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Labour Market Participation and Fertility in Seven European Countries: A Comparative Perspective

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Abstract: Although evidence suggests a correlation between fertility and employment, comparative studies on this topic are relatively scarce, particularly when considering the diverse ways in which the two variables interact in different countries. The aim of this article is to analyse the relationship between the employment and reproductive behaviours of women born between 1940 and 1979 in seven European countries (Bulgaria, Czech Republic, France, Germany, Georgia, Italy, and Lithuania). Using data from the second wave of Generation and Gender Surveys (GGS) and the Istat survey *Famiglia e Soggetti Sociali* (FSS) in Italy, we estimated the propensity of first and second childbirth through multi-process modelling. The article's contribution is both theoretical and methodological. First, this research aims to investigate the correlation between employment and the timing of first and second births in a comparative perspective challenging the traditional East-West divide in Europe and the potential convergence in the impact of employment on fertility behaviours across European countries. Furthermore, the study asks whether the relationship between employment and fertility is changing similarly across European countries or whether differences tend to persist over time.

The results are discussed considering women's emancipation in different institutional settings, highlighting how women's participation in labour markets affects reproductive behaviour. In particular, the relationship between employment and fertility behaviour is examined in relation to the opposing macro-level thesis, which suggests that the association between employment and fertility changed from negative to positive after the mid-80s.

The second contribution of the article is a methodological one. It involves using simultaneous models with three equations to account for potential unobserved factors that influence the timing of the first and second childbirth and the potential endogeneity of employment status on fertility behaviour. The three equations include two log-Hazard equations for the transitions to the first and second birth order and an additional probit model to estimate the probability of being currently employed over the life course. By using this approach, we aim to provide a more comprehensive understanding of the relationship between employment and fertility, while controlling for potential confounding factors.

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Results suggest relevant national differences. On the one hand, the three Western countries considered in the analysis, France, Germany, and Italy, show a clear incompatibility of work and childbearing. However, in the first two, younger cohorts seem to be less affected by employment, likely because they benefitted from family policies introduced after the mid-1980s. On the other hand, the post-socialist countries are highly heterogeneous. In this area, we can find three different models. First, in Bulgaria and the Czech Republic employment is largely compatible with fertility choices resulting in a higher propensity of having the first and the second childbirth among working women. Second, in Lithuania the positive impact of employment for the first childbirth turns negative for the second one. Third, in Georgia we found a clear postponement of childbirth among working women for both birth orders. Overall, our results show deep differences across countries, suggesting that some European countries are far from demonstrating convergence in the relationship between employment and fertility.

Keywords: Fertility · Employment · Europe · Hazard Models · Birth Order · Multi-process Model

1 Introduction

Women's fertility and employment options have been widely studied in the demographic, economic, and sociological literature. Empirical studies in Western industrialised countries suggest that these two life choices tend to be in conflict, but that this conflict can be softened by institutional support for employed parents and when labour markets stimulate female employment. Another factor that helps women combine work and life is the social acceptance of working mothers. In fact, when it becomes a social norm, the conflict between work and family decreases (*Adsera* 2005; *Del Boca et al*. 2005; *Klesment et al.* 2014; *Gutiérrez-Domènech* 2010; *Gustafsson/Wetzels* 2000; *Mills et al.* 2005; *Liefbroer/Corijn* 1999; *Muszyńska* 2007).

These findings are consistent with microeconomic theory, which suggests that when women's participation in the labour market increases, opportunity costs for childbearing become higher, resulting in a reduction in the birth rate. However, micro-level research in post-socialist European countries (*Kreyenfeld* 2004; *Kantorová* 2004; *Matysiak* 2009) has challenged these assumptions by showing that in this region, working women are just as likely to become mothers as those who are not employed, even though these countries offer little support in terms of family reconciliation policies. This suggests that conditions relating to work and family balance are not the only country-specific factors affecting fertility and employment behaviour. Furthermore, employment may be a facilitator of family-building in countries with longer histories of women's participation in the labour force, where they are accepted as income providers.

Despite the abundance of research into the work-fertility nexus, comparative analyses on this issue are still rare. This article analyses the relationship between

being employed and the reproductive behaviours of women born between 1940 and 1979 in seven European countries: Bulgaria, the Czech Republic, France, Germany, Georgia, Italy, and Lithuania. Using data from the second wave of Generation and Gender Surveys (GGS), and the Istituto Nazionale di Statistica (Istat) survey *Famiglia e Soggetti Sociali* (FSS) in Italy,[1] we estimated the propensity of first and second childbirth through multi-process hazard models, adopting a comparative perspective.

Thus, the contribution of this article is both theoretical and methodological. First, the association between employment and the transition to first and second birth is analysed from a comparative perspective, challenging the traditional East-West divide in Europe and the potential convergence in the impact of employment on fertility behaviours across European countries.

Second, the impact of employment on fertility is considered over the life course and taking into account potential unobserved confounding factors that may affect both employment and fertility.

Our results reveal a negative link between employment and fertility behaviours in Western countries, whereas Eastern European countries demonstrate a high level of heterogeneity. Overall, we did not find evidence of a converging trend across countries.

The paper is organised as follows. In the second section, the theoretical background related to the employment-fertility nexus in the literature is introduced and discussed, and research hypotheses are formulated. The third section contains a description of the data and methods used in the analysis. In the fourth section, results from multivariate models are shown, and the fifth section draws some concluding remarks and provides a discussion of emerging issues and new research directions.

2 Employment and fertility at macro and micro level

Women's fertility and employment choices have been widely studied in the demographic, economic, and sociological literature. On the one hand, studies have repeatedly underlined that fertility reduces work-force participation, especially among women who have just become mothers (*Bernhardt* 1993; *Matysiak/Vignoli* 2008). The studies' results reflect the challenges of balancing childcare and employment (*Brewster/Rindfuss* 2000). In contrast, the findings on the impact of female labour force participation on family size are generally more controversial (*Ní Bhrolcháin* 1986b; *Vignoli et al.* 2012; *Kreyenfeld/Andersson* 2014).

[1] GGS data are suitable to study fertility, especially for cohorts born after the 1940s and for periods after the 1970s (*Vergauwen et al*. 2015), and there are no more recent longitudinal and comparative data. Italian data comes from the 2009 survey "Indagine Multiscopo Famiglie e Soggetti Sociali," conducted by Istat. FSS, as part of the Multipurpose Survey Program on Italian households, is the Italian version of Generations and Gender Survey.

