

Variation in the intersection between partnership and fertility: A comparison across 3 cohorts in 16 countries

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The intersection between partnership forms and fertility is increasingly complicated in the United States and European countries. This is due to increasing variety in partnership forms, diversity in fertility and changes in the way that these two processes interact. For example, in countries such as Norway, non-marital cohabitation, birth postponement and births to stable but non-marital partnerships are important, while in Italy, birth is largely restricted to marital relationships, which are universal albeit postponed. This paper uses Latent Class Growth models to evaluate the relationship between partnership and fertility and how this varies across the United States and 15 European countries. These models optimise a number of typical behaviours, and we examine how these are distributed across both birth cohort and national setting, to evaluate not only variations in behaviour, but also differences in how relationships have changed during the 20th century.

Across Europe and the United States, partnership patterns have become increasingly complex (Perelli-Harris and Lyons-Amos 2012, Elzinga and Liefbroer 2007, Billari and Liefbroer 2010). In addition, the timing and pace of childbearing have become less standardised, with the variance in the mean age at birth increasing (Billari and Liefbroer 2010). This increase in heterogeneity has led to questions about the interrelationship between partnership formation and childbearing. To what extent are marriage and childbearing still linked? Does the presence of children indicate that cohabitation is becoming more marriage-like? How does the change in the age pattern of union formation reflect changes in the timing of entrance into parenthood?

Most demographic research examines either partnership formation or fertility, but rarely examines the intersection of these two behaviours (see Perelli-Harris et al 2012). Studies that look at joint processes usually use sophisticated statistical methods to disentangle joint decision-making, but focus on one country (Upchurch et al 2002, Brien et al 1999, Aasve 2003, Steele et al 2005). Most studies that compare multiple countries tend to focus on the unobserved heterogeneity that determines both processes, rather than comparing general levels in behaviours across countries (e.g. Le Goff 2002, Baizan, Aasve, and Billari 2004). Perelli-Harris et al (2012) provide one way to examine the intersection between partnership and fertility by analysing the percent remaining in cohabitation at different stages of the childbearing process, but these analyses do not take into account the age pattern of the population or the multiple paths to union formation that can occur within countries.

In this paper, we use Latent Class Growth Models (LCGM) to map out fertility and partnership behaviour in the United States and 15 countries across Europe. LCGM allow us to draw the intersection between fertility and partnership trajectories across the reproductive ages (15-44), as well as transitions into and out of cohabitation and marriage. This paper builds on our previous work, which explores the heterogeneity of partnership behaviour within and across countries (Perelli-Harris and Lyons-Amos 2012). By incorporating childbearing into the models, we can distinguish between partnership classes that have different childbearing trajectories. For example, one class may be associated with the probability of entering parenthood that increases over the lifecourse, while another may have limited entrance into parenthood, despite comparable partnership behaviour. Taken as a whole, these analyses will provide insights into the meaning and function of different forms of partnership with respect to childbearing.

With our analysis of multiple countries, we can also ask to what extent the intersection between partnerships and childbearing is similar across countries. We use the Harmonized Histories, a dataset incorporating surveys from the United States and 15 European countries to compare the prevalence of latent classes across countries. The retrospective partnership and fertility data allow us to make cross-national comparisons for three birth cohorts: 1945-55, 1955-64, and 1965-74. By examining changes in classes over time, we can capture temporal changes and observe the disassociation between partnership and fertility. These cohorts will show a shift from homogenous marital partnership/fertility patterns to a more heterogeneous pattern.

Data

We analyse retrospective union and fertility histories from 16 surveys that have been standardized in a dataset called the Harmonized Histories (Perelli-Harris, Kreyenfeld, and

Kubisch 2009, and see www.nonmarital.org). The data for Austria, Belgium, Bulgaria, Estonia, France, Hungary, Italy, Norway, Romania, and Russia come from the Generations and Gender Surveys (GGS), which interviewed nationally representative samples of the resident population in each country. Because the GGS is not available for all countries (or the retrospective histories were not adequate for our purposes), we also relied on other data sources. The Dutch data come from the 2003 Fertility and Family Survey (FFS). The data for the UK are from the British Household Panel Survey (BHPS). The Spanish data come from the Survey of Fertility and Values conducted in 2006¹, and the Polish data are from the Employment, Family, and Education survey conducted in 2006. The U.S. data are from the National Survey of Family Growth, conducted between 2006 and 2008.

