The role of age at first birth on married mothers' labor force transitions: A life course perspective

Kristin Smith

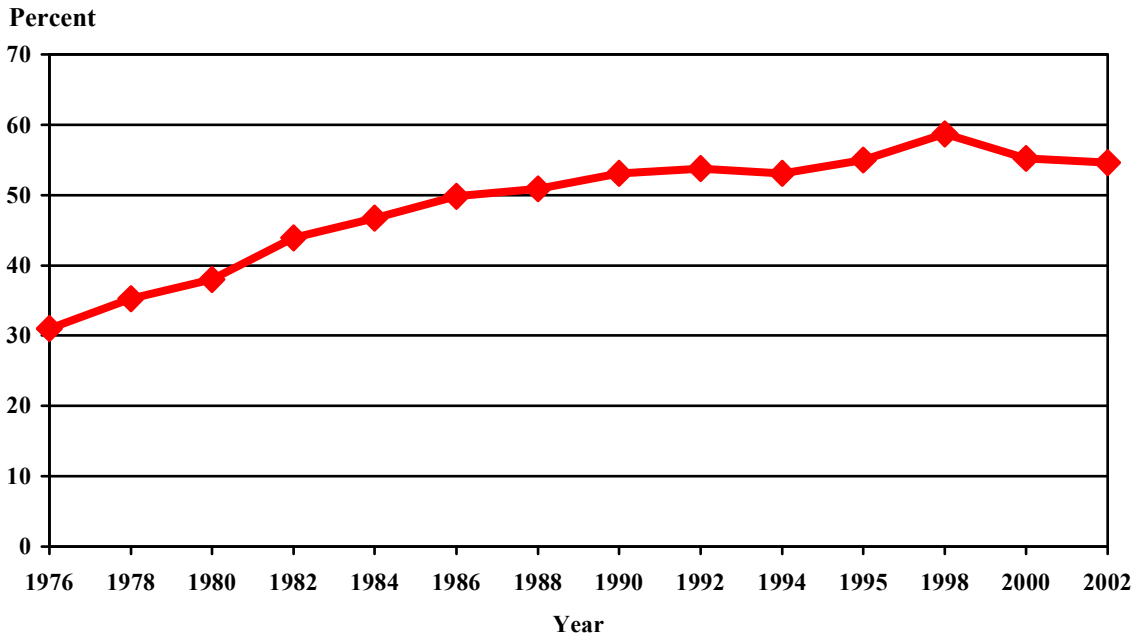
Abstract

This paper explores how the timing of the transition to parenthood is associated with later labor force transitions among married mothers with children. Using the Survey of Income and Program Participation (SIPP) 1996 panel, I find that married mothers who begin family building at early ages are more likely to exit the labor force than those who begin "on-time," consistent with neoclassical economic theory. However, I also find that married mothers who begin family building at late ages are more likely to exit the labor force than those who begin "on-time," which contradicts neoclassical economic theory. The life course perspective provides a rationale for differential impacts on labor force participation depending on the age at first birth due to its attention to the timing of events and their consequences. Models are then stratified by age at first birth to examine how the co-variates differentially influence married mothers' labor force exits depending on the age at first birth.

Introduction

Recent data indicates that a new trend may have started in the late 1990s, with more mothers of young children trading in their worker role for full-time parenting. Figure 1 shows the labor force participation rate of mothers with infants less than one year of age from 1976 to 2002. For the first time since 1976, the decade's long trend of mother's increasing labor force participation has fallen from an all-time high of 59 percent in 1998 to 55 percent in 2000 and remained at that same level in 2002 (Bachu and O'Connell 2000; Downs 2003). The decline is apparent among older, White, and married mothers, as well as mothers with some college education.

Figure 1. Labor Force Participation Among Women With Infants, 1976 to 2002



Source: Downs, B. 2003. Fertility of American Women, 2002. Current Population Reports. U.S. Census Bureau.

One important American fertility trend is the increasing number of women who are delaying child birth and family building, and instead focusing first on career building. Neoclassical economic

theory asserts that women who postpone child bearing and invest in building their market potential will have strong ties to the labor force and will be less likely to exit, even when they do begin family building . However, the life course perspective offers an alternative approach to conceptualizing how early life transitions set the stage for later life chances differentially. The life course perspective provides a rationale for differential impacts on labor force participation depending on the age at first birth due to its attention to the timing of events and their consequences (Elder 1998).

Trends in age at first birth

Since the 1960s, we have seen a shift in the age at first birth toward older ages, notably among women with college degrees (Rindfuss, Morgan, and Offutt 1996). In 1988, women age 30 and above accounted for 33 percent of the total fertility rate, up from 19 percent in 1976. At the turn of the century, more than 40 percent of all births were to women over age 30. Demographers predict that trends toward delayed parenthood will continue, and possibly increase, in the coming decades (Rindfuss, Morgan, and Swicegood 1988).

The importance of birth timing in increasing women's wages

Another important and concurrent trend is the increasing proportion of women graduating from college, increasing from 12 percent in 1970 to 52 percent in 2004. Recent female graduates now are more likely to earn a college degree than males of comparable ages. Higher education levels often lead to higher wages. Older women with higher education levels earn the highest average wages (Blau 1998; Spain and Bianchi 1996). Bloom (1986) finds that women aged 30-39 who wait until at least age 27 to have their first birth, earn 36 percent more than those who have their first child before 22, and 18 percent more than those who first give birth at ages 22-26. When controlling for education and years of work experience and other control variables, those who have their first birth after age 27 still earn roughly 10 percent more than those who give birth prior to age 22. Late child bearers and

childless women have higher education levels and more work experience, both of which account for most of the hourly wage differential.

The timing of a woman's first birth influences the level of education she attains (Hofferth, Reid, and Mott 2001), and in turn the career paths that are available to her (Coombs and Freedman 1970; Rindfuss and John 1983). According to Bloom's (1986) research using the 1985 CPS, childless women are more likely than women with children to hold managerial positions; childless women and late childbearers are more likely to hold professional positions; and early childbearers are heavily represented in service and blue collar professions. Clearly a woman's early life events are setting the stage for later life outcomes (such as earnings) (Rindfuss and John 1983) and are likely contributing to her worldview and shaping her meaning of work and family.

