THE IMPACT OF ATYPICAL WORKING HOURS ON FERTILITY INTENTIONS ACROSS EUROPE

Ivan Čipin[1] and Petra Međimurec[2]

XXVII IUSSP International Population Conference, Busan 2013

Session 04-01-02: Economic and cultural factors influencing fertility preferences

---

[1] University of Zagreb, Faculty of Economics and Business, Department of Demography
[2] University of Zagreb, Faculty of Economics and Business

INTRODUCTION

Contemporary Europe is facing an unprecedented demographic change manifesting itself through an ageing population and a decreased working population. Therefore, raising low fertility rates has become one of the main priorities of European policymakers, which is to be achieved simultaneously with raising female employment rates (European Commission, 2005).

Very low fertility is a complex and a relatively new demographic and social phenomenon caused by many factors (Frejka & Sobotka, 2008). One-sided theoretical explanations, either economic (focusing on women's increasing labor market participation and its effect on fertility) or cultural (focusing on individualism and self-realization as in the case of the second demographic transition theory), have, at best, provided limited explanation of fertility behavior. As it happens oftentimes, theoretical expectations regarding fertility rarely match the actual situation, which fails to be fully explained by any relevant approaches attempting to elaborate on the underlying factors of low fertility.

In many European countries, fertility decisions take place in a context characterized by a high proportion of economically active women who are in their childbearing years of age. In addition, younger generations, and women especially, are becoming more educated. On the other hand, the costs of raising children are growing. Family policy measures are particularly deficient with regards to facilitating reconciliation between work and family obligations in some countries (Gauthier, 2007). In developed (before all European) countries, there exists a gap between the desired and the actual number of children (Bongaarts, 2001). Some authors argue that high personal ideals about the desired number of children indicate an unrealized demand for children and thereby find space for a pro-fertility policy (Chesnais, 1998; Hakim, 2003). This, so-called, hidden demand for children is largely a result of unfavorable social and economic conditions. We believe that in many countries, and especially those with very low fertility, high personal aspirations concerning the desired number of children are relatively difficult to accomplish in the current socio-economic context. To some extent, countries with adequate incentives and fertility policy measures can stimulate women and couples to achieve their desired fertility intentions. Whether (and to what extent) will these

actions yield a successful result is fairly doubtful. However, it is important to investigate which areas have a higher need of pro-fertility interventions.

The link between employment and fertility has been widely recognized throughout demographic literature (see, for example, Brewster and Rindfuss, 2000; Engelhardt and Prskawetz, 2004; Matysiak and Vignoli, 2008). Most of these studies focus on women's labor market status (employment versus non-employment) and number of working hours (part-time versus full-time employment). Yet, papers describing the relationship between working conditions and childbearing remain relatively scarce. Previous research shows that an individual's perception of work-family conflict is influenced by longer and unsocial working hours (Gallie and Russel, 2009). It is therefore reasonable to assume these factors also affect fertility behavior.

Employed women cannot be viewed as a homogenous group (Martín García, 2010). Working atypical hours might make it more difficult to combine work with family responsibilities, especially if formal childcare institutions do not follow women's work time. Therefore, these women could opt for a strategy of reduced fertility, particularly in the absence of informal childcare arrangements provided by partners, (close) relatives or others.

This paper is divided into several parts. A literature review, including both relevant theoretical approaches and previous research on fertility and atypical working hours, follows the introduction. We continue by specifying the aims of this study and research hypotheses. Part four contains data and sample description, variables and modeling techniques used to conduct the analysis. Finally, we present the results in part five, and discuss them in part six of this paper.

THEORETICAL APPROACHES AND PREVIOUS RESEARCH

There is a wide variety of theories on low fertility determinants. A wholesome review is available elsewhere (see, for example, de Bruijn, 2006; Morgan and Taylor, 2006), here we only deal with theoretical approaches that are relevant for the purposes of this study. This section also includes a review of previous empirical findings, but, since there is a lack of research directly linking fertility to atypical working hours, we rely on literature indicating possible indirect effects.

Theories explaining low fertility determinants are not exclusively demographic, but also rely on other disciplines such as economics, sociology, anthropology, psychology, biology, etc. According to economic explanations of fertility behavior, individuals or couples maximize their lifelong well-being by conforming the number and the quality of children to scarce resources (i.e. time and money). Economic theories on fertility are based on the idea that having children is a result of utility maximization by individuals or couples (Becker, 1960, 1991; Becker and Barro, 1988, Ermisch, 2003). Economists argue that there is a reasonable amount of evidence on the effects economic factors have on individual and couple decisions about having children (see, for example, Leibenstein 1974, 1975; Easterlin, 1975; Willis, 1987; Cigno and Ermisch, 1989). Europeans position children highly on their list of values. In fact, a very small percentage of women do not want to become mothers (Testa, 2006). Decision on becoming a parent is one of the most complex life decisions individuals or couples face. Parenting involves many concerns about economic, social and psychological development of a child for at least a decade and a half, and, in many cases, for over two decades. The biggest lifestyle changes occur during the birth of the first child (Hobcraft and Kiernan, 1995).

