European Population Conference, Padova 24-27, June 2020

The impact of aggregate unemployment on individual-level fertility: variations across welfare regime and women's educational level

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EXTENDED ABSTRACT

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Abstract

In this paper we examine the impact of the country-level unemployment rates on individual-level fertility behavior in 26 European countries during the period 1990-2016. We assess how the impact of aggregate unemployment varies by parity, educational level and welfare regime context. We hypothesize that the impact of the aggregate unemployment depends on the work-family arrangements prevalent in each country and on how they differ by educational level. We use retrospective fertility histories derived from the European Union Statistics on Income and Living Conditions (EUSILC) for the year 2016 and contextual unemployment data. The results of the event history analyses with country fixed effects show substantial differences in the effect of unemployment by welfare regime and educational level. The overall effects of unemployment for first birth are negative and statistically significant for the Southern, Nordic and Liberal regimes. For second births, the effects of unemployment are negative for the Southern countries and positive for the Conservative countries. Yet, these results conceal substantial welfare regime disparities by educational attainment.

Key words: fertility, unemployment, crises, gender regime, welfare regime.

Introduction

The Great Recession that started in 2007 has renewed the interest in the effects of economic downturns, and specifically on the effect of unemployment, on fertility. Several papers have investigated the impact of contextual unemployment on the TFR or other measures of aggregate fertility, showing that there is generally a negative effect on fertility levels (Comolli 2017; Matysiak, Vignoli, and Sobotka 2018; Sobotka, Skirbekk, and Philipov 2011 ; Schneider 2015). A wider literature has examined the effect of individual level unemployment on fertility, showing substantial discrepancies in their conclusions, especially with respect to the effect of women's unemployment in different contexts and with different parities (e.g. Özcan, Mayer, and Luedicke 2010; Vignoli, Drefahl, and De Santis 2012). Fewer papers have analyzed the effects of contextual unemployment on individual-level fertility (Adserà 2011; Hoem 2000; Kravdal 2002; Neels, Theunynck, and Wood 2013). Most of them have focused on first birth and in periods before the Great Recession. In this paper we examine the impact of the country-level unemployment rates on individual fertility behavior in 26 European countries during the period 1990-2016, i.e. including the recession of the mid 1990s and the whole economic cycle leading to the Great Recession. We explore how the impact of unemployment varies by parity, educational level and welfare regime context. By doing so we hope to gain a better understanding of the variables and mechanism involved.

While most of the previous papers focusing on the link between unemployment and fertility are descriptive or are based on micro-economic theory, here we base our analyses on welfare regime and gender theories (Esping-Andersen 1999; Pascall and Lewis 2004; Pfau-Effinger 2005). We argue that some of the inconsistencies and inconclusive findings of previous literature can be solved by considering the socioeconomic position of individuals (proxyed by their educational level) and how it is linked to several dimensions of the welfare and gender regime. The thrust of the argument is that the impact of the aggregate unemployment depends on the work-family arrangements prevalent in each country and on how they differ by educational level. The prevalence of full-time employed dual earner couples, housewife-male breadwinner couples, or of part-time employment among women greatly differs between welfare regimes (Korpi 2010; Orloff 2009). Moreover, these work-family arrangements are systematically related to the women's educational and socio-economic level (Hook 2015).

We hypothesize that the overall effect of unemployment conceals important differences between welfare regimes and educational levels. Thus, in Southern European countries[1], characterized by low de-familialization, unsupported familialism and high levels of socio-economic inequality, we expect overall negative effects of unemployment, coupled with a stronger negative effect for low educated women (since unemployment is more prevalent among them), especially for first births. Similarly, in the Liberal countries we also expect a negative effect of unemployment, especially for the low educated. However, low educated mothers have a higher support in the form of child benefits and unemployment benefits, potentially leading to a higher fertility in case of unemployment.