Theoretical framework

Neoclassical economic theory

The neoclassical model can be used to explain how individuals decide whether or not to participate in the labor force. A mother's decision to work or not is made by comparing the value of her time in the market (her wage, w) to the value she places on her time spent at home caring for children and doing housework, or her reservation wage (w*), given a fixed budget constraint. If w is greater than w*, she participates in the labor market; if w is less than w*, she does not (she remains out or exits). The value of her market time consists of her wage rate net of child care expenses, and depends on her market value, including her education level, job skills, seniority, and cumulative work experience (Desai and Waite 1991; Hofferth 1996; Liebowitz, Klerman, and Waite 1992). The value of her nonmarket time, or reservation wage, is influenced by tastes and preferences (as is the value of market time) and also by the level of demands on the nonmarket time. For example, the presence of very young children or other circumstances requiring intense attention will increase her reservation wage (Blau, Ferber, and Winkler 1998; Hofferth 1996; Liebowitz, Klerman, and Waite 1992). The

availability of income from other sources (husband or savings) also influences the value placed on her nonmarket time, reducing the opportunity cost of her foregone wages and leading to lower labor force participation (Blau, Ferber, and Winkler 1998; Hofferth and Collins 2000; Liebowitz, Klerman, and Waite 1992).

The theory implies that factors that increase the value of a mother's market time, or her wages, tend to increase the probability that she will participate in the labor force (Blau, Ferber, and Winkler 1998). Therefore, factors that increase her market value such as higher education levels, full-time work, continuous work experience, and longer job tenure all are theoretically (and empirically) positively associated with continuous labor force participation. Mothers with high market value will remain in or enter the labor force while mothers with low market value will exit or remain out. The value placed on market work should also ideally take into account job characteristics, with those jobs that are more challenging, offer rewarding work, provide a pleasant environment, and offer benefits such as health insurance increasing the probability of labor force participation (Blau, Ferber, and Winkler 1998).

On the other hand, factors that increase the value of nonmarket time will lower the probability that she will participate in the labor force (Blau, Ferber, and Winkler 1998). The presence of young children, a high number of children, twins, and a preference for maternal care for children all are in theory negatively associated with labor force participation. Other family income, which in effect decreases the opportunity costs of not working, and thus increases the value of nonmarket time, will be negatively associated with labor force participation. High child care costs will effectively lower a mother's wage and increase the value of nonmarket time, and thus will be negatively associated with labor force participation (Anderson and Levine 2000; Baum 2002; Blau and Robins 1989; Connelly 1992; Han and Waldfogel 2001; Hofferth and Wissoker 1992).

When applied to a married mothers decision to exit the labor force, one would expect early childbearers to be on a life course pathway that would discourage high market potential and work force

commitment. A birth at an early age is associated with disruptions in the young mother's schooling, poverty after the birth of her first child, and dependence on public assistance (Geronimus and Korenman 1992; Hofferth and Moore 1979). Neoclassical economic theory argues that mothers who are low-skilled, low-wage earners would be more likely to exit the labor force because the value of her time spent caring for children would be higher than the wages she would receive in the labor market (Becker 1981; Blau, Ferber, and Winkler 1998). The costs of working—child care, transportation, and other work-related costs—would be sufficiently higher than her wages and serve to encourage a labor force exit.

Martin (2000) reasons that women, notably women with higher education levels, are having births at later ages because their career orientations and demands for high-quality and costly child care do not enable them to start a family early in their careers. Thus, it is possible that they are postponing fertility until later ages when they can use their higher earnings capacity to buffer the opportunity cost of raising children, and purchase child care so that they can remain in the labor force throughout childbearing years (Martin 2000). This line of thinking is supported by the neoclassical economic theory argument that higher earnings, and other measures of market potential, deter labor force exits because they increase labor force commitment and make the value of a mother's wage much higher than the value of her reservation wage, or the value she places on her time spent at home caring for children and doing housework (Becker 1981; Blau, Ferber, and Winkler 1998).

Life course perspective

For many, the neoclassical model does not give sufficient attention to developmental pathways, and the social context within which work and family decisions are made. A life course, role context theoretical approach focuses not on what each individual gets out of market and nonmarket work and the best ways to maximize household efficiency, but rather on the context of lives. Life stage, the timing of events, and each spouse's circumstances influence the family decision-making process; thus,

considering their respective roles illuminates the intricacies of the work/family interface (Moen and Yu 2000). A life course perspective provides a framework that guides research exploring the dynamics of multiple, interdependent pathways (Elder 1994). This is very helpful when considering a couple's decision for the wife to exit or enter the labor force because the labor force participation of one spouse potentially has ramifications on the other spouse's consumption, leisure, housework demands, and pressure to be the sole or primary breadwinner.

The timing of life events is potentially useful in explaining married mother's labor force behavior. The timing of lives is grounded on the idea that certain life events are age-based, and reflect social expectations and beliefs based on age appropriate behavior (Elder 1994). Thus, life transitions like marriage or the birth of the first child can be relatively early or late according to demographic patterns and age norms. The timing of these family building life events can in turn, influence the timing of subsequent labor force transitions, particularly for women, who are typically responsible for housework and child care (Becker and Moen 1999; Coltrane and Ishii-Kuntz 1992). By analyzing the timing of events, analysts can be sensitive to the consequences of early or late transitions for later experiences and events. Central to the life course perspective is that developmental processes and outcomes are shaped by the social trajectories that people follow, and early choices and pursuits set the stage for those trajectories. Social timing also involves the scheduling of multiple trajectories, such as family and career building, and their synchrony or asynchrony.

The timing of a woman's first birth influences the level of education she attains (Hofferth, Reid, and Mott 2001), and in turn the career paths that are available to her (Coombs and Freedman 1970; Rindfuss and John 1983). The life course perspective provides a rationale for differential impacts on labor force participation depending on the age at first birth due to its attention to the timing of events and their consequences (Elder 1998). In short, the life course perspective argues that the timing of childbearing has an effect on the extent to which the birth of a child shapes a woman's life chances.