In the process of society modernization, children have lost their economic value in terms of child labor and support to parents throughout their old age. Nowadays, psychological value of children is gaining increasing importance. Individuals can meet their psychological needs with a smaller number of children. On the other hand, a smaller number of children does not necessarily imply less investment in children. On the contrary, the economic costs of children have grown, and greater investment in the quality of children inevitably leads to an increase in psychological costs of raising children, primarily with regards to time and emotions

(Becker and Lewis, 1973). In recent years, economic approaches to explain low fertility have focused on increased women's autonomy, a growing number of women in the labor market and calculation of direct and indirect costs of having children (Bernhardt, 1993). Empirical studies during the 1960s and the 1970s, when fertility decline went hand in hand with an increase in women's labor market participation, confirmed such views even further. The evidence was so obvious that the negative relationship between female employment and fertility became a fact (see Becker, 1991). However, recent demographic, economic and sociological literature disagrees with the idea that women's employment must always have a negative impact on fertility. Research suggests the importance of policy in coordinating motherhood with employment. Policies regarding women's participation in the labor market may have positive effects on the fertility rate (Bernhardt, 1993; Rindfuss and Brewster, 2000; McDonald, 2000; Neyer, 2003). At the end of the 1980s, there has been a reversal in the relationship between total fertility rate and female labor participation rate in developed countries. From negative, this relationship turned positive at the aggregate level (Ahn and Mira, 2002; Engelhardt and Prskawetz, 2004). One of the most common explanations of this reversal is the importance of institutional environment conducive to aligning work with family responsibilities.

Research on fertility aspirations suggests that the vast majority of men and women do not have as many children as they would like (Goldstein et al., 2003). This shows that couples face limitations which prevent them to have the desired number of children and that there exists a mechanism according to which these restrictions operate. The link between fertility intentions and actual reproductive behavior is pretty complex. It is likely that over time, intentions will change upwards or downwards (McDonald, 2002). Little is known about when fertility intentions occur and how they evolve over time. Most of the studies focus on married couples, and research fails to distinguish between those who delay childbearing from those who voluntarily remain childless (Schoen et al., 1999). Young, still childless women frequently base their fertility intentions on wishful thinking. Older women's fertility intentions result from personal life experience. Everything leads to a conclusion according to which decisions about having children can be understood as a process that takes place in the context of other life decisions, primarily partnerships and work, life experiences and personal health. In most societies, women face greater social pressure with regards to

having children than men do. In fact, people would rather ask women than men why they do not have any children, because motherhood is considered socially desirable (Hakim, 2003).

It is particularly important to investigate women who do not want to have children or stop after having a one child, as well as women who want three or more children, and then compare them to women who want two children – which has become the norm in the reproductive behavior over the past few decades. White and Kim (1987) argue that decisions about having children are taken sequentially, and that the final number of children depends on earlier life experience and situational factors. While decisions on having a first child are those reflecting if someone wants to be a parent or not, decisions on having each additional child are different in terms of parents being experienced with previous children. In other words, the circumstances and the alternatives vary with parity.

We take parity related differences into consideration when investigating the impact of individual employment characteristics on fertility intentions. Our aim is to make a contribution to existing literature on the relationship between fertility and female employment. As discussed earlier, this relationship has been widely recognized among scholars. That is why we limit our research to women working atypical hours, hoping to provide a deeper insight on how fertility behavior is affected by this increasingly frequent employment pattern.

Previous findings connecting atypical working time and fertility behavior are extremely rare. Begall (2013) used a mixed-method couple approach and limited her research on Netherlands only. She confirmed a negative relationship between non-standard work schedules and childbearing for childless women, but failed to find a corresponding significant effect for women with one child. There is, however, more evidence on how atypical work affects other family related outcomes (Presser, 2003; La Valle, 2002; Barnes et al., 2006; Johnson, 2004).

