	Black		-2.261**		-2.189**
	Hispanic		-1.407**		-1.328**
	Years of education		0.414**		0.413**
	Unmarried		-0.818**		-0.965**
	Number in household		-0.045		-0.038
	Self-rated health		-0.192**		-0.195**
	Ln(household earnings)		0.154**		0.155**
	Ln(household wealth)		0.114**		0.115**
	Private health insurance		-0.119		-0.133
	# Waves		-0.003		-0.010
Rate of linear change, π_{1i}	Intercept	0.150**	0.178**	0.109**	0.188**
	Born 1940s/1950s	-0.088*	-0.040	-0.068+	-0.028
	Covariate	-0.102**	-0.116**	0.054**	0.001
	Black		-0.030+		-0.026
	Hispanic		-0.024		-0.021
	Years of education		-0.003		-0.003
	Unmarried		-0.017		0.006
	Number in household		-0.004		-0.005
	Self-rated health		-0.007		-0.007
	Ln(household earnings)		-0.004		-0.005
	Ln(household wealth)		-0.000		-0.000
	Private health insurance		0.035**		0.036**
	# Waves		-0.012**		-0.012**
Rate of quadratic change, $\pi 2_i$	Intercept	-0.008**	-0.003	-0.008**	-0.004+
	Born 1940s/1950s	0.006*	0.005	0.005+	0.004
	Covariate	0.006*	0.007**	-0.000**	-0.000*
Random Effects	Level 1 Residual	7.245**	7.526**	7.242**	7.523**
	Level 2 Intercept	20.293**	13.803**	20.184**	13.808**
	Level 2 Age	0.378**	0.290**	0.377**	0.290**

Table 4.3 (continued)

Level 2 Age^2	0.001**	0.001**	0.001**	0.001**
N	39649	33676	39649	33676
Number of groups	9397	9308	9397	9308
Log Likelihood	-109098	-92278	-109020	-92294

** p<0.01, * p<0.05, + p<0.1

Table 4.4 Retirement (IRA/Keogh) Wealth Trajectories for Women Ages 51-65; Random Coefficient Growth Models – Family Timing Measures

	Covariate	*First marriage after 30*		*First birth after 30*	
		(1)	(2)	(3)	(4)
Fixed Effects					
Initial Status, π_{oi}	Intercept	3.772**	2.051**	3.790**	2.035**
	Born 1940s/1950s	0.798**	0.461*	0.628**	0.464*
	Covariate	-1.214**	-0.092	0.768**	0.371*
	Covariate*Born 1940s/1950s	1.792**	0.487**	0.904**	0.203
	Black		-2.206**		-2.225**
	Hispanic		-1.335**		-1.371**
	Years of education		0.412**		0.403**
	Unmarried		-0.828**		-0.936**
	Number in household		-0.041		-0.044
	Self-rated health		-0.197**		-0.198**
	Ln(household earnings)		0.155**		0.154**
	Ln(household wealth)		0.114**		0.115**
	Private health insurance		-0.124		-0.128
	# Waves		-0.012		-0.024
Rate of linear change, π_{1i}	Intercept	0.149**	0.179**	0.144**	0.185**
	Born 1940s/1950s	-0.089*	-0.040	-0.087*	-0.040
	Covariate	-0.078*	-0.047	-0.108*	-0.064
	Black		-0.029+		-0.030+
	Hispanic		-0.025		-0.024
	Years of education		-0.003		-0.003
	Unmarried		-0.025+		-0.021
	Number in household		-0.004		-0.004
	Self-rated health		-0.007		-0.007
	Ln(household earnings)		-0.005		-0.004
	Ln(household wealth)		-0.000		-0.000
	Private health insurance		0.034**		0.034**
	# Waves		-0.013**		-0.012**
Rate of quadratic change, $\pi 2_i$	Intercept	-0.008**	-0.002	-0.007**	-0.002
	Born 1940s/1950s	0.006*	0.005	0.006*	0.005
	Covariate	0.005*	0.004	0.007*	0.004
Random Effects	Level 1 Residual	7.242**	7.523**	7.242**	7.530**
	Level 2 Intercept	20.175**	13.842**	20.209**	13.783**
	Level 2 Age	0.377**	0.292**	0.379**	0.293**

Table 4.4 (continued)

Level 2 Age^2	0.001**	0.001**	0.001**	0.001**
N	39649	33676	39649	33676
Number of groups	9397	9308	9397	9308
Log Likelihood	-109029	-92308	-109133	-92310

** p<0.01, * p<0.05, + p<0.1

Table 4.5 Retirement (IRA/Keogh) Wealth Trajectories for Women Ages 51-65; Random Coefficient Growth Models – Employment Commitment Measures (Based on m=5 Imputed Datasets)

	Covariate	*Employment absence*[1]		*Earnings Continuity*[2]	
Fixed Effects		(1)	(2)	(3)	(4)
Initial Status,					
π_{oi}	Intercept	3.759**	3.678**	3.762**	3.704**
	Born 1940s/1950s	0.726+	0.373	0.769*	0.359
	Covariate	0.062	0.039	-0.217	-0.174
	Covariate*Born 1940s/1950s	0.048	0.033	-0.079	-0.022
	Black		-2.278**		-2.276**
	Hispanic		-1.419**		-1.419**
	Years of education		0.416**		0.416**
	Unmarried		-0.867*		-0.864*
	Number in household		-0.014		-0.015
	Self-rated health		-0.180		-0.180
	Ln(household earnings)		0.153		0.152
	Ln(household wealth)		0.103		0.103
	Private health insurance		-0.118		-0.119
	# Waves		0.007		0.017
Rate of linear					
change, π_{1i}	Intercept	0.154	0.134	0.156	0.129
	Born 1940s/1950s	-0.095	-0.042	0.072	0.040
	Covariate	0.004	0.008	0.058	0.035
	Black		-0.038		-0.039
	Hispanic		-0.023		-0.023
	Years of education		-0.002		-0.003
	Unmarried		-0.021		-0.021
	Number in household		-0.005		-0.005
	Self-rated health		-0.005		-0.005
	Ln(household earnings)		-0.004		-0.004
	Ln(household wealth)		-0.001		-0.001
	Private health insurance		0.033		0.033
	# Waves		-0.013		-0.015
Rate of quadratic					
change, $\pi 2_i$	Intercept	-0.008	-0.003	-0.008	-0.002
	Born 1940s/1950s	0.007	0.006	0.007	0.006
	Covariate	-0.001	-0.001	-0.003	-0.004
Random Effects	Level 1 Residual	7.240**	7.260**	7.241**	7.260**

Table 4.5 (continued)

Level 2 Intercept	20.429**	14.410**	20.405**	14.407**
Level 2 Age	0.381*	0.364*	0.380*	0.363*
Level 2 Age^2	0.001	0.001	0.001	0.001
N	39649	39649	39649	39649
Number of groups	9397	9397	9397	9397
Log Likelihood	-109155	-107435	-109152	-107434

** p<0.01, * p<0.05, + p<0.1

Notes: 1)Employment absence: proportion of prime-age years (20-55) with no earnings ; 2)Earnings continuity: whether respondent has more than 20 years of covered earnings during prime ages (20-55)

Figures

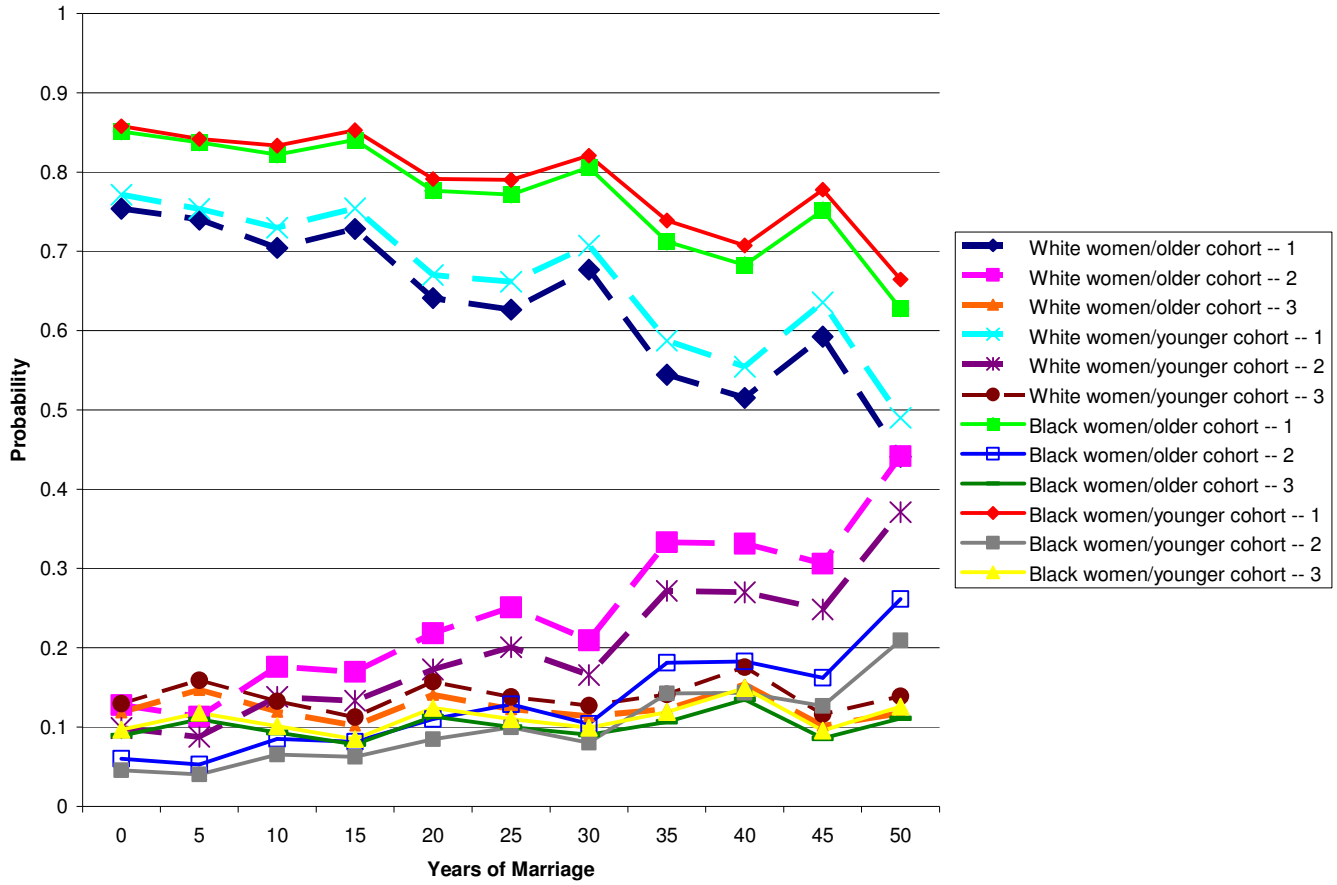

Figure 2.1 Predicted Probabilities of Social Security Eligibility Type by Marriage Length, Cohort, and Race (estimates based on Table 2.2)

