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European Population conference 2016, Mainz (Germany)

Title: **Childbearing after Union Dissolution: Does the Sequence of Union Matter?**

## Short abstract

Research has examined the recent patterns of childbearing out-of-wedlock as well as the associations between childbearing and union transitions. Less systematic has been research on deciphering fertility patterns after union dissolution. This is limiting since life courses are increasingly diverse regarding partnership and family careers, and part of the well-documented changing fertility patterns across union types may be due to factors that lead individuals to dissolve unions and re-partner. We address this gap in knowledge by theorizing and examining how childbearing evolves after union dissolution. For the empirical analysis, we use hazard regression for first-, second- and third-order childbearing episodes of women aged 16 to 40 from the panel study Household, Income and Labor dynamics in Australia. Preliminary results from parity-specific models show that fertility rates are the highest among first-order marital unions. We also find that subsequent unions (to the first one) have increased first-order childbearing rates. Our study contributes to the understanding of contemporary fertility patterns, by shedding light on fertility variations across partnership life courses. Further work will include, among others, the simultaneous estimation of childbearing and union transitions to assess the effect of unobserved factors that commonly affect both processes.

## Extended abstract

*Background*

Family trajectories in contemporary societies are increasingly plural (Widmer and Ritschard 2009; Beaujouan 2012). In recent decades, we have seen dramatic changes in partnership behaviour, with cohabitation, union dissolution and repartnering (beyond marriage) on the rise in most industrialized countries, including Australia (Buechler 2006; Gray 2015). As a result, the universality of marriage as the first and only union type over the life course has indeed declined, and second and later (marital or cohabitating) subsequent unions have become increasingly common. Additionally, childbearing is no longer exclusively taking place within the confines of marriage. A number of studies have reported the increase in childbearing within cohabitation (Kiernan 2004; Kennedy and Bumpass 2008; Perelli-Harris 2014), with some arguing that cohabitation has taken on many of the meanings of marriage (Smock 2000; Raley 2001) to the degree that marriage as an institution has almost lost its salience (Cherlin 2004). Most recently, however, studies looking at continued childbearing (beyond first birth) within cohabitation suggest that marriage and cohabitation are not equivalent settings for additional childbearing (Liefbroer and Dourleijn 2006; Perelli-Harris 2014). Along these lines, some studies call for caution when assessing childbearing across union types since transitions in and out cohabiting and marital unions occur about the time of childbearing (Baizan et al. 2003,2004; Le Goff 2002).

Less attention has been paid to the above-commented increasing diversity in the number of partners and union statuses to explain contemporary childbearing. The few studies that have looked into childbearing after the dissolution of a marital union and their correlates

coincide in that childbearing with new partners may constitute a large number of births in contemporary societies (Beaujouan 2010; Thompson *et al*; 2014, Vanassche et al 2015). However, the bulk of these studies have focused on the examination of continued childbearing with subsequent partners. Our study complements and broadens the scope of these studies by looking into childbearing after union dissolution regardless of prior parental status and with a focus on the sequence of unions. This is important as individuals and particularly women are increasingly delaying their childbearing to prioritize the consolidation of a career (Blossfeld and Huinink 1991, Oppenheimer 1988), and are more likely to have had multiple partners before the birth of their first child (Wu and Schimmele 2005). Among others, difficulties in finding the 'right' partner might be a decisive factor in the delay in childbearing. In fact, having a supportive partner was the second most important factor (after women's health) in the decision to have a child among childless men and women in a cross-national European Study (Testa 2007). This means that individuals might have experienced a union dissolution before having the opportunity to give birth and form a new union which usually takes time (Mills et al. 2011). In this regard, our study innovates by theorizing and examining the role of prior union experience in explaining contemporary fertility patterns. We shed light on the conditions under which first-, second- and third-order childbearing episodes occur after (cohabitant or marital) union dissolution. We also contribute to the literature by examining selective factors that affect progress in both, partnership and childbearing trajectories. To this end, we use Australian longitudinal data and deploy a simultaneous modelling of childbearing and union dissolution.