Late child bearers tend to have high market potential because they have been on a life course pathway that encourages higher education and continuous employment (Coltrane and Ishii-Kuntz 1992). They are likely to be well established professionally and more secure economically (Hofferth 1984). Researchers argue that women who delay childbearing until a later age appear to experience the transition differently than those who begin childbearing at early ages (Coltrane 1990; Coltrane and Ishii-Kuntz 1992). Although career interruptions tend to have a negative effect on wage attainment, and thus would deter labor force exits, the disruptive effect could vary by the timing of the interruption (Taniguchi 1999). Mothers who have accumulated sufficient work experience prior to childbearing may suffer a smaller price for their time away from paid work because they have built the foundation of their careers, and consequently this work experience enables them "time off" without suffering downward mobility in the future (Blackburn, Bloom, and Neumark 1993; Taniguchi 1999). In short, late child bearers may believe that they will be able to reenter the labor force relatively easily because they have amassed human capital and market potential. Thus, under the life course perspective, late childbearing would be associated with a labor force exit, which differs from the expected relationship if using a neoclassical economic theory lens.

Data and Methods

Data

I use the 1996 SIPP Longitudinal Panel to analyze labor force transitions. The large initial sample size (36,700 households) and the longer duration of the panel (4 years) of the 1996 SIPP Panel allow investigation of employment patterns for a large number of couples. Improvements and expansions in the questions asked in the 1996 panel allow more focused and detailed analyses. The SIPP is well suited for my analysis because it collects detailed monthly demographic data and employment activity data for all persons in the household for each interview reference period (called a

wave). The 1996 SIPP Panel was conducted for 12 waves, collecting data for a continuous 48-month period.

My sample consists of 51,214 person-waves of observations at risk of a labor force exit, meaning that these records represent a wave where the respondent was a married mother with at least one child under 15 years and was employed and had positive earnings. The sample is further constricted to those who entered the panel in the first interview wave (wave 1), were in two or more consecutive waves, and were aged 15 to 60 at wave 1 when they entered the panel. There are 1,848 person-wave records indicating that a first labor force exit occurred during the panel.

Dependent Variable

The labor force exit dependent variable is based on the response to a question about whether the respondent had a paid job in the past four months. The following question is asked at each interview in reference to the preceding four-month time period: "Did …(you) have at least one job (that is, a job for an employer, a business, or some other work arrangement) during the reference period or interview month?" This question ascertains whether the respondent had a paid job in any of the four months of the wave (the interview or current month and the preceding three months).

Labor force exits are captured by looking at the responses to the labor force participation question longitudinally, wave-by-wave, and noting the first transition during the panel for each respondent from having a paid job with positive earnings in the previous wave to not having a paid job in the current wave (note that labor force transitions only occur between waves). Although some respondents experience more than one labor force exit transition during the panel, my dependent variable is coded 0 if there is no labor force exit during the panel, and coded 1 when the first labor force exit occurs.

Independent variables

All of the independent variables represent the characteristics at the wave prior to the transition, unless otherwise noted. In this way, I am able to recreate the family situation just prior to the labor force transition at a time when the final decision to exit the labor force was being made. The independent variables were selected because there is prior empirical or theoretical evidence of a relationship with labor force participation decisions. The variables discussed below are grouped into six broad categories, which are explored in this dissertation, namely: 1) mother's market value, 2) job characteristics, 3) family economics, 4) stage in life course, and 5) gender egalitarianism between the wife and husband. Control variables are discussed at the end of this section.

Age at first birth

Age at first birth questions are asked on the SIPP in wave 2, in the fertility and marital history topical modules. Respondents who were never married or had never had a birth at wave 1 were tracked during the panel and given their age at first birth as it occurred. The age at first birth variable is the same for all waves the respondent is present in the panel, since the age at first birth does not change once it occurs.

Previous research has defined delayed childbearing as occurring after age 28 (Coltrane and Ishii-Kuntz 1992), or after age 30 (Hofferth 1984; Martin 2000). Likewise, early childbearing has been defined as teenage childbearing (Hofferth and Moore 1979; Hofferth, Reid, and Mott 2001; Rich and Kim 1999; Taniguchi 1999). The timing of first childbirth was indexed in this study by four categories based on the age at first birth: 1) first birth occurred at age less than 22, 2) first birth occurred at age 22 to 28 (reference group), 3) first birth occurred at age 29 or older, and 4) missing age at first birth data. These cutoff points were based on an analysis of the National Center for Health Statistics (NCHS) vital statistics data that show that the mean age at first birth was 24.6 in 1996, was 24.7 in both in 1997 and 1998, and was 24.8 in 1999 (NCHS Vital Statistics Report, 2002), the years of

the 1996 SIPP Panel. Creating a group to be on-time with a reasonable number of years around 25 years, I created the grouping of on-time first birth to be age 22 to 28. A first birth over age 28 was thus considered late, and a birth prior to age 22 was considered early.

Work related measures

Market value (realized)

Market value is measured by education level, whether you hold a full-time job, monthly personal earnings, and cumulative work experience. According to neoclassical economic theory, market value is positively associated with labor force participation, that is, those with greater market value tend to have greater labor market prospects and are more likely to be gainfully employed (Becker 1981).

To determine how education level is associated with labor force exits, four dummy variables are created from the educational attainment variable: less than a high school degree, high school graduate (reference group), some college, and college graduate.

Usual hours worked is a continuous measure, calculated from respondent's answers to the question of their usual hours worked per week in the last month. The total hours worked is calculated by summing the hours worked at up to two jobs or businesses. Employment status dummy variables were created with the following categories: part-time hours (1 to 34 hours) and full-time hours (35 or more, reference group).

Monthly personal earnings are an average of earnings over the previous four months, not including any months with no earnings. This methodology is preferable than simply taking one month's earnings because of variability in earnings. The log of monthly personal earnings is included in the models.

The work history topical module gathers information from respondents on a number of questions regarding previous work experience and breaks in the labor force for care-giving. The

topical module is administered in wave 1 and refers to work experience prior to the panel. Therefore, this variable is the same for all waves the respondent is present in the panel, since their previous work experience prior to the panel does not change over the panel. I include two dummy variables indicating the number of years the respondent has had a labor force break for 6 or more months for care-giving prior to the panel. The first is 1 to 2 years with a labor force break for 6 or more months, and the second is 3 or more years with a labor force break for 6 or more months. The reference group is those who have not had any labor force break for 6 or more months for care-giving. I tested several configurations of this construct to find the best measure of number of years with a break, by including more detailed categories and also a continuous variable. I also tested a dummy variable noting whether the respondent has had any break in the labor force for six or more months for care-giving prior to the panel.

