Union Instability as an Engine of Fertility? A micro-simulation model for France.

Extended Abstract

Abstract

Micro-level relationships between union formation or dissolution and childbearing may constitute the 'engine' of variation and change around replacement level fertility. Where unions and childbearing occur relatively late in the childbearing years and stability is relatively high, couples may settle for one child together and not be exposed to the risk of 'extra' children with a new partner. When unions and childbearing occur at moderate ages and unions frequently dissolve, however, many parents may produce a second (or third) child with a new partner. In this paper, we estimate the parameters of these micro-level relationships for female respondents to the 1999 French `Etude de l'Histoire Familiale´. We also present an initial micro-simulation of the implications of union dissolution for the intensities of second and third births in France.

1. Introduction

The so-called Second Demographic Transition is not as much a story about fertility as it is a story about the changing nature of intimate partnerships. We argue here that declines in union formation and union stability have made it more difficult for individuals to attain their desired number of children in a single union while at the same time increasing the probability of 'extra' children in a new union. The balance between these two opposing effects and the relative proportion of the populations at risk produce above- or below-replacement fertility.

Since divorce rates began to increase in the 1970s, several scholars have investigated their implications for childbearing. Women who remained in stable marriages had more children than those who divorced and did not remarry, fewer children than those who divorced and remarried, producing no net difference between ever-divorced and continuously married women (Cohen and Sweet 1974; Lauriat 1969; Thornton 1978; Kalwat 1983; Kucera 1983; Wineberg 1988; Clarke et al. 1993). The patterns are most consistent for U.S. white women. Among ethnic minority U.S. women, for example, stable marriages produced on average one more child than disrupted marriages, with or without remarriage (Thornton 1978; see also Wineberg 1988). Among women who married late, divorce and remarriage produced fewer children than did a stable marriage (Kalwat 1983).

More recent and more complex analyses have dealt separately with the two components of the relationship between union stability and childbearing. Several studies have demonstrated that childbearing is positively associated with union stability, at least during the period when children are young (Steele et al. 1995). The question for our purpose is whether children cause couples to

remain together or whether couples are more likely to have children when they believe their union is stable. Lillard and Waite (1993) were the first to demonstrate with simultaneous hazard models that unions most likely to dissolve also produced fewer children. Effects were particularly pronounced for the risk of having a first child.

The second component, a positive effect of repartnering on fertility, is consistent with a large body of research on stepfamilies. Most of this research estimates effects of previous children on childbearing in new unions and finds a negative effect as might be expected from the larger number of children a stepfamily birth would produce (Bumpass 1984; O'Keeffe 1988; Wineberg 1990; Haurin 1992; Lillard & Waite 1993; Loomis & Landale 1994; Toulemon & LaPierre-Adamcyk 1995; Toulemon 1997; Buber & Prskawetz 2000; Olah 2001; Stewart 2002). In some studies, however, the high family size associated with stepfamily births did not deter couples from having at least one shared child (Griffith et al. 1985; Vikat et al. 1999; Toulemon 1997). Two studies of Swedish fertility (Hoem 1995; Vikat et al. 1999) demonstrated that 'extra' children were produced by repartnering. Both showed that the risk of having a second or third child in one's lifetime was significantly greater when that birth was the first in a union; that is, new unions produce 'extra' births that would not otherwise occur. Vikat et al. (1999) found also that the risk of a third lifetime birth was higher if the individual's third birth was only the second in the union, i.e., if it was the couple's second rather than third shared birth. Using more complete data – including that on both partners' children -- Thomson and her colleagues (Thomson et al. 2002; Thomson & Li 2002) found that stepfamily couples with no shared child or only one shared child had an elevated birth risk, net of the effects of the couple's combined number of children. When children live with a repartnered couple, the likelihood of 'extra' births is reduced but not removed (Vikat, Thomson & Prskawetz 2004). Henz & Thomson (2005) showed that the stepfamily effect on childbearing was larger when controlling for the higher risk of dissolution in stepfamily than non-stepfamily unions. In contrast to estimates of union stability on childbearing, none of these studies have, however, accounted for possible selection into stepfamilies on the basis of desires for more children.

These micro-level relationships have not been considered as possible 'engines' of variation and change around replacement level fertility. Where unions and childbearing occur relatively late in the childbearing years and stability is relatively high, couples may settle for one child together and not be exposed to the risk of 'extra' children with a new partner. When unions and childbearing occur at moderate ages and unions frequently dissolve, however, many individuals may produce a second (or third) child with a new partner. Our purpose in this paper is to examine the micro-level processes underlying the connections between union timing and stability and the risk of first, second and third births in France. We also present an initial micro-simulation of the implications of union dissolution for total family sizes of two or three.