By contrast, in the Conservative group the levels inequality are lower and familialism is supported by state policies. Here, for second and third births, we expect that most women (especially lower and middle educated) are housewives or part-time workers, which are little affected by unemployment themselves, or only indirectly if their partners are unemployed (although unemployment benefits cushion income decline). The negative effects of unemployment on second births should be concentrated on high educated women with stronger work attachment. The effects of unemployment should be stronger for first birth, however, as most women are in the labor market at this life course stage. Since unemployment is more prevalent among the low educated, also they should be more negatively affected by unemployment. The literature offers less information on the Eastern group, making predictions more hazardous. Nevertheless, it can be hypothesized that the low educated are likely to be especially hit by unemployment, leading to postponement of first births, while second births may be less affected, due to more traditional gender arrangements.

In the Nordic group, we expect overall negative effects of unemployment, especially for first birth, as most women want to be established themselves in the labor market before starting a family, and subsequently show a strong labor market attachment (Jalovaara et al. 2018). Yet, this regime also provides relatively high levels of supported familialism (long and well paid parental leave, child benefits, and in some countries cash for care options), which can offer an attractive alternative to employment for low educated women in times of economic crises.

[1] See below for the grouping of countries.

Data

The individual level data used in the analyses come from the national cross sectional samples of the European Union Statistics on Income and Living Conditions (EUSILC) for the year 2016 (EUROSTAT 2015). We selected information from 26 countries with populations over 500,000 individuals and with available contextual data. The following preliminary grouping of countries was made. South: Portugal, Spain, Greece, Italy, Cyprus. North: Denmark, Sweden, Finland, France, Belgium, Slovenia. Liberal: United Kingdom, Ireland, Netherlands. Conservative: Austria, Germany, Poland, Hungary, Czech Republic, Slovakia. East: Estonia, Latvia, Lithuania, Croatia, Romania, Bulgaria, Serbia, North Macedonia, Montenegro. This grouping of countries is based on the levels of de-familialization (proxyed by the spending on family services as a percentage of GDP) and income inequality, based on data from OECD around 2010. The own-child method is applied to reconstruct fertility histories. The EUSILC provides the date of birth of each child residing in the household; therefore, the data does not include deceased children or children no longer living with their mothers. I selected women aged 15 to 40 at survey time, to ensure that the process of children leaving the parental home does not bias the analyses. The literature has demonstrated that women can be included in the models up to their early forties without introducing any significant bias in their fertility histories (Klesment et al. 2014; Nitsche et al. 2018), and indeed the resulting fertility histories of women are consistent with the timing and the quantum of existing data. An important advantage of this approach is that no left censoring is present in the retrospective fertility histories. I excluded foreign born women, to avoid including children not born in each country. The sample comprises 51,812 women for first birth analyses, 24,001 women for second birth, and 14,283 women for third births, that were observed between 1990 and up to 2015 (survey year was not included in the analyses). The EUSILC provides the level of education at survey time. From this information it is possible to reconstruct the progression of the women in the educational system.

The data on unemployment comes from Eurostat. The rates are lagged one year, to account for nine-month gestation, and for an average birth occurring during the middle of the calendar year. The results reported below, however, are substantially identical when the enrolment rate is lagged two years.

Methods

Discrete-time event–history analyses are used to model factors associated with the annual probability of experiencing a first second or a third birth. A logistic specification is used, which can be viewed as a latent-response model (Rabe-Hesketh and Skrondal 2012). Underlying the observed dichotomous behavior y_{ij} (whether an individual *i* has a child in duration *j*), there is an unobserved or latent continuous response y_{ij}^* representing the propensity to bear a child. If the latent response is greater than 0, then the observed response is 1 and 0 otherwise. A linear regression model is specified for the latent response y_{ij}^*