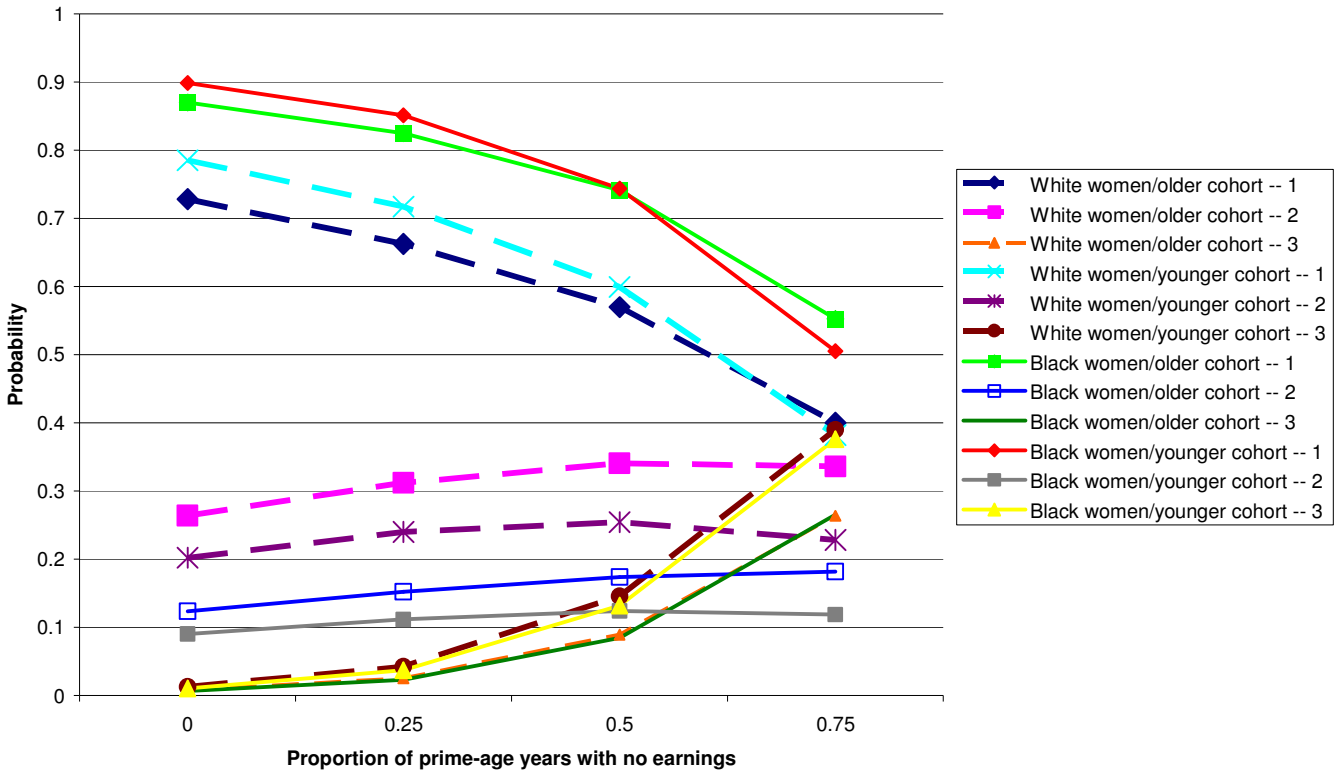

Figure 2.2.Predicted Probabilities of Social Security Eligibility Type by Employment Absence, Cohort, and Race (estimates based on Table 2.3)

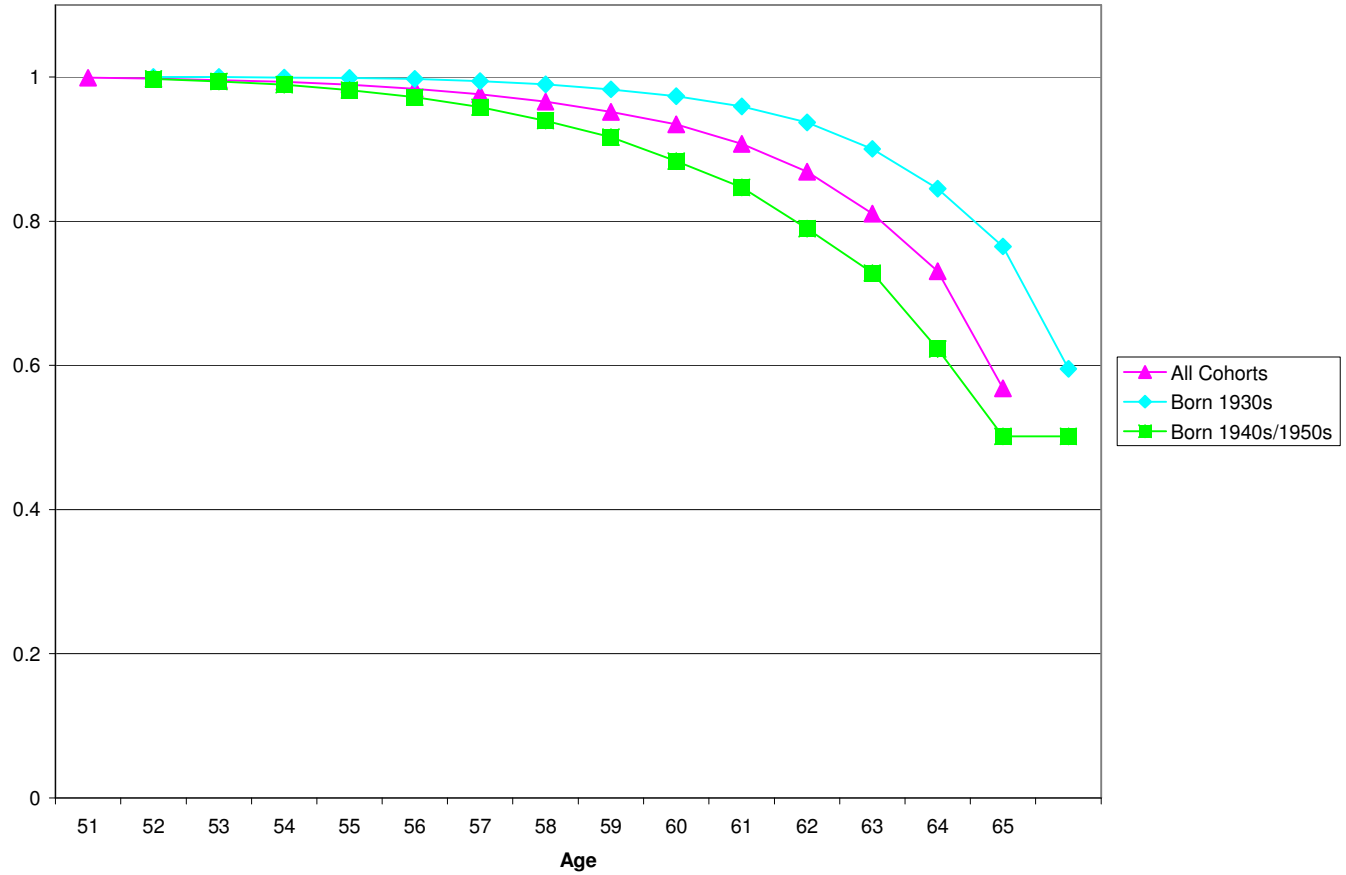

Figure 3.1 Survivor Function by Age for Risk of Women's Occupational Pension Income Receipt

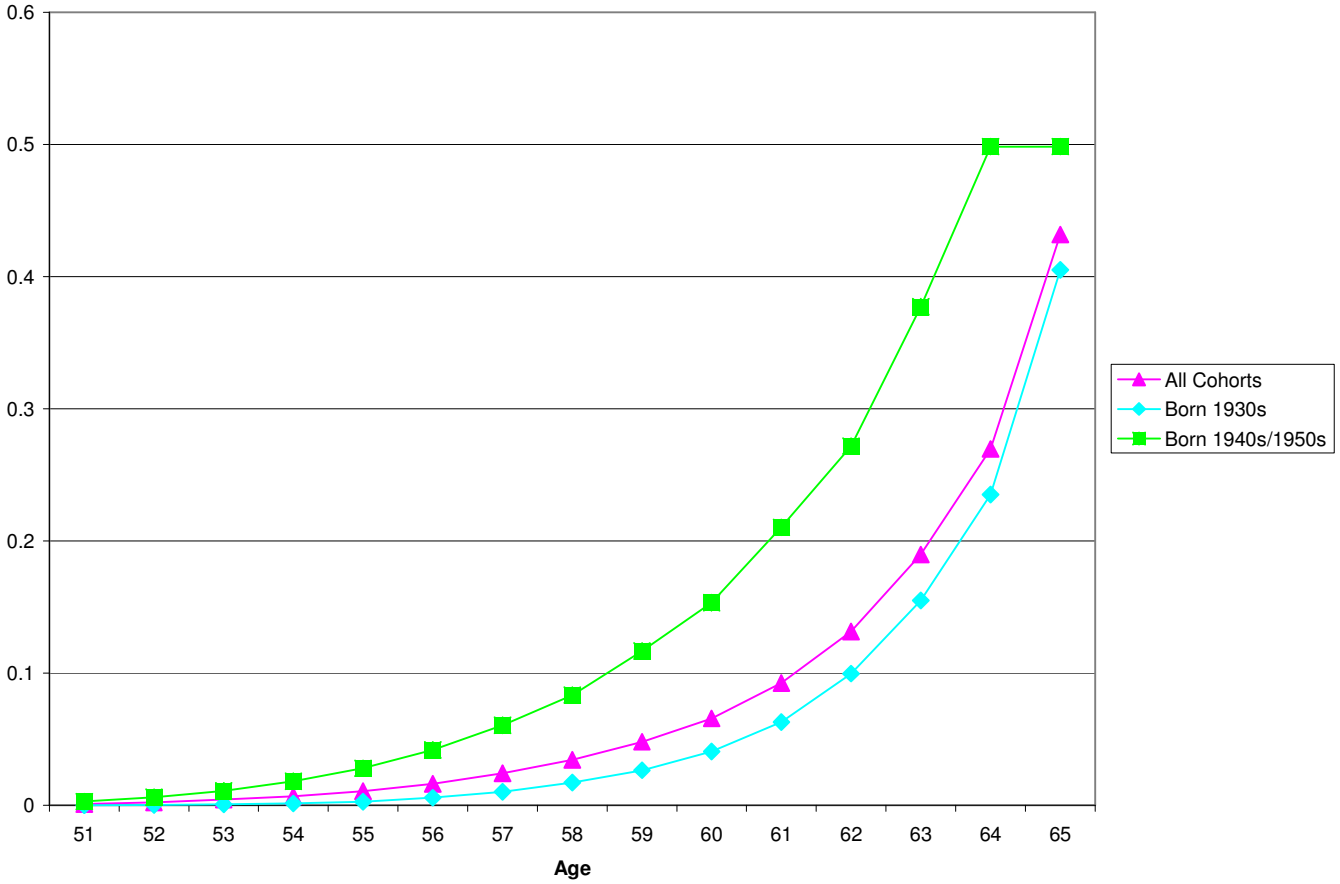

Figure 3.2 Cumulative Hazard Function by Age for Risk of Women's Occupational Pension Income Receipt