*Theoretical approach and tentative hypotheses*

We adopt a life course perspective, which conceives individual life paths as sequences of purposive biographical transitions in different life domains, embedded in social contexts, to generate and maintain subjective well-being (Lindenberg and Frey 1993; Huinink & Feldhaus 2009; Huinink and Kohli, 2014). In contemporary societies, raising children contributes to the production of subjective well-being because the parent-child relationship spurns affection, stimulation and social gratification (Tomasello 2009), and because parenthood is *per se* a life-goal (Mace 2014). A satisfactory partnership life can also be considered a primary life-goal, but forming a union is also a strategic intermediate goal for childbearing due to prevailing norms about the appropriateness of childbearing in the context of a stable union. The extent to which childbearing occurs within marital unions has decreased dramatically over recent decades. Certain dynamics such as the increase of divorce, the diffusion of cohabitation, or the changing meaning of marriage and cohabitation have certainly contributed to this trend. In the following, we propose tentative hypotheses on childbearing by union status in Australia focusing on the succession of union states of women.

Despite increasing childbearing in cohabitation, most children are born within marital unions in Australia. While only 14 percent of all couples cohabit, 75 percent of all married couples had cohabited prior to marriage. Thus, cohabitation is largely deemed a probationary period. Conceptions and strong intentions to have children in the near future precipitate marriage among cohabiting couples. Given this, we expect that *women in intact*

*marriages (i.e. first-order marriages) will have higher likelihood of entering childbearing episodes (Intact marriage hypothesis).*

Controlling for the fertility of first-order marriages, we also expect increased *likelihood of entering childbearing episodes among re-partnered individuals.* Due to space reasons, we will not explain in detail the mechanism and state explicitly hypotheses for increased childbearing after union dissolution in this extended abstract. The pathways to childbearing of women after union dissolution will be related to some untested mechanism proposed by previous research such as (i) finding a matching partner, (ii) pressures related to biological clocks, (iii), consolidation of a career and (iv) the existence of children of prior relationships.

Prior research finds strong independence between childbearing and union transitions on factors that are often unmeasured in the data that favor childbearing (i.e. shorter time to conception) and stable unions (i.e. longer time to dissolution), and *vice versa*. Hence, the association might not only be partly spurious, but the direction of causality is also contested. We expect that *individuals who are more (less) prone to relationship instability and breakdown have lower (higher) likelihood of entering childbearing episodes (Selection hypothesis)*.

*Data*

For the empirical analysis, we use fourteen waves of the panel survey Household, Labor and Income Dynamics in Australia (HILDA, 2001-2014). This dataset allows tracking individuals over time, and collect extensive information on factors relevant to this research, including complete fertility and marital histories, non-marital unions, union stability measures and a number of relevant demographic and socio-economic characteristics.

Since our outcome of interest is childbearing, the unit of analysis is the childbearing episode. We define a childbearing episode as the lapse of time in months since age 16 until the first conception leading to live birth, or since the last delivery until the next conception leading to live birth. We measure conceptions by subtracting nine months to the time of childbirth. Only the year of birth is available in the dataset. Thus, we assume childbirths occur (i) one month before the interview if the respondent is partnered at the time of the interview, (ii) the last month the individual was partnered if the respondent was not partnered at the time of the interview, or (iii) in July if the individual was not partnered since the last interview. After restricting the sample to women, aged 16-40, with complete information on marital and childbearing histories, and who had no children or were in the first or second childbearing episodes between 2001 and 2013, we observe 2,805 episodes leading to 832 first-order conceptions, 850 episodes leading to 188 second-order conceptions, and 297 episodes leading to 22 third-order conceptions.

Main predictors include women's marital histories as well as other information on the succession of partners and union stability. We construct marital histories using retrospective data. We distinguish several partnership states in time-varying dummy variables: single; cohabiting and never married; first marriage (reference category); separated/divorced; separated and cohabiting with a new partner; remarried; widow. The partnership states are specified as time-dependent variables, except single and widowhood states which are

specified as time-varying variables. Time-dependent specifications of partnership states allow estimating the childbearing hazard as a time function since the start of a given partnership state. We use piecewise linear transformations of the duration of each partnership state. We complement the examination of the impact of previous union experience on childbearing using (i) a dummy variable capturing whether the individual is not in her first observed (cohabiting or marital) union within the observation window, (ii) dummy variables capturing the number of relationships that lasted more than one month, (iii) a dummy variable capturing whether the respondent initiated a separation in her last union. We also include additional variables in the model to control for age group, education level, employment status, occupational group, childbearing intentions, pre-marital cohabitation with the actual spouse, calendar period, and territory or state.

