

## **The Changing Effect of Women's Employment on Fertility: A Comparison of Four Institutional Settings in the 1990s**

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### **Abstract**

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*Focusing on the period of policy and economic changes that occurred in many developed countries in the 1990s, the study offers a theoretical model which systematically examines the effect of women's employment on their fertility behavior across countries representing different cultural, institutional and economic environments. I expect that in contexts with high support for mothers' employment and their children, where the labor market is family-friendly and offers good opportunities for employment, and where the ideology supports a dual-earner model, women's employment will be less consequential to their fertility. The study, based on the Fertility and Family Survey, focuses on the effect of employment on the decision to enter parenthood and the decision to have a second child. To capture the simultaneity of work and fertility decisions, I employ a bivariate probit model. I find a positive effect of women's employment on the likelihood of having a first child in the most supportive contexts, and a negative effect in settings that are least supportive of women's employment. However, in all settings employment reduces the likelihood of having a second child, which attests to the still unresolved incompatibility of family and work.*

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**Keywords:** women's employment; fertility; incompatibility of family and work; welfare states; bivariate probit model.

In recent decades most industrial countries have experienced a steep decline in fertility (Goldstein, Sobotka & Jasilioniene 2009; Myrskylä, Kohler & Billari 2009; OECD 2011), accompanied by changes in the age and incidence of marriage, the timing of entering parenthood, and the rate of out-of-wedlock births (Brewster and Rindfuss 2000; Kohler, Billari & Ortega 2002). These changes are the consequence of several social processes, including the rise in women's education, the introduction of more efficient birth control techniques and women's greater participation in the labor force (Pettit & Hook, 2005; Santow and Bracher 2001; Hilgeman & Butts 2009). Numerous studies have found, accordingly, that women who participate in paid employment, especially those who pursue a demanding career, limit their fertility and have relatively few children or none at all (Budig 2003; Brewster and Rindfuss 2000; Ekert-Jaffé 1986, 2001; Hakim 2003). In recent years, though, fertility has become positively related to women's employment in some states, and working women are more likely to give birth than women who are not working (Andersson, 2000; Leth-Sørensen and Rohwer 2001; Vikat 2002).

Another recent development in the relationship between women's employment and fertility has occurred on the macro level. The countries with the highest women's labor-force participation have become characterized by highest rather than lowest fertility. Scholars have attributed this reversal in the correlation sign to the weakening incompatibility between childrearing and females' employment in some countries, resulting from changes in the institutional context (Brewster and Rindfuss 2000; Castles 2003; Rindfuss et al. 2003). Indeed, a common finding is that over the last two decades most developed countries have increased their support to families by introducing a variety of 'family-friendly' policies (Thevenon 2011).

These policy changes and heterogeneity are claimed to be also responsible, along with economic development and economic growth (Luci & Thevenon 2010), for the rebound of fertility since the mid-1990s, by slowing the trend towards later childbearing, though not necessarily increasing the number of children in the family (Pison 2009). For example, fertility has risen from an average of 1.69 children per woman in OECD countries in 1995 to 1.71 in 2008, with an especially large rebound in Spain, France, Belgium and the United Kingdom. But only in the United States and New Zealand has the rate risen above the replacement threshold of 2.1 children (Luci and Thevenon 2011).

While most Western countries nowadays are characterized by these trends, they vary considerably in their rates and patterns of fertility, and in the ability of women to combine work with childbirth. This between-country variation promotes closer attention to the institutional context within which individuals make their work and family decisions at a time when changes in the relationship between women's employment and childbirth have started to occur and fertility begun to rise. Studies in this area have traditionally emphasized the role of the welfare state in alleviating work-family incompatibility, especially the extent to which employment-supportive policies modify the influence of family on work (e.g., Gornick et al. 1997; Stier et al. 2001) and the role of such policies in affecting fertility and its timing (e.g., Hilgeman and Butts 2009; Matysiak & Vignoli 2006; Neyer & Andersson 2008; Rendall et al. 2009). Other studies have challenged the standard microeconomic explanations and point to the importance of other country-specific factors, such as economic incentives or culturally rooted behavioral patterns (e.g., Matysiak & Vignoli 2013).