$$Y_{ij}^* = \beta_0 + \beta_1' X_{ij} + \beta_2' X_{ij} + \upsilon_{ij}$$

where X_{ij} are vectors of covariates, β_0 is the baseline hazard function (the duration since age 15 or since previous birth), β_1 denotes the value of the estimated coefficients of regional variables, β_2 denotes the value of the estimated coefficients of the model for individual level covariates, and the random term u_{ij} is assumed to follow a logistic distribution. Following Rindfuss et al. (2007), country-level fixed effects are included to control for the possible endogenity of unemployment rate and fertility. In fixed-effects models, estimates cannot be confounded with omitted covariates and are hence less sensitive to model misspecification than estimates based on a random-intercept model. Identification of the model relies on the changes over time in the country variables. Random effects models for the countries were also computed (Barber et al. 2000), providing substantively similar results as the fixed effects. Random-intercept models, however, make the strong assumption that the country–specific intercepts are independent of the covariates (Rabe-Hesketh and Skrondal 2012).

Additionally, we also plan to compute models with simultaneous equations for the first, second, and third births. This approach, introduced by Kravdal (2001), was designed to account for self-selection into each parity and the differential fertility timing between educational groups. The specification is analogous as above, except for the introduction of a women-specific random heterogeneity term ε_i. The factor ε_i is assumed to be normally distributed with mean 0 and variance σ^2.

$$Y^1{}_{ij}{}^* = \beta_0 + \beta' X_{ij} + \varepsilon_i + \upsilon_{ij}$$

$$Y^2{}_{ij}{}^* = \beta_0 + \beta' X_{ij} + \varepsilon_i + \upsilon_{ij}$$

$$Y^3{}_{ij}{}^* = \beta_0 + \beta' X_{ij} + \varepsilon_i + \upsilon_{ij}$$

In this system of equations, the random variable ε captures unobserved heterogeneity. In particular, ε reflects unobserved factors influencing births, is specific to each woman and constant over time. It is assumed to follow a normal distribution. Model estimation is performed using full-information maximum likelihood, as implemented in the software package aML (Lillard and Panis 2003).

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Table 1. ***Results of the event–history analysis for first and second births. Country fixed effects. Odds Ratios***

	First birth	**Second birth**
	Odds ratio	Odds ratio
Age	4.627***	1.191***
Age square	0.972***	0.997***
Education Low	1	1
Middle	19.01***	0.684***
High	0.120***	0.563***
Education Low * age	1	
Education Middle * age	0.701***	
Education High * age	0.865***	
Education Low * age square	1	
Education Middle * age square	1.009***	
Education High * age square	1.007***	
Belgium	1	1
Bulgaria	1.320***	0.476***
Czechia	1.064	0.849**
Denmark	0.848***	1.203**
Germany	0.649***	0.619***
Estonia	1.432***	0.677***
Ireland	0.929	0.996
Greece	0.596***	0.988
Spain	0.543***	0.681***
France	1.089*	1.113
Croatia	0.967	0.929
Italy	0.501***	0.752***
Cyprus	0.861**	0.922
Latvia	1.466***	0.537***
Lithuania	1.460***	0.525***
Hungary	0.994	0.685***
Netherlands	0.773***	1.684***
Austria	0.775***	0.961
Poland	1.615***	0.665***
Portugal	0.800***	0.409***
Romania	0.614***	0.369***
Slovenia	0.849***	0.917
Slovakia	0.187***	0.387***
Finland	0.996	1.456***
Sweden	0.932	1.544***
United Kingdom	1.004	0.978
Unemployment rate	0.994***	0.996
Years since first birth		1.565***
Years since first birth square		0.956***
Low edu.* years since first birth		1

Middle edu.* years since first birth		1.167***
High edu.* years since first birth		1.599***
Low edu.* years since first birth sq.		1
Middle edu.* years since first birth sq.		0.983***
High edu.* years since first birth sq.		0.948***
Observations	616045	109609

Significance:'*'=10%;'**'=5%; '***'=1%.