Job characteristics

Occupation is included in the labor force exit models to test whether women employed in certain occupational categories are more likely to exit the labor force. Since it is unwieldy to include all occupations individually, I created six dummy variables broadly grouping six occupational categories: professional/managerial, sales, administrative, clerical, farm/forest/fisheries, and other. Previous researchers (Becker and Moen 1999; Blair-Loy 2003; Moen and Yu 2000) argue that professional and managerial careers demand a high time investment in work. These jobs also provide meaning to life and rewards (Blair-Loy 2003). After testing the six dummy variable construct, I refined my occupation measure to one dummy variable coded 1 if the married mother worked in a managerial or professional occupation, 0 otherwise, because the relationship was maintained by grouping all of the other occupation categories.

The class of worker is coded into the following 4 dummy variables: 1) Private for profit (reference group); 2) Private not for profit; 3) Government worker at the local, state and federal levels;

and 4) Own business or family worker. Public sector jobs and self-employment are theoretically more flexible than private sector jobs (Moen and Yu 2000), thus I include a dummy variable coded 1 if the respondent works in the public sector or is self-employed.

Jobs with benefits, such as health insurance, tend to retain employees (Tilly 1996). I include two dummy variables simultaneously indicating whether the mother has health insurance and the source of the health insurance. The first dummy variable is coded 1 if the mother receives health insurance through her current job, and 0 otherwise. The second dummy variable is coded 1 if the mother does not have any health insurance, and 0 otherwise. The reference category is married mothers with health insurance through someone else (most of the time this is their spouse, but it could also be someone else).

Family related measures

Family economics

When making labor force transition decisions, family economic resources are likely to be considered. I include two measures of family economics in the models–total family income and estimated market cost of child care.

Other monthly family income, not including the wife's earnings, is included to measure the family income available to the family when the wife does not work. Other monthly family income primarily reflects the husband's earnings, but also includes other forms of family income. Family income is an average of earnings over the previous four months, not including any months with no income. The log of other family income is included in the models. I tested other specifications including various groupings of monthly other family income to test for a curvilinear relationship. In addition, dummy variables measuring the poverty status (in poverty and near-poor or 125 percent of poverty) were tested in the models but not included in the final models due to collinearity.

Research shows that child care costs influence mother's labor force decisions: higher child care costs increase labor force exits and decrease the rates of entering the labor force (Anderson and Levine 2000; Baum 2002; Blau and Robins 1989; Connelly 1992; Han and Waldfogel 2001; Hofferth and Wissoker 1992). According to neoclassical economic theory, child care costs act as a tax on women's earnings and effectively lower their wage rate. The omission of child care costs would introduce bias and increase the error terms in my models. However, the SIPP does not collect child care costs of those using child care for each month longitudinally, nor does it collect data on potential child care costs for those not using child care. Child care questions are asked twice over the life of the 1996 SIPP panel (in wave 4 and wave 10 in the child care topical modules). All arrangements used and total costs for each arrangement are collected. Because child care arrangements and costs are not collected longitudinally for each month in the panel, I impute estimates of the market child care costs for all families with children, regardless of the employment status of the mother, for each wave based on the wave 4 child care data. This allows the estimated child care costs to change as family structure and other family characteristics change.[1] Since the observed child care costs paid by child care users may not accurately reflect child care prices facing women who are not currently using child care, it would still be necessary to predict child care costs even if the SIPP did collect child care costs in every wave (Blau and Hagy 1998; Han and Waldfogel 2001).

I predict child care costs using data on married women with at least one child under 15 who are employed and using paid child care in the 1996 SIPP Wave 4 Topical Module (collected in the Spring of 1997). Anderson and Levine (2000) describe several methodologies used in previous research to predict child care costs and make a concentrated effort to present a commonly-agreed-upon set of assumptions in order to bring the field closer to convergence on a standard approach. For this reason I follow Anderson and Levine (2000), and several other researchers who use a similar methodology

[1] Baum (2002) in his longitudinal study of child care costs does not allow the cost of child care to vary over the life of the panel; however I believe that as the determinants of child care cost change, for example, the number and ages of children change throughout the panel, the estimated market cost of child care for each family will also change.

(Baum 2002; Han and Waldfogel 2001; Hofferth and Wissoker 1992).[2] I use the SIPP child care topical module data to estimate a model to predict individual child care costs per hour worked.[3] To determine the cost of care per hour worked, I divide the weekly child care expenses by the number of hours the mother works per week.

I estimate the child care costs controlling for sample selection bias due to the fact that child care costs are only observed for women who are employed and using paid child care. I correct the regression coefficients for sample selection bias using the standard two-stage technique developed by (Heckman 1979). Thus the selectivity equation estimates the joint decision of a mother to be employed and to use paid child care. First I estimate a probit model to predict the probability of having child care costs (as opposed to having zero child care costs) and then use the results from that probit to control for sample selection bias in the main equation estimating child care costs. The market price of care is specified as a function of demographic characteristics thought to influence the type of care chosen and the child care market characteristics, following Han and Waldfogel (2001) and Anderson and Levine (2000). I identify the probability that a mother is employed and paying for child care by including the unemployment rate and the square of the mother's age in the selectivity equation but not in the equation that predicts child care costs. The unemployment rate may influence whether a mother is employed, but once she is employed and pays for care, the unemployment rate should have no effect on the amount paid for care. Following Anderson and Levine (2000) and Han and Waldfogel (2001), I drop the five states that are not separately identified in the SIPP so that I can use the state unemployment rate to control for the tightness of the labor market in the probit.

I estimate the following two models jointly:

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[2] I follow Han and Waldfogel (2001) very closely in the set of variables that I put in my model. There is one difference in my model: I use a slightly different set of controls for the age of children. Hence, like Han and Waldfogel (2001), my model differs from Anderson and Levine (2000) in that I include more detailed controls for the age of children, I do not include disability status, and do not distinguish between employed and unemployed other household members.

[3] Connelly (1992) and Han and Waldfogel (1999) predicted the hourly cost of child care per hour worked, Ribar (1992) and Michalopoulos and Robins (2000) predicted the cost of child care per hour used, and Kimmel (1998), Anderson and Levine (1999) and Baum (2002) used both measures.