The research contribution is twofold. First, unlike previous studies which typically have focused on one dimension (see Balbo, Billari & Mills 2013), it offers a theoretical model which considers not only the role of policies in affecting fertility, but also the entire institutional context. Focusing on the period of policy and economic changes that occurred in many developed countries in the 1990s, this model seeks to examine systematically the reciprocal relationships between women's employment and their fertility decisions in different institutional settings, and to shed light on the changing role of welfare states, labor markets and gender ideologies in affecting fertility behavior. For that purpose, the "regime" approach is used (see for example Rendall et al. 2009; Stier et al. 2001) and a bivariate probit model is employed to capture the simultaneity of work and fertility decisions and the complex ways in which policy bundles and institutional arrangements shape the relationship between work and family behavior. Second, a distinction is made between entering parenthood (which is the subject of many studies in the area, see for example Rendall et al. 2009) and having a second child. This distinction is important because fertility motivations may differ, as may the intervening effect of the structural settings of these decisions (Esping-Andersen 2009). It is well known that working women are likely to postpone their first birth because they prefer to establish a career and strengthen their market power, and in some settings they do so to accumulate rights and benefits before entering parenthood (Esping-Andersen 2009). But the decision to have a second child presents a different set of opportunities and constraints for parents. This decision is more likely to be affected by the ability to combine work and family demands, as well as by economic circumstances and the ability to reduce the opportunity cost of motherhood via enhanced fatherly childcare (Brodmann, Esping-Andersen and Guell 2007). Moreover, after having their first child, parents become more aware of the work-family conflict (Brewster and Rindfuss 2000).

### **The relationship between fertility and women's employment in context**

In all industrialized societies women have responded to emerging opportunities in the labor market by postponing marriage and reducing fertility. Despite the dramatic increase in women's labor-force participation, especially by mothers with young children, working women continue to assume the primary responsibility for their families. Thus, it is likely that women who intend to develop demanding careers postpone childbirth and have fewer children, or choose to be childless (Bernhardt 1993; Hakim 2003; Frejka & Sardon 2006). Especially germane to the negative correlation between fertility and labor force participation, as McDonald (2000) suggests, is the compatibility of women's opportunities with their ability to realize them: "if women are provided with opportunities nearly equivalent to those of men in education and market employment, but these opportunities are severely curtailed by having children, then, on average, women will restrict the number of children that they have" (p. 1).

Fertility's association with work may reflect families' economic considerations, in particular those of working women. Economic theory focuses on the opportunity costs of women, and emphasizes the rational calculations of the costs of having children against opportunities in the labor market (Becker 1965, 1981; Willis 1973).

From this point of view, women take account of their own resources, demands on their time, and the opportunities available to them in the market, when they decide on how many children they wish to raise and whether to participate in paid employment. On top of deciding whether to enter parenthood, when to do so is also a consideration because the timing of women's giving birth may affect their life chances and work behavior. Postponement of childbirth is seen as a way to reduce the negative consequences of work interruptions, because then the event will take place after the critical point of establishing a career. Indeed, time out of work on account of the birth of a child, especially in the early stages of a career, is detrimental in terms of occupational achievements and career (Budig and England 2001; Buchmann et al. 2004; Moen and Han 2001; Stier and Yaish 2008; Taniguchi and Rosenfeld 2002; Uunk et al. 2005). Economic considerations are also relevant from a macro-level perspective; the postponement of fertility coincides with adverse economic conditions and high unemployment (Adsera 2013), particularly among the higher educated and youth (Adsera 2010, 2011; Neels, Theunynck & Wood 2013). Higher unemployment or lower job security creates uncertainties and doubts about households' present and future economic position, and hence may hinder or prevent childbearing (Hondroyannis 2009; Kreyenfeld 2010; Matysiak 2009; Mills and Blossfeld 2005; Sobotka Skirbekk & Philipov 2011). Furthermore, generous state support to families, in association with a generous unemployment insurance system, may moderate the effect of economic uncertainty on fertility (Pailhé & Solaz 2012).