At the national level, the correlation between female labour force participation and total fertility changed from negative to positive around the mid-1980s (*Ahn/Mira* 2002; *Rindfuss et al*. 2003), a finding that may hide the presence of relevant country-specific heterogeneities (*Kögel* 2004). At the micro level, the theory of fertility and women's labour supply as suggested by *Mincer* (1963) and *Becker* (1965) provides an explanation of the changes that have occurred in recent decades. Formally, women's fertility and employment decisions may be evaluated using a framework of economic rationality based on two economic mechanisms: the *price effect* and the *income effect*. The *price effect* implies that a fertility decision is, at its core, an evaluation of opportunity costs. The forgone earnings of the person caring for the child at home, in most cases the mother, contributes to the total cost of having a child. The maximisation of the utility of the family is achieved through a specialisation of the roles of the parents, which usually results in the man being the breadwinner and the woman devoting her time to domestic and childcare work. The *income effect* assumes that women achieving higher levels of education and a stable position in the labour market have better chances of pursuing a career and accumulating wealth. Higher income can offset the additional financial burden that may prevent individuals from having another child, and thus increases the chances of childbearing among working women. Furthermore, additional resources enhance the feasibility of outsourcing childcare, which motivates mothers to re-enter employment sooner after the birth of a child. The microeconomic approach further suggests that the price effect largely outweighs the income effect, and subsequently supports the idea not only that women's employment hinders childbearing, but also that parenthood *threatens* mothers' employment opportunities.

Today, the role specialisation of parents is increasingly questioned, mainly because women have a greater presence in labour markets and have shortened their child-related career pauses (*Oppenheimer* 1997). Nowadays, women are increasingly averse to leaving a career for the purpose of having a child (*Gutiérrez-Domènech* 2010). Instead, they combine and balance work and family life, choosing the time to enter motherhood and sequencing birth and work episodes (*Ní Bhrolcháin* 1986a/b; *Gracia/Kalmijn* 2016). As a result, household organisation is changing, and women are playing a growing role in contributing to the household budget (*Cherlin* 2000; *Stevenson/Wolfers* 2007; *Raz-Yurovich* 2012). In this new scenario, the price effect of women's employment on fertility becomes less likely to outweigh the income effect. In addition, for women who are pursuing careers, any time spent out of the labour force negatively affects their chances of occupational advancement (*Bielby* 1992; *Rosenfeld* 1992; *Rosenfeld/Spenner* 1992; *Gangl/Ziefle* 2009; *Rindfuss/Choe* 2015).

One possible mechanism by which labour force participation may reduce fertility is through delaying the transition to parenthood, reflecting a consideration of the high opportunity costs of childbearing, especially among women with higher human capital (*Rindfuss et al.* 1996). Generally, women's economic roles are more significant in countries where women's work is supported by adequate welfare policies and the employment of mothers is more socially accepted. *McDonald* (2000) argues that in societies where the breadwinner model prevails, women

must decide between children and employment, resulting in lower fertility rates. Conversely, in societies with higher levels of gender equity in the social institutions related to the family, women and men are better able to combine employment with higher levels of fertility. In other words, if a society removes or restricts structural obstacles through the provision of social organisation and support for families with children, women should be better able to combine work with children. In line with this perspective, *Chesnais* (1996) and *Esping-Andersen* (2009) observe that at the first stage, providing similar opportunities to women and men, both in terms of education and labour market participation, tends to reduce the number of children per woman because women bear the burden of both family and employment. However, subsequent improvements in the availability of childcare, as well as an increase in more egalitarian couples, might result in a positive effect on fertility by providing women with greater opportunities to reconcile work and family. This viewpoint is strengthened by the fact that fertility is higher where the differences between men and women in terms of educational, occupational, and political participation are low (*McDonald* 2000, 2006; *Esping-Andersen* 2009; *Esping-Andersen/Billari* 2015; *Baizan et al.* 2016; *Frejka et al.* 2018).

2.1 Fertility and women's employment across European countries

A meta-analysis by *Matysiak* and *Vignoli* (2008) highlights at a micro level the negative impact of female employment on childbearing for most Western industrialised economies, especially for the second and third birth order. The price effect outweighs the income effect wherever the opportunity costs are higher for mothers than for childless women. Another explanation alludes to the fact that after childbearing, women's positions in the labour market may become more vulnerable, and consequently, their bargaining power in the household is reduced (*Neyer et al.* 2013). Furthermore, the magnitude of the negative effect of women's employment on fertility varies across countries, depending on the opportunity costs in a given country. Empirical work clearly concludes that women tend to postpone motherhood and avoid additional births in countries where mothers in employment are less supported at an institutional level and/or less socially accepted, or where labour market institutions are less aligned with mothers' needs (*Adsera* 2005; *Del Boca et al.* 2005; *Mills et al.* 2005; *Gutiérrez-Domènech* 2010; *Schleutker* 2013). Southern European states are typical examples of countries where the reconciliation of work and family is difficult and where the conflict between paid work and motherhood is particularly pronounced (*Adsera* 2005; *Boeri et al*. 2005). In Italy, where childcare services receive little state support and are still largely reliant on the family (*Saraceno/Keck* 2010), women who want to pursue a career may markedly delay or completely renounce childbirth. This so-called "familialism" is bolstered by a plethora of norms and policies that reinforce it, including cash transfers and vouchers for families rather than accessible public care services, as well as a disjointed system of social benefit schemes (*Impicciatore/Dalla Zuanna* 2017).

In countries characterised by conservative welfare regimes, policies supporting mothers' employment are the exception, despite extensive state interventions in

other economic activities (*Esping-Andersen* 1990, 1999). Additionally, women are often only perceived as ancillary income providers. Consequently, the traditional "male breadwinner/female caregiver" model has changed slightly into a "male breadwinner/female part-time caregiver" (*Matysiak/Vignoli* 2008: 366) model. By contrast, in strong welfare regimes, the difficulties of combining employment and childrearing are reduced by relatively liberal attitudes and policies supporting working mothers. Research in strong welfare states on the relationship between fertility and career choices reveals that employed women are at least as likely to give birth to a first child as the non-employed (*Matysiak/Vignoli* 2008).

Female employment is also more socially accepted and indeed encouraged in Eastern European countries such as Eastern Germany (*Kreyenfeld* 2004), the Czech Republic (*Kantorová* 2004), and Poland (*Matysiak* 2009). These findings may seem counterintuitive: in Eastern Europe, policies offering support for working parents declined following the fall of socialism (*Stropnik* 2003; *Saxonberg/Sirovátka* 2006; *Szelewa/Polakowski* 2008). Furthermore, many of the family and labour market policies as well as cultural barriers opposing the conciliation between work and family have been shown to be comparable to those in Mediterranean countries (*Matysiak* 2011; *Thévenon* 2011). Furthermore, *Lück* and *Hofäcker* (2003) reveal that attitudes towards working mothers in post-socialist countries are relatively traditional when compared to the rest of Europe. One possible explanation can be found in the social norm that expects women to enter motherhood early (*Perelli-Harris* 2005; *Potančoková* 2009; *Mynarska* 2010). Under socialist rule, the difficulties involved in combining work and family life were alleviated by low competition in the labour market and supported by a socialist ideology which promoted both fertility and high levels of women's employment. Therefore, in these countries, women have historically been seen as income providers and are more integrated into the labour market than in Western Europe. This effect may even have been reinforced after these countries became members of the EU, as families tried to achieve higher, Western living standards, which would be difficult to reach with only a single income.

Considering the difference between first child and higher order childbirths, the interrelationship between fertility and women's employment is particularly strong among mothers. In fact, the opportunity costs can be higher for mothers than for childless women. A possible explanation can be traced back to the fact that after childbearing, a woman's position in the labour market may be weakened and more vulnerable, resulting in a reduction of their bargaining power at home (*Neyer et al.* 2013). Other studies suggest that the negative impact of labour force participation on fertility is higher after the first birth, because women pay more attention on the conflict between work and child-rearing as they get older and gain experience with work and children (*Stolzenberg/Waite* 1977). This "learning hypothesis" suggests that mothers are more cautious about balancing work and life when they have already experienced this conflict.