Rather than actual fertility, we use fertility intentions as an indicator of childbearing behavior. Theory of planned behavior (Ajzen, 1991) provides a link between intentions and subsequent behavior. According to Ajzen's model, intentions are immediate antecedents of behavior, and are determined by individual attitudes, subjective norms and perceived behavioral control. Demographic, socio-economic and other individual characteristics, as

well as contextual variables, become background factors affecting attitudinal, normative and control factors, which then determine the intention itself. Demographers are increasingly interested in the theory of planned behavior (Billari et al., 2009; Dommermuth et al., 2011). Even though there is an ongoing debate on the appropriateness of using intentions as fertility behavior predictors (see Morgan and Bachrach, 2011; Philipov, 2011), empirical findings provide sufficient evidence on the predictive validity of reproductive intentions (Schoen et al., 1999), even after controlling for individual socio-demographic characteristics (Spéder and Kapitány, 2009). We thereby also adopt the assumption of intentions adequately representing subsequent childbearing behavior.

RESEARCH AIMS AND HYPOTHESES

This study focuses on investigating the relationship between atypical working hours and women's fertility intentions. Based upon previously discussed theoretical framework and former empirical findings, we assume fertility intentions to be a valid predictor of subsequent childbearing behavior and, therefore, use them as the outcome variable in examining whether working atypical hours affects women's decisions about having a(nother) child. Atypical working hours are defined in terms of working evenings/night, working overtime and working weekends. To achieve our goal of complementing existing literature on the relationship between fertility and female employment, we develop several research hypotheses:

H1. Working atypical hours significantly affects women's intentions to have a(nother) child.

> *H1a*. Working evenings/night reduces the likelihood of expressing a positive fertility intention.
>
> *H1b*. Working overtime reduces the likelihood of expressing a positive fertility intention.
>
> *H1c*. Working at weekends reduces the likelihood of expressing a positive fertility intention.

It is reasonable to assume that working atypical hours differs in its effect on fertility intentions depending on women's parity. The data set used to conduct the analysis only includes information about the number of children currently living in the household (either biological or not) and fails to provide information about women's parity. The number of children currently living in the household is therefore used as a proxy of the number of children a woman has.

H2. Depending on the number of children currently living in the household, the impact of atypical working hours on fertility intentions differs.

While constructing the third hypothesis, thought has been given to possible country-level differences in fertility intentions outcomes. Guided by the assumption of fertility intentions

varying across specific national settings, we investigate the influence of a country-level context on women's intentions to have a(nother) child.

H3. Women's fertility intentions vary across European countries and a country-level context influences fertility intentions outcomes.

> *H3a*. There is a significant amount of variation in women's fertility intentions across European countries.
>
> *H3b*. Higher childcare availability (for children under 3 years of age) stimulates women's positive fertility intentions.

Our research hypotheses therefore provide an illustration of building a multilevel model.

METHOD

Data. Empirical analysis is based on data from European Social Survey (the ESS), a biennial cross-sectional survey. The fifth round was fielded in 2010/11 and currently available multilevel database includes information on 26 countries. The ESS employs rigorous quality controls, and a random probability sample drawn in each of the participating countries has to meet predefined methodological standards. Each wave consists of a core module and rotating modules. The 2010/11 round includes a module on work and family life, containing information about fertility intentions and working conditions required for the purposes of this study.

Sample. In order to examine fertility intentions as realistically as possible, the total sample is restricted to women only, aged 18 to 45 at the time of the interview, living with their partner or husband. We use data on 25 countries (we excluded Israel due to the lack of contextual data and a different definition of a workweek compared to other countries). The ESS provides two weighting options in its database. As recommended by the ESS survey documentation, we use both design and population weights for our analysis. The weighted sample consists of 7172 respondents. Throughout the course of our analysis, we divide the used sample into four subsamples according to the number of children currently living in the household.

Variables. Fertility intention, measured by the question of whether a(nother) child is intended within the next three years, is the outcome variable, containing following response categories: definitely not (coded as 1), probably not (coded as 2), probably yes (coded as 3), definitely yes (coded as 4). Explanatory variables include having to work evenings/night, having to work overtime and having to work at weekends. Answer categories for having to work evenings/night and having to work overtime were coded on an ordinal scale with 1 coded as never, 2 coded as less than once a month, 3 coded as once a month, 4 coded as several times a month, 5 coded as once a week, 6 coded as several times a week and 7 coded as every day. We collapsed those seven categories into the following three: rarely (including categories 1 and 2), occasionally (including categories 3, 4 and 5) and frequently (including categories 6 and 7). Answer categories for having to work at weekends were also coded on an ordinal scale with 1 coded as never, 2 coded as less than once a month, 3 coded

as once a month, 4 coded as several times a month and 5 coded as every week. We adopted the analog procedure and collapsed those five categories into the following three: rarely (including categories 1 and 2), occasionally (including categories 3 and 4) and frequently (including category 5). Control variables include age of the respondent, years of full-time education completed and number of children in the household. All three control variables are continuous. Since the ESS original dataset does not include a variable indicating a woman's parity, we constructed the third control variable (number of children in the household) as its proxy, using the information on other household residents and their relationship to the respondent. Percentage of children aged 3 or less enrolled in formal childcare is used as a country-level context variable. Descriptive statistics on all variables used in the analysis is available in the Appendix.