While all women are expected to take into account their opportunity costs when considering fertility, institutional arrangements may influence fertility behavior and the extent to which it is affected by women's work activity (Del Boca & Locatelli, 2006; Jaumotte, 2004; Van der Lippe & Van Dijk, 2002). Social policies aimed at facilitating women's market activity have been implemented in most industrialized countries concomitant with the rise in women's labor-force participation. Family policies may reflect different assumptions about the relations between state, family, and gender (Brewster and Rindfus 2000; Hantrais 1997; Gornick and Meyers 2003; Neyer and Andersson 2008). In the Scandinavian countries, for example, these policies are aimed at increasing women's economic independence and alleviating their reliance on the family (Esping-Andersen 1999; Hantrais 1997). They provide services and benefits, such as paid and unpaid maternity and parental leaves, subsidized daycare for preschool children, a long school day, and tax credits for childcare, so as to let women combine work with family responsibilities (Gornick and Meyers 2003). In other countries, such as Germany and Italy, where the family is still seen as the major social institution responsible for individuals' wellbeing (Hantrais 1997), policies are implemented in a way that preserves the gendered division of labor (Orloff 2001).

Family- or employment-supportive policies are seen to facilitate women's work, but also to affect family-planning processes (Andersson 2000; Haas 1992; Rendall et al. 2009; Olah 2003; Hilgeman & Butts 2009; Diprete et al. 2003). But the extent to which they indeed affect childbirth, and whether they shape the relationship between fertility and work, is not clear. There are numerous counterexamples showing that higher fertility levels persist in some countries despite lower levels of state support for families, and vice versa. Empirical evidence on the role of policies in affecting fertility has been mixed (Gauthier 2007). For example, in countries which provided child allowances in the 1970s and the 1980s, the decline in total fertility rates was less pronounced than in other countries (Blanchet and Ekert-Jaffe 1994; Ekert-Jaffe 1986). Similarly, Adsera (2004) found that longer periods of maternity leave and more generous public expenditure on family services, such as daycare centers and cash allowances, boosted the fertility of women 25 years of age and older. Other studies, however, have demonstrated that family benefits, even when they are generous, exert a modest and temporary effect on fertility (Gauthier 1996; Gauthier and Hatzius 1997) or no effect at all (Andersson et al. 2004; Hank & Kreyenfeld 2003; Hoem et al. 2001); at most they encourage early entry into motherhood rather than a change in family size (Barnby and Cigno 1990; Beets 2001; Ermisch 1988; Luci & Thevenon 2010).

Policies notwithstanding, familial as well as employment decisions correspond largely to ideologies and perceptions of gender roles and women's entitlements (Lewis 1992). The fertility-increasing effects of policies supporting the family-work balance are conditional on a cultural shift, i.e., on the acceptance of the idea that mothers can resume work without harming their children. Before this cultural change occurs, even the provision of generous benefits will not change individuals' family and work decisions overnight (Salles, Rossier & Brachet 2010). In southern European countries a traditional perception of men as providers and women as caregivers may affect the extent to which women are motivated and able to combine work and family. Part-time employment is scarce, and social policy is not well enough developed to achieve work-family compatibility. This limits employment opportunities for young women who, once married, are expected to fulfill their primary responsibility at home.

In contrast, Scandinavian countries, which promote gender equality and the dual-earner family model (see Lewis 1992; Orloff 2001), also offer convenient employment opportunities in the public sector and in well protected part-time jobs which accommodate women's economic and familial roles.