Despite slightly different survey designs, the union and birth histories are relatively comparable. We therefore use the pooled dataset, since this has the advantage of affording more statistical power resulting in the detection of a greater number of Latent Classes. Our data include the month of entrance into a cohabiting or marital unions and separation and divorce. Questions about cohabitation generally refer to co-resident relationships with an intimate partner that last more than three months. Birth timing is accurate to the nearest month. Our analysis examines the partnership states and entrance into parenthood that occurs between the ages of 15 and 45. Because most of our surveys interviewed women who were older than 45 at the time of the survey, we are able to compare women born in 1945-54, 1955-64, and 1965-74. In Austria, Poland, and the US, only women up to age 49 were interviewed; thus, we only include the latter two birth cohorts. We use sample weights when available in a given survey to estimate the prevalence of classes within countries.

Method

Latent Class Growth Models (LCGMs) are an extension of conventional growth curve models which assume that individuals are drawn from subpopulations (latent classes) that have different growth trajectories. These models have been increasingly applied to demographic research (Dariotis *et al.* 2011; Cheadle, Amato and King 2010). We extend previous work by Perelli-Harris and Lyons-Amos (2012) to extract latent classes based on trajectories for both partnership and childbearing (mirroring Dariotis *et al.* 2011). The first trajectory equation describes different partnership patterns across the lifecourse. Separate logits are fitted for each partnership behaviour: married, single, cohabitation, pre-marital cohabitation that changes to marriage and single after being in a previous union. The second growth equation describes the timing of entrance into motherhood and allows us to detect differential patterns of childbearing, even given relatively similar partnerships trajectories.

The number of classes is determined by the Lo-Mendell-Rubin Likelihood Ratio Test (LMR-LRT). This gives an objective means of assessing the number of classes, and hence the number of different careers experienced. Following the extraction of classes, we use the posterior probability of class membership as our main output. Each woman has a probability of membership in a certain class, depending on how well the estimated classes correspond to her actual partnership and fertility history. We compare the change in mean probability of class membership across countries and cohorts. This allows us to determine the changes

¹ The Centro de Investigaciones Sociológicas, but it is still undergoing processing. Therefore, the CIS holds no responsibility for any inaccuracies found in the data.

in both partnership and fertility across cohorts within countries, and also to compare across national settings.