Analytical strategy. We begin our analysis by running a series of ordinal logistic regression models to explore whether a relationship between fertility intentions and atypical working hours exists on an individual level. Ordinal logistic regression model is an extension of the logistic regression model applying to dichotomous outcome variables, allowing for three or more ordered response categories. Ordered categories of the outcome variable are separated by a series of thresholds. Although the model fails to meet the proportional odds assumption, we opted to keep an ordinal measure of intentions, since there were no substantial differences in model estimates when the depended variable was recoded as a dichotomous measure of fertility intentions. Accounting for possible country-level differences in fertility intentions outcomes and determining whether and to what extent childcare availability influences women's reproductive plans implied running a multilevel ordinal logistic regression model. More specifically, we ran a two-level random effects model with respondents nested within country clusters and the intercept parameter (first threshold) allowed to vary randomly across clusters. The amount of between-country variance in fertility intentions should be interpreted with caution, since its estimate may be influenced by explanatory variables included in the model. Our analysis begins with the unconditional (no predictors) model and the between-country fertility intentions variance is estimated in the amount of 4,6%. After running the final model, the between-country variance in fertility intentions is reduced to approximately 1,5%. To test whether the impact of atypical working hours on fertility intentions varies across countries, we also ran a model

including random slopes for the three explanatory variables (having to work evenings/night, having to work overtime and having to work weekends). Since no statistically significant effects were found, the final model only includes a random intercept to account for country-level differences in fertility intentions outcomes. Investigating if and how the impact of atypical working hours on fertility intentions differs according to a woman's parity implied running four additional models. As mentioned earlier, we use the number of children currently living in the household as a proxy of a woman's parity. Models were run separately for women with: a) no children currently living in the household, b) one child currently living in the household, c) two children currently living in the household and d) three or more children currently living in the household. We used IBM SPSS version 20 to conduct the entire analysis.

RESULTS

The results of the single-level ordinal regression analysis are presented in Table 1. The findings are only partially consisted with our first general hypothesis (*H1*).

Table 1: Single-level ordinal logistic regression results

	Model 1a		Model 1b		Model 1c		Model 1d	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
Treshold values								
Plan having children								
Definitely not	-4,289	0,256***	-4,846	0,263***	-4,749	0,251***	-4,548	0,274***
Probably not	-3,247	0,251***	-3,801	0,259***	-3,703	0,246***	-3,493	0,269***
Probably yes	-2,102	0,248***	-2,664	0,255***	-2,560	0,243***	-2,342	0,266***
Age of respondent	-0,154	0,006***	-0,153	0,006***	-0,157	0,006***	-0,155	0,006***
Years of full-time education	0,096	0,010***	0,084	0,010***	0,083	0,010***	0,089	0,010***
No. of children in household	-0,587	0,038***	-0,603	0,038***	-0,590	0,038***	-0,608	0,038***
Working evenings/night								
Rarely	0,416	0,092***					0,213	0,109*
Occasionally	0,325	0,109**					0,187	0,117
Frequently	ref.						ref.	
Working overtime								
Rarely			-0,050	0,103			-0,139	0,116
Occasionally			0,036	0,112			0,047	0,121
Frequently			ref.				ref.	
Working weekends								
Rarely					0,369	0,096***	0,307	0,104**
Occasionally					0,014	0,103	-0,020	0,107
Frequently					ref.		ref.	
Pseudo R-square (Cox and Snell)	0,326		0,326		0,327		0,332	

*** $p \leq 0,001$, ** $p \leq 0,01$, * $p \leq 0,05$

According to Model 1a, women having to work evenings/night rarely or occasionally are more likely to plan a(nother) child within the next three years compared to women having to work evenings/night frequently. Similarly, women having to work at weekends rarely are more likely to state a positive fertility intention compared to women having to work at weekends frequently (Model 1c). No statistically significant relationship was found between women's fertility intentions and having to work overtime in Model 1b. All three explanatory variables are included in Model 1d. Once again, women rarely working evenings/night and

women rarely working at weekends show a higher likelihood of intending a(nother) child within the next three years compared to women who work such hours frequently, but working evenings/night and working at weekends occasionally don't seem to influence women's fertility intentions. The effect of working overtime remains absent.

Findings from running an empty (no predictors) multi-level ordinal logistic regression model confirm hypothesis *H3a*. Although we do not present the null-model results here, they are available from the authors upon request. It is important to notice that, when testing a variance component, we divided the corresponding *p*-value by two and used a one-tailed significance test, as recommended by Hox (2010). We thereby conclude that women's fertility intentions vary significantly across countries (*z*-test = 1,833, *p*/2 = 0,067/2 = 0,0335). Adding explanatory variables to the model yielded results summarized in Table 2.