The complexity of arrangements, institutions, and cultures creates different environments within which family decisions are taken. The current study examines the role of institutional contexts in affecting the *relationship* between work and family decisions. In general, it is expected that in contexts with high gender equity—in which employed mothers and their children are given support, where the labor market is family-friendly and offers good opportunities for employment, and where the ideology supports a dual-earner model—women's employment will be less consequential to their fertility. By contrast, in contexts that provide little support to family and mothers, where the labor market is rigid and offers no special arrangements for combining work and family or poor opportunities for women's employment, and where the dominant ideology supports a more traditional and gendered division of labor, women's employment is expected to reduce fertility. Between these two extremes, different configurations of these dimensions arise, resulting in a more complex relationship between work and fertility. For example, when the *gap* between market opportunities for women and support for mothers' employment is high, women's employment will negatively affect fertility. To represent these multifaceted contexts in the theoretical model, Esping-Andersen's (1990, 1999) three welfare regimes is taken as a starting point—social-democratic, liberal, and conservative—regimes which differ in their institutional and ideological characteristics. This distinction largely corresponds to other categorizations of fertility regimes and to most theoretical arguments on fertility (see, e.g., Chesnais 1996; McDonald 2000). This categorization has been modified by separating the southern European countries from the conservative countries, treating them as a separate regime. Also, France is assigned to the social-democratic regime because of its family policy and institutional arrangements relevant to working women (see Bettio and Plantega 2004). Accordingly, more specific hypotheses are developed as to the effect of work on women's decision to have children in four distinct regimes in order to better understand the conditions behind the changing relationship between employment and fertility. The focus is on the 1990s, before family policies became more heterogeneous than is suggested by the standard analysis of welfare state regimes, and before some countries switched to more mixed forms of support to families (Meulders & O'Dorchai 2007; Thevenon 2011).

The liberal or *market welfare regime* encompasses countries that provide little direct support for families with children or for working mothers. Still, the general ideology promotes women's economic role since the market is seen as the main source of achieving wellbeing, and both men and women are encouraged to participate in paid employment. The labor market is flexible, featuring the increasing practice of part-time work and the opportunity to change jobs and switch in and out of employment over time (Thevenon 2011). Women, like men, are expected to work continuously and on a fulltime basis, while part-time employment is restricted to low-paid jobs with inferior work conditions. In this regime work is expected to strongly (and negatively) affect fertility. Since employment-supportive policies are limited and the opportunity costs are high for highly educated women and those with a strong attachment to the labor market, childbearing is costly and working mothers are expected to delay entry into parenthood or refrain from having children. The negative effect is expected to be especially high in respect of a second child, given the difficulty of combining work and family demands. Women who do not work are expected to have more children on average and to give birth at an earlier age. These behaviors are strengthened by means-tested and/or work-tested state transfers targeted mostly at poor families with dependent children (Kearney 2002; Korpi 2000; McLanahan 2004). During the last two decades, governments in these countries made major reforms to the system of child-contingent benefits, but the groups most affected by the reforms are still low- to moderate-income working individuals and couples, particularly those with children (Baughman and Dickert-Conlin 2003; Brewster, Ratcliff & Smith 2008). In the current study this regime includes the U.S. and New Zealand.

The *social-democratic regime*, which covers the Scandinavian countries (Finland, Norway and Sweden in this study) and France, is a context that provides women with the necessary conditions to combine work and childrearing. As in the liberal regime, women's employment is encouraged, although the state rather than the market is responsible for providing welfare services. Generous parental leave and subsidized childcare arrangements are key elements of its family policy, and special support is given to families with children. The public-service sector has expanded to offer white-collar and service jobs—many of them 'female-type' service and semi-professional occupations.

As such, the public-service sector has become one of the most preferred segments of employment for women (Esping-Andersen 1990; Gornick and Jacobs 1998; Hansen 1995; Kolberg 1991). Since maternity benefits are employment-related, a positive effect of women's involvement in market work on the decision to have a first child is expected and, given the institutional support of mothers' employment, no effect of employment on women's subsequent deliveries is expected. Some studies indeed show that benefits conditional on employment increase the fertility (Diprete et al 2003; Del Boca et al. 2003; Ronsen 2004) and labor supply of highly educated women (Haan & Wrohlich 2009). Well-educated women can rely on several state-aided measures that support female labor-force participation and family life, and can support a larger family by investing their higher income in family size, independent of the education level of their partners (Koppen 2006). In the 1990s, this expected positive influence of work on having a first child is uncommon and distinct, probably being a turning point in the changing relationship between fertility and employment.