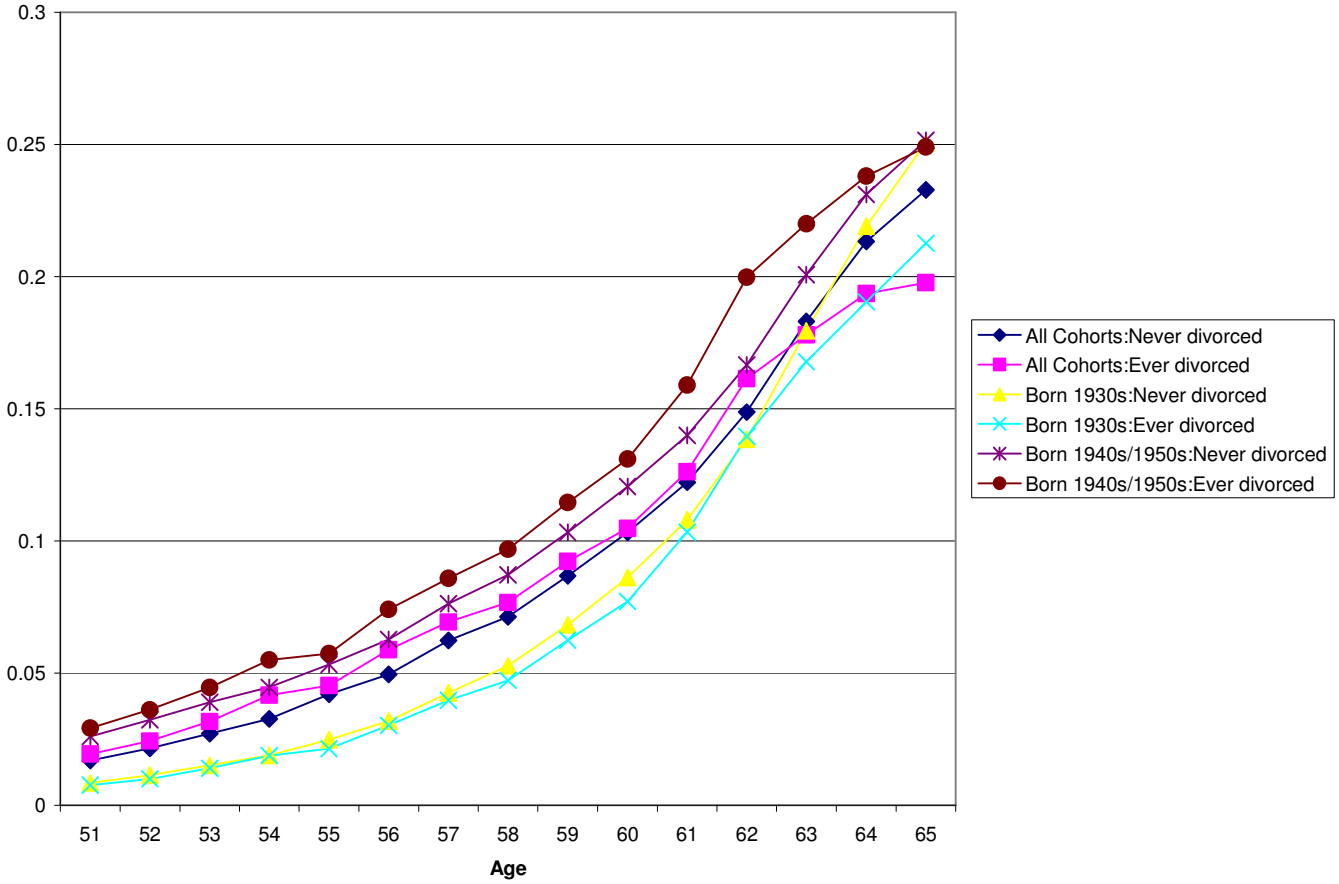

Figure 3.3 Predicted Hazards of Women's Pension Receipt by Age, Cohort, and Ever Divorced (estimates based on Table 3.3)

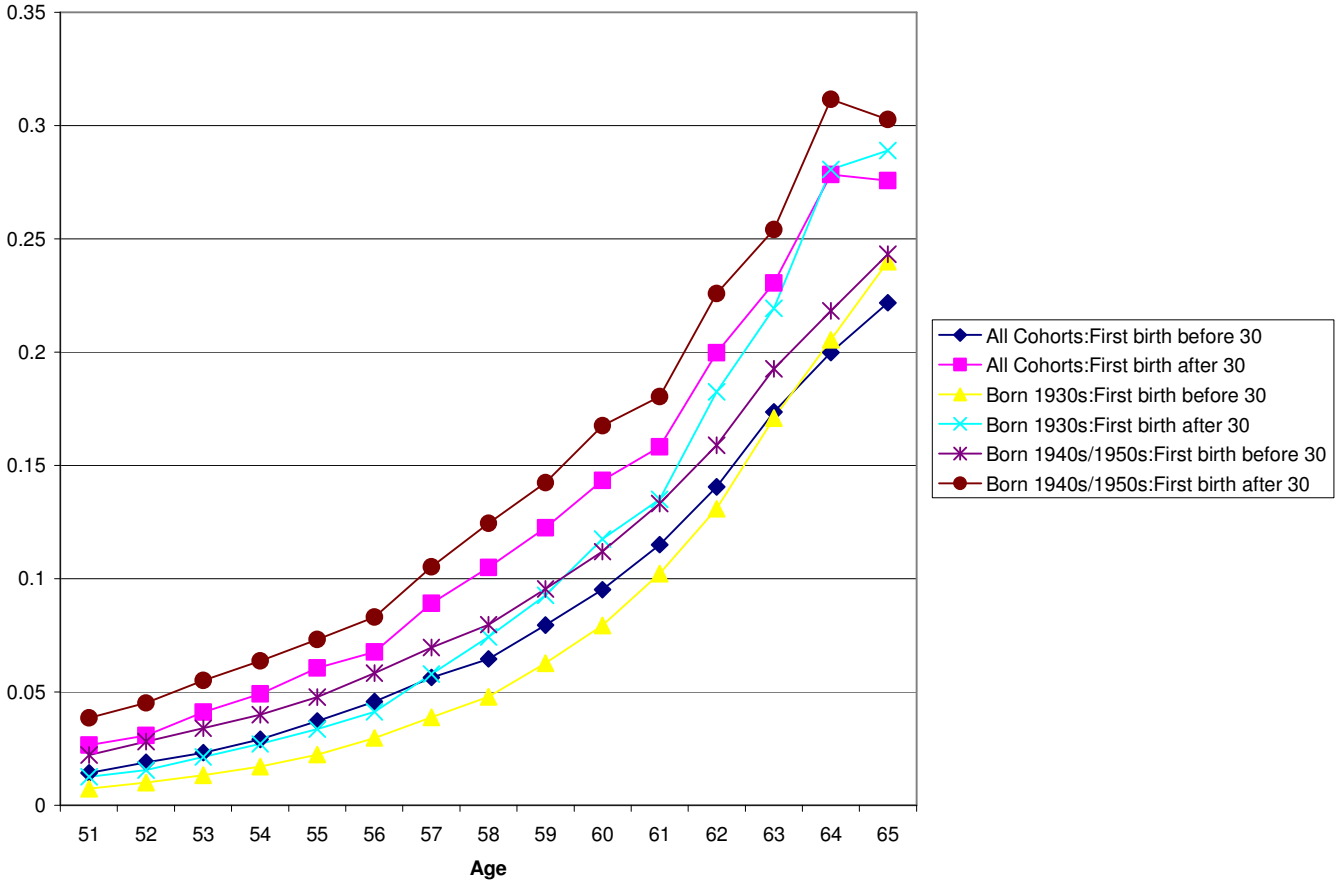

Figure 3.4 Predicted Hazards of Women's Pension Receipt by Age, Cohort, and First Birth Timing (estimates based on Table 3.4)

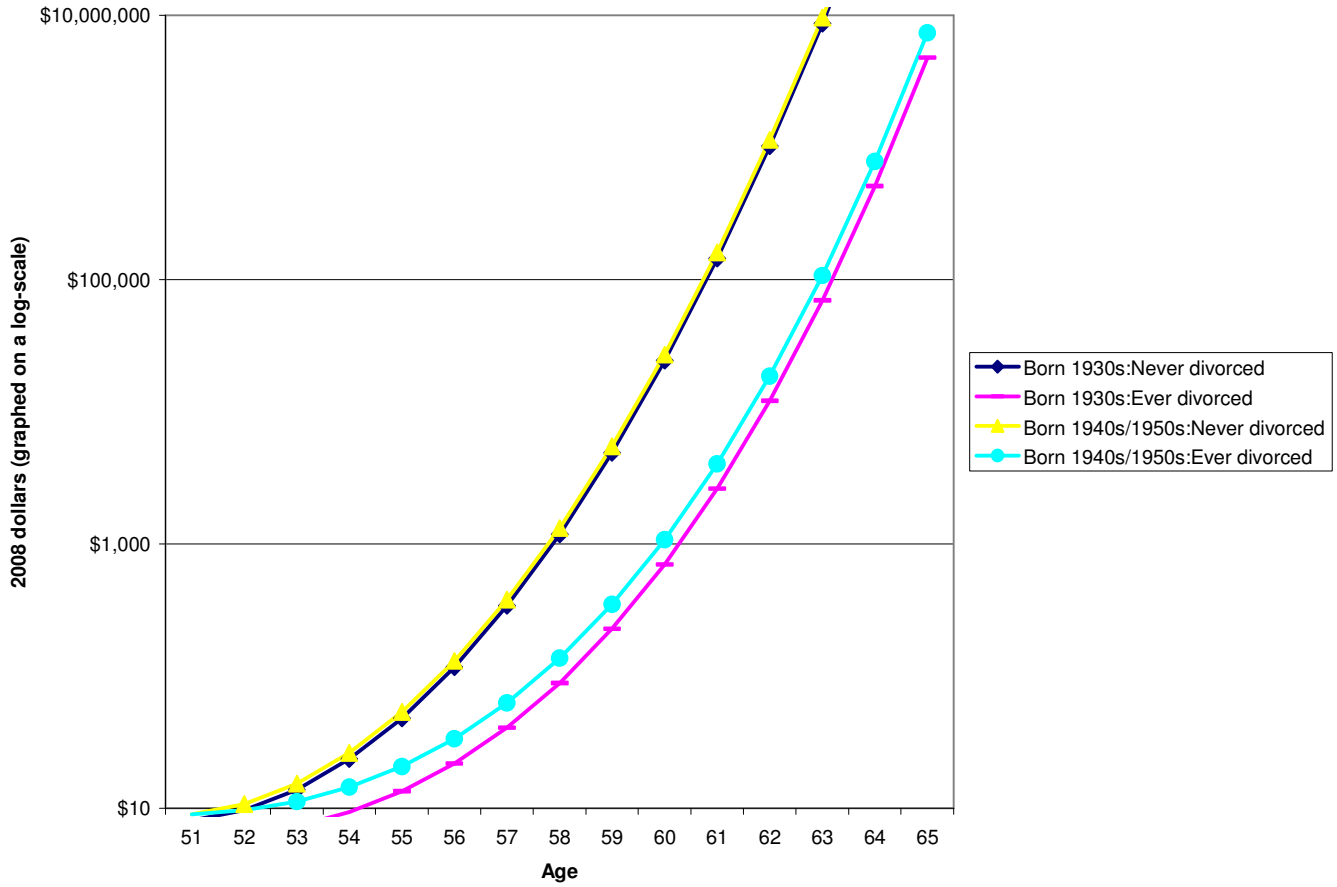

Figure 4.1 Predicted Retirement Wealth (IRA/Keogh) Trajectories for Women, Ages 51-65, by Cohort and Ever Divorced (estimates based on Table 4.3)