Table 2: Two-level ordinal logistic regression results

	Model 2a		Model 2b		Model 2c		Model 2d	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
Treshold values								
Plan having children								
Definitely not	-4,287	0,298***	-4,812	0,303***	-4,740	0,292***	-4,542	0,319***
Probably not	-3,260	0,294***	-3,783	0,298***	-3,710	0,288***	-3,502	0,315***
Probably yes	-2,110	0,291***	-2,641	0,295***	-2,562	0,284***	-2,345	0,312***
Age of respondent	-0,156	0,006***	-0,157	0,006***	-0,161	0,006***	-0,158	0,006***
Years of full-time education	0,100	0,011***	0,089	0,011***	0,087	0,011***	0,094	0,011***
No. of children in household	-0,587	0,040***	-0,600	0,040***	-0,585	0,039***	-0,613	0,040***
Working evenings/night								
Rarely	0,388	0,094***					0,150	0,112
Occasionally	0,234	0,112*					0,078	0,121
Frequently	ref.						ref.	
Working overtime								
Rarely			-0,030	0,107			-0,111	0,120
Occasionally			0,030	0,115			0,070	0,125
Frequently			ref.				ref.	
Working weekends								
Rarely					0,387	0,100***	0,345	0,109**
Occasionally					-0,001	0,108	-0,012	0,112
Frequently					ref.		ref.	
Childcare provision	0,003	0,004	0,002	0,004	0,002	0,004	0,002	0,004
-2 log pseudo likelihood	42.333,501		41.849,104		42.548,164		41.965,881	

*** $p \leq 0,001$, ** $p \leq 0,01$, * $p \leq 0,05$

Contrary to hypothesis *H3b*, childcare availability had no statistically significant influence on women's fertility intentions. Remaining results suggest, similarly to the single-level model, that having to work evenings/night both rarely and occasionally (Model 2a), as well as having to work at weekends rarely (Model 2c) affects women's predicted log odds of intending a(nother) child within the next three years. Working overtime remains insignificant (Model 2b). When including all explanatory variables simultaneously (Model 2d), only working at weekends kept its statistical significance.

Finally, Table 3 contains results obtained by running four separate models for women with no children currently living in the household (Model 3a), one child currently living in the household (Model 3b), two children currently living in the household (Model 3c) and three or more children currently living in the household (Model 3d).

Table 3: Two-level ordinal logistic regression results according to the number of children currently living in the household

	Model 3a		Model 3b		Model 3c		Model 3d	
No. of children in household	0		1		2		3+	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
Treshold values								
Plan having children								
Definitely not	-3,527	0,545***	-3,877	0,541***	-5,840	0,696***	-0,523	1,767
Probably not	-2,886	0,542***	-2,814	0,535***	-4,173	0,686***	1,771	1,779
Probably yes	-1,459	0,536**	-1,700	0,532***	-3,351	0,689***	3,905	1,874*
Age of respondent	-0,133	0,010***	-0,195	0,011***	-0,195	0,015***	-0,078	0,037*
Years of full-time education	0,076	0,019***	0,133	0,021***	0,058	0,021**	0,160	0,054**
Working evenings/night								
Rarely	0,285	0,206	0,574	0,207**	0,120	0,217	-2,099	0,518***
Occasionally	0,780	0,210***	0,012	0,240	0,006	0,235	-2,107	0,491***
Frequently	ref.		ref.		ref.		ref.	
Working overtime								
Rarely	0,300	0,207	0,208	0,210	-0,784	0,246***	0,165	0,590
Occasionally	0,500	0,210*	-0,018	0,228	-0,042	0,252	0,001	0,521
Frequently	ref.		ref.		ref.		ref.	
Working weekends								
Rarely	0,157	0,184	0,461	0,190*	0,199	0,240	1,332	0,701
Occasionally	-0,223	0,190	0,371	0,199	-0,551	0,240*	0,457	0,697
Frequently	ref.		ref.		ref.		ref.	
Childcare provision	-0,002	0,009	0,018	0,005***	-0,005	0,007	-0,022	0,022
-2 log pseudo likelihood	9.437,128		12.926,634		16.378,931		10.513,438	

*** $p \leq 0,001$, ** $p \leq 0,01$, * $p \leq 0,05$

The findings are consistent with hypothesis *H2*. According to the results presented in Table 3, the impact of atypical working hours on fertility intentions differs for women of different parity.

Childless women working evenings/night occasionally compared to frequently and working overtime occasionally compared to frequently are more likely to want a child within the next three years.