The *conservative* welfare regime is a context in which women's employment is only partly supported by the state, thereby reducing the costs of children, and to some extent also women's opportunity costs. This is especially true for the 1990s (Nieuwenhuis, Need & Van Der Kolk 2012), but since then several conservative countries have introduced new policies which made benefits conditional on employment history and thereby greatly increased economic incentives for employed women to have children (Neugart & Ohlsson 2009). In this regime, the labor market offers opportunities to combine work and family in part-time employment, but the dominant ideology embraces men's role as main providers and women's role as secondary breadwinners (Cooke 2011; Lewis 1992). For example, in Germany parents are expected to take responsibility for caring for the child they conceived, and “non-parental” care is seen as negatively affecting child development (Salles, Rossier & Brachet 2010). Consequently, women combine work and family, but are seen as the main family caregivers and as only partly responsible for breadwinning. Work is expected to interfere with fertility decisions, mainly regarding a second child, although the effect is not expected to be as strong as in the liberal regime, since women who work for pay have access to benefits such as maternity leave and are able to combine work and family by working part-time. Austria, Belgium and Germany are assigned to this category in the study.

In the southern European regime the dominant gender ideology envisions a male breadwinner, with no special consideration for mothers' employment or their care work (Orloff 2001). The public-service sector, where part-time work is traditionally more widespread, is relatively small. Consequently, mothers may be discouraged from joining the labor force. The labor market is rigid and employment opportunities are restricted, especially for new entrants, and have been largely responsible for the high unemployment rates among women and youth (Bertola et al. 2007). In Italy, for example, the rigidities and imperfection of the labor market, and high unemployment rates, have resulted in later age at marriage and increased costs of having children (Chiuri 2000; Del Boca 2002). In this regime, instability and uncertainty of employment may result in a positive selection to the labor market, whereby highly educated women are more likely to join in the economic activity and also limit their fertility, as mothers lose their ability to find a job if they interrupt employment following a birth. These women who work in high paid jobs or in a family-friendly environment such as the public sector are well protected and benefit strongly from reconciliation policies (Herrarte, Moral-Carcedo & Sáez 2012). Women with lower education, on the other hand, also limit their fertility since they are more economically constrained. Accordingly, both direct and indirect (and long-term) costs of childbirth may hinder fertility (Caldwell and Schindlmayer 2003). These conditions have led to a negative association between women's employment and fertility. Put differently, due to the characteristics of the southern European countries in the 1990s—weak public support for working parents, high instability of employment contracts, and strong pressure of unemployment among young people, in addition to the traditional perception of women as the main homemakers and care providers—a sharp conflict between fertility and women's employment is expected. However, because fertility in this setting is costly for both working and nonworking mothers, women's employment will not necessarily affect their fertility decisions (but rather the household financial considerations); this question remains open.

In the following sections, expectations regarding the effect of work on fertility in each of the four institutional settings are examined.

### **Data and methods**

The data obtained from the Fertility and Family Survey (FFS) conducted in the 1990s in 24 member states of the United Nations Economic Commission for Europe (UNECE). The surveys provide a country-sample of households.

In each household a single adult informant reported her or his own sociodemographic characteristics, current labor force and employment details, and complete marriage, fertility and employment history, as well as attitudes to family and gender roles. The analysis reported here was restricted to the 12 industrialized countries that provided detailed information on demographic and labor market attributes of women: Belgium, Germany and Austria (conservative regime); the U.S. and New Zealand (market regime); Sweden, Denmark, Norway and France (social-democratic regime); and Italy, Greece and Spain (southern European regime). The sample includes women aged 20 to 45 at the time of the survey. A person-year file is constructed separately for first and second births, using the event history analysis technique. Each file contains a number of observations beginning at age 14 (for the analysis of first births) or at the time the woman had her first child (for the analysis of second births) up until she gave birth to her first or second child respectively, or was censored, at the time of the survey.

### **The interrelations between women's work and fertility**

Women's decision to have a child and their decision to participate in the labor force can be viewed as jointly determined; that is, employment may affect the decision to enter parenthood or have another child, but the decision to work, or how much time to allocate to paid work, is affected by the presence of children. To capture the simultaneity of work and fertility decisions, and to establish a causal effect from work to fertility, a bivariate probit model is employed, which makes it possible to take into account the endogeneity embedded in the relationships between work and fertility decisions, and to estimate more accurately the effect of work activity on the decision to have a child.