2.2 Research hypotheses

The discrepancies between empirical findings reported across welfare state regimes highlight the need for more in-depth investigations into the role of women's employment for childbearing. We compare different European countries where family and labour market-related policies and the cultural obstacles to work and family reconciliation are similarly strong, but which have different income models. To disentangle the complex links between employment and fertility, we distinguish between birth orders. Adopting a life course perspective, we observe how employment affects both the entry into motherhood and the transition to a second child.

Based on the previously debated literature, we test three hypotheses:

H1) Employed women tend to postpone the entry into motherhood compared to non-employed women.

H2) The impact of women's employment on a second birth is more pronounced than on a first birth.

H3) The adverse effect of women's employment on fertility is higher in countries with familialistic regimes than in countries with other regimes (post-socialist and conservative), particularly in relation to the propensity to become a mother.

3 Data and method

The analysis is based on the second wave of GGS and FSS surveys, conducted between 2007 and 2009, in the following countries: Bulgaria, the Czech Republic, France, Germany, Georgia, Italy, and Lithuania.[2] These surveys, which are still the most suitable and current data available, contain information on employment histories on a monthly basis, as well as detailed information on women's fertility. We restricted our sample to women born between 1940 and 1979.[3] The resulting

[2] Among the countries available from the second wave of the GGS, we excluded some countries because of a lack of information on one or more substantive variables used in the analysis. Each country developed the survey independently, following the guidelines of the Generation and Gender Programme. The second wave of the GGS is affected by decreasing response rates and attrition; Germany and Lithuania reported overall response rates of around 32 percent and 23 percent, respectively. Caution should be taken in interpreting the results from these countries. Further details are available in the appendix. However, only the second wave gathers information on respondents' careers. Cross-national analyses based on the second wave of GGS survey are also applied in *Schwanitz* (2017). For Italy, we preferred to use the Italian FSS survey instead of the GGS second wave because of the larger sample size, more recent data, and greater availability of proximate determinants, without sacrificing comparability. The same strategy was recently used by *Schwanitz et al*. (2021).

[3] We excluded cases with missing or misreported information on the year of birth for children: 1,392 in the case of the first birth and 697 for the second. We also deleted cases in which the second/third child was born before the first/second one; 480 twins, and another 62 cases with inconsistent information.

sample pool used for the analysis comprises 25,031 women. In the case of the second birth, we limited our analysis to 20,519 women. We adopted an event history analysis approach aiming at considering women interviewed before the end of their reproductive age (i.e., right-censored), as well as allowing for time-varying variables (e.g., *Blossfeld et al.* 2007; *Mills* 2011). The multivariate perspective is ensured by developing piecewise linear exponential models (also known as generalised Gompertz or piecewise-linear Gompertz) where the baseline is linear over a certain range, and again linear but with a different coefficient (slope) over the next range (see *Lillard*/*Panis* 2003: 45). This is a generalisation of the standard exponential model that does not require the definition of an *a priori* shape of the baseline hazard. The events of interest are the transitions to first and second birth. For the first childbirth, episodes begin at the interviewee's 14th birthday and end at the birth of the first child (event occurred), or at the interview (event is right-censored).[4] The baseline hazard duration is a function of the woman's current age, assumed as linear within the following age intervals: up to 17, 18-21, 22-25, 26-29, 30-34, 35+. Concerning the transition to the second childbirth, episodes begin nine months after the first childbirth and end at the birth of the second child or the interview (censored cases). The baseline refers to the duration since the starting point (nine months after the first birth) and it is considered as linear within intervals of 0-1, 2-3, 4-5, 6-7, and 8+ years.

One possible bias in estimating the two equations separately is that there may be some unobserved factors that drive the decision and the timing to have both the first and the second child. The approach used to avoid this bias is to perform simultaneous estimation of hazard equations (one for each birth order) containing an identical residual expressing the total deviation of each individual from the rest of the sample in terms of unobserved characteristics (*Kravdal* 2001, 2002, 2007).

We also consider the potential endogeneity of being currently employed. Indeed, there may be some unobserved factors behind both job and fertility choices. For instance, individual preferences for a large family (formed during infancy and adolescence) may contradict investing in one's professional career (see, e.g., *Hakim* 2000, 2003). In order to disentangle the effect of employment on fertility behaviours from the potential influence of unobserved confounding factors that may affect both job and fertility (e.g. family-work balance, gender role attitudes, contextual characteristics, contraceptive behaviours, etc.), we simultaneously estimated two hazard equations, one for the first and second birth order each (both including an identical residual ε), together with a probit equation with a binary outcome (having, or not having, a job at a specific point in time t) including an unobserved factor λ. The joint estimation of the three equations allowing for correlation between ε and λ permits to account for the potential endogeneity of working activity on fertility behaviour. This multi-process approach represents a research strategy that has been adopted in several studies on fertility and other behaviours such as

[4] All dates are monthly. Some cases reported season instead of the month. In these situations, the month is randomly obtained within the specified season.

partnership formation and dissolution (*Lillard* 1993; *Lillard et al.* 1995; *Steele et al.* 2005; *Impicciatore/Billari* 2012), education (e.g., *Upchurch et al.* 2002; *Impicciatore/Dalla Zuanna* 2017), internal mobility (*Thomas/Dommermuth* 2021), and employment transitions (*Steele* 2011).

More formally, we developed three equations (subscript i stands for i^{th} woman):

$$ln\ \mu_i^{(1)}(t) = \gamma^{(1)}(t) + \alpha^{(1)} Job_i(t) + \beta'^{(1)} X_i^{(1)}(t) + \varepsilon \quad (1)$$

$$ln\ \mu_i^{(2)}(t) = \gamma^{(2)}(t) + \alpha^{(2)} Job_i(t) + \beta'^{(2)} X_i^{(2)}(t) + \varepsilon \quad (2)$$

$$Probit(Job_i(t)) = \Phi^{-1}(\beta_0 + \beta'^{(3)} X_i^{(3)}(t) + \lambda) \quad (3)$$

where $ln\ \mu_i^{(1)}(t)$ is the log-hazard of having a j^{th} child at time t; $\gamma^{(j)}(t)$ is the baseline function; $Job_i(t)$ is the employment condition (as a time-varying variable) and $\alpha^{(j)}$ is the relative regression parameter; $X_i^{(j)}$ is the vector of the (time fixed and time-varying) exogenous covariate for the j-th equation, and $\beta'^{(j)}$ is the relative regression parameters' vector. Equation (3) is a binary regression model based on a probit specification (i.e., Φ^{-1} is the inverse of the cumulative standard normal distribution) considering the probability of being employed as a function of a set of exogenous variables $X^{(3)}$.