Probability of paying for child care = Φ (β_0 + β_1 (mother's age) + β_2 (mother's age squared) + β_3 (mother has a high school degree) + β_4 (mother has some college) + β_5 (mother has college degree or higher) + β_6 (black) + β_7 (Hispanic) + β_8 (number of children under 18) + β_9 (any child less than 1) + β_{10} (any child 1 or 2) + β_{11} (any child 3 or 4) + β_{12} (any child 5 or 6) + β_{13} (any child 7, 8, 9, or 10) + β_{14} (log of other family income) + β_{15} (other adults at home other than parents) + β_{16} (urban) + β_{17} (South) + β_{18} (Midwest) + β_{19} (West) + β_{20} (state unemployment rate) + μ)

Log of CC costs per hour worked = β_0 + β_1 (mother's age) + β_2 (mother has a high school degree) + β_3 (mother has some college) + β_4 (mother has college degree or higher) + β_5 (black) + β_6 (Hispanic) + β_7 (number of children under 18) + β_8 (any child less than 1) + β_9 (any child 1 or 2) + β_{10} (any child 3 or 4) + β_{11} (any child 5 or 6) + β_{12} (any child 7, 8, 9, or 10) + β_{13} (log of other family income) + β_{14} (other adults at home other than parents) + β_{15} (urban) + β_{16} (South) + β_{17} (Midwest) + β_{18} (West) + β_{19} (sample selection correction term λ) + ν

Appendix Table 1 shows the results for the determinants of the probability of being employed and paying for child care and from the estimation of the cost of child care per hour worked. The probability of being employed and paying for child care increases significantly with higher levels of education, as other family income increases, and when children aged 1 through 10 are present in the household. Higher numbers of children in the household significantly decreases the probability that the mother is employed and paying for child care, as does the presence of other adults other than the parents in the household. This probability decreases with the unemployment rate.

Column 2 of Appendix Table 1 shows that the estimated child care costs are significantly lower for Blacks and Hispanics than they are for Whites, but they are significantly higher for mothers with children aged 1 through 6. As other family income rises, the cost of child care also rises significantly.

Mothers living in urban areas pay more for child care than their rural counterparts. Furthermore, mothers in the South and Midwest pay less for child care. The sample selection correction term, lamda, is negative and not statistically significant. Han and Waldfogel's (1999) results also show that the lamda for married mothers was not statistically significant.

I use the regression coefficients of the predicted child care costs to impute a market cost of child care per hour worked for each married mother in my SIPP longitudinal sample for each wave that she is in the sample. The mean value of this imputed hourly cost for the married mothers with children in my sample is $1.86.

Presence of children

Whether or not a mother is in the process of building a family, measured by the presence and number of young children, has shown positive effects on women's labor force exits. I created dummy variables of the age of the youngest child to correspond with specific stages of child development and with potential level of demands on a mother's time: less than 1 year, 1 and 2 years, 3 through 5 years, 6 through 9 years, and 10 through 14 years (reference category). Number of children present was recoded to the following: one child (reference category), two children, and three or more children.

A change in family status through the birth of a new child has been well documented as a trigger for labor force exits. I include a dummy variable indicating whether a birth occurred in the previous wave (any of the four months) or the current wave (any of the four months). Another dummy variable indicating whether a child (not including a new baby) recently entered the family in the previous wave (any of the four months) or the current wave (any of the four months) is also included in the models.

Husbands work hours

To test whether mothers married to husbands who work long hours are more likely to exit the labor force, I include a dummy variable coded 1 if the husband works over 65 hours per week, and 0 otherwise. I tested several other configurations of overtime as well, defining overtime as 45 or more hours, 50 or more hours, 55 or more hours, and 60 or more hours. I chose the 65 or more measure because it represents a sufficient amount of overtime that would render the husband pretty much inaccessible to take on a meaningful amount of the child care and household domestic tasks (25 extra hours per week).

Gender egalitarianism between husband and wife

I include a measure of the wife's earnings relative to her husband's to examine the labor force patterns of women who are primary providers, women who are equal earners, and women who are married to husband's who are the primary providers. Three dummy variables are created following (Nock 2001) discussion of mutually dependent spouses (MEDS) using the average monthly personal earnings of the four months of the previous wave of both spouses. Equal providers are dual-income couples where wives contribute at least 40% but less than 60% of the total couple earnings (reference group); wife main providers are dual-income couples where the wife contributes 60% or more of the total couple earnings; and husband main providers are dual-income couples where the wife contributes less than 40% of the total couple earnings.

I also create a measure of wife's relative education, with three dummy variables indicating the same education level (reference group), wife has a higher education level, and wife has a lower education level. These dummy variables are constructed using the four educational categories (less than high school, high school, some college, and college graduate). I also constructed a relative hours worked variable, but it was very highly correlated with the wife's work hours so I did not include it in the models.

Control variables

The following variables are used as controls in this estimation. I include a dummy variable indicating minority status to control for non-white race and ethnicity. Previous research has shown differences in labor force exits of new mothers by race and ethnicity. I also control for age, which was tested several ways. First I tested five categories: 15 to 24, 25 to 34 (reference group), 35 to 44, 45 to 54, and 55 and older, with only the oldest age group showing significance. Next, a continuous variable of age was included. Since I exclude from the analyses the three cases that are continuously retired throughout the time they are in the panel, labor force exits among the oldest age group as an early retirement should not be an issue in this estimation. In the final models, I control for age by including a continuous variable of age.

A dummy variable indicating residence in a metro area was included to control for proximity to large urban metro markets, where more jobs can be found and higher wages are often paid. A change in residence through a move has been well documented as a trigger for a married women's labor force exit. I include a dummy variable indicating whether a move occurred in the previous wave (any of the four months) or the current wave (any of the four months). Several variables were tested as controls in preliminary analyses but then dropped due to consistent lack of significance across several specifications of the models. These variables include season of labor force transition, disability status of the husband, disability status of the wife, and mother's school enrollment.

Methods

To study labor force transition rates, I use discrete-time hazard models. Events are defined in terms of a qualitative change that occurs at a specific point in time, a disjunction between what precedes and what follows (Alison 1984). This requires that I divide the observation period into several discrete intervals and create a separate unit of analysis for each interval. In my case, the interval is every four months and coincide with an interview wave. This allows the baseline hazard

rate to vary within the duration of a spell without having to specify the exact hazard-rate path (Drobnic, Blossfeld, and Rohwer 1999). Dividing the unit into discrete intervals assumes that the transition rate is constant within the intervals but can change between them.