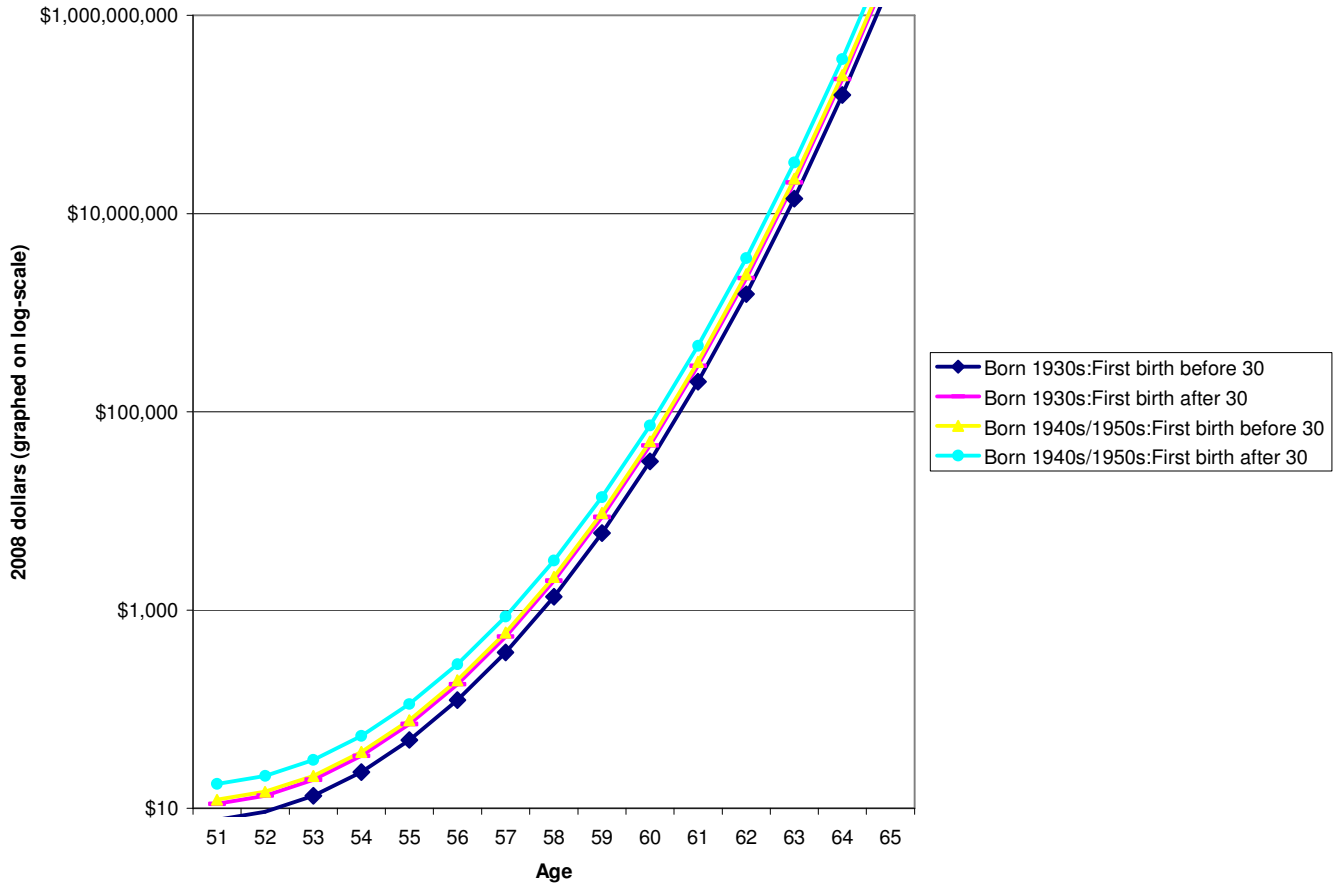

Figure 4.2 Predicated Retirement Wealth (IRA/Keogh) Trajectories for Women, Ages 51-65, by Cohort and First Birth Timing (estimates based on Table 4.4)

Appendix

Appendix Table 2.A Descriptive Statistics for Unimputed, Original Dataset for Analysis of Women's Social Security Eligibility Type

	All Women			Born 1930-1935 (HRS)			Born 1936-1941 (HRS)		
	Mean	*SD*	*N*	*Mean*	*SD*	*N*	*Mean*	*SD*	*N*
Social Security eligibility status									
Own worker benefit	0.623	0.434	2188	0.581	0.462	999	0.659	0.403	1189
Dual eligibility	0.252	0.434	2188	0.309	0.462	999	0.204	0.403	1189
Auxiliary benefit	0.125	0.434	2188	0.110	0.462	999	0.138	0.403	1189
Age	66.233	4.840	2188	68.974	4.252	999	63.929	4.038	1189
Marital Continuity									
Ever divorced	0.333	0.471	2188	0.296	0.457	999	0.363	0.481	1189
Length of longest marriage	33.017	15.281	2188	34.829	16.218	999	31.495	14.276	1189
Family Timing									
First marriage after 30	0.316	0.465	5459	0.342	0.474	2308	0.298	0.457	3151
First birth after 30	0.169	0.375	5459	0.172	0.378	2308	0.167	0.373	3151
Employment Commitment									
Employment absence	0.404	0.262	3998	0.446	0.270	1700	0.373	0.250	2298
Earnings continuity	0.479	0.500	3998	0.458	0.498	1700	0.495	0.500	2298
Cohort Change									
Born 1936-1941	0.577	0.494	5459	0.000	0.000	2308	1.000	0.000	3151
Controls									
Black	0.187	0.390	5459	0.197	0.398	2308	0.180	0.384	3151
Hispanic	0.097	0.295	5459	0.086	0.280	2308	0.104	0.306	3151
Years of education	11.915	3.042	5451	11.716	3.105	2306	12.061	2.987	3145
Unmarried	0.436	0.496	2188	0.489	0.500	999	0.392	0.488	1189
Number in household	2.172	1.219	2188	2.083	1.187	999	2.247	1.242	1189
Self-rated health	2.991	1.154	2188	3.006	1.133	999	2.978	1.171	1189
Total respondent annual earnings	4608.044	13360.190	2188	3333.850	11102.070	999	5678.624	14917.660	1189
Total household wealth	407818.300	1239249.000	2183	373164.600	1015319.000	997	436949.600	1399828.000	1186
Private health insurance	0.202	0.401	2162	0.187	0.390	999	0.214	0.410	1180

Appendix Table 2B. Odds Ratios for Multinomial Logit Models of Women's Social Security Eligibility Type -- Full Model with All Covariates

	Own worker benefit	Dual eligibility
Born 1936-1941	0.556**	0.422**
	(0.112)	(0.096)
Ever divorced	1.828**	1.889**
	(0.352)	(0.404)
Length of longest marriage	1.011+	1.046**
	(0.006)	(0.007)
Marriage length*Cohort	0.999	0.991
	(0.010)	(0.011)
First marriage after age 30	1.731**	0.800
	(0.312)	(0.192)
Delayed marriage*Cohort	0.757	0.864
	(0.361)	(0.434)
First birth after age 30	0.895	0.993
	(0.204)	(0.248)
Employment absence	0.024**	0.004**
	(0.012)	(0.002)
Employment absence*Cohort	1.221	3.760
	(1.672)	(5.320)
Earnings continuity	4.081**	0.965
	(1.452)	(0.309)
Earnings continuity*Cohort	0.556	0.616
	(0.385)	(0.460)
Age	1.014+	1.040**
	(0.008)	(0.010)
Black	1.365	0.613+
	(0.321)	(0.157)
Hispanic	0.941	0.578
	(0.240)	(0.202)
Years of education	1.104**	1.007
	(0.029)	(0.032)
Unmarried	0.524**	1.202
	(0.090)	(0.258)
Number in household	1.077	0.914
	(0.059)	(0.059)
Self-rated health	1.043*	1.004
	(0.020)	(0.021)
Ln(total respondent earnings)	0.989	0.995
	(0.016)	(0.018)
Ln(total household wealth)	1.303**	1.036
	(0.087)	(0.086)

Appendix Table 2B (continued)		
Private health insurance	0.815	0.486**
	(0.203)	(0.117)
N	5459	5459
Pseudo R^2	0.320	0.320
Log Likelihood	-4046	-4046

** p<0.01, * p<0.05, + p<0.1

Appendix Table 3A. Odds Ratios for Predictors of Risk of Pension Income Receipt for Women Ages 51-65 -- Full Model with All Covariates	
Age	1.254**
	(0.012)
Born 1940s/1950s	5.356**
	(1.098)
Ever divorced	0.562**
	(0.077)
Ever divorced*Cohort	1.374
	(0.363)
Length of longest marriage	1.007*
	(0.003)
Marriage length*Cohort	0.966**
	(0.006)
First marriage after age 30	0.631**
	(0.056)
First birth after age 30	1.270**
	(0.090)
Employment absence	0.799*
	(0.079)
Earnings continuity	0.946
	(0.054)
Black	1.364**
	(0.100)
Hispanic	0.920
	(0.114)
Years of education	1.175**
	(0.013)
Unmarried	3.133**
	(0.252)
Number in household	0.906**
	(0.026)
Self-rated health	0.978
	(0.024)
Ln(respondent annual earnings)	0.892**
	(0.006)
Ln(total household wealth)	1.059**
	(0.010)

Appendix Table 3A (continued)	
Private health insurance	2.341**
	(0.160)
N	23111
Log-likelihood	-6323