Preliminary results

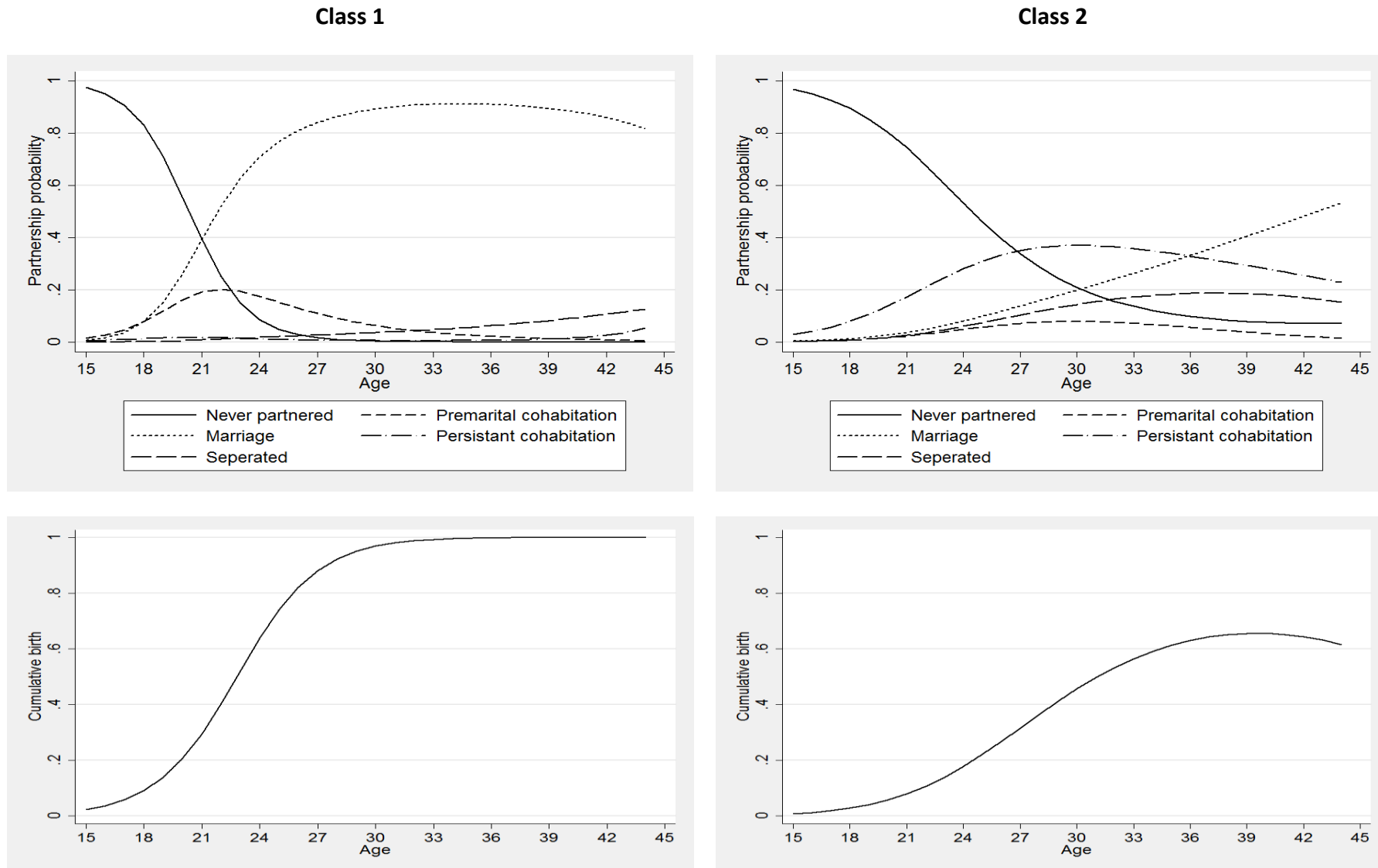
We present results from Norway (one of the countries in our analysis, pooled across all cohorts) by way of illustration (Figure 1). Future work will extend this analysis to the entire Harmonized Histories dataset, and incorporate countries across Europe and the United States. The LMR-LRT for Norway indicates that the optimal number of classes is 2 (the p-value for 2 classes was 0.00 while the p-value for 3 classes was 0.24 i.e. the addition of the third class was not significant). Previous work indicates that 8 classes are extracted from the pooled Harmonized Histories dataset when examining union formation only (Perelli-Harris and Lyons-Amos 2012).

The left hand column of the Figure represents the combined partnership and fertility profile for Class 1. The partnership component is characterised by marriage, which increases from age 19 onward, peaking at age 30 in excess of 90%. In this class marriage is preceded by cohabitation, and is largely stable (the overall probability of separation remains low). The fertility trajectory almost replicates this marriage pattern, with an increase in the proportion of women who have had a child from age 18 onward. The closeness of the marriage and partnership curves indicates that fertility in this context is closely associated with entry into marriage. Childbearing is also universal for this class, with all women having had their first child by age 30. (We expect to extract further classes in the pooled model, which should demonstrate the rise of married women who do not have children).

In Class 2 (right hand column) partnership is characterised by a later and less steep decline in the proportion never in union. This trend is accompanied by a slow increase in cohabitation, which increases from early ages and peaks at around age 30. Following this, the proportion of women cohabitating declines, with women tending either to separate (which increases from age 24 onward, peaking at age 39) or marry. While the trajectory for childbearing seems to follow the curve for cohabitation up until age 30, it continues to increase after this age. This indicates that in Class 2, the association between partnership status and childbearing is less clear-cut than in class 1. Additionally the proportion of women who have ever had a birth does not increase from age 39 onward, peaking at around 60% (the slight decline is an artefact of the polynomial used to fit the trajectory). Class 2 represents heterogeneous pattern of partnership and fertility, increasingly accepting of cohabitation and moving away from marriage (although not rejecting it entirely) and with a high proportion of delayed childbearing and childless women.

Future work will examine how these types of classes differ across cohorts and countries. As in our previous analysis, we expect around 8 partnership classes to emerge with their associated patterns of fertility. Examining the distribution of these classes will allow us to establish changes in the patterns of partnerships and fertility over time, while highlighting the importance of national context to demographic behaviour.

Figure 1: Extracted partnership (top) and childbearing (bottom) trajectories for illustrative 2 class LCGM for Norway



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