In the bivariate model, the fertility decision  $i$ , is modeled as a continuous implicit variable  $y_{i1}^*$  that expresses the woman's desire to have a child and possibility of having one at time  $t$ ; this implicit unobservable desire is translated into the observable variable  $y_{i1}$  that takes the value 1 if the woman has a child.<sup>1</sup> The latent variable  $y_{i2}^*$  models the decision to work. The general model of the joint decision can be written as

$$\begin{cases} y_{i1}^* = x_{i1}\beta_1 + \alpha d_i + u_{i1} & (1) \\ y_{i2}^* = x_{i2}\beta_2 + u_{i2} & (2) \end{cases}$$

With

$$\begin{pmatrix} u_{i1} \\ u_{i2} \end{pmatrix} \sim N \left[ \begin{pmatrix} 0 \\ 0 \end{pmatrix}, \begin{pmatrix} \sigma_{1i}^2 & \rho\sigma_{1i}\sigma_{2i} \\ \rho\sigma_{1i}\sigma_{2i} & \sigma_{2i}^2 \end{pmatrix} \right] \text{ The error terms}$$

only the signs  $y_{i1}$  and  $y_{i2} = d_i$  of the variables  $y_{i1}^*$  and  $y_{i2}^*$  are observed, and the actual decisions can be written as

$$y_{i1} = \begin{cases} 0 & \text{if } y_{i1}^* \leq 0 \\ 1 & \text{if } y_{i1}^* > 0 \end{cases} \quad y_{i2} = \begin{cases} 0 & \text{if } y_{i2}^* \leq 0 \\ 1 & \text{if } y_{i2}^* > 0 \end{cases}$$

Fertility is equal to zero if the woman has no child (or one child in the case of the second birth) at time  $t$  and 1 if she has given birth. Work is equal to 0 if the woman is out of the labor force and 1 if she is working at time  $t$ .

Given equation (2), equation (1) can be written:

$$y_{i1}^* = x_{i1}\beta_1 + \alpha d_i + \rho \frac{\sigma_1}{\sigma_2} (y_{i2}^* - x_{i2}\beta_2) + w_{i1}$$

<sup>1</sup> The example, for reasons of simplicity, does not include the time variable  $t$  and the birth order variable  $n$ .

Where the distribution of  $w_{1i}$  is normal with a mean of zero and variance equal to  $\sigma_1^2(1-\rho^2)$  and thus

$$E(u_{i1} / x_{i1}, y_{i2}) = \rho \frac{\sigma_1}{\sigma_2} (y_{i2}^* - x_{i2}\beta_2) + w_{1i} \quad \text{when } \rho \neq 0 \text{ and } E(u_{i1} / x_{i1}, y_{i2}) \neq 0. \text{ Estimating equation (1)}$$

without taking into account equation (2) may lead to biased coefficients ( $\alpha + \rho \frac{\sigma_1}{\sigma_2}$  instead of  $\alpha$ ).

Modeling  $y_{i1}$  and  $y_{i2}$  as bivariate probit, the test of  $H_0 \rho = 0$  is obtained for the endogeneity of market activity and fertility ( $\rho$  different from zero indicates endogeneity) (see Ekert-Jaffe and Stier 2009). The person-year file allows to model the instant (annual) risk of giving birth as the equivalent of a risk proportional duration model, taking into account the duration structure and the right censor bias (see Courgeau and Lelièvre, 1992). The procedure allows for clustering all observations which belong to the same women, in order to account for the duration model's error structure. The main interest is in predicting the probability of women's giving birth to their first child, and, for those who have already mothered a child, of giving birth a second time. According to this procedure, a work equation is estimated together with the childbirth equation.

#### Dependent variables

The dependent variables used in the analysis are (1) the probability of women who have never had a child of giving birth to a first child at specific time t, and (2) the probability of mothers who have had one child of giving birth to a second child at time t. The work equations consider two dependent variables: for the entire population It is asked whether the woman works, and for a subset of working women whether the woman works fulltime.

