Demographic determinants of family structure dynamics experienced by children

1. Introduction

The family structure experienced by children while growing up is widely believed to have important consequences for their development and subsequent adult outcomes. Many studies have analyzed the impact of growing up in a single-parent family, experiencing a divorce, living with a step-parent, and other family structures on social, demographic, economic, and psychological outcomes of children. There is also a large literature on the determinants of family structure changes. However, there are few studies that explicitly examine the links between the marital transitions and childbearing behavior of parents and the family structure dynamics experienced by children. In this paper, we jointly model three aspects of parental behavior that affect the family structures experienced by children. These are (1) transitions of women among marital states (married, cohabiting, single), (2) timing of childbearing, and (3) decisions on where a child lives. Integrating the analysis of these three related demographic behaviors allows us to directly derive their implications for family structure dynamics experienced by children. This is of interest in itself, and also serves as the basis for linking parental demographic behavior to subsequent child development outcomes.

2. Background

Marriage has become much less common in the last 30 years in the U.S. And the proportion of people who lived in a cohabiting relationship before first marriage by age 25 rose from 11% in 1970 to about 50% in 1988 (Bumpass, Sweet, and Cherlin, 1991). In fact the decline in marriage has been largely offset by the increase in cohabitation: the percent ever married by age 25 declined from 72% to 55% between 1970 and 1987, while the percent ever in a living-together union (married or cohabiting) declined from 75% to 69% (Bumpass, Sweet, and Cherlin, 1991).

These trends have important consequences for the living circumstances of children. Births to unmarried women increased sharply in recent years, from 18% of all births in 1980 to 28% in 1990 and 33% in 2000 (Martin et al., 2002). However, children born to unmarried women do not necessarily live with only one biological parent. Thirty-nine percent of births to unmarried women in 1990-94 were to women in cohabiting relationships, up from 29% in 1980-84 (Bumpass and Lu, 2000). Thus while about half of children born recently are expected to ever spend time in a family with an unmarried parent (Cherlin, 1999), many of these children are in fact living with both biological parents part of the time. Births to cohabiting women grew from 6% to 12% of all births from the early 1980s to the early 1990s.

Many studies examine the determinants of union formation, transitions among relationship states, and fertility, without directly analyzing implications for children. Examples include van der Klaauw (1996); Weiss and Willis (1997); Brien, Lillard, and Stern (2002); Carlson, McLanahan, and England (2001); Brien, Lillard, and Waite (1999); Bennett, Bloom, and Miller (1995); Upchurch, Lillard, and Panis (2001);Waite and Lillard (1991); and Manning and Smock (1995). Few studies have analyzed marital transitions from the perspective of children. Aquilino

(1996), Brown and Flinn (2001), and Graefe and Lichter (1999), and are the main exceptions. We build on these three studies, and extend them in several ways.

First, we incorporate cohabitation as a distinct marital state, which only Graefe and Lichter (1999) have done previously in this context. The effects of the absence of a biological parent in a child's household may differ depending on whether the biological parents were in a cohabiting or marital relationship (or neither). Cohabiting unions are less stable than marital unions, and if the expected future duration of the relationship affects time and goods inputs provided by the (potentially-absent) parent, then cohabitation provides less benefit to the child than marriage.

Second, we model family structure at the time of a child's birth, while previous studies have taken this as given. Parental demographic behavior can affect the family structure experienced by children by affecting the timing of births and living arrangements at birth, as well as transitions out of the state at the time of birth.

Third, from a child's perspective it matters not only *whether* a mother changes marital states, but *which* man is involved: the biological father or another man. For example, many children born while the mother was single will eventually experience the entry of a man into the household. If that man is the child's biological father, the implications for the child may be quite different than if he is not.

Finally, most children live with their biological mother, but it is increasingly common for children to live for some time outside of the biological mother's household. This of course has implications for the family structure experienced by children, but previous studies disregard or censor observations in which a child does not live with the biological mother. We include such cases and model transitions into and out of the biological mother's household.