** p<0.01, * p<0.05, + p<0.1

Appendix Table 4A. Descriptive Statistics for Multiple Imputation Dataset (m=5) for Analysis of Women's Household IRA/Keogh Wealth									
	All Women			Born in the 1930s (HRS)			Born in the 1940s/1950s (WB/EBB)		
	Mean	*SD*	*N*	*Mean*	*SD*	*N*	*Mean*	*SD*	*N*
IRA/Keogh Wealth (2008 real dollars)	52252.700	192065.900	39649	45779.340	142515.900	25632	64090.130	258823.100	14017
Age	58.099	4.037	39649	59.379	3.808	25632	55.757	3.334	14017
Employment Commitment									
Employment absence (% of prime-age years (20-55) with no earnings)	0.342	0.353	39649	0.323	0.309	25632	0.376	0.420	14017
Earnings continuity (> than 20 years of covered earnings during prime ages (20-55))	0.450	0.540	39649	0.408	0.499	25632	0.526	0.602	14017
Cohort Change									
Born 1940s/1950s	0.354	0.478	39649	0.000	0.000	25632	0.000	0.000	14017
Controls									
Black	0.173	0.378	39649	0.182	0.386	25632	0.158	0.364	14017
Hispanic	0.096	0.294	39649	0.094	0.292	25632	0.098	0.297	14017
Years of education	12.294	3.008	39649	12.027	3.009	25632	12.783	2.944	14017
Unmarried	0.335	0.472	39649	0.361	0.480	25632	0.286	0.452	14017
Number in household	2.420	1.262	39649	2.373	1.267	25632	2.505	1.246	14017
Self-rated health	2.708	1.161	39649	2.732	1.171	25632	2.665	1.142	14017
Total household annual earnings (2008 real dollars)	70107.010	171519.600	39649	61838.750	105753.400	25632	85226.640	249823.000	14017
Total household wealth (2008 real dollars)	9.90E+07	1.73E+10	39649	1.43E+08	2.14E+10	25632	1.90E+07	2.18E+09	14017
Private health insurance	0.387	0.487	39649	0.358	0.479	25632	0.440	0.496	14017
Number of waves	4.345	2.234	39649	3.400	1.915	25632	6.074	1.671	14017

Appendix Table 4B. Retirement (IRA/Keogh) Wealth Trajectories for Women Ages 51-65; Random Coefficient Growth Models -- Full Models with All Covariates

Fixed Effects					
Initial Status, π_{oi}	Intercept	12.345**	Rate of linear change, π_{1i}	Intercept	1.110
	Born 1940s/1950s	1.989*		Born 1940s/1950s	0.932
	Ever divorced	0.771		Ever divorced	0.875*
	Length of longest marriage	1.000		Length of longest marriage	1.000
	First marriage after age 30	1.019		First marriage after age 30	0.900+
	Delayed marriage*Cohort	1.380		First birth after age 30	0.979
	First birth after age 30	1.195		Black	0.969+
	Delayed fertility*Cohort	0.901		Hispanic	0.968
	Employment absence	0.991		Years of education	0.996
	Earnings continuity	0.922		Unmarried	1.003
	Black	0.123**		Number in household	1.002
	Hispanic	0.326**		Self-rated health	0.986*
	Years of education	1.540**		Ln(household earnings)	1.000
	Unmarried	0.452**		Ln(household wealth)	1.000
	Number in household	0.900*		Private health insurance	1.043**
	Self-rated health	0.894*		# Waves	0.986*
	Ln(household earnings)	1.147**			
	Ln(household wealth)	1.118**			
			Rate of quadratic change, $\pi 2_i$		
	Private health insurance	0.804+		Intercept	0.998
	# Waves	1.020		Born 1940s/1950s	1.004
				Ever divorced	1.009**
				Length of longest marriage	1.000
				First marriage after age 30	1.008*
				First birth after age 30	1.002
Random Effects	Level 1 Residual	7.266**			
	Level 2 Intercept	14.056**			
	Level 2 Age	0.300**			
	Level 2 Age^2	0.001**			

Appendix Table 4B (continued)

N	24686
Number of groups	6312
Log Likelihood	-67325

** p<0.01, * p<0.05, + p<0.1

References

Anderson, Deborah J., Binder, Melissa, and Kate Krause. 2002. "The Motherhood Wage Penalty: Which Mothers Pay It and Why?" *The American Economic Review* 92: 354-358.

Angel, Jacqueline; Jiminez, Maren A; and Ronald A. Angel. 2007. "The Economic Consequences of Widowhood for Older Minority Women." *The Gerontologist* 47: 224-234.

Atchely, Robert C. 1982. "Retirement as a Social Institution." *Annual Review of Sociology* 8: 263-287.

Avellar, Sarah and Pamela J. Smock. 2003. "Has the Price of Motherhood Declined Over Time? A Cross-Cohort Comparison of the Motherhood Wage Penalty." *Journal of Marriage and Family* 65: 597-607.

Bajtelsmit, Vickie L. 2006. "Gender, the Family, and Economy," Pp. 121-140 in *The Oxford Handbook of Pensions and Retirement Income.* Gordon L. Clark; Alicia C. Munnell; and J. Michael Orzag, eds. New York: Oxford University Press.

Becker, Gary S. 1985. "Human Capital, Effort, and the Sexual Division of Labor." *Journal of Labor Economics* 3: S33-S58.

Bennett, Neil G., Bloom, David E., and Patricia H. Craig. 1989. "The Divergence of Black and White Marriage Patterns." *American Journal of Sociology* 95: 692-722.

Bernhardt, Annette, Morris, Martina, Handcock, Mark S., and Marc A. Scott. 2001. *Divergent Paths: Economic Mobility in the New American Labor Market*. New York: Russell Sage Foundation.

Bianchi, Suzanne M. 1999. "Feminization and Juvenilization of Poverty: Trends, Relative Risks, Causes, and Consequences." *Annual Review of Sociology* 25: 307-333.

Blackburn, McKinley L., Bloom, David E., and David Neumark. 1993. "Fertility Timing, Wages, and Human Capital." *Journal of Population Economics* 61: 1-30.

Blau, David M. 1998. "Labor Force Dynamics of Older Married Couples." *Journal of Labor Economics* 16: 595-629.

Blau, Francine D. and Lawrence M. Kahn. 1992. "The Gender Earnings Gap: Learning from International Comparisons." *American Economic Review* 82: 533-538.

_____. 2000. "Gender Differences in Pay." *Journal of Economic Perspectives*, 14: 75-99.

_____. 2003. "Understanding International Differences in the Gender Pay Gap." *Journal of Labor Economics* 21: 106-144.

Blossfeld, Hans-Peter, ed. 1995. *The New Role of Women: Family Formation in Modern Societies*. Boulder, CO: Westview Press.

Blossfeld, Hans-Peter, Golsch, Katrin and Gotz Rohwer. 2007. *Event History Analysis with STATA*. Mahway, New Jersey: Lawrence Erlbaum Associates, Publishers.

Blossfeld, Hans-Peter and Catherine Hakim, eds. 1997. *Between Equalization and Marginalization: Women Working Part-Time in Europe and the United States of America*. Oxford: Oxford University Press.

Bollen, Kenneth A. 1989. *Structural Equations with Latent Variables*. New York: John Wiley & Sons.

Bongaarts, John. 2004. "Population Aging and the Rising Cost of Public Pensions." *Population and Development Review* 30: 1-23.

Bonoli, Guiliano. 2003. "Two Worlds of Pension Reform in Western Europe." *Comparative Politics* 35: 399-416.

Brady, David, and Denise Kall. 2008. "Nearly Universal, But Somewhat Distinct: The Feminization of Poverty in Affluent, Western Democracies, 1969-2000." *Social Science Research* 37: 976-1007.

Bridges, Benjamin and Sharmila Choudhury. 2005. "Social Security as a Retirement Resource for Near-Retirees." ORES Working Paper #106. Washington, DC: Social Security Administration, Office of Policy, Office of Research, Evaluation, and Statistics, Washington, DC.

_____. 2007. "Social Security Benefits as a Retirement Resource for U.S. Near-Retirees." *Review of Income and Wealth* 53: 538-567.

Browning, Martin. 1992. "Children and Household Economic Behavior." *Journal of Economic Literature* 30: 1434-1475.

Browning, Martin and Annamaria Lusardi. 1996. "Household Saving: Micro Theories and Micro Facts." *Journal of Economic Literature* 34: 1797-1855.

Budig, Michelle J. and Paula England. 2001. "The Wage Penalty for Motherhood." *American Sociological Review* 66: 204-225.

Bumpass, Larry and Hsien-Hen Lu. 2000. "Trends in Cohabitation and Implications for Children's Family Contexts in the United States." *Population Studies* 54: 29-41.

Burkhauser, Richard V., Duncan, Greg J., Hauser, Richard, and Roland Berntsen. 1991. "Wife or Frau, Women Do Worse: A Comparison of Men and Women in the United States and Germany After Marital Dissolution." *Demography* 28: 353-360.

Burkhauser, Richard V., Giles, Philip, Lillard, Dean R., and Johannes Schwarze. 2005. "After Death Do US Part: An Analysis of the Economic Well-Being of Widows in Four Countries." *Journal of Gerontology* 60B (5): S328-S246.

Butrica, Barbara A. and Howard M. Iams. 2000. "Divorced Women at Retirement: Projections of Economic Well-Being in the Near Future." *Social Security Bulletin* 63(3): 3-12.

Butrica, Barbara A., Iams, Howard M., and Karen E. Smith. 2003. "It's All Relative: Understanding the Retirement Prospects of Baby Boomers." Research Report. Washington, DC: The Urban Institute.

Casper, Lynne M. and Bianchi, Suzanne M. 2002. *Continuity and Change in the American Family*. Thousand Oaks, CA: Sage Publications.

Cawthorne, Alexandra. 2008. "The Straight Facts on Women in Poverty." Fact Sheet (October). Washington, DC: Center for American Progress.

Chandler, Timothy D., Kamo, Yoshinori, and James D. Werbel. 1994. "Do Delays in Marriage and Childbirth Affect Earnings?" *Social Science Quarterly* 75: 838-853.

Chang, Mariko L. 2000. "The Evolution of Sex Segregation Regimes." *American Journal of Sociology*, 105: 1658-1701.

Charles, Maria and David B. Grusky. 2004. *Occupational Ghettos: The Worldwide Segregation of Women and Men*. Stanford, CA: Stanford University Press.

Chaudry, Ajay. 2004. *Putting Children First: How Low-Wage Working Mothers Manage Child Care*. New York: Russell Sage Foundation.

Cherlin, Andrew. 1980. "Postponing Marriage: The Influence of Young Women's Work Expectations." *Journal of Marriage and the Family* 42: 355-365.

_____. 1992. *Marriage, Divorce, Remarriage*. Cambridge, MA: Harvard University Press.

Clark, Robert L., Burkhauser, Richard V., Moon, Marilyn, Quinn, Joseph F., and Timothy M. Smeeding. 2004. *The Economics of an Aging Society*. Malden, MA: Blackwell Publishing.

Conley, Dalton. 1999. *Being Black, Living in the Red: Race, Wealth, and Social Policy in America*. Berkeley, CA: University of California Press.

Copeland, Craig. 2009a. "Individual Account Retirement Plans: An Analysis of the 2007 Survey of Consumer Finances, With Market Adjustments to June 2009." *EBRI Issue Brief #333*. EBRI, Washington, DC.

_____. 2009b. "Employment-Based Retirement Plan Participation: Geographic Differences and Trends, 2008." *EBRI Issue Brief #336*. EBRI, Washington, DC.

Correll, Shelley. 2007. "Getting a Job: Is There a Motherhood Penalty?" *American Journal of Sociology* 112: 1297-1338.

Crown, William. 2001. "Economic Status of the Elderly." Pp. 352-368 in *Handbook of Aging and the Social Sciences*, Fifth Edition. Robert H. Binstock and Linda K. George, eds. New York: Academic Press.

Crystal, Stephen and Dennis Shea. 1990. "*Cumulative Advantage, Cumulative Disadvantage, and Inequality Among Elderly People*." The Gerontologist 30: 437-443.