We assume that ε and λ reflect, respectively, the woman's propensity to have a higher fertility and to have a job, factors which are constant over time, normally distributed, and potentially correlated. Therefore, we assume the following variance-covariance structure of unobserved heterogeneity in the simultaneous equations model:

$$\begin{pmatrix}\varepsilon\\ \lambda\end{pmatrix} \sim N\left[\begin{pmatrix}0\\ 0\end{pmatrix}, \begin{pmatrix}\sigma_\varepsilon^2\\ \sigma_{\varepsilon\lambda} 1\end{pmatrix}\right] \quad (4)$$

A strong correlation between pairs of residuals means that some common, unobserved factors (at the individual level) simultaneously influence the two processes (fertility and having a job). An estimate of the parameters of the model via maximum likelihood can be obtained using aML[5] (*Lillard/Panis* 2003). The variable of interest (*Job*) is modelled through a binary time-varying variable (*currently working*) and is defined by the start and end times of (up to eight) job episodes experienced before the interview. An evaluation of the impact of being employed on the birth of the first or the second child is used to shed light on our hypotheses.

The vector of exogenous variables includes the binary time-varying variable *Currently student* and the educational attainment at the time of the interview (*Education*) coded into three levels: primary (ISCED 0, 1, and 2), secondary (ISCED

[5] aML uses full information maximum likelihood with an iterative search algorithm to find parameter estimates. It requires that the user specifies starting values for (almost) all parameters, i.e., values which are used in the first iteration (*Lillard/Panis* 2003: 18)

3 and 4), and tertiary (ISCED 5 and 6). Level of education is widely considered to be a relevant aspect in shaping fertility, being strongly associated with occupational success and reflecting cultural resources that influence individuals' preferences for specific partners and family pathways in general (*Basu* 2002; *Blossfeld/Timm* 2003; *Nitsche* 2021). However, the impact of the educational level on the transition to motherhood may be smaller than the effect of being enrolled in education (*Hoem* 1986; *Kravdal* 1994). Thus, several authors suggest including this aspect in multivariate models (*Goldscheider/Waite* 1986; *Blossfeld/Huinink* 1991; *Billari/Philipov* 2004; *Impicciatore/Tomatis* 2020). Due to lack of information on the educational career, education is here considered as a time-constant variable. The underlying assumption is that those who completed high levels of education aimed to achieve them from an early age. This assumption, which has also been used in previous works (see e.g., *Bratti/Tatsiramos* 2012; *Kravdal* 2001), can be partially relaxed by including a cohort effect in the model.

The models also include the women's *Country* (Bulgaria, Czech Republic, France, Georgia, Germany, Italy, Lithuania) and *Birth cohort* (1940-1949, 1950-1959, 1960-1969, 1970-1979). The reduction in Western European fertility has mostly been driven by a reduction in the progression ratio to second and higher birth orders amongst older cohorts, i.e., those born between 1940 and 1955. In Central and Eastern Europe, fertility decline has been mainly driven by a reduction in the transition to a second childbirth. Highly educated women often choose to have only one child, thereby satisfying the social norm of becoming a mother, yet minimising the problems of combining full-time work with household and childcare duties (*Frejka* 2008; *Brzozowska* 2015). However, *Zeman et al.* (2018) highlight that regional patterns emerged among women born between 1955 and 1970: Central and Eastern Europe experienced a decrease in the transition to the second childbirth, while German-speaking and Southern European countries showed a decrease in first birth rates. In the Nordic countries, fertility remained stable or even increased.

Finally, for the transition to the second child we included the mother's *Age at first childbirth* (-25, 26-30, 31-35, 36+ years) as a categorical variable which encompasses the potential catch-up effect for women with postponed fertilities (*Impicciatore/Dalla Zuanna* 2017), such as those who work or are more educated. The catch-up effect suggests that women who have their first child late have the second one relatively faster, increasing second birth intensities. A late age at first birth, in fact, might generally have a reducing effect on the transition to the second childbirth.

Table 1 contains summary statistics of the sample. These results illustrate, among other features, the lower participation of women in the labour market in Italy, the earlier transition to motherhood in the Eastern European countries, and the short interval between the first and the second birth in Georgia.

4 The transition to the first and second childbirth: empirical results

Table 2 shows the estimates obtained in the pooled sample by developing both independent and simultaneous models for the first and second childbirth as well as

Tab. 1: Sample description

	Bulgaria	Czech Republic	France	Georgia	Germany	Italy	Lithuania
Education							
Primary	23.8	13.6	26.4	7.9	9.2	49.4	20.9
Secondary	48.1	71.3	40.3	62.5	61.5	33.5	48.9
Tertiary	28.1	15.1	33.4	29.6	29.3	17.1	30.3
	100.0	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*
Birth cohorts							
1940-1949	16.9	25.6	21.4	18.3	19.4	21.1	24.7
1950-1959	16.5	25.3	26.5	27.0	28.0	24.7	26.5
1960-1969	33.9	22.8	27.7	29.4	35.1	28.8	25.8
1970-1979	32.6	26.3	24.4	25.4	17.5	25.5	23.1
	100.0	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*
Ever worked	96.4	83.9	95.8	98.3	77.9	99.7	94.9
At least one child	89.7	88.3	81.2	88.6	86.3	79.0	88.5
Two children (among mothers)	69.5	72.6	76.8	82.4	71.9	69.1	69.4
Age at first childbirth (median)	22.1	22.9	26.5	22.9	26.8	27.7	23.9
Years between 1st and 2nd child (median)	4.8	4.5	3.7	2.5	4.3	4.8	5.2
Number of cases	3721	1279	2748	3392	1397	11579	915

Source: own calculation based on Wave 2 of the GGS and Istat FSS (2009)

the probit estimates for being employed. We found a generalised postponement of fertility when women are working. This result is confirmed (and even strengthened) in the simultaneous model, i.e., when the potential endogeneity of the employment condition is considered. We do not find a relevant difference between the first and second child; the associated coefficients are quite similar in both transitions.

The coefficients of the control variables tend to be in line with our expectations. The propensity to have a child tends to be lower among more educated women (especially for the first child), students, and younger cohorts. Model estimates also confirm that in Eastern European countries the propensity to have a child is higher than in Western ones (especially Italy). Italy also shows a reduced participation of women in the labour market, as highlighted by the Probit equation.

The correlation among residuals in the multi-process model is positive and significant, suggesting that there are some unobserved factors influencing both the decision to have a child and to be employed. Not taking this factor into account could result in an underestimation of the role of having a job. However, it must be stressed that sign and significance of the coefficients do not change between the independent to simultaneous equations.