#### Independent variables

The main concern is with the effect of women's employment on fertility, and hence the main explanatory variable is the employment status of a woman at time t-1. Because women may participate in the labor force on a part-time basis, only the analysis for working women is repeated examining the effect of hours of work (whether they worked fulltime (35+ hours a week) or part-time) at t-1.

The models also include several control variables, which were found in past research to affect women's fertility decisions. The time-variant variables include *education* and *marital status*. For each time point t, It was indicated whether the woman was still in school and whether she had post-high school education (=1; 0 otherwise) in the previous year, These indicators were calculated based on the age of the woman at the beginning of each year and her achieved level of education, reported at the time of the survey.<sup>2</sup> For each observation, it was indicated whether the woman was married (=1) the year before. The model also controls for two time-fixed variables: the woman's *birth cohort* (1= woman age 35 or older at the time of the survey) and her self-declared *religiosity*<sup>3</sup> (1= religious woman; 0 otherwise).

The *number of years at risk* (*years since age 14* for first births or the *time elapsed since the first birth* for second births) serves as the baseline duration variable. Based on previous studies showing a sharp increase in the probability of giving birth a second time up until the third year after the first birth, and a sharp decrease thereafter (Ekert-Jaffe and Stier 2009; Hoem and Hoem 1989; Olah 2003), the time elapsed since the first birth is modeled by two splines: "*short duration*" which is equal to 3 minus the age of the first child; and "*long duration*" which is equal to the age of the first child minus 3 (for a similar procedure, see Ekert-Jaffe and Stier 2009). In addition to these two variables, the *woman's age at the birth of her first child* was added, to denote fertility orientation.

<sup>2</sup> The B.A. degree variable is based on the highest level of a woman's education. The minimal age to acquire academic degree is 21.

<sup>3</sup> When information on religion was not available, a woman who attended religious services once a week or more or declared herself to belong to any religion was defined as religious.

The independent variables in the work equations include the duration variable (number of years since age 14 for first births or the number of years since the woman gave birth her first time for second births); prior work experience; the level of education (whether the woman has an academic education=1); and whether the woman was still in school and for second births also the mother's age at the birth of her first child.

### Findings

The analysis describes the probability of women's having a first child in the four welfare regimes.<sup>4</sup> Table 1 (panel A) presents the survival function for women who did not give birth to a first child using life tables. The figures reveal considerable variation across regimes in the rate and pace of having a first child. The table shows an early entry into parenthood in the liberal regime, with about 13% of women having their first child prior to age 18 and about 45% entering parenthood by age 23. The fertility patterns are different in all the other regimes. The pace of entering parenthood is slower than in the liberal regime, especially so in the southern European countries, where only 30% of women gave birth by age 23.

However, Table 1 suggests a more complex pattern of fertility in the different regimes. It shows that the risk of a first birth in the liberal regime is high also at later ages, indicating that a bipolar distribution of age at first birth may take place. The relatively high rate of childlessness, as reflected in the proportion of all women who have not given birth before age 38, lends further support to this conclusion. Delayed childbirth is found also in the southern European countries, reflected by the highest rate of women who remained childless by the age of 33 (30%), although eventually only 13% remained childless by age 38. While childbirth is delayed also in the conservative and social-democratic regimes, women are more likely to remain childless in the former than in the latter—16% and 12% of women in the two regimes, respectively, did not have a child yet at the age of 38.

**Table 1**

**The Proportions of Women Who Have Not Given Birth to a First Child (Panel 1) and a Second Child (Panel 2) in Welfare Regimes: Life Tables' Estimates**

	<b>Social democratic welfare regime</b>	<b>Liberal welfare regime</b>	<b>Conservative welfare regime</b>	<b>Southern European regime</b>
<b>Panel 1: First births</b>				
<b>Women's age</b>				
Up until age 18	0.9587	0.8695	0.9617	0.9571
Up until age 23	0.6275	0.5545	0.6238	0.6940
Up until age 28	0.3068	0.3195	0.3032	0.3660
Up until age 33	0.1687	0.1904	0.1875	0.2916
Up until age 38	0.1214	0.1442	0.1561	0.1337
<b>Panel 2: Second births</b>				
<b>Years since first birth</b>				
Up to 3	0.6905	0.5570	0.6802	0.7302
Up to 6	0.2760	0.1630	0.2622	0.3561
Up to 9	0.1667	0.0652	0.1632	0.2269
Up to 12	0.1285	0.0335	0.1466	0.1788

Source: Fertility and Family Surveys (1990-1998).