*Analytical strategy*

We examine up to three childbearing episodes of women using piecewise linear log-hazard models. The model can be written as

$$\ln h_{ij}^{C}(t) = y_i^{C} T(t) + \sum_k \alpha_{ik}^{C} Z_k^{C}(t) + \sum_k \beta_i^{C} x_{ij}^{C}(t) + u_j^{C}$$

where $h_{ij}^{C}$ is the hazard of a conception *c* of *i* order $(i = 1,2,3)$ of women *j*. The hazard rate of childbirth depends on the duration until conception, specified as a piecewise linear spline in $y_i^{C} T(t)$. We also define piecewise linear splines for the duration of union states, which are specified in $\alpha_{ik}^{C} Z_k^{C}(t)$. Time-varying and time-constant covariates are specified in $\beta_i^{C} x_{ij}^{C}(t)$. Last, $u_j^{C}$ is a random term capturing individual-specific unobserved heterogeneity is fixed across childbearing episodes of the same women.

The effects of time-dependent, time-varying, and time-constant variable are estimated separately for first, second and third births, in order to examine parity-specific differences. To test our hypotheses, we will assess the size and significance of coefficients of covariates capturing the duration of union states and the other indicators of previous union experience, as well as interaction terms among them.

One of our hypotheses considers that the independence between childbearing and union transitions is due to unobserved factors commonly affecting both processes. To this end, we follow Kulu and Steele's (2013) analytical strategy, and we simultaneously estimate the equation for the hazard of conception and an equation for the hazard of (cohabiting or marital) union dissolution. The simultaneous estimation allows us including a correlation term ρ among the individual-specific random terms of the conception and union dissolution hazard equations. A significant non-zero correlation indicates that there are individual-specific unobserved factors that commonly affect both, conception episodes and union dissolutions. Hence, we can test the selection hypothesis assessing the direction and significance of the correlation term ρ. Identification of the system of equation is achieved by

having repeated childbearing episodes and union dissolutions for a few women in the sample (Steele 2008).

*Preliminary results*

Preliminary results of the hazard rate for first-, second, and third-order conceptions are presented in Table 1. We find that all partnership states before the first marriage or after its dissolution are negatively associated with the hazard rate of first-order conceptions. For second- and third order conceptions, most of the coefficients of partnership states other than first-order marriage remain mostly negative, but coefficients are not statistically significant. We take this as evidence that substantiate our first hypothesis since first-intact marriages remain primary settings for childbearing, at least among women who conceive their first child.

We have further preliminary findings for the association between childbearing and previous union experience. Women who are in a second- or higher order (cohabiting or marital) union are more likely to enter a childbearing episode, but the result is only statistically significant for first-order conceptions. We take this as evidence for our hypotheses women with previous union experience, due to a number of reasons, have higher rates of childbearing.

Table 1: Hazard rate model of first-, second-, and third-order conceptions.

| | First conception | Second conception | Third conception |
|---|---|---|---|
| First marriage | Ref. | Ref. | Ref. |
| Cohabiting – never married | -1.43*** | -1.19*** | -1.52* |
| | (0.08) | (0.18) | (0.66) |
| Separated and not in a union | -1.70*** | -1.22** | -0.86 |
| | (0.20) | (0.42) | (1.04) |
| Separated and cohabiting | -1.29*** | -0.55 | -1.08 |
| | (0.16) | (0.32) | (1.05) |
| Re-married | -0.61* | 0.19 | - |
| | (0.26) | (0.43) | (-) |
| Second- or higher- order union | 0.84*** | 0.34 | 0.35 |
| | (0.14) | (0.35) | (1.04) |
| Baseline hazard | -7.02*** | -7.22*** | -8.88*** |
| | (0.20) | (0.48) | (1.58) |
| N (episodes) | 13709 | 5527 | 2078 |

Coefficients are log-hazards. Standard errors in parentheses under coefficients.
Covariates included in the model: age groups, calendar period and education level.
Significance levels: * 0.05 ** 0.01 *** 0.001
HILDA Survey data (2001-2013).

*Further work*

The final paper will include improvements to current models and further tests for more nuanced hypotheses about childbearing after union dissolution. The improvements to the model include an adequate modelling of the childbearing time-dependence using linear splines and the inclusion of a full set of control variables in the model specification. Further hypotheses testing will entail assessing the effects of additional covariates related to previous union experience and interaction terms between union-order, prior union status and current union status. We will deepen on the examination of the direction of causality and will assess the degree of unobserved heterogeneity by deploying the multi-process estimation of the hazard rates of childbearing and union dissolution commented in the analytical strategy section.