Dannefer, Dale. 2003. "Cumulative Advantage/Disadvantage and the Life Course: Cross-Fertilizing Age and Social Science Theory." *Journal of Gerontology: Social Sciences* 58B: S327-S338.

Deere, Carmen Diana and Cheryl R. Doss. 2006. "The Gender Asset Gap: What Do We Know and Why Does It Matter?" *Feminist Economics* 12: 1-50.

Drobnic, Sonja and Immo Wittig. 1997. "Part-Time Work in the United States of America." Pp. 289-314 in *Between Equalization and Marginalization: Women Working Part-Time in Europe and the United States of America*. Hans-Peter Blossfeld and Catherine Hakim, eds. Oxford: Oxford University Press.

Drobnic, Sonja, Blossfeld-Hans Peter, and Gotz Rohwer. 1999. "Dynamics of Women's Employment Patterns over the Family Life Course: A Comparison of the United States and Germany." *Journal of Marriage and Family* 61: 133-146.

Duncan, Greg J., Boisjoly, Johanne, and Timothy Smeeding. 1996. "Economic Mobility of Young Workers in the 1970s and 1980s."*Demography* 33: 497-508.

Dushi, Irena and Howard M. Iams. 2008. "Cohort Differences in Wealth and Pension Participation of Near-Retirees." *Social Security Bulletin* 68(3): 45-66.

Dynan, Karen E., Skinner, Jonathan, and Stephen P. Zeldes. 2002. "The Importance of Bequests and Life-Cycle Savings in Capital Accumulation: A New Answer." *The American Economic Review* 92: 274-278.

Ebbinghaus, Bernhard. 2006. *Reforming Early Retirement in Europe, Japan, and the USA*. New York: Oxford University Press.

Elder, Glen H., Jr., Johnson, Monica Kirkpatrick, and Robert Crosnoe. 2003. "The Emergence and Development of Life Course Theory," Pp. 3-19 in *Handbook of the Life Course*. Jeylan T. Mortimer and Michael J. Shanahan, eds. New York: Kluwer Academic/Plenum Publishers.

Employee Benefit Research Institute. 2004. "Assets in Qualified Retirement Plans, 1985-2002: Revised." *Facts from EBRI*. EBRI, Washington, DC.

_____. 2008. "Tax Expenditures and Employee Benefits: Estimates from the FY 2009 Budget." *EBRI Fast Facts*. EBRI, Washington, DC.

_____. 2009. "Chapter 8: Retirement Annuity and Employment-Based Retirement Income." *EBRI Databook on Employee Benefits*. EBRI, Washington, DC.

_____. 2010. "Income and Benefits, II: Retirement Plan Participation." *EBRI Fast Facts #153*. EBRI, Washington, DC.

Engelen, Ewald. 2006. "Changing Work patterns and the Reorganization of Occupational Pensions," Pp. 98-120 in *The Oxford Handbook of Pensions and Retirement Income*. Gordon L. Clark; Alicia C. Munnell; and J. Michael Orzag, eds. New York: Oxford University Press.

Engelhardt, Gary V. and Jonathan Gruber. 2004. "Social Security and the Evolution of Elderly Poverty." NBER Working Paper No. 10466. Cambridge, MA: National Bureau of Economic Research.

England, Paula. 2005. "Gender Inequality in Labor Markets: The Role of Motherhood and Segregation." *Social Politics* 12: 264-288.

Esping-Andersen, Gosta. 1990. *The Three Worlds of Welfare Capitalism*. Princeton, NJ: Princeton University Press.

_____. 1999. *Social Foundations of Postindustrial Economies*. New York: Oxford University Press.

Farkas, Janice I. and Angela M. O'Rand. 1998. "The Pension Mix for Women in Middle and Late Life: The Changing Employment Relationship." *Social Forces* 76: 1007-1032.

Federal Interagency Forum on Aging-Related Statistics. 2008a. "Older Americans 2008: Key Indicators of Well-Being." Federal Interagency Forum on Aging-Related Statistics, Washington, DC: U.S. Government Printing Office.

_____. 2008b. "Selected Indicators of Retirement Resources Among People Aged 55-64: 1984, 1994, and 2004." Federal Interagency Forum on Aging-Related Statistics, Washington, DC: U.S. Government Printing Office.

Forest, Kay B., Moen, Phyllis, and Donna Dempster-McClain. 1995. "Cohort Different in the Transition to Motherhood: The Variable Effects of Education and Employment Before Marriage." *The Sociological Quarterly* 36: 301-336.

Gale, William G., and John Karl Scholz. 1994. "Intergenerational Transfers and the Accumulation of Wealth." *Journal of Economic Perspectives* 8: 145-160.

George, Linda K. 2003. "Life Course Research: Achievements and Potential," Pp. 671-678 in *Handbook of the Life Course*. Jeylan T. Mortimer and Michael J. Shanahan, eds. New York: Kluwer Academic/Plenum Publishers.

Ginn, Jay and Sara Arber. 1996. "Patterns of Employment, Gender and Pensions: The Effect of Work History on Older Women's Non-State Pensions." *Work, Employment, and Society* 10: 469-490.

Ginn, Jay, Street, Debra, and Sara Arber. 2001. Women, *Work, and Pensions: International Issues and Perspectives*. Philadelphia, PA: Open University Press.

Goldin, Claudia. 1990. *Understanding the Gender Gap: An Economic History of American Women.* New York: Oxford University Press.

_____. 2004. "The Long Road to the Fast Track: Career and Family." *Annals of the American Academy of Political and Social Science* 596: 20-35.

_____. 2006. "The Quiet Revolution That Transformed Women's Employment, Education, and Family." *American Economic Association Papers and Proceedings* 96: 1-21.

Gordon, David M. 1996. *Fat and Mean: The Corporate Squeeze of Working Americans and the Myth of Managerial Downsizing*. New York: The Free Press.

Gornick, Janet. 2004. "Women's economic outcomes, gender inequality and public policy: findings from the Luxembourg Income Study." *Socio-Economic Review* 2: 213-238.

Gornick, Janet and Marcia Meyers. 2003. *Families That Work: Policies for Reconciling Parenthood and Employment*. New York: Russell Sage Foundation.

Grad, Susan. 1989. "Income and Assets of Social Security Beneficiaries by Type of Benefit." *Social Security Bulletin* 52: 2-10.

Gustman, Alan and Thomas F. Juster. 1995. "Income and Wealth of Older American Households: Modeling Issues for Public Policy Analysis." NBER Working Paper No. 4996. Cambridge, MA: National Bureau of Economic Research.

Halaby, Charles N. 2003. "Panel Models for the Analysis of Change and Growth in Life Course Studies." Pp. 503-527 in *Handbook of the Life Course*. Jeylan T. Mortimer and Michael J. Shanahan, eds. New York: Kluwer Academic/Plenum Publishers.

Han, Shin-Kap and Phyllis Moen. 1999a. "Clocking Out: Temporal Patterning of Retirement." *American Journal of Sociology* 105: 191-236.

_____ and _____. 1999b. "Work and Family Over Time: A Life Course Approach." *The Annals of the American Academy of Political & Social Science* 562: 98-110.

_____ and _____. 2001. "Coupled Careers: Pathways Through Work and Marriage in the United States," Pp. 201-231 in *Careers of Couples in Contemporary Societies: From Male Breadwinner to Dual Earner Families*. Hans-Peter Blossfeld and Sonja Drobnic, eds. Oxford, UK: Oxford University Press.

Hanson, Sandra L. 1983. "A Family Life-Cycle Approach to the Socioeconomic Attainment of Working Women." *Journal of Marriage and the Family* 45: 323-338.

Hardy, Melissa A. 1993.*Regression with Dummy Variables*. Sage University Paper Series on Qualitative Application in the Social Sciences, No. 93. Newbury Park, CA: Sage Publications.

Hardy, Melissa A. and Kim Shuey. 2000. "Pension Decisions in a Changing Economy: Gender, Structure, and Choice." *Journal of Gerontology: Social Sciences*. 55B: S271-S277.

Harrington Meyer, Madonna. 1990. "Family Status and Poverty among Older Women: The Gendered Distribution of Retirement Income in the United States." *Social Problems* 37: 551-563.

_____. 1996. "Making Claims as Workers or Wives: The Distribution of Social Security Benefits." *American Sociological Review* 61: 449-465.

Harrington Meyer, Madonna and Pamela Herd. 2007. *Market Friendly or Family Friendly? The State and Gender Inequality in Old Age*." New York: Russell Sage Foundation.

Harrington Meyer, Madonna, Wolfe, Douglas A., and Christine L. Hines. 2005. "Linking Benefits to Marital Status: Race and Social Security in the US." *Feminist Economics* 11: 145-162.

_____, _____, and _____. 2006. "Declining Eligibility for Social Security Spouse and Widow Benefits in the United States?" *Research on Aging* 28: 240-260.

Hayward, Mark D.; Friedman, Samantha; and Hsinmu Chen. 1998. "Career Trajectories and Older Men's Retirement." *Journal of Gerontology: Social Sciences* 53B: S91-S103.

Heinz, Walter R. 2003. "From Work Trajectories to Negotiated Careers: The Contingent Work Life Course," Pp. 185-382 in *Handbook of the Life Course*. Jeylan T. Mortimer and Michael J. Shanahan, eds. New York: Kluwer Academic/Plenum Publishers.

Henretta, John C. 2001. "Work and Retirement." Pp. 255-271 in *Handbook of Aging and the Social Sciences,* Fifth Edition. Robert H. Binstock and Linda K. George, eds. New York: Academic Press.

Henretta, John C.; O'Rand, Angela M.; and Christopher G. Chan. 1993a. "Joint Role Investments and Synchronization of Retirement: A Sequential Approach to Couples' Retirement Timing." *Social Forces* 71: 981-1000.

_____; _____; and _____. 1993b. "Gender Differences in Employment After Spouse's Retirement." *Research on Aging* 15: 148-169.

Holden, Karen C. and Hsiang-Hui Daphne Kuo. 1996. "Complex Marital Histories and Economic Well-being: The Continuing Legacy of Divorce and Widowhood as the HRS Cohort Approaches Retirement." *The Gerontologist* 36: 383-390.

Holden, Karen C. and Pamela J. Smock. 1991. "The Economic Costs of Marital Dissolution: Why Do Women Bear a Disproportionate Cost?" *Annual Review of Sociology* 17: 51-78.

Hughes, Mary Elizabeth and Angela M. O'Rand. 2004. *The Lives and Times of the Baby Boomers*. New York: The Russell Sage Foundation.

Immergut, Ellen M., Anderson, Karen M., and Isabelle Schulze, eds. 2007. *The Handbook of West European Pension Politics*. Oxford: Oxford University Press.

Internal Revenue Service. 2008. "Individual Retirement Arrangements (IRAs)." Publication 590. Washington, DC: Department of the Treasury. Available: http://www.irs.gov/pub/irs-pdf/p590.pdf (accessed on 1/4/10).

Johnson, Richard W. 1999. "The Gender Gap in Pension Wealth: Is Women's Progress in the Labor Market Equalizing Retirement Benefits?" The Retirement Project Brief Series, No. 1. The Urban Institute, Washington, DC.