3. Data

We use data from the National Longitudinal Survey of Youth 1979 cohort (NLSY79). These data are extremely rich and have not yet been fully exploited to analyze the link between parental demographic behavior, family structure dynamics, and child outcomes. The data provide marriage, divorce, separation, cohabitation, birth, and living arrangement histories over a 24 year period for a cohort of women born from 1957 to 1964. Interviews were conducted annually from 1979 through 1994, and biannually since 1994. The month and year of all changes in legal marital status are recorded. From 1979 through 1989, the survey records whether the woman is cohabiting with a man at the time of the interview date, but does not record the date at which the cohabitation began. Beginning with the 1990 interview, the survey elicits the beginning date of cohabitations in progress at the interview date, and asks each married respondent whether she cohabited with her spouse before the marriage and if so when the cohabitation began. Thus long-lasting cohabitations and cohabitations that resulted in marriage (if the marriage lasted until 1990) are well-measured, while some shorter cohabitations and those that did not convert to a marriage are missed or measured less accurately. Our statistical analysis accounts for uncertainty about exact starting and ending dates of such cases.

The month and year of birth of each child is recorded, and each interview provides a record of where each child lived at the time of the interview: the mother's household, the father's household, or somewhere else. Another source of information that is very useful in matching children to their biological fathers versus other co-resident men is a set of questions on whether the biological father of each child lives in the household. These data are available at each survey date from 1984 through 2000 with the exception of 1991. By combining these data with the relationship history, we measure the beginning and ending dates of periods in which each child was living with the biological father, another man, or no man, distinguishing marital from cohabiting relationships in the former two cases.

These data are substantially richer and more accurate than the data used in previous studies. Many previous studies used retrospective data that are subject to recall error (for example, Bennett et al., 1995; Bumpass and Lu, 2000; Manning, 1993; Manning and Smock, 1995; Raley, 2001), while the NLSY79 data are prospective. Studies in this field that have used the NLSY79 data (Graefe and Lichter, 1999; Morrison and Ritualo, 2001; Upchurch et al., 2001) used data only through the early 1990s, before the bulk of childbearing for this cohort was completed, and also before the cohabitation questions were improved.

4. Methods

We specify models of transitions of a woman among marital and fertility states and of children in and out of the mother's home. We specify *transition intensities* for the occurrence of various kinds of events. The events include (1) dissolution of a cohabitation (2) dissolution of a marriage, (3) formation of a cohabitation, (4) formation of a marriage, (5) conception leading to a live birth, (6) exit of a child from the mother's household, and (7) entry of a child into the mother's household. The occurrence of one of the events causes a change in the woman's *state*, where a state is defined by her marital status (single, cohabiting, married), pregnancy status, parity, and which of her children live with her. A woman who occupies a given state is in general at risk of the occurrence of more than one event. For example, a woman who is cohabiting is simultaneously at risk of experiencing termination of the cohabitation and becoming single, marrying the man with whom she cohabits, becoming pregnant, and having one of her children move in or move out. The model is thus of the "competing risks" type (e.g., Dolton and van der Klauuw, 1999). Each transition intensity is modeled as a function of the mother's age, duration in the state, the mother's characteristics (race, ethnicity, education, family background), previous states occupied (number of previous marriages, number of previous cohabitations, etc.), the number of children, and the number of children fathered by the current partner. We will also examine the effects of labor market conditions, neighborhood characteristics, welfare benefits, child support order rules, divorce laws, and other policy variables. The model incorporates a rich set of channels through which the demographic processes are interrelated. For example, a divorce may trigger other subsequent changes in living arrangements, the birth of a sibling will also have such effects, births out of wedlock will affect marriage probabilities, etc.

The transition intensity equations are linked by dependence on a common permanent unobserved factor representing unobserved characteristics of a woman that influence marital behavior, as in

Brien, Lillard, and Waite (1999) and Dolton and Van der Klaauw (1999). The joint likelihood function for all observed spells experienced by a woman and her children is specified and maximized, with the unobserved factor treated as a random effect and integrated out of the likelihood function. The econometric approach is similar to the "simultaneous hazards" approach of Lillard (1993), also used in Brien, Lillard, and Waite (1999). Simulations based on the parameter estimates are used to characterize the implications of the estimates for the family structure experienced by children from age 0 through 17. For example, we will simulate the fraction of childhood a child will spend living in various types of arrangements: a one parent family, a two parent family with both biological parents, a step father, and so forth. and we will simulate how these childhood experiences vary with policy parameters such as those mentioned above.

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