Discrete-time hazard models have two major advantages over other types of regression techniques. First, these models allow the independent variables to change over time, variables such as age, income, or household composition. Research has shown that this leads to less bias in the estimates (Alison 1982). Another advantage of discrete-time hazard models is that they allow the inclusion of censored observations (that is, married mothers who have not exited the labor force at the end of the survey (Gupta and Leite 1999).

The model is essentially a logistic regression, with the dependent variable measuring the occurrence of a married mother with children under 15 who experience a labor force transition in a particular wave. Specifically, the transition being measured at each wave is a labor force exit. The ratios represent the increased (or decreased) odds of experiencing a labor force transition for each wave.

Results

Event History Analysis Models Predicting Labor Force Exits

Step-wise Analyses

Table 1 shows a series of four event history regression models predicting whether a married mother exits the labor force during the panel. Model one predicts the effect of age at first birth on labor force exits, Model 2 adds work related variables, Model 3 adds family related variables, and Model 4 controls for demographic controls. This analytical strategy allows the interpretation of the effect of age at first birth as other co-variates are added to the model, showing how each addition alters the effect.

The results from Model 1 show that married mothers exit the labor force when they begin child bearing at an early age, but there is no significant relationship between late child bearing at labor force exits. Model 2 adds the work related variables. Controlling for work related variables, the effect of early child bearing remains positive but is no longer statistically significant. Model 2 shows that the effect of late child bearing is mediated by the other co-variates in the model. With the addition of the work related variables in Model 2, the effect of late child bearing becomes significant, indicating that late child bearers are more likely to exit the labor force. This finding contradicts the expected effect if one relies on neoclassical economic theory: late child bearing allows for greater investment in one's market value, things such as education, continued work experience, and higher wages, that in turn strengthen one's ties to the job market. Recall that neoclassical economic theory suggests that mothers who delay child bearing invest in their education and build stronger ties to the labor force, as such, the effect of delayed child bearing would be negative under this theoretical stream. On the other hand, the life course perspective allows for differential impacts on labor force participation depending on the age at first birth. Women who have built the foundation of their careers may be able to take time off from the labor force without suffering downward mobility in the future.

Several of the work related variables are correlated with labor force exits, and the direction of the effect of the variables is consistent with previous research. Having less than a high school education increases the odds that a married mother exits the labor force. Higher mothers' personal earnings reduce the likelihood of a labor force exit. Married mothers who have had several labor force breaks of 6 or more months prior to the start of the panel are more likely to exit the labor force. Married mothers who are self employed or government workers are less likely to exit the labor force. Having health insurance through the current job reduces the odds of a labor force exit by 69 percent, while having no health insurance increases the odds by 55 percent.

In Model 3, the family related variables are added. The effect of early child bearing and the effect of late child bearing remains the same. The inclusion of family related variables do not alter the

general effects of the work related variables. Mothers with a youngest child under the age of 1 or a recent new baby face higher odds of a labor force exit. The effect of higher numbers of children is negative[4], as is the effect of family income, other than the wife's earnings, contrary to my hypotheses based on neoclassical economic theory and the life course perspective. Higher predicted child care costs raise the risk of a labor force exit for married mothers, consistent with the literature. Mothers married to men who work overtime (65 hours per week or more) face higher risks of exiting the labor force (odds ratio = 1.3) than wives whose husbands do not. Wives married to men who are the primary provider are more likely to exit the labor force in line with neoclassical economic theory; however, wives who are the primary provider are also more likely to exit the labor force, contrary to neoclassical economic theory.[5]

In model 4, I add demographic controls. The relationship of age of first birth on labor force exits again is unchanged. Net of the work, family, and demographic control variables, late child bearing is associated with a greater propensity to exit the labor force. The coefficients for the work related indicators and the family related indicators are similar in Model 3 and 4, suggesting that the relationships between work and family characteristics on labor force exits are strong. Three of the demographic controls are significantly related to labor force exits. Being a minority or experiencing a recent move are both positively associated with a labor force exit. As age increases, married mothers are less likely to exit the labor force.

Models stratified by age at first birth

In this section I explore in a preliminary manner whether a married mothers earnings and education are differentially associated with a married mother's likelihood of experiencing a labor force

[4] Although I expected mothers with higher numbers of children to be more likely to exit the labor force, Klerman and Leibowitcz (1999) found that mothers self select at the birth of their first child into homemakers and paid workers. They found that mothers who are employed after their first birth, are also employed after their second, and their third. Because my sample includes all mothers, not just first-time mothers or new mothers, the negative effect of a higher number of children on mother's labor force exits is not surprising.

[5] This relationship is explored further in a separate paper.

exit depending on her age at first birth. If Tanigushi's (1999) assertion that the disruptive effect of a labor force exit varies by the timing of the interruption and mothers who have already built the foundation of their careers can take time off without suffering downward mobility, I would expect among late child bearers those who have high earnings and high education levels would be more likely to exit the labor force. To answer this question, I stratify the full model by four age at first marriage categories, married mothers who had their first birth under age 22 (Panel A), between 23 to 28 years (Panel B), 35 and over (Panel C), and for those who are missing first birth data (Panel D) (see Table 4).[6] Table 2 shows only the key variables of interest; however, the full models are presented in Appendix Table 2.

Table 2 shows that being a college graduate is negatively associated with labor force exits for married mothers who delay childbearing. Likewise, as personal earnings increase mothers who delay childbearing are less likely to exit the labor force, the same effect that is found for mothers who are early and on-time child bearers, as well as for those who are missing age at first birth data. This preliminary analysis implies that those who would have the easiest time reentering the labor force—those with high education levels and earnings—are not more likely to exit among married mothers who delay childbearing.

Discussion

Contrary to my expectation based on neoclassical economic theory, I found that married mothers who delay child bearing are more likely to exit the labor force. If women who delay childbearing invest in their careers and have higher education levels, employment continuity, and in turn higher earnings, then it follows that they would have strong ties to the labor force and would have a lower (rather than higher) propensity to exit the labor force. The life course perspective offers an alternative interpretation of the positive effect of delaying child bearing on labor force exits by

[6] Respondents who were not in the sample at wave 2 did not answer the fertility history questions.

allowing for differential impacts of the labor force exit depending on the timing of the interruption. Mothers who have already built the foundation of their careers may believe that they can potentially take time off without suffering downward mobility. By stratifying the models by age at first birth, however, I found that having a higher education and higher earnings were not positively associated with labor force exits among married mothers who delay child bearing. In future analyses, I will test several interactions in the full model to try to better understand the relationships at hand.