*References*


Baizan, P., Aassve, A., and Billari, F. 2003. "Cohabitation, Marriage, and First Birth: The Interrelationship of Family Formation Events in Spain." European Journal of Population/Revue europeenne de Demographie 19(2): 147-169.

Baizan, P., Aassve, A., and Billari, F. 2004. "The Interrelations between Cohabitation, Marriage and First Birth in Germany and Sweden. Population and Environment 25(6): 531-561.

Beaujouan, E. 2010. "How is Fertility Affected by Separation and Repartnering?" Population & Societies 464: 1-4.

Beaujouan, E. 2012. "Repartnering in France: The Role of Gender, Age and Past Fertility." Advances in Life Course Research 17: 69-80.

Cherlin, A. 2004. "The Deinstitutionalization of American Marriage." Journal of Marriage and Family 66: 848-861.

Gray. E. 2015. "Repartering." In G. Heard, D. Arunachalam (Eds.), Family Formation in 21st Century Australia. Springer Science+Business Media Dordrecht.

Heard, G. 2011. "Socioeconomic Marriage Differentials in Australia and New Zealand." Population and Development Review 37(1): 125-160.

Huinink, J., & Kohli, M. (2014). A life-course approach to fertility. Demographic Research, 30, 1293.

Huinink, J., & Feldhaus, M. (2009). Family research from the life course perspective. International Sociology, 24(3), 299-324.

Kennedy, S. and Bumpass, L. 2008. Cohabitation and Children's Living Arrangements: New Estimates from the United States." Demographic Research 19: 1663-1692.

Kiernan, K. 2004. "Unmarried Cohabitation and Parenthood: Here to Stay? European Perspectives." In D. P. Moynihan, T. M. Smeeding and L. Rainwater (Eds.), The Future of the Family. New York: Russell Sage Foundation.

Kulu, H., & Steele, F. (2013). Interrelationships between childbearing and housing transitions in the family life course. Demography, 50(5), 1687-1714.

Le Goff, J. 2002. "Cohabiting Unions in France and West Germany: Transitions to First Birth and First Marriage." Demographic Research 7(18): 593-624.

Liefbroer, A., and Dourleijn, E. 2006. "Unmarried Cohabitation and Union Stability: Testing the Role of Diffusion using Data from 16 European Countries." Demography 43(2): 203-221.

Lindenberg, S., & Frey, B. S. (1993). Alternatives, frames, and relative prices: a broader view of rational choice theory. Acta sociologica, 36(3), 191-205.
Mace, R. (2014). When not to have another baby: An evolutionary approach to low fertility. Demographic Research, 30, 1074.
Mills, M., Rindfuss, R., McDonald, P. and Velde, E. 2011. "Why Do People Postpone Parenthood? Reasons and Social Policy Incentives." Human Reproduction Update 17(6): 848-860.
Perelli-Harris, B. 2014. "How Similar are Cohabiting and Married Parents? Second Conception Risks by Union Type in the United States and Across Europe." European Journal of Population 30: 437-464.
Raley, K. 2001. "Increasing Fertility in Cohabiting Unions: Evidence for the Second Demographic Transition in the United States." Demography 38: 59-66.
Smock, P. 2000. "Cohabitation in the United States: An Appraisal of Research Themes, Findings and Implications." Annual Review of Sociology 26: 1-20.
Steele, F. (2008). Multilevel models for longitudinal data. Journal of the Royal Statistical Society: Series A 171, 5–19.
Testa M. 2007. "Childbearing Preferences and Family Issues in Europe: Evidence from the Eurobarometer 2006 Survey." Vienna Yearbook Population Research: 357-379.
Thompson, E., and Collela, U. 1992. "Cohabitation and Marital Stability: Quality or Commitment?" Journal of Marriage and Family 54: 259-267.
Tomasello, M. (2009). The cultural origins of human cognition. Harvard University Press.
Vanassche, S., Corijn, M., Matthijs, K., and Swicegood, G. 2015. "Repartnering and Childbearing After Divorce: Differences According to Parental Status and Custodial Arrangements." Population Research Policy Review 34:761-784.
Widmer, E. and Ritschard, G.2009. "The de-stabilization of the life course: Are men and women equal?" Advances in Life Course Research 14: 28-39.
Wu. Z., and Schimmele, C. 2005. "Repartnering after First Union Disruption." Journal of Marriage and Family 67: 27-36.