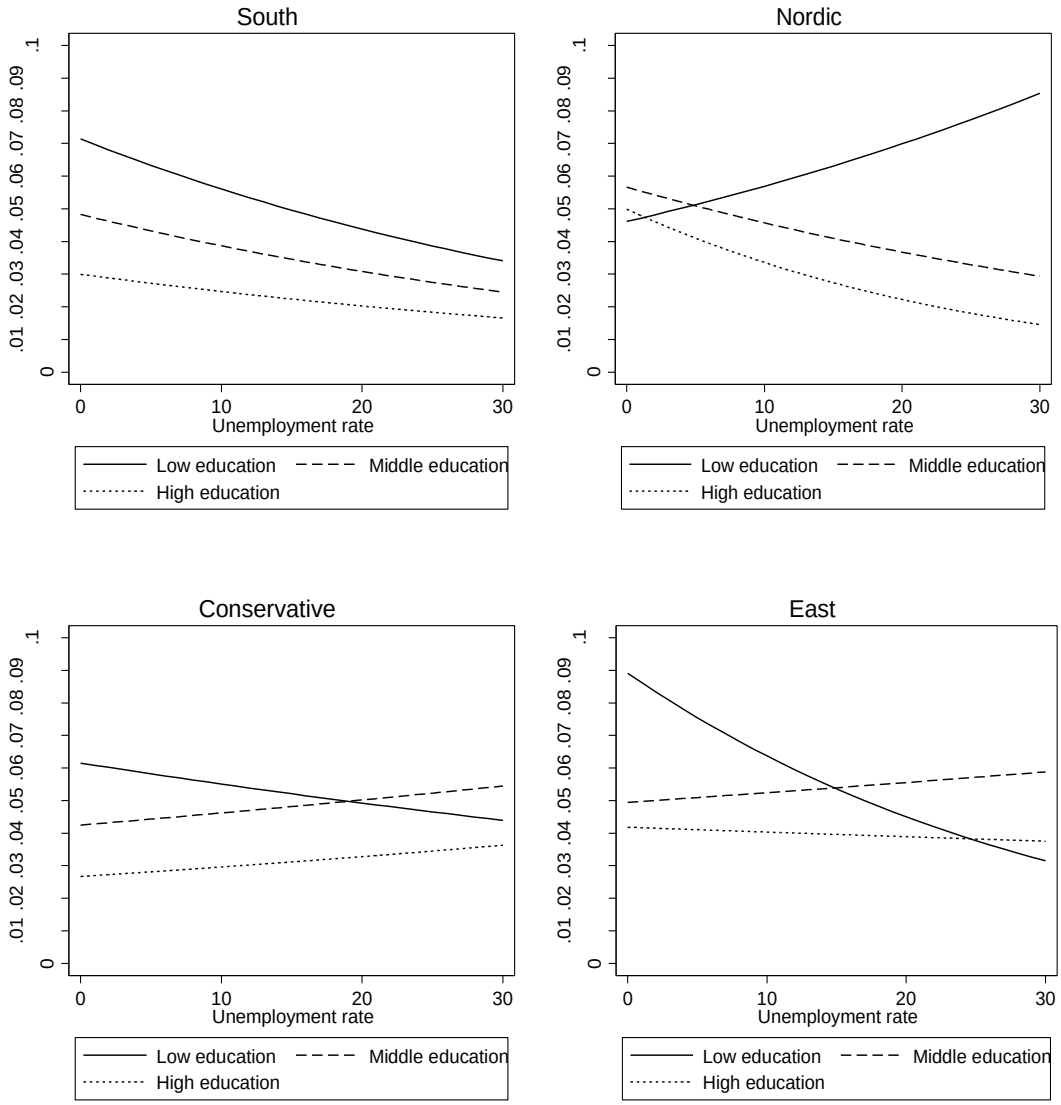

Figure 1. Predicted annual probability of a first birth by educational level and unemployment rate. Controls as in Table 1. Includes interaction terms between education and unemployment rate, and between age and education. The interaction between education and unemployment rate was not statistically significant for the Liberal countries.