2. Data

The data for this study come from the French `Etude de l'Histoire Familiale´ (EHF) 1999, which was conducted together with the census in March 1999 (Cassan, Héran, Toulemon 2000). In this study, 235 000 women and 145 000 men completed an additional questionnaire on their origin, children, partnerships, working life, social origin and languages spoken in the family. We

restricted our sample to birth cohorts after 1940. Immigrants were only included if they arrived in metropolitan France before they reached age 15, i.e. they underwent their transition to adulthood in France. Moreover, we excluded observations where the event took place before the age of 15.

About 146 000 women remained in our sample, where 73% experienced a first birth, 52% had a second birth and 20% had a third birth. In the survey, the respondents were asked about their union histories (marriage or living in a union, defined as sharing the same household for six months or longer). If respondents reported more than two unions, entry and ending dates were recorded only for the first and most recent (including union ongoing at the survey). First unions were reported by 82% of the sample, of which 20% had ended. Among those experiencing union dissolution, 52% had formed at least one subsequent union. Of the most recent unions, 14% had ended by the time of the 1999 survey.

3. Modeling birth and union intensities in France

We identified five processes from which we need parameters to adequately simulate the contributions of union stability to fertility: 1^{st}, 2^{nd}, and 3^{rd} birth, union formations and union dissolutions. We start with rather parsimonious models of these processes focusing on the relationships between union status and parity.

Birth intensities

We model first birth intensity (Table 1a) as a function of mother's age and union status. We distinguish seven categories for union status, incorporating length of ongoing union and union order. The highest intensities of first birth are observed for women in a first or higher order union for at most 2 years. Independent of union order, being in a union more than 2 years decreases the risk of a first birth. The lowest intensity of a first birth is found for women who have never been in a union, followed by women who are currently out of union.

For second and third birth intensities we also control for age of younger/youngest child (Table 1 b, Figure 1). Union status is classified in relation to previous birth(s). Birth intensities are highest at age two of the previous child. Second birth intensities are lowest for women who are currently not in a union and highest if the they are currently in a union that is not the same as the birth union of the first child (0.428 vs. 1.89, second column in Table 1b). Compared to the reference category -- in the first child's birth union -- having the first child before the current union increases second birth intensity.

For third births we find a similar pattern. The lowest risk is for women who are currently in no union (0.889), followed by women who are in the same union that also produced the first and second child (reference category). Mothers who had at least one of their previous births in a previous union, experienced a higher third-birth intensity, highest if both children were born in a previous union (4.45).

Our results so far indicate that second and third birth intensities are elevated to a considerable extent if women are in a union and prior births were produced in a different union.

Union formation and dissolution

We estimated separate models for the formation and dissolution of first and most recent union. Table 2 summarizes results for union formation. For first unions we find a clear hump shape pattern of the intensity of union formation where the clock is the number of years since age 15. For most recent union formation the intensity estimates are monotonically decreasing in the time that passed since the end of the first union. We also estimated models including parity and age of children. We find the highest intensities for first as well as most recent union formation during the woman's pregnancy. Because we have not included these parameters in the simulation (below), we do not present them at this time.

We model dissolution of first and most recent union depending on the union's duration . As indicated in Table 3 we find higher dissolution intensities for most recent than for first unions. Independent of union order we find a hump shaped pattern of union dissolution with respect to duration. The peak intensity is at duration 2-4 years for the first union and 8-11 years for the second. We also estimated models with age and parity of the children but have not yet included them in the simulation and therefore do not present them here.

4. Results of the microsimulation model

In a first simulation analysis (Figure 2) we study the effect of a union dissolution on second births and the expected number of further births for women who had a first birth within a first union. We compared (1) the probabilities of progressing on to a second birth, and (2) the expected number of further children after n conception free years (since first conception) for women with and without a union disruption in period n. Our results indicate that a union disruption has almost no effect on the probability of a second birth if the disruption occurs after the 2nd year since first conception but that it then increases the expected number of all further births by increasing third birth probabilities.

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Table 1a: Firth birth intensity

mothers age	
15	0,0355 ***
16	0,105 ***
17	0,211 ***
18	0,307 ***
19	0,328 ***
20	0,3 ***
21	0,287 ***
22	0,284 ***
23	0,28 ***
24	0,294 ***
25	0,293 ***
26	0,298 ***
27	0,291 ***
28	0,275 ***
29	0,261 ***
30	0,23 ***
31	0,209 ***
32	0,173 ***
33	0,157 ***
34	0,128 ***
35	0,106 ***
36	0,0924 ***
37	0,074 ***
38	0,0538 ***
39	0,0354 ***
40	0,0301 ***
41	0,0192 ***
42	0,00684 ***
43	0,00772 ***
44	0,0052 ***
45-49	0,00229 ***
union status 1	
never in union	0,0931 ***
first union<2y	1
first union>2y	0,803 ***
after first, before last	0,177 ***
last union<2y	0,852 ***
last union>2y	0,803 ***
after last union	0,202 ***
N	1679700
df_m	37
Ll	-89491
Aic	179056
Bic	179513