Tab. 2: Hazard models for the first and second childbirth and probit model for having a job: independent and simultaneous equations

	First child				Second child				Having a job
	Independent		Simultaneous		Independent		Simultaneous		Simultaneous
	β	sig.	*β*	sig.	*β*	sig.	*β*	sig.	*β* sig.
Baseline (current age)									
-17 years	0.08***		0.08***						
18-21 years	0.02***		0.02***						
22-25 years	0.00		0.01***						
26-29 years	0.00		0.00***						
30-34 years	-0.01***		0.00***						
35+ years	-0.02***		-0.02***						
Baseline (duration since the first birth)									
0-1 years					0.04***		0.05***		
2-3 years					-0.01***		-0.01***		
4-5 years					-0.02***		-0.02***		
6-7 years					-0.02***		-0.02***		
8+ years					-0.02***		-0.02***		
Currently working (ref. No)									
Yes	-0.25***		-0.58***		-0.29***		-0.68***		
Education (ref. Medium)									
Low	0.24***		0.40***		0.06***		0.11***		-0.31***
High	-0.17***		-0.36***		0.01		-0.08***		0.00
Currently student (ref. No)									
Yes	-0.87***		-0.89***		-0.30***		-0.46***		
Birth Cohort (ref. 1960-69)									
1940-49	0.04*		0.05*		-0.04*		-0.02		-0.03
1950-59	0.09***		0.15***		-0.05**		-0.01		-0.01
1970-79	-0.14***		-0.17***		-0.12***		-0.21***		0.01
Country (ref. Italy)									
Bulgaria	1.06***		1.54***		0.09***		0.41***		0.74***
Czech Republic	0.79***		1.21***		0.21***		0.53***		1.67***
France	0.37***		0.61***		0.43***		0.71***		1.12***
Georgia	0.91***		1.41***		0.75***		1.28***		1.82***
Germany	0.48***		0.65***		0.27***		0.49***		0.67***
Lithuania	0.82***		1.15***		0.09*		0.37***		0.65***
Age at previous childbirth (ref. 25-29)									
15-24 years					0.25***		-0.07**		
30-34 years					-0.31***		-0.13***		
35+ years					-1.28***		-1.03***		
Constant	-9.39***		-9.93***		-4.78***		-4.91***		-0.21***
Standard deviation of residual in the fertility equations 0.85***									
Correlation between the residuals (fertility-education) in the simultaneous models 0.63***									
Number of cases	25031				20519				25031

Note: statistical significance: * > 90%; ** > 95%; *** > 99%.

Source: own calculation based on Wave 2 of the GGS and Istat FSS (2009)

Table 3 includes estimates obtained separately for each country coming from independent and simultaneous models.[6] This comparative approach reveals important differences across countries: the first childbirth tends to be postponed among working women in France, Germany, Italy, and Georgia and accelerated in Bulgaria, the Czech Republic, and Lithuania. Thus, with the sole exception of Georgia, a distinction between Eastern and Western European countries emerges.

For the transition to second birth, the role of being employed is confirmed for almost all countries: the coefficients for the employment variable remain significantly negative for Western countries (France, Germany, Italy) and positive for Bulgaria and the Czech Republic. However, being employed increases the propensity to have a second child for Lithuanian women, differently to what we observed for the first birth transition.

There is no evidence of a generalised stronger impact of being employed for the second childbirth compared to the first one.

The coefficient associated with employment increases in magnitude for the second birth in France and Germany. In Bulgaria, the Czech Republic, Georgia, and Italy, the coefficient decreases. As previously noted, the coefficient changes sign in Lithuania.

An analysis of the interaction between employment status and cohort (Table 4) provides further insights. In France, the negative impact of employment on the

Tab. 3: Hazard models for the first and second childbirth, by country and current employment condition (ref. non-working women in the same country): independent and simultaneous equations

	First child				Second child			
	independent equations		simultaneous equations		independent equations		simultaneous equations	
	Coeff.	Sig.	Coeff.	Sig.	Coeff.	Sig.	Coeff.	Sig.
Bulgaria	1.05***		1.19***		0.11**		0.24***	
Czech Republic	0.72***		0.75***		0.56***		0.64***	
France	-0.35***		-0.62***		-0.55***		-0.81***	
Georgia	-0.51***		-0.67***		-0.13***		-0.26***	
Germany	-0.15**		-0.31***		-0.33***		-0.49***	
Italy	-0.39***		-0.62***		-0.34***		-0.53***	
Lithuania	0.57***		0.55***		-0.66***		-0.66***	

Note: other variables included: birth cohort of woman, education, currently a student, age at first childbirth for the second childbirth (full models by country in appendix). Statistical significance: * > 90%; ** > 95%; *** > 99%.

Source: own calculation based on Wave 2 of the GGS and Istat FSS (2009)

6 To check the robustness of the comparison, we also developed independent and simultaneous models on the pooled sample including an interaction term between country and being currently employed. Results (available on request) do not differ significantly from those shown in Table 3.

transition to both the first and second child is substantially reduced. This result can be the linked to family policies which were introduced starting in the mid-1980s. Given that our sample includes women born between 1940 and 1979, only the younger cohorts were able to benefit from these measures. Albeit in a less linear way, a similar reduction also emerges in Germany and, to a lesser extent, in Italy. Conversely, in Bulgaria and the Czech Republic, cohort analysis reveals the enhancement of the positive link between employment and fertility. This trend also applies to the first child in Lithuania, whereas in Georgia no important cohort effects emerge. Overall, the relationship between employment and fertility does not show a convergent trend moving from older to younger cohorts. Most countries move in the same direction, just from different starting levels: negative associations become weaker, and positive associations become stronger. Both these trends suggest that female employment becomes less harmful and more beneficial to childbearing across countries.

Tab. 4: Log-hazard for the transition to the first and second childbirth, by country, cohort and current employment condition (ref. non-working women in the same country and in the same cohort): simultaneous equations

	First child				Second child			
	1940-49	1950-59	1960-69	1970-79	1940-49	1950-59	1960-69	1970-79
Bulgaria	0.29**	0.96***	1.03***	1.07***	-0.24	0.09	0.28**	0.35***
Czech Republic	0.44**	0.59***	0.58***	0.69***	0.59	0.13	0.94***	0.52*
France	-1.12***	-0.73***	-0.49***	0.08	-1.46***	-0.84***	-0.66***	-0.29*
Georgia	-0.38***	-0.53***	-0.66***	-0.59***	-0.22*	-0.19**	-0.16*	-0.23*
Germany	-0.52***	-0.12	-0.24**	-0.14	-0.60***	-0.45***	-0.48***	-0.22
Italy	-0.62***	-0.56***	-0.53***	-0.49***	-0.59***	-0.54***	-0.48***	-0.17**
Lithuania	0.33	0.18	0.45**	0.44**	-0.83*	-0.65*	-0.48*	-0.63**

Note: other variables included: education, currently a student, age at first childbirth for the second childbirth. Statistical significance: * > 90%; ** > 95%; *** > 99%.

Source: own calculation based on Wave 2 of the GGS and Istat FSS (2009)

5 Discussion and conclusions

In this article, we examined the relationship between fertility and employment in seven European countries, observing both the transition to first and second childbirth. To date, few studies have observed the effect of employment on the propensity to have a first and second child using a comparative perspective at a micro level and taking into account the potential endogeneity of the employment condition.

Overall, we do not find support for a generalised delay effect when being employed (*H1*), nor for a more pronounced effect of employment on the propensity to have a second birth (*H2*).