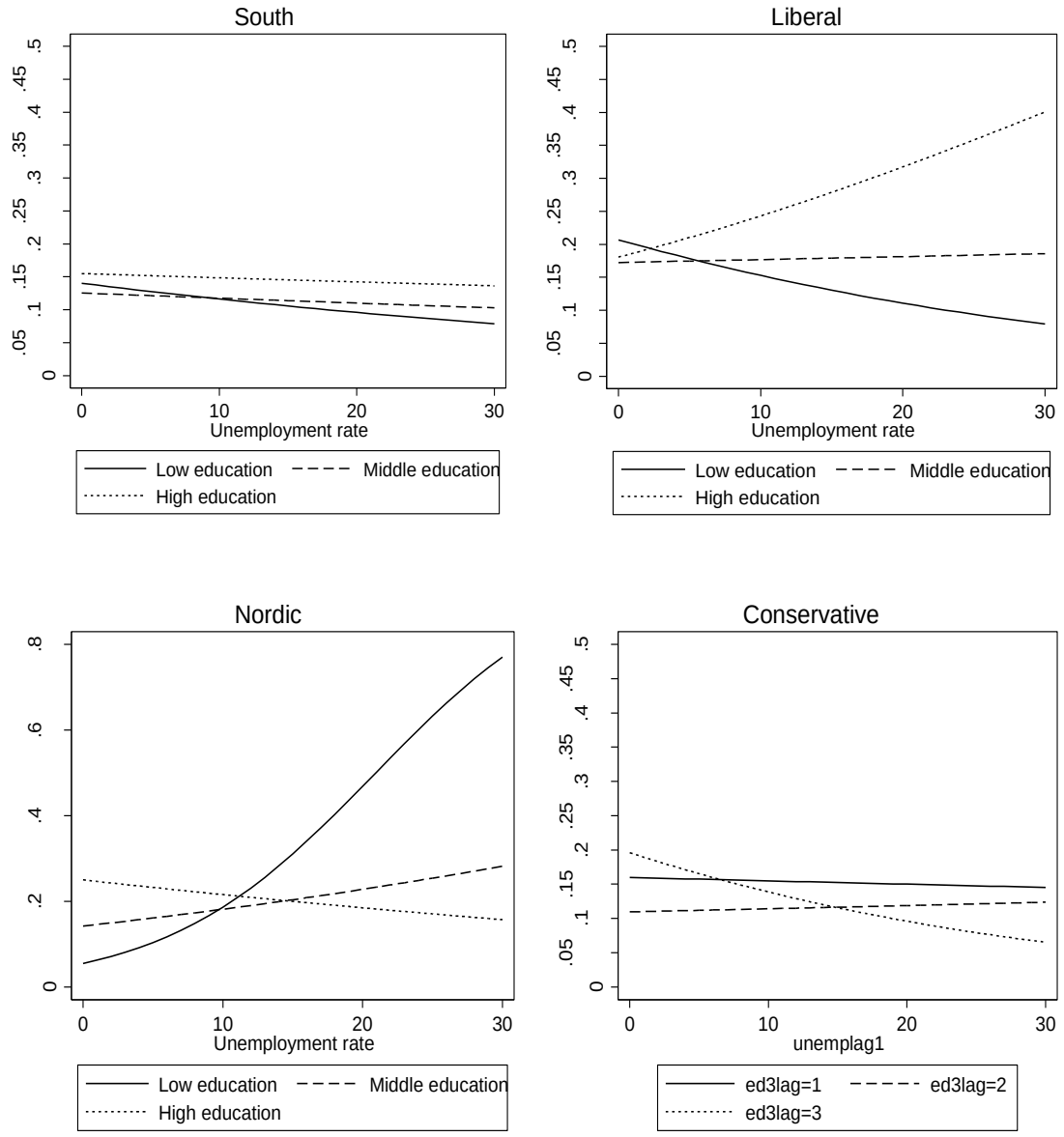

Figure 2. Predicted annual probability of a second birth by educational level and unemployment rate. Controls as in Table 1. Includes interaction terms between education and unemployment rate, and between duration since first birth and education. The interaction between education and unemployment rate was not statistically significant for the Eastern countries.