On the other hand, for women with one child currently living in the household, working overtime had no effect on fertility intentions. Working evenings/night and working at weekends rarely (instead of frequently) increased the likelihood of expressing a positive intention about having a second child. Childcare provision influenced fertility intentions of women with one child currently living in the household. As expected (hypothesis *H3b*), available formal childcare arrangements stimulate positive fertility intentions.

For women with two children currently living in the household, atypical working hours in terms of rarely working overtime and occasionally working at weekends decreased the likelihood of expressing a positive fertility intention.

Similarly, for women with three or more children currently living in the household, working overtime both rarely and occasionally reduced the likelihood of intending an additional child within the next three years.

DISCUSSION

One of the main goals of this study was to assess the impact of atypical working hours on fertility. However, due to inability to construct respondents' fertility histories in the ESS database, we used short-term fertility intentions as a proxy for reproductive behavior. Controlling for some socio-demographic and aggregate contextual variables, we constructed a two-level ordinal logistic regression model.

The results we obtained partially support our hypotheses. It is important to note that it is very difficult to compare our findings to other studies, mainly due to lack of research on the particular topic of this paper. A rare exception is Begall's (2013) dissertation in which she uses a mixed-method couple approach for Netherlands. She found a negative association between non-standard work schedules and childbearing for childless women, but failed to find a similar effect for women with one child.

The results of the single-level ordinal logistic regression analysis were consistent with our hypotheses that women having to work evenings/night and having to work at weekends frequently are more likely to state a negative fertility intention (compared to women having to work such hours rarely). We failed to find a significant result for women working overtime. One of the answers probably lies in an increased difficulty to distinguish the causes of working overtime, partly because overtime work has become a normal work situation in contemporary global economies, and it clearly differs from other two types of atypical working hours.

As shown in the previous section, the results we obtained both negate and support some of the hypotheses. Since most formal childcare across Europe is available only on a daytime basis and during the standard working week (Monday to Friday), childcare responsibilities often become a pretty serious problem for women who work extensive and unsocial hours. In the overall multilevel model (including all female respondents (regardless the number of children currently living in the household) and all three explanatory variables) we only found a statistically significant negative relationship between working at weekends and women's fertility intentions. In a situation when childcare institutions fail to adapt to changing employment patterns, particularly to an increase in working atypical hours, some parents

might respond by limiting their fertility. However, in the absence of formal childcare arrangements, it has been widely assumed that working at atypical times is most likely linked to informal childcare provision (i.e. spouses, family or even babysitters).

We found a significant amount of variation in women's fertility intentions across European countries. Yet, childcare availability (for children under 3) turned out not to be a statistically significant country-level variable positively influencing women's fertility intentions. It is, to some extent, a surprising result, but on the other hand, countries significantly differ in the level of informal childcare, family ties and partners' help, employment type and contracts, employment legislation, etc., all of which might lead to omitted-variables bias. Fertility intentions of women with one child currently living in the household were the only ones positively affected by childcare availability. This suggests that the impact of atypical working hours on fertility intentions differs for women of different parity. Non-mothers are different from mothers in terms of working at atypical hours and forming their childbearing intentions. Surely, a woman's perception of what it means to be a mother changes after the birth of a first child. However, working evenings/night and working at weekends rarely (instead of frequently) increased the likelihood of expressing a positive intention about having a second child. For women with two or more children currently living in the household, atypical working hours increased the likelihood of expressing a positive fertility intention. A more flexible work schedule might stimulate fertility intentions in cases when both partners do not have to work atypical hours, so one of them is free to care for children when the other one is not. That way, relying on childcare institutions becomes less of a problem, and a child's time with at least one parent is maximized. Previous research showed that fathers become more prone to engage in childcare when mothers work at atypical times (La Valle, 2002).

Even though not all of our findings were significant, the overall results indicate that working at atypical times affects women's childbearing decisions. Unsocial working hours are becoming increasingly frequent, especially in some employment sectors (for example, retail), where the effects of such working conditions might manifest themselves on fertility behavior. Work at atypical times could be an important determinant of delaying and not realizing the intended fertility. We are fully aware that other factors might also influence our findings. One limitation of this study was the inability to collect appropriate macro-level variables. The aggregate variable we used (enrollment rates of children under 3 in formal

childcare) was relevant, but in our opinion, not sufficient. Countries differ in work time regulations/legislations, as well as in the percentage of women employed in particular sectors. To be more specific, analyzing women in various European countries, but in the same sectors of employment, controlling for work time regulations and both formal and informal childcare availability, might lead to more robust results. Therefore, further research is needed to explain the unresolved issues raised by our findings.