Findings on the cross-country variations at the micro-level relationship between fertility and women's employment reveal important heterogeneity in Europe, while not fully coinciding with the expected results (only partly consistent with *H3*). On the one hand, the three Western countries considered in the analysis (France, Germany, and Italy) appear to be more similar than expected. Conservative and familialistic countries are characterised by relatively rigid labour markets with little support for working parents and more traditional attitudes towards working mothers (*Matysiak/Vignoli* 2008). However, women's employment conflicts with childbearing not only in Italy but in all the three Western countries. Women born between 1940 and 1970 are more likely to postpone the transition to motherhood as well as the transition to higher birth orders if they are employed. Although France is considered a family-friendly country, characterised by relatively high and stable fertility levels, these policies have been progressively built in tandem with those on employment only since 1985 *(Martin* 2010). Furthermore, in France, employment instability has a negative effect on household size (*Ciganda* 2015). In Germany, before unification, there were two contrasting family models: in the East, the government supported the dual-worker model, and measures to increase the fertility rate were implemented; in the West, a male breadwinner model persisted and women pursued a part-time career model, with no-employment breaks while their children were in pre-school (*Ostner* 2010; *Pfau-Effinger/Smidt* 2011). After unification, family policies were built based on the West Germany model. However, women in East Germany have not adapted their behaviour to this model, *de facto* two different systems persist, and the two models have continued to coexist (*Pfau-Effinger/Smidt* 2011).

On the other hand, post-socialist countries emerged as highly heterogeneous. Existing literature suggests that the working mother norm is institutionally embedded in former socialist countries (*Standing* 1994; *Puffer* 1996; *Frejka/Gietel-Basten* 2016), and the process of women's integration in the labour market was maintained ideologically by linking employment with emancipation (*Scott* 1974). While in Western Europe, the value of individualism and the post-industrial social context led to the consideration of work as a necessity for either fulfilling family duties or achieving individual independence, in Eastern Europe people were more likely to consider women's participation in paid work as a way both to fulfil family responsibilities and to obtaining emancipation (*Ma* 2010). Therefore, Eastern Europe might be less progressive regarding the conflict of a women's role in balancing work and family but more tolerant in accepting that women work. At the same time, women's labour market participation in post-socialist countries was supported by extensive childcare policies, incorporating generous maternity and childcare leave allowances, and flexible working arrangements (*Metcalfe/Afanassieva* 2005). However, the relationship between labour market participation and fertility is radically different across countries in Eastern Europe. Results suggest three different models.

The first is the one experienced in Bulgaria and the Czech Republic, where being employed is largely compatible with fertility choices resulting in a higher propensity of having the first and the second childbirth among working women. In these two countries, women have adopted the image of the working mother and, despite

increasing difficulties, continue to follow both work and family goals. While in the majority of Western Europe being eligible for parental leave is dependent on prior employment, in many Eastern European countries mothers are permitted to take long periods of parental leave unrelated to labour market status or employment history (*Matysiak/Szalma* 2014; *Moss* 2014). As part of pro-natalist measures in the 1990s, for example, the Czech Republic extended its parental leave until the child's 4th birthday, while in Bulgaria maternity leave is 410 days (*Frejka/Gietel-Basten* 2016). Furthermore, in Bulgaria, childcare allowances are higher for the second child than for the first (*Frejka/Gietel-Basten* 2016).

The second model is that followed by Lithuania, where the positive impact of employment for the first childbirth turns negative for the second birth. The postponement of a second child may be the result of a dual expectation from women: earning income while fulfilling care duties. On the one hand, in recent decades, changing attitudes towards working mothers and new family policies have improved the ability to better reconcile work and family. On the other hand, increased competition in labour markets has created new constraints and decreased the possibilities of re-entering employment for mothers who have left their jobs. The difficulties in finding a new job or returning to work after the first birth may influence women in postponing their next child until they have re-established a relatively good position in the labour market. In Lithuania in particular, unstable economic conditions in part caused by changes in government have led to a discontinuity of family policies without a positive effect of measures on fertility taking hold (*Frejka/Gietel-Basten* 2016). Furthermore, starting from the 1990s, not only the Lithuanian fertility rate fell, but so did the number of desired children, falling below replacement level (*Frejka/Gietel-Basten* 2016).

The third model is the one experienced in Georgia, featuring a clear postponement of childbirth among working women. This feature places Georgia close to Western countries even though, unlike the latter, the incompatibility between employment and fertility tends to decrease passing from the first to the second childbirth. Among post-socialist countries, Georgia is often singled out with a persistence of very traditional values regarding family and gender roles (*Blum et al.* 2009; *van der Lippe et al.* 2006). Most women and men become parents at a young age and soon after forming a union (*Frejka et al.* 2008; *Kesseli* 2008). Once married, both women and men tend to have a child very soon (*Olds/Westoff* 2004; *Neyer et al.* 2013) and are more inclined to have another child within three years from the previous birth than other Europeans (*Neyer et al.* 2013). Given the strong relationship and the reduced time gap between union formation and childbearing, a work-related experience can lead to a postponement of family formation, causing working women to fall behind in the general trend of fertility decisions and outcomes.

All things considered, there are limitations to our analysis. First, the comparative perspective obliged us to consider only a limited amount of information, as not all variables of interest are available for cross-country comparisons. Aspects such as family background, income, area of education, and religion should be considered because they may also shape women's life courses (*Rindfuss et al.* 2003). The life history of the male partner also plays an important and often crucial role in a

woman's choices regarding childbearing. However, the structure of the data used here limits the possibility of adopting a couple-level analysis (e.g., *Blossfeld et al.* 2001) because of a lack of information about the current partners' characteristics. Another relevant factor is the characteristics of job episodes. For instance, the possibility to combine work and family duties can be facilitated by the availability of part-time employment. In countries with very small part-time labour markets, such as the Mediterranean and Eastern countries, women can be constrained to choosing between full-time work or no work at all (*Bardasi/Gornick* 2003). Financial necessities and labour market insecurity may also force women to work on a full-time basis and to follow both work and family goals (*Matysiak/Steinmetz* 2008). Unfortunately, a large number of missing data on part-time/full-time information prevents us from including it in our analysis.[7]

Second, in multiprocess modelling, the unobserved factors included that drive both employment and fertility choices are considered to be time-invariant. This implies that the individual orientation towards family life and fertility is constant over the reproductive life. Despite some attempts to relax this assumption (e.g., *Gottard et al.* 2015), it is usually accepted in the demographic interpretation (*Kravdal* 2001; *Kreyenfeld* 2002; *Steele et al.* 2005). It is also in line with *Hakim's* (2000, 2003) interpretation which considers "preference" for a greater or lesser number of children as a crucial determinant of the fertility level. In fact, Hakim argues that in European countries this preference is formed during infancy and adolescence and varies little over the course of a woman's reproductive life.

Third, this comparison would have been enriched by considering additional countries with different welfare state regimes, especially from Northern and Southern Europe and by including more recent data. Unfortunately, recent changes in support of working mothers in several European countries therefore cannot be considered.