These findings suggest that the process of delayed child bearing may be capturing another phenomena. It is possible to conceive of other reasons why women who postpone childbearing would exit the labor force. Due to the high correlation between age at first marriage and age at first birth, many career-oriented women appear to be delaying both marriage and childbearing, focusing first on career building and putting family building on the back burner. But they hear the biological clock ticking. Biologically, the likelihood of achieving fertility decreases with age, thus for women who postpone childbearing, despite their fertility desires and intentions to bear children, the path to attaining children may be paved with frustration, disappointment, and fertility treatments once they do decide to begin family building. Also, the likelihood of twins is greater among older women and has been on the rise in America. The process of delayed child bearing may make these mothers who have greater financial resources (their own and their husbands) have a strong desire to care for their child once it does arrive. The old adage "absence makes the heart grow stronger," comes to mind. Unfortunately, the SIPP does not ask questions that would answer this definitively.

Table 1. Step-Wise Event History Analysis Predicting Labor Force Exit Among Married Mothers with Children Under 15

Parameter	Model 1 Coefficient	Model 2 Coefficient	Model 3 Coefficient	Model 4 Coefficient
TIMING OF PREVIOUS LIFE EVENTS				
Age at first birth				
Younger, under 22	0.344***	0.045	0.042	0.000
On-time, 22-28	R	R	R	R
Older, 29 and over	0.028	0.239***	0.210**	0.288***
Missing	0.639***	0.487***	0.413***	0.264**
WORK RELATED VARIABLES				
MOTHER'S MARKET CHARACTERISTICS				
Education level				
Less than high school		0.408***	0.449***	0.418***
High school degree		R	R	R
Some college		-0.007	-0.075	-0.087
College graduate		0.034	-0.131	-0.139
Hours worked				
Part-time		-0.090	-0.110	-0.089
Full-time		R	R	R
Monthly personal earnings				
Log of monthly personal earnings		-0.507***	-0.459***	-0.460***
Labor force continuity				
Break in LF for caregiving 6+months[1]				
No break in LF for caregiving		R	R	R
1 to 2 yrs with 6+ month break		-0.054	-0.039	-0.054
3 or more yrs with 6+ month break		0.078	0.203***	0.254***
JOB CHARACTERISTICS				
Occupation				
Managerial/Proffesional		-0.144*	-0.126	-0.123

Class of worker				
Government worker or self employed		-0.216**	-0.173**	-0.151**

Table 1. CONTINUED

Parameter	Model 1 Coefficient	Model 2 Coefficient	Model 3 Coefficient	Model 4 Coefficient
JOB CHARACTERISTICS CONT.				
Health insurance				
Health insurance through husband/other		R	R	R
Health insurance through current job		-1.136***	-1.162***	-1.164***
No health insurance		0.341***	0.269***	0.188**
FAMILY RELATED VARIABLES				
FAMILY ECONOMICS				
Other family income[2]				
Log of other family income			-0.092***	-0.076***
Estimated market child care costs				
Log of predicted child care costs			0.450**	0.567***
PRESENCE OF CHILDREN				
Number of children				
One			R	R
Two			-0.213***	-0.231***
Three or more			-0.240**	-0.252**
Age of youngest child				
Less than 1			0.800***	0.608***
1 to 2			0.084	-0.138
3 to 5			0.041	-0.112
6 to 14			R	R
Child enters household in previous or current wave				
New baby			0.563***	0.492***
Older child enters			0.306	0.243
HUSBAND'S WORK HOURS				
Husband works 65+ hours per week			0.292***	0.278***
GENDER EGALITARIAN COUPLE				

Relative monthly earnings[3]				
Husband primary provider			0.273***	0.269***
Equal providers			R	R
Wife primary provider			0.231*	0.311**

Table 1. CONTINUED

Parameter	Model 1 Coefficient	Model 2 Coefficient	Model 3 Coefficient	Model 4 Coefficient
DEMOGRAPHIC CONTROLS				
Race and ethnicity				
Minority				0.237***
White, not Hispanic				R
Age				
Continuous variable of age				-0.018***
Residence				
Metro residence				0.020
Move				
Move in previous or current wave				0.526***
Intercept	-3.460***	0.360*	0.241	0.687*
-2 Log Likelihood	15,824.010	14,440.534	14,145.543	14,065.280
X^2	82.265***	1,465.741***	1,760.732***	1,840.996***
Degrees of freedom	3	14	26	30
Number of observations	51,214	51,214	51,214	51,214

Source: 1996 SIPP Panel. Unit of analysis is person-wave. p-values: * p<.05 ** p<.01 ***P<.001 R: Reference group

[1] Includes only labor force breaks for 6 or more months prior to the start of the panel (ie., Wave 1).

[2] Excludes mother's earnings.

[3] This measure follows Nock's (2000) classification of marriages of equally dependent spouses (MEDS) where the husband is the primary provider if the wife earns less than 40 percent of the combined wife and husband earnings; they are equal earners if the wife earns between 40 and 59 percent of the combined earnings; and the wife is the primary earner if she earns 60 percent or more of the combined earnings.

Table 2. Event History Analysis Predicting Labor Force Exit Among Married Mothers with Children Under 15, Stratified by Age at First Birth

Parameter	Younger first birth	On-time first birth	Older first birth	Missing first birth
Education level				
Less than high school	0.361***	0.469**	0.487	0.558
High school degree	R	R	R	R
Some college	0.030	-0.246*	-0.168	0.237
College graduate	-0.444	-0.047	-0.455*	0.326
Monthly personal earnings				
Log of monthly personal earnings	-0.476***	-0.538***	-0.313***	-0.432***
-2 Log Likelihood	4,757.693	5,251.823	2,554.227	1,402.476
X^2	563.188***	700.025***	372.439***	222.140***
Degrees of freedom	27	27	27	27
Number of observations	15,142	21,813	10,506	3,753

Source: 1996 SIPP Panel. Unit of analysis is person-wave. p-values: * p<.05 ** p<.01 *** p<.001 R: Reference group