Kalleberg, Arne L. 2000. "Nonstandard Employment Relations: Part-Time, Temporary and Contract Work." *Annual Review of Sociology* 26: 341-365.

Karamcheva, Nadia and Alicia H. Munnell. 2007. "Why Are Widows So Poor?" Issue Brief No. 7-9. Chestnut Hill, MA: Center for Retirement Research at Boston College.

Karoly, Lynn A. and Gary Burtless. 1995. "Demographic Change, Rising Earnings Inequality, and the Distribution of Personal Well-Being, 1959-1989." *Demography* 32: 379-405.

Keister, Lisa A. 2000a. *Wealth in America: Trends in Wealth Inequality*. New York: Cambridge University Press.

_____. 2000b. "Race and Wealth Inequality: The Impact of Racial Differences in Asset Ownership on the Distribution of Household Wealth." *Social Science Research* 29: 477-502.

Kessler-Harris, Alice. 2001. *In Pursuit of Equity: Women, Men, and the Quest for Economic Citizenship in 20th Century America*. New York: Oxford University Press.

Kingson, Eric R. and John B. Williamson. 2001. "Economic Security Policies." Pp. 369-386 in *Handbook of Aging and the Social Sciences*, Fifth Edition. Robert H. Binstock and Linda K. George, eds. New York: Academic Press.

Korenman, Sanders and David Neumark. 1992. "Marriage, Motherhood, and Wages." *The Journal of Human Resources* 27: 233-255.

Korpi, Walter. 1990. "Faces of Inequality: Gender, Class, and Patters of Inequalities in Different Types of Welfare States." *Social Politics* 7: 127-191.

Kotlikoff, Laurence J. and Lawrence H. Summers. 1981. "The Role of Intergenerational Transfers in Aggregate Capital Accumulation." *Journal of Political Economy* 89: 706-732.

Land, Kenneth C. and Stephen T. Russell. 1996. "Wealth Accumulation Across the Adult Life Course: Stability and Change in Sociodemographic Covariate Structures of Net Worth Data in the Survey of Income and Program Participation 1984-1991." *Social Science Research* 25: 423-462.

Lee, Sunwha and Lois Shaw. 2003. "Gender and Economic Security in Retirement." IWPR Publication #D456. Institute for Women's Policy Research, Washington, DC.

Leibowitz, Arleen, and Klerman, Jacob A. 1995. "Explaining Changes in Married Mother's Employment Over Time." *Demography 32*: 365-378.

Lesthaeghe, Ron and Guy Moors. 2000. "Recent Trends in Fertility and Household Formation in the Industrialized World." *Review of Population and Social Policy* 9: 121-170.

Levine, Phillip B., Mitchell, Olivia S., and James F. Moore. 2000. "Women on the Verge of Retirement: Predictors of Retiree Wellbeing." Pp. 167-207 in *Forecasting Retirement Needs and Retirement Wealth*. Olivia S. Mitchell; P. Brett Hammond; and Anna M. Rappaport, eds. Philadelphia, PA: University of Pennsylvania Press.

Levine, Phillip B., Mitchell, Olivia S., and John W. Phillips. 1999. "Worklife Determinants of Retirement Income Differentials Between Men and Women." NBER Working Paper No. 7243. Cambridge, MA: National Bureau of Economic Research.

Levy, Frank. 1995. "Incomes and Income Inequality." Pp. 1-57 in *State of the Union: America in the 1990s. Volume One: Economic Trends*. Reynolds Farley, ed. New York: Russell Sage.

_____. 1998. *The New Dollars and Dreams: American Incomes and Economic Change*. New York: Russell Sage Foundation.

Levy, Frank and Peter Temin. 2007. "Inequality and Institutions in 20th Century America." Working Paper 07-17. Cambridge, MA: Massachusetts Institute of Technology Department of Economics Working Paper Series.

Lewis, Jane. 1997. "Gender and Welfare Regimes: Further Thoughts." *Social Politics*, Summer: 160-177.

Lichter, Daniel T., McLaughlin, Diane K., Kephart, George, and David J. Landry. 1992. "Race and the Retreat From Marriage: A Shortage of Marriageable Men?" *American Sociological Review* 57: 781-799.

Light, Audrey. 2003. "Gender Differences in the Marriage and Cohabitation Income Premium." *Demography* 41: 263-284.

Little, Roderick J. A. and Donald B. Rubin. 2002. *Statistical Analysis with Missing Data*. Hoboken, NJ: John Wiley & Sons, Inc.

Love, David A., Palumbo, Michael G., and Paul A. Smith. 2008a. "The Trajectory of Wealth in Retirement." Working Paper No. 2008-13. Finance and Economics Discussion Series, Division of Research & Statistics and Monetary Affairs, Federal Research Board, Washington, DC.

Love, David A., Smith, Paul A., and Lucy C. McNair. 2008b. "A New Look at the Wealth Adequacy of Older U.S. Households." Working Paper No. 2008-20. Finance and Economics Discussion Series, Division of Research & Statistics and Monetary Affairs, Federal Research Board, Washington, DC.

Lupton, Joseph P. and James P. Smith. 2003. "Marriage, Assets and Savings." Pp. 128-152 in *Marriage and the Economy: Theory and Evidence from Advanced Industrial Societies*. Shoshana A. Grossbard-Schechtman, ed. Cambridge: Cambridge University Press.

Macmillan, Ross. 2005. "The Structure of the Life Course: Classic Issues and Current Controversies." Pp. 3-24 in *The Structure of the Life Course: Standardized? Individualized? Differentiated?* Ross Macmillan, ed. New York: Elsevier.

Martin, Patricia P. and David A. Weaver. 2005. "Social Security: A Program and Policy History." *Social Security Bulletin* 66: 1-15.

Martin, Steven P. 2004. "Women's Education and Family Timing: Outcomes and Trends Associated With Age at Marriage and First Birth." Pp. 77-188 in *Social Inequality*, Katherine M. Neckerman, ed. New York: Russell Sage Foundation.

McLanahan, Sara. 2004. "Diverging Destinies: How Children are Faring Under the Second Demographic Transition." *Demography* 41: 607-627.

McLanahan, Sara and Lynne Casper. 1995. "Growing Diversity and Inequality in the American Family." Pp. 1-45 in *State of the Union: America in the 1990s. Volume Two: Social Trends*. Reynolds Farley, ed. New York: Russell Sage.

Marini, Marilyn M. 1989. "Sex Differences in Earnings in the United States." *Annual Review of Sociology* 15: 343-380.

Mitchell, Olivia, Olson, Jan, and Thomas Steinmeier. 1996. "Construction of the Earnings and Benefits File (EBF) for Use With the Health and Retirement Survey." NBER Working Paper No. 5707. Cambridge, MA: National Bureau of Economic Research.

Modigliani, Franco. 1986. "Life Cycle, Individual Thrift, and the Wealth of Nations." *American Economic Review* 76: 297-313.

Modigliani, Franco and Richard Brumberg. 1954. "Utility Analysis and the Consumption Function: An Interpretation of Cross-Section Data." Pp. 388-426 in *Post-Keynesian Economics*, K.K. Kenneth K. Kurihara, ed. New Brunswick, NJ: Rutgers University Press.

Moen, Phyllis. 2001. "The Gendered Life Course." Pp. 179-196 in *Handbook of Aging and the Social Sciences*, Fifth Edition. Robert H. Binstock and Linda K. George, eds. New York: Academic Press.

Moen, Phyllis; Kim, Jungmeen E.; and Heather Hofmeister. 2001. "Couples' Work/Retirement Transitions, Gender, and Marital Quality." *Social Psychology Quarterly* 64: 55-71.

Moen, Phyllis; Sweet, Stephen; and Raymond Swisher. 2005. "Embedded Career Clocks: The Case of Retirement Planning." Pp. 237-265 in *The Structure of the Life Course: Standardized? Individualized? Differentiated?* Ross Macmillan, ed. New York: Elsevier.

Morgan, S. Philip. 1996. "Characteristic Features of Modern American Fertility." *Population and Development Review* 22 (Supplement: Fertility in the United States: New Patterns, New Theories): 19-63.

Morris, Martina and Bruce Western. 1999. "Inequality in Earnings in the Close of the Twentieth Century." *Annual Review of Sociology* 25: 623-657.

Munnell, Alicia H. 2004. "Why Are So Many Older Women Poor?" Just the Facts on Retirement Issues No. 10. Chestnut Hill, MA: Center for Retirement Research at Boston College.

Munnell, Alicia H. and Steven A. Sass. 2005. "401(k) Plans and Women: A "Good News/Bad News" Story." Just the Facts on Retirement Issues No. 13. Chestnut Hill, MA: Center for Retirement Research at Boston College.

Munnell, Alicia H. and Mauricio Soto. 2005. "Why Do Women Claim Social Security Benefits So Early?" Issue Brief No. 35. Chestnut Hill, MA: Center for Retirement Research at Boston College.

National Institute on Aging. 2007. "Growing Older in America: The Health and Retirement Study." National Institutes of Health Publication #07-5757. Washington, DC: U.S. Department of Health and Human Services.

National Research Council and Institute of Medicine. 2003. *Working Families and Growing Kids: Caring for Children and Adolescents*. Eugene Smolensky and Jennifer A. Gootman, eds. Washington, DC: The National Academies Press.

Oliver, Melvin L. and Thomas A. Shapiro. 1996. *Black Wealth/White Wealth: A New Perspective on Racial Inequality*. New York, NY: Routledge.

Oppenheimer, Valerie K. 1994. "Women's Rising Employment and the Future of the Family in Industrial Societies." *Population and Development Review* 20: 293-342.

O'Connor, Julia. 1993. "Gender, Class, and Citizenship in the Comparative Analysis of Welfare State Regimes: Theoretical and Methodological Issues." *The British Journal of Sociology* 44: 510-518.

O'Rand, Angela. 1996. "The Precious and the Precocious: Understanding Cumulative Disadvantage and Cumulative Advantage Over the Life Course." *The Gerontologist* 36: 230-238.

_____. 2001. "Stratification and the Life Course: The Forms of Life-Course Capital and Their Interrelationships." Pp. 197-213 in *Handbook Aging and the Social Sciences*, Fifth Edition. Robert H. Binstock and Linda K. George, eds. New York: Academic Press.

O'Rand, Angela M. and John C. Henretta. 1982. "Delayed Career Entry, Industrial Pension Structure, and Early Retirement in a Cohort of Unmarried Women." *American Sociological Review* 47: 365-373.

_____.1999. *Age and Inequality: Diverse Pathways Through Later Life*. Boulder, CO: Westview Press.

O'Rand, Angela M., Ebel, Donald, and Katelin Isaacs. 2009. "Private Pensions in International Perspective." Pp. 429-443 in *The International Handbook of the Demography of Aging*, Peter Uhlenberg, ed. New York: Springer-Verlag.

O'Rand, Angela M., Isaacs, Katelin, and Leslie Roth. Forthcoming. "Age and Inequality in Global Context." In *The International Handbook of Social Gerontology*, Dale Dannefer and Chris R. Phillipson, eds. Newbury Park, CA: Sage Publications.