Finally, Wave 2 of the GGS suffers from a high attrition rate. Maintaining high response rates and low attrition levels is a major challenge for social science research infrastructures. Failure to achieve this can cause unwanted systematic deviations from the true outcome of a survey, as high non-response rates can pose a significant threat to survey quality (*Gauthier et al.* 2018). *Van Damme* and colleagues (2022) found that, in Bulgaria, Georgia, Germany, France, Lithuania, and the Czech Republic (among other countries), attrition is systematically related to a variety of factors, including lower educational backgrounds, being older, being more traditional, having a lower commitment to marriage, cohabiting, having separated parents, and poor health. *Žilinčíková* and *Hiekel* (2018), observing transitions from cohabitation, showed that respondents with higher education and employment were more likely to participate in both waves, as well as cohabiting parents compared to those without children. These results suggest that people who are more disadvantaged

[7] Focusing on the first eight job episodes for all countries included in the analysis except Italy, we found 14,578 missing values about full time/part time classification among 38,812 episodes (around 37 percent).

are more likely to drop out the panel between Waves 1 and 2 whereas, conversely, couples who are less traditional may be less sensitive to attrition. Although some potential spurious effects may be partially limited by including variables such as education and employment in a multivariate analysis (as suggested by *Žilinčíková* and *Hiekel* 2018), panel attrition selectivity could create a bias resulting in a potential underestimation of the connection between labour market participation and fertility (see the Appendix for further detail).

Notwithstanding these limitations, our analysis provides new evidence that can shed light on the relationship between employment and fertility behaviours, particularly with regards to the opposing macro-level thesis, which states that after the mid-80s the association between employment and fertility changed from negative to positive. At a micro level, the relationship remains controversial. Thus, this is an example of a relatively common phenomenon in the social sciences: a pattern appears in cross-sectional analyses (different countries observed at the same point in time), but the same relationship does not emerge when studying a single country (or a group of countries) over time (*Kolk* 2019). Our results show deep differences across countries, suggesting that some European countries are far from demonstrating convergence in the relationship between employment and fertility. We found that the incompatibility between work and childbearing is more marked in Western European countries compared to post-socialist countries. However, some exceptions reveal that the European East-West divide is not completely clear-cut.

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Appendix

Tab. A1: Hazard models for the first and second childbirth and probit model for employment. Simultaneous equations, full models, Bulgaria and Czech Republic

	Bulgaria						Czech Republic					
	First child		Second child		Having a job		First child		Second child		Having a job	
	β	sig.	*β*	sig.	*β*	sig.	*β*	sig.	*β*	sig.	*β*	sig.
Baseline (current age)												
-17 years	0.05***						0.09***					
18-21 years	0.03***						0.02***					
22-25 years	-0.01***						0.00					
26-29 years	0.00						0.00					
30-34 years	-0.01***						-0.01					
35+ years	-0.01***						-0.02***					
Baseline (duration since the first birth)												
0-1 years			0.06***						0.05***			
2-3 years			0.00						-0.01**			
4-5 years			-0.01**						-0.02*			
6-7 years			-0.02***						0.00			
8+ years			-0.02***						-0.02***			
Currently working (ref. No)												
Yes	1.19***		0.24***				0.75***		0.64***			
Education (ref. Medium)												
Low	0.81***		0.73***		-0.26***		0.18*		0.17		-0.26***	
High	-0.30***		-0.41***		0.10***		-0.24*		0.21		0.10***	
Currently student (ref. No)												
Yes	-0.47***		-0.31***				-0.56***		-0.29			
Birth Cohort (ref. 1960-69)												
1940-49	-0.30***		-0.11		0.04		-0.09		-0.18		0.04	
1950-59	-0.09		0.15**		0.04*		-0.17*		0.03		0.04*	
1970-79	0.01		-0.56***		-0.09***		-0.49***		-0.28**		-0.09***	
Age at previous childbirth (ref. 25-29)												
15-24 years			0.02						0.03			
30-34 years			-0.18						-0.61***			
35+ years			-2.43***						-1.47**			
Constant	-8.33***		-5.73***		-0.46***		-9.88***		-5.67***		-0.46***	
Theta	0.86***						0.62***					
Rho	0.03						0.07					
Number of cases	3721						1279					

Note: statistical significance: * > 90%; ** > 95%; *** > 99%.

Source: own calculation based on the 2nd wave of the GGS

Tab. A2: Hazard models for the first and second childbirth and probit model for employment. Simultaneous equations, full models, France and Georgia

	France						Georgia					
	First child		Second child		Having a job		First child		Second child		Having a job	
	β	sig.	*β*	sig.	*β*	sig.	*β*	sig.	*β*	sig.	*β*	sig.
Baseline (current age)												
-17 years	0.08***						0.09***					
18-21 years	0.03***						0.02***					
22-25 years	0.02***						0.00**					
26-29 years	0.00						0.00					
30-34 years	-0.01**						-0.01**					
35+ years	-0.02***						-0.01***					
Baseline (duration since the first birth)												
0-1 years			0.08***						0.03***			
2-3 years			-0.01**						-0.03***			
4-5 years			-0.01*						-0.01**			
6-7 years			-0.03***						-0.03***			
8+ years			-0.02***						-0.02***			
Currently working (ref. No)												
Yes	-0.62***		-0.81***				-0.67***		-0.26***			
Education (ref. Medium)												
Low	0.31***		0.10		-0.26***		0.13*		0.11		-0.26***	
High	-0.51***		0.18*		0.09***		-0.33***		-0.25***		0.10***	
Currently student (ref. No)												
Yes	-1.29***		-0.35***				-1.10***		-0.74***			
Birth Cohort (ref. 1960-69)												
1940-49	0.02		0.02		0.04		-0.16**		-0.23***		0.04	
1950-59	-0.06		-0.20**		0.04*		0.08		0.00		0.04*	
1970-79	-0.12		0.07		-0.10***		0.04		-0.45***		-0.09***	
Age at previous childbirth (ref. 25-29)												
15-24 years			-0.40***						0.08			
30-34 years			-0.03						-0.43***			
35+ years			-0.81***						-1.79***			
Constant	-9.80***		-4.93***		-0.46***		-8.51***		-3.58***		-0.46***	
Theta	1.13***						0.64					
Rho	0.09						0.14***					
Number of cases	2748						3392					

Note: statistical significance: * > 90%; ** > 95%; *** > 99%.
Source: own calculation based on the 2nd wave of the GGS

Tab. A3: Hazard models for the first and second childbirth and probit model for employment. Simultaneous equations, full models, Germany and Italy

	Germany						Italy					
	First child		Second child		Having a job		First child		Second child		Having a job	
	β	sig.	*β*	sig.	*β*	sig.	*β*	sig.	*β*	sig.	*β*	sig.
Baseline (current age)												
-17 years	0.08***						0.07***					
18-21 years	0.01***						0.03***					
22-25 years	0.01***						0.01***					
26-29 years	0.01**						0.01***					
30-34 years	0.00						0.00					
35+ years	-0.03***						-0.02***					
Baseline (duration since the first birth)												
0-1 years			0.06***						0.06***			
2-3 years			-0.02***						0.01***			
4-5 years			-0.01*						-0.02***			
6-7 years			-0.03***						-0.02***			
8+ years			-0.02***						-0.03***			
Currently working (ref. No)												
Yes	-0.31***		-0.49***				-0.62***		-0.53***			
Education (ref. Medium)												
Low	0.40***		0.19		-0.26***		0.47***		0.07		-0.25***	
High	-0.14		0.13		0.10***		-0.40***		0.09		0.10***	
Currently student (ref. No)												
Yes	-1.33***		-0.50***				-1.05***		-0.38***			
Birth Cohort (ref. 1960-69)												
1940-49	0.13		-0.24*		0.04		0.32***		0.27***		0.03	
1950-59	0.14		-0.26**		0.04*		0.51***		0.14***		0.04*	
1970-79	0.04		-0.01		-0.10***		-0.41***		-0.02		-0.10***	
Age at previous childbirth (ref. 25-29)												
15-24 years			-0.42***						-0.26***			
30-34 years			-0.08						0.12**			
35+ years			-1.38***						-0.36***			
Constant	-9.58***		-4.63***		-0.46***		-10.41***		-5.55***		-0.45***	
Theta	0.79						1.02***					
Rho	0.13**						0.11***					
Number of cases	1397						11579					

Note: statistical significance: * > 90%; ** > 95%; *** > 99%.