Appendix Table 1. Results from the Two-Step Child Care Costs Estimation Procedure

	Probability of Paying for Care		Cost per Hour Worked	
Variable	Coefficient	Standard error	Coefficient	Standard error
Intercept	-1.1437	(0.4420)**	-0.3881	(0.6060)
Age	0.0129	(0.0235)	0.0045	(0.0039)
Age squared	-0.0003	(0.0003)	--	
High school graduate	0.2524	(0.0811)***	0.0559	(0.1024)
Some college	0.4097	(0.0801)***	0.0885	(0.1361)
College or more	0.7041	(0.0843)***	0.2206	(0.2043)
Black	-0.0233	(0.0683)	-0.1641	(0.0523)***
Hispanic	0.0955	(0.0656)	-0.0997	(0.0529)*
Number of children under 18	-0.1865	(0.0293)***	0.0288	(0.0565)
Any child less than 1	0.1173	(0.0787)	0.0778	(0.0670)
Any child 1 or 2	0.4959	(0.0527)***	0.4242	(0.1346)***
Any child 3 or 4	0.5577	(0.0496)***	0.3851	(0.1491)**
Any child 5 or 6	0.4042	(0.0477)***	0.1915	(0.1144)*

Any child 7, 8, 9, or 10	0.3122	(0.0482)***	0.0334	(0.0959)
Log of other family income	0.0745	(0.0133)***	0.0515	(0.0231)**
Other adults at home	-0.1643	(0.0363)***	-0.0694	(0.0557)
Urban	-0.0228	(0.0463)	0.1356	(0.0353)***
South	0.0428	(0.0563)	-0.1019	(0.0440)**
Midwest	-0.0333	(0.0625)	-0.0964	(0.0427)**
West	0.0683	(0.0601)	-0.0462	(0.0466)
State unemployment rate	-0.0460	(0.0211)**	--	
Inverse Mills Ratio (lamda)	--		-0.0247	(0.4007)
Number of observations	5118		5118	

Standard errors in parentheses.
* p < .10 ** p < .05 *** p < .001

Appendix Table 2. Event History Analysis Predicting Labor Force Exit Among Married Mothers with Children Under 15, Stratified by Age at First Birth

Parameter	Younger first birth	On-time first birth	Older first birth	Missing first birth
WORK RELATED VARIABLES				
MOTHER'S MARKET CHARACTERISTICS				
Education level				
Less than high school	0.361***	0.469**	0.487	0.558*
High school degree	R	R	R	R
Some college	0.030	-0.246*	-0.168	0.237
College graduate	-0.444	-0.047	-0.455*	0.326
Hours worked				
Part-time	-0.095	-0.075	-0.028	-0.215
Full-time	R	R	R	R
Monthly personal earnings				
Log of monthly personal earnings	-0.476***	-0.538***	-0.313***	-0.432***
Labor force continuity				
Break in LF for caregiving 6+months[1]				
No break in LF for caregiving	R	R	R	R
1 to 2 yrs with 6+ month break	-0.148	0.002	-0.017	-0.073
3 or more yrs with 6+ month break	0.109	0.342***	0.379**	0.197
JOB CHARACTERISTICS				
Occupation				
Managerial/Proffesional	-0.057	-0.227*	-0.108	0.001
Class of worker				
Government worker or self employed	-0.273*	-0.097	-0.100	-0.282
Health insurance				
Health insurance through husband/other	R	R	R	R
Health insurance through current job	-1.070***	-1.075***	-1.385***	-1.427***
No health insurance	0.295**	-0.019	0.207	0.240

Appendix Table 2. CONTINUED

Parameter	Younger first birth	On-time first birth	Older first birth	Missing first birth
FAMILY RELATED VARIABLES				
FAMILY ECONOMICS				
Other family income[2]				
Log of other family income	-0.055	-0.075	-0.179***	-0.052
Estimated market child care costs				
Log of predicted child care costs	0.765**	0.338	0.672	0.838
PRESENCE OF CHILDREN				
Number of children				
One	R	R	R	R
Two	-0.130	-0.318**	-0.196	-0.321
Three or more	-0.193	-0.298*	-0.364	-0.218
Age of youngest child				
Less than 1	0.590***	0.681***	0.712**	0.032
1 to 2	-0.257	0.098	-0.307	-0.478
3 to 5	-0.044	0.026	-0.493*	-0.365
6 to 14	R	R	R	R
Child enters household in previous or current wave				
New baby	0.209	0.637***	0.583**	0.365
Older child enters	0.157	0.625	-11.733	0.591
HUSBAND'S WORK HOURS				
Husband works 65+ hours per week	0.252*	0.317**	0.402*	0.021
GENDER EGALITARIAN COUPLE				
Relative monthly earnings[3]				
Husband primary provider	0.147	0.206	0.354*	0.741**
Equal providers	R	R	R	R
Wife primary provider	0.361*	0.050	0.230	0.838**

Appendix Table 2. CONTINUED

Parameter	Younger first birth	On-time first birth	Older first birth	Missing first birth
DEMOGRAPHIC CONTROLS				
Race and ethnicity				
Minority	0.264**	0.340**	-0.033	0.056
White, not Hispanic	R	R	R	R
Age				
Continuous variable of age	-0.020**	-0.013	-0.024	-0.032**
Residence				
Metro residence	-0.051	0.105	-0.035	0.183
Move				
Move in previous or current wave	0.367***	0.527***	1.135	0.527**
Intercept	0.710***	1.060*	0.241	0.593
-2 Log Likelihood	4,757.693	5,251.823	2,554.227	1,402.476
X^2	563.188***	700.025***	372.439***	222.140***
Degrees of freedom	27	27	27	27
Number of observations	15,142	21,813	10,506	3,753

Source: 1996 SIPP Panel. Unit of analysis is person-wave. p-values: * p<.05 ** p<.01 ***P<.001 R: Reference group

[1] Includes only labor force breaks for 6 or more months prior to the start of the panel (ie., Wave 1).

[2] Excludes mother's earnings.

[3] This measure follows Nock's (2000) classification of marriages of equally dependent spouses (MEDS) where the husband is the primary provider if the wife earns less than 40 percent of the combined wife and husband earnings; they are equal earners if the wife earns between 40 and 59 percent of the combined earnings; and the wife is the primary earner if she earns 60 percent or more of the combined earnings.

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