Orloff, Ann. 1993. "Gender and the Social Rights of Citizenship: The Comparative Analysis of Gender Relations and Welfare States." *American Sociological Review* 58: 303-328.

_____. 1996. "Gender in the Welfare State." *Annual Review of Sociology*, 22: 51-78.

Pearce, Diana. 1978. "The Feminization of Poverty: Women, Work, and Welfare." *The Urban and Social Change Review* 11:28-36.

Porter, Kathryn H., Larin, Kathy, and Wendell Primus. 1999. "Social Security and Poverty Among the Elderly." Washington, DC: Center on Budget and Policy Priorities.

Quinn, Joseph F. 2002. "Retirement Trends and Patterns Among Older American Workers." Pp. 293-315 in *Policies for an Aging Society*, Stuart Altman and David Shactman, eds. Baltimore, MD: Johns Hopkins University Press.

Quinn, Joseph F. and Richard V. Burkhauser. 1994. "Retirement and Labor Force Behavior of the Elderly." Pp. 50-101 in *Demography of Aging*, edited by Linda Martin and Samuel Preston. Washington, DC: National Academy of Science.

RAND. 2008. "RAND HRS Data Documentation, Version H." Labor & Population Program, RAND Center for the Study of Aging.

Rank, Mark R. and Thomas A. Hirschl. 2001. "The Occurrence of Poverty Across the Life Cycle: Evidence from the PSID." *Journal of Policy Analysis and Management* 20: 737-755.

Reitzes, Donald C.; Murran, Elizabeth J.; and Maria E. Fernandez. 1998. "The Decision to Retire: A Career Perspective." *Social Science Quarterly* 79: 607-619.

Rose, Stephen J. and Heidi Hartmann. 2004. "Still A Man's Labor Market: The Long Term Earnings Gap." Report #C355. Washington, DC: Institute for Women's Policy Research.

Rosenfeld, Rachel A. 1996. "Women's Work Histories." *Population and Development Review* 22: 199-222.

Royston, Patrick. 2004. "Multiple Imputation of Missing Values." *The Stata Journal* 4: 227-241.

_____. 2005. "Multiple Imputation of Missing Values: Update." *The Stata Journal* 5: 188-201.

Rubin, Donald. B. 1987. *Multiple Imputation for Non-Response in Surveys*. New York: John Wiley & Sons.

Sainsbury, Diane, ed. 1999. *Gender and Welfare State Regimes*. New York: Oxford University Press.

Sandel, Steven H. and Howard M. Iams. 1996. "Women's Future Social Security Benefits: Why Widows Will Still Be Poor." Paper presented at the Annual Meeting of the Population Association of America, New Orleans, 1996.

Schafer, Joseph L. 1999. "Multiple Imputation: A Primer." *Statistical Methods in Medical Research* 8: 3-15.

Schmidt, Lucie and Purvi Sevak. 2006. "Gender, Marriage, and Asset Accumulation in the United States." *Feminist Economics* 12: 139-166.

Seburn, Patrick. 1991. "Evolution of Employer-Provided Defined Benefit Pensions." *Monthly Labor Review* 114:16-23.

Shaw, Lois and Catherine Hill. 2001. "The Gender Gap in Pension Coverage: What Does the Future Hold?" IWPR Publication #E507. Institute for Women's Policy Research, Washington, DC.

Shuey, Kim M. and Angela M. O'Rand. 2004. "New Risks for Workers: Pensions, Labor Markets, and Gender." *Annual Review of Sociology* 30: 453- 477.

Singer, Judith D. and John B. Willett. 2003. *Applied Longitudinal Data Analysis: Modeling Change and Event Occurrence.* New York: Oxford University Press.

Smith, James P. 1995. "Racial and Ethnic Differences in Wealth in the Health and Retirement Study." *Journal of Human Resources* 30: S158-S183.

Smith, Deborah B. and Phyllis Moen. 1998. "Spousal Influence on Retirement: His, Her, and Their Perceptions." *Journal of Marriage and Family* 60: 734-744.

Smith, James P. and Ward, Michael P. 1985. "Time-Series Growth in the Female Labor Force." *Journal of Labor Economics 3*: S59-S90.

Smock, Pamela J. 1993. "The Economic Costs of Marital Disruption for Young Women over the Past Two Decades." *Demography* 30: 353-371.

Smock, Pamela J., Manning, Wendy D. and Sanjiv Gupta. 1999. "The Effect of Marriage and Divorce on Women's Economic Well-Being." *American Sociological Review* 64: 794-812.

Stier, Haya, Lewin-Epstein, Noah, and Michael Braun. 2001. "Welfare Regimes, Family-Supportive Policies, and Women's Employment along the Life-Course." *American Journal of Sociology*, 106: 1731-1760.

Stone, Robyn I. 1989. "The Feminization of Poverty Among the Elderly." *Women's Studies Quarterly* 17: 20-34.

Sweeney, Megan M. 2002. "Two Decades of Family Change: The Shifting Economic Foundations of Marriage." *American Sociological Review* 67: 132-147.

Tamborini, Christopher R. and Kevin Whitman. 2007. "Women, Marriage, and Social Security Benefits Revisited." *Social Security Bulletin* 67: 1-20.

Teachman, Jay D., Tedrow, Lucky M., and Kyle D. Crowder. 2000. "The Changing Demography of America's Families." *Journal of Marriage and the Family* 62" 1234-1246.

Thane, Pat. 2006. "The History of Retirement," Pp. 33-51 in *The Oxford Handbook of Pensions and Retirement Income.* Gordon L. Clark; Alicia C. Munnell; and J. Michael Orzag, eds. New York: Oxford University Press.

Thomas, Adam and Isabel Sawhill. 2002. "For Richer or for Poorer: Marriage as an Antipoverty Strategy." *Journal of Policy Analysis and Management* 21: 587-599.

Thompson, Lawrence H. 2006. *US Retirement Income System*. Oxford Review of Economic Policy 22: 95-112.

Tienda, Marta and Jennifer Glass. 1985. "Household Structure and Labor Force Participation of Black, Hispanic, and White Mothers." *Demography* 22: 381-394.

Treas, Judith and Ramon Torrecilha. 1995. "The Older Population." Pp. 47-92 in *State of the Union: America in the 1990s. Volume Two: Social Trends*. Reynolds Farley, ed. New York: Russell Sage.

U.S. Census Bureau. 2007. "Current Population Survey: 2007 Annual Social and Economic Supplement." Available: http://pubdb3.censUS.gov/macro/032007/pov/toc.htm, accessed 4/22/08.

U.S. Department of Labor. 2007. "Private Pension Plan Bulletin Historical Tables." Washington, DC: Employee Benefits Security Administration.

_____. "Women in the Labor Force: A Databook." Report #1011. Washington, DC: U.S. Bureau of Labor Statistics.

U.S. Social Security Administration. 2008. *Annual Statistical Supplement, 2008*. Washington, DC: Office of Policy, Office of Research, Evaluation, and Statistics.

_____. 2009a. *Fast Facts & Figures About Social Security, 2009*. Washington, DC: Office of Policy, Office of Research, Evaluation, and Statistics.

_____. 2009b. *Income of the Population 55 or Older, 2006*. Washington, DC: Office of Policy, Office of Research, Evaluation, and Statistics.

van der Lippe, Tanja and Liset van Dijk. 2002. "Comparative Research on Women's Employment." *Annual Review of Sociology* 28: 221-241.

VanDerhei, Jack and Craig Copeland. 2001. "The Changing Face of Private Retirement Plans." Employee Benefit Research Institute. Issue Brief #232 (April). Washington, DC.

Verma, Satyendra K. 2006. "Retirement Plan Coverage of Boomers: Analysis of SIPP Data." Data and Chart Book, AARP Public Policy Institute, Washington, DC.

Waite, Linda J. 1995. "Does Marriage Matter?" *Demography* 32: 483-507.

_____. 2000. *The Case for Marriage: Why Married People Are Happier, Healthier, and Better Off Financially*. New York: Doubleday.

Waldfogel, Jane. 1997. "The Effect of Children on Women's Wages." *American Sociological Review* 62: 209-217.

_____. 1998. "Understanding the "Family Gap" in Pay for Women with Children." *Journal of Economic Perspectives*, 12: 137-156.

Waldfogel, Jane and Susan Harkness. 1999. "The Family Gap in Pay: Evidence from Seven Industrialized Countries." Luxembourg Income Study Working Paper #219.

Weaver, David A. 1997. "The Economic Well-Being of Social Security Beneficiaries, with an Emphasis on Divorced Beneficiaries." *Social Security Bulletin* 60: 3-17.

Wenger, Jeffrey. 2003. "Share of Workers in 'Non-Standard' Jobs Declines." Briefing Paper #137. Washington, DC: Economic Policy Institute.

Wetzel, James R. 1995. "Labor Force, Unemployment, and Earnings." Pp. 59-105 in *State of the Union: America in the 1990s. Volume One: Economic Trends*. Reynolds Farley, ed. New York: Russell Sage.

White, Martha C. 2010, February 7. "Can the U.S. Government Require You to Get an IRA?" *The Washington Post*, p. G02.

Williamson, John B. and Sara E. Rix. 1999. "Social Security Reform: Implications for Women." Working Paper 1999-07. Chestnut Hill, MA: Center for Retirement Research at Boston College.

Williamson, James M. and Timothy M. Smeeding. 2004. "Sliding into Poverty? Cross-National Patterns of Income Source Change and Income Decay in Old Age." Working Paper #2004-25. Chestnut Hill, MA: Center for Retirement Research at Boston College.

Willson, Andrea E. 2003. "Race and Women's Income Trajectories: Employment, Marriage, and Income Security Over the Life Course." *Social Problems* 50: 87-110.

Willson, Andrea E. and Melissa A. Hardy. 2002. "Racial Disparities in Income Security for a Cohort of Aging American Women." *Social Forces* 80: 1283-1306.

Wilmoth, Janet and Gregor Koso. 2002. "Does Marital History Matter? Marital Status and Wealth Outcomes Among Preretirement Adults." *Journal of Marriage and Family* 64: 254-268.

Wise, David A. 1997. "Retirement Against the Demographic Trend: More Older People Living Longer, Working Less and Saving Less." *Demography* 34: 83-95.

Wolff, Edward N. 1998. "Recent Trends in the Size Distribution of Household Wealth." *Journal of Economic Perspectives* 12: 131-150.

Wolff, Edward N. 2002. *Retirement Insecurity: The Income Shortfalls Awaiting the Soon-to-Retire.* Washington, DC: The Economic Policy Institute.

World Bank. 1994. *Averting the Old Age Crisis*. Oxford: Oxford University Press.

Wu, Lawrence L. and Barbara Wolfe, eds. 2001. *Out of Wedlock: Causes and Consequences of Nonmarital Fertility*. New York: Russell Sage.

Yamokoski, Alexis and Lisa A. Keister. 2006. "The Wealth of Single Women: Marital Status and Parenthood in the Asset Accumulation of Young Baby Boomers in the United States." Feminist Economics 12: 167-194.

Zick, Cathleen D. and Karen Holden. 2000. "An Assessment of the Wealth Holdings of Recent Widows." *Journal of Gerontology: Social Sciences* 55B: S90-S97.

Biography

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