REFERENCES

Ahn, N. and Mira, P. (2002), A Note on the Changing Relationship between Fertility and Female Employment Rates in Developed Countries. *Journal of Population Economics* 15(4): 667-682

Ajzen, I. (1991), The Theory of Planned Behavior, *Organizational Behavior and Human Decision Processes*, 50: 179 – 211.

Barnes, M., Bryson, C. and Smith, R. (2006), *Working atypical hours: what happens to 'family life'?*, London: National Centre for Social Research.

Becker, G. (1960), An Economic Analysis of Fertility. In: National Bureau of Economic Research (eds.), *Demographic and Economic Change in Developed Countries*. Princeton: Princeton University Press, pp. 209-231

Becker, G. (1991) *A Treatise on the Family*, Cambridge, Mass., Harvard University Press

Becker, G. and Barro, R. (1988), A Reformulation of the Economic Theory of Fertility, *Quarterly Journal of Economics* 103(1): 1-25

Becker, G. i Lewis, H. (1973) On the Interaction between the Quantity and Quality of Children *Journal of Political Economy*, volume 81 (2) Part II: S279-S288

Begall, K. (2013), 'Occupational Hazard? The Relationship of Working Conditions and Occupations with Fertility', PhD Thesis, Groningen: Faculty of Behavioral and Social Sciences.

Bernhardt, E. (1993), Fertility and Employment, *European Sociological Review* 9: 25-42

Billari, F. C., Philipov, D. and Testa, M. R. (2009), Attitudes, norms and perceived behavioural control: Explaining fertility intentions in Bulgaria, *European Journal of Population*, 25: 439 – 465.

Bongaarts, J. (2001), Fertility and reproductive preferences in post-transitional societies, In: Bulatao, R. A. and Casterline, J. B. (Eds), *Global Fertility Transition. Supplement to Population and Development Review* 27: 260–281

Brewster, K. L. and Rindfuss, R. R. (2000), Fertility and women's employment in industrialized nations. *Annual Review of Sociology*. 26: 271 – 296.

Chesnais, J.-C. (1998), Below-replacement fertility in the European Union (EU-15): Facts and policies 1960-1997, *Review of Population and Social Policy*, 7: 83-101

Cigno, A. and Ermisch, J. (1989.) A Microeconomic Analysis of the Timing of Births *European Economic Review*, vol. 33: 737-760

De Bruijn, B. J. (2006), Fertility: Theories, Frameworks, Models, Concepts. In: Casselli, G., Vallin, J., Wunsch, G. (Eds.), *Demography: Analysis and Synthesys: a treatise in population studies*, vol. 1. (p. 549 – 570), New York, Academic Press.

Dommermuth, L., Klobas, J. and Lappegård, T. (2011), Now or later? The Theory of Planned Behavior and timing of fertility intentions, *Advances in Life Course Research*, 16(1), 42 – 53.

Engelhardt, H. and Prskawetz, A. (2004), On the changing correlation between fertility and female employment over space and time. *European Journal of Population*. 20: 35 – 62.

Ermisch, J. (2003) *An Economic Analysis of the Family,* Princeton and Oxford, Princeton University Press

European Commission (2005), *Green paper: Confronting demographic change: A new solidarity between the generations*. Brussels: Communication from the Commission.

Frejka, T. and T. Sobotka (2008), Fertility in Europe: Diverse, delayed and below replacement, Overview Chapter 1 in: T. Frejka, T. Sobotka, J. M. Hoem, and L. Toulemon

(Eds.) *Childbearing trends and policies in Europe. Demographic Research, Special Collection* 7, Vol. 19, Article 3, pp. 15-46

Gallie, D. and Russell, H. (2009), Work-Family Conflict and Working Conditions in Western Europe. *Social Indicators Research*. 94: 445 – 467

Gauthier, A. (2007), The impact of family policies on fertility in industrialized countries: a review of the literature. *Population Research and Policy Review*. 36: 323 – 346

Goldstein, J., Lutz, W. and Testa, M. R. (2003), The emergence of sub-replacement family size ideals in Europe, *Population Research and Policy Review* 22: 479–496

Hakim, C. (2003), Preference theory: A new approach to explaining fertility patterns. *Population and Development Review* 29(3): 349-374

Hobcraft, J. and Kiernan, K. (1995), *Becoming a Parent in Europe, Evolution or Revolution in European Population*. Proceedings of the European Population Conference. Milano, pp 27–65

Hox, J. J. (2010), *Multilevel analysis: Techniques and applications* (2nd ed.), New York, NY: Routledge.

Johnson, J. (2004), Do Long Hours Contribute to Divorce? *Topics in Economic Analysis and Policy,* 4:1. Article 24.

La Valle, I., Arthur, S., Millward, C., Scott, J. and Claydon, M. (2002), *Happy families? Atypical work and its influence on family life*, Bristol: The Policy Press/Joseph Rowntree Foundation, Family and Work series.