Table 1b: Second and third birth intensity

second birth			**Third birth**		
age of first child			**age of 2nd child**		
0	0,12	***	0	0,0577	***
1	0,238	***	1	0,0972	***
2	0,318	***	2	0,108	***
3	0,272	***	3	0,101	***
4	0,222	***	4	0,084	***
5	0,173	***	5	0,0724	***
6	0,135	***	6	0,0616	***
7	0,0998	***	7	0,0535	***
8	0,0828	***	8	0,0434	***
9	0,0679	***	9	0,0392	***
10-14	0,046	***	10-14	0,0269	***
15-19	0,024	***	15-19	0,0147	***
20-35	0,0181	***	20-35	0,0142	***
union status of prior birth			**union status**		
not in union	0,428	***	not in union	0,889	***
union with first birth	*1*		*in union that produced the 1st and 2nd birth*	*1*	
union but 1st birth out of union	1,13	***	union with 2nd birth but 1st birth out of union	1,23	***
union but first birth in another union	1,89	***	union with 2nd birth but first birth in previous union	1,51	***
mothers age			union but 1st and 2nd before current union		
15-19	1,7	***	and at least one out of union	1,84	***
20-24	1,12	***	in union but 1st and 2nd births in prior union	4,45	***
25-29	*1*		**mothers age**		
30-34	0,836	***	15-24	1,95	***
35-39	0,426	***	*25-29*	*1*	
40-44	0,102	***	30-34	0,658	***
45-49	0,0101	***	35-39	0,327	***
			40-44	0,0607	***
sample size	605920		45-49	0,0087	***
df_m	22				
log likelihood	-134192		sample size	652453	
AIC	268427		df_m	23	
BIC	268676		log likelihood	-77974	
			AIC	155994	
			BIC	156255	

Figure 1

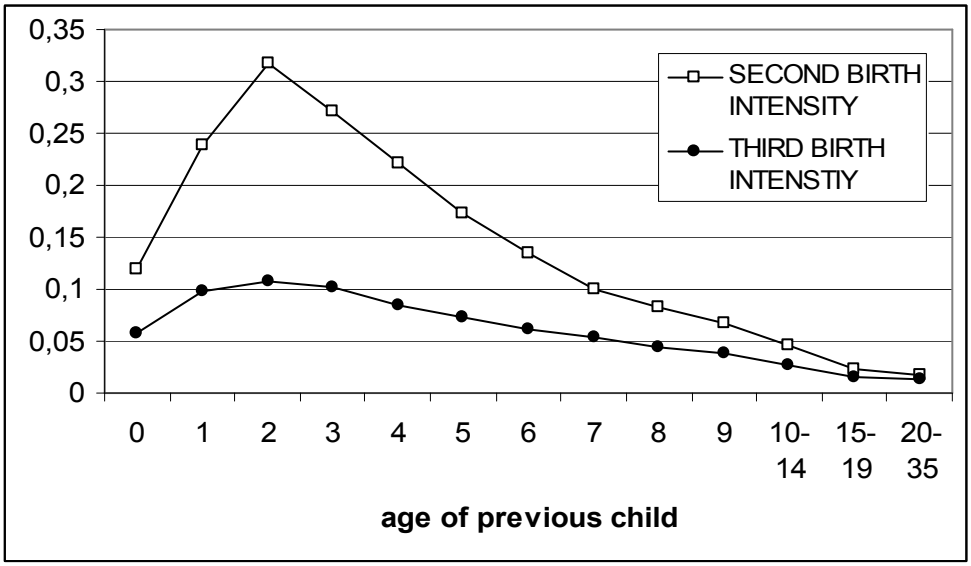

Table 2

first union formation		most recent nion formation	
duration since age 15		**duration since end of first union**	
15	0,00401***	0	0,232***
16	0,0135***	1	0,127***
17	0,0396***	2	0,108***
18	0,087***	3	0,1***
19	0,135***	4	0,0846***
20	0,176***	5	0,0787***
21	0,203***	6	0,0746***
22	0,211***	7	0,0595***
23	0,206***	8	0,0668***
24	0,194***	9	0,0614***
25	0,174***	10+	0,0643***
26	0,149***		
27	0,135***		
28	0,121***		
29	0,11***		
30	0,0854***		
31	0,0771***		
32	0,0725***		
33	0,063***		
34	0,0464***		
35	0,0488***		
36	0,0436***		
37	0,0391***		
38	0,0336***		
39	0,0277***		

Table 3

first union dissolution		most recent union dissolution	
Duration of first union		duration of most recent union	
0-1	0,0146 ***	0-1	0,0186 ***
1-2	0,0215 ***	1-2	0,026 ***
2-4	0,0231 ***	2-5	0,0258 ***
4-6	0,0224 ***	5-8	0,0287 ***
6-8	0,0208 ***	8-11	0,029 ***
8-10	0,0207 ***	11-14	0,0255 ***
10-12	0,0196 ***	14+	0,0227 ***
12-14	0,0181 ***		
14+	0,0155 ***		

Figure 2