Source: own calculation based on the 2nd wave of the GGS and Istat FSS (2009)

Tab. A4: Hazard models for the first and second childbirth and probit model for employment. Simultaneous equations, full models, Lithuania

	Lithuania					
	First child		Second child		Having a job	
	β	sig.	β	sig.	β	sig.
Baseline (current age)						
-17 years	0.10	***				
18-21 years	0.03	***				
22-25 years	0.00					
26-29 years	-0.01	**				
30-34 years	-0.01					
35+ years	-0.02	***				
Baseline (duration since the first birth)						
0-1 years			0.04	***		
2-3 years			-0.01			
4-5 years			0.00			
6-7 years			-0.02	*		
8+ years			-0.03	***		
Currently working (ref. No)						
Yes	0.55	***	-0.66	***		
Education (ref. Medium)						
Low	0.19		0.06		-0.26	***
High	-0.42	***	-0.33	**	0.10	***
Currently student (ref. No)						
Yes	-0.42	***	-0.64	***		
Birth Cohort (ref. 1960-69)						
1940-49	-0.20		-0.10		0.04	
1950-59	-0.18		-0.07		0.04	*
1970-79	0.00		-0.32	**	-0.09	***
Age at previous childbirth (ref. 25-29)						
15-24 years			-0.05			
30-34 years			-0.68	***		
35+ years			-1.39	**		
Constant	-10.82	***	-4.34	***	-0.46	***
Theta	0.68	***				
Rho	0.04					
Number of cases	915					

Note: statistical significance: * > 90%; ** > 95%; *** > 99%.
Source: own calculation based on the 2nd wave of the GGS

The Generations and Gender Survey (GGS) – documentation

This appendix provides a detailed overview of the Generation and Gender Survey, Wave 2 (GGS).

The GGS is a large-scale survey that explores the intergenerational transmission of social inequality, family dynamics, and gender relations across Europe. Data are provided by the Generation & Gender Programme Research (GGP). Started under the umbrella of the United Nations Economic Commission for Europe (UNECE), the GGP infrastructure is run by institutes with strong traditions in academic research on population and family change and on survey methodology.

GGS survey was conducted in multiple countries and covers representative samples of men and women from different age cohorts. The GGS dataset has been used to investigate a wide range of topics, such as partnership dynamics, fertility, transition to adulthood, care and support networks, household tasks division, and contraception. These data are crucial for understanding fundamental societal challenges in Europe and constitute a considerable basis for formulating evidence-based policies. The sampling guidelines, as summarised by *Simard* and *Franklin* (2005), establish three main elements: the target population is 18-79-year-olds (at the time of the first wave), the sample size for Wave 1 must be sufficiently large to achieve at least 8,000 interviews in case of a third wave, and probability sampling must be used. It is worth noting that the large sample sizes in each wave are one of the GGS's distinguishing features. This allows data users to study specific social groups, such as low-income families or particular living arrangements (e.g., cohabiting couple, single parent, living alone, etc.). Moreover, the broad age range expands research possibilities, particularly in terms of analysing intergenerational relations and support.

During the first wave of the GGS, national teams consisting of national statistical offices and/or national research institutes collected data. To ensure consistency in fieldwork procedures, data collection guidelines were provided to each national team. Probability sampling was implemented across all participating countries. However, the timing of fieldwork in Wave 1 differed significantly between countries (between 2003 and 2012) due to constraints in each specific country, which is relevant information for data users as differences between countries might be related to time-specific contextual elements. Nonetheless, the survey is designed to examine retrospective and within-person life-course dynamics, which reduces the need for strict comparability between countries in the timing of fieldwork.

There was also diversity in the modes of data collection in Wave 1, with some countries using computer-assisted personal interviewing (CAPI) and others using paper and pencil interviewing (PAPI) or a mixed-methods strategy. Most countries continued to use similar survey modes in Wave 2, with PAPI and CAPI prevailing as the most common survey modes (*Gauthier et al.* 2018).

Observing the methodology documentation provided by the Generations and Gender Programme (GGP), it is possible to reconstruct the sampling procedure and the response rate of each county selected in our analysis (see Table A5).

To minimise attrition rates, the GGP has implemented several recommendations for fieldwork practices since the first wave. These practices include close collaboration between the research institute, fieldwork agency, interviewers, and respondents; providing incentives to respondents that may vary depending on the country; maintaining regular contact with respondents through letters, brochures, and questionnaires; recommending interviewer continuity to establish a rapport; and ensuring specialised interviewer training and supervision.

The GGS faces the challenge of tracing and contacting all respondents every three years, which requires measures to trace and motivate respondents between waves. In France, the cumulative attrition after three waves of the survey was 43 percent, with the highest attrition registered between Waves 1 and 2. However, such a rate is "similar to that found in other similar surveys in France," according to *Régnier-Loilier* and *Guisse* (2012). In Austria, *Buber-Ennser* (2014) observes that attrition does not affect results, suggesting that "the data can be used without (significant) concern about selectivity".

Tab. A5: Information about GGS Wave 2

Country	Year of interview	Sampling procedure	Data collection mode	Complete interview	Response rate calculated with reference to Wave 1 total sample
Bulgaria	2007	Wave 2 covers the same population that was sampled in 2004, for Wave 1 of the GGS	Face-to-Face (personal interview) Technique: PAPI	9,344	72.7%
Czech Republic	2008/2009	Database from Wave 1 + quota sampling	Face-to-Face (personal interview) Technique: CAPI, CASI	10,071	32%
France	2008	All Wave 1 respondents who had agreed to be recontacted for a second interview	Face-to-Face (personal interview) Technique: CAPI	6,576, *42 were then removed	65%
Georgia	2009	To conduct as many repeated interviews as possible of 10,000 respondents from GGS Wave 1	Face-to-Face (personal interview) Technique: PAPI	8,303	83%
Germany	2008/2009	All the Wave 1 respondents who had agreed to be recontacted for a second interview	Face-to-Face (personal interview) Technique: CAPI	3,285, *58 were then removed	33%
Lithuania	2009	All the Wave 1 respondents who had agreed to be recontacted for a second interview	Face-to-Face (personal interview). Technique: PAP I	2,294	23%

Note: PAPI: paper and pencil interview, CAPI: computer-assisted personal interview, CASI; computer-assisted self interview.
Source: based on documentation provide by GGP (https://www.ggp-i.org/data/methodology/)

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