Leibenstein, H. (1974), An Interpretation of the Economic Theory of Fertility: Promising Path or Blind Alley? *Journal of Economic Literature* 12(2): 457-479.

Leibenstein, H. (1975), The Economic Theory of Fertility Decline, *Quarterly Journal of Economics* 89(1): 1-31

Martín García, T. (2010), The Impact of Occupational Sex-Composition on Women's Fertility in Spain. *European Societies*, 12 (1): 113-133

Matysiak, A. and Vignoli, D. (2008), Fertility and Women's Employment: A Meta-analysis. *European Journal of Population*. 24: 363 – 384.

McDonald P. (2000), Gender equity in theories of fertility transition, *Population and Development Review* 26, 3: 427-439

McDonald, P. (2002) Sustaining fertility through public policy: the range of options, *Population (English Edition)* 57(3): 417–446

Morgan, S. P. and Bachrach, C. A. (2011), Is the theory of planned behavior an appropriate model for human fertility?, *Vienna Yearbook of Population Research*, 9: 11 – 18.

Morgan, S. P. and Taylor, M. G. (2006), Low Fertility at the Turn of the Twenty-First Century, *Annual Review of Sociology*, 32: 375 – 399.

Morgan, S. P. and Taylor, M. G. (2006), Low Fertility at the Turn of the Twenty-First Century, *Annual Review of Sociology*, 32: 375 – 399.

Neyer, G.R. (2003), Family policies and low fertility in Western Europe. *Journal of Population and Social Security* (Suppl. 1), 46–93

Philipov, D. (2011), Theories on fertility intentions: A demographer's perspective, *Vienna Yearbook of Population Research*, 9: 37-45

Presser, H. (2003), *Working in a 24/7 Economy*. New York: Russell Sage Publications

Schoen, R., Astone N. M., Kim Y. J., Nathanson, C. A. and Fields, J. (1999), Do Fertility Intentions Affect Fertility Behavior?, *Journal of Marriage and Family*, 61: 790 – 799

Spéder, Z. and Kapitány, B. (2009), How are time-dependent childbearing intentions realized? Realization, postponement, abandonment, bringing forward, *European Journal of Population*, 25: 503 – 523.

Testa, M. R. (2006), *Childbearing preferences and family issues in Europe.* Special Eurobarometer 253/Wave 65.1 – TNS Opinion & Social, European Commission

White, L. and Kim, H. (1987), The family-buidling process. Childbearing choices by parity, *Journal of Marriage and the Family,* 49: 271-279

Willis, R. (1987), What Have We Learned from the Economics of Fertility? *American Economic Review* 77(2): 68-81

APPENDIX

Table 4: Absolute and relative frequencies of the outcome variable's response categories

Variable/ Category	Plan having a child	
	Frequency	Percent
Definitely not	3578	53,6
Probably not	1174	17,6
Probably yes	948	14,2
Definitely not	975	14,6
Total	6674	100

Table 5: Absolute and relative frequencies of the explanatory variables' response categories

Variable/ Category	Working evenings/nights		Working overtime		Working weekends	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Rarely	2802	62,5	2649	59,7	2425	54,0
Occasionally	930	20,8	1265	28,5	1401	31,2
Frequently	749	16,7	521	11,8	667	14,8
Total	4480	100	4434	100	4493	100

Table 6: Distributions and descriptive statistics of control variables

Variable	N	Min	Max	Mean	Std. Deviation
Age of respondent	7172	18	45	34,94	6,85
Years of full-time education completed	7126	0	30	13,88	3,37
Number of children in household	7172	0	12	1,37	1,07
Childcare enrolment	7172	3,50	65,40	26,17	14,83
Valid N	7126				

Table 7: Country-level indicator of childcare availability

Country	Children under 3 in formal childcare (%)
Belgium	43,3
Bulgaria	16,7
Switzerland	25,0
Cyprus	29,3
Czech Republic	6,5
Germany	17,9
Denmark	65,4
Estonia	25,7
Spain	38,4
Finland	26,8
France	44,4
United Kingdom	42,3
Greece	15,2
Croatia	15,4
Hungary	11,4
Ireland	27,5
Netherlands	57,0
Norway	50,4
Poland	3,8
Portugal	42,4
Russian Federation	17,6
Sweden	46,7
Slovenia	31,5
Slovakia	3,5
Ukraine	15,3

Source: OECD (2012), OECD Family Database, OECD, Paris (www.oecd.org/social/family/database) – data are a three-year average (2007, 2008, 2009), TransMonEE 2013 Database, UNICEF Regional Office for CEE/CIS (for post-socialist countries) – data are a three-school-year average (2007/08, 2008/09, 2009/10)