The second panel (B) of this table, which presents the survival function for remaining with only one child, shows that more than two thirds of women in all regimes had a second child within 6 years of the birth of their first child; most of these births took place within the first 3 years. However, there is cross-country variation in the pace of having a second child.

<sup>4</sup> The variation within regimes was relatively low and no significant differences in birth patterns were found between countries in the same regime.

In the liberal regime, half of the women already had a second child within the first 3 years and only 16% did not have a second child by the time their firstborn turned 6. By the twelfth year, only a small minority (3.3%) did not have an additional child. The pattern differs substantially for women in the southern European countries, where only about a quarter of all mothers had a second child within 3 years following the first birth, and a quarter did not have a child by the ninth year. On the whole, the patterns observed for women in this regime indicate that the low fertility rate results from a low number of children in the family rather than from a high proportion of childless women. The two other regimes are in between, with 16% remaining with one child for a long period (9 years). Eventually, however, more women in the social-democratic regime than in the conservative gave birth a second time (13% and 15% remaining with one child, respectively).

Overall, the findings regarding women's transitions into giving birth a first and second time are in line with the claim that women's fertility decision is context-dependent. The differences in fertility patterns imply that variation in social and economic conditions in the 1990s might affect women's decisions whether and when to have children. In the next section the effect of women's work on their fertility decisions is examined and whether the work-family relationships differ across regimes.

### **The effect of women's employment on the first birth**

Now the analysis is turned to examining the effect of work on fertility in a multivariate framework. Table 2 present the results of the fertility equation in the bivariate probit model, which takes into account the endogeneity of work and fertility decisions (the results of the work equations are presented in Appendix Table A1). In the fertility equation the employment status of women in the previous year is included, and also education (currently at school and level of education), duration, religiosity, marital status and cohort.

The fertility equation shows that the correlation between fertility and work decision in the four regimes,  $\rho$ , is statistically significant, meaning that the fertility decision is jointly taken with the work decision in all institutional contexts.<sup>5</sup> In line with the research expectations, the effect of women's employment is **positive** ( $b=0.293$ ) in the social-democratic regime, and **negative** in the liberal and southern European contexts ( $b= -1.757$  and  $-0.936$ , respectively). This is in line with the claim regarding the institutional context in the 1990s. Having high opportunity costs and no state support in childcare prompts women to limit their fertility. These characteristics stand in contrast to the social-democratic regime, and partly also to the conservative regime (no significant effect of work on fertility), in which childcare is not as costly, and mothers enjoy work-related benefits such as paid maternity leave. The positive effect of employment on fertility in the social-democratic regime reflects state support of working mothers, which provides them more incentives to work, since the entitlement for maternity leave is based on accumulating some work experience before childbirth.

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<sup>5</sup> A comparison to a simple probit analysis revealed significant differences in the work coefficients. In most cases these coefficients were downwardly biased.

**Table 2**  
**The Effect of Work on the Likelihood of Having a 1st Child in Four Welfare Regimes:**  
**Results from Bivariate Probit Model, Women Aged 20-45**

	<b>Social democratic welfare regime</b>	<b>Liberal welfare regime</b>	<b>Conservative welfare regime</b>	<b>Southern European regime</b>
<b>Education</b>				
Presence in educational system (t-1)	-0.412* (.059)	-0.114* (.050)	-0.861* (.144)	-1.082* (.049)
Academic degree	0.289* (.044)	-0.036 (.047)	-0.126 (.096)	0.419* (.067)
<b>Social and Demographic characteristics</b>				
Religious women	-0.428* (.063)	0.193* (.034)	0.319* (.063)	-0.011 (.044)
Older cohort	2.032* (.049)	1.774* (.065)	2.060* (.107)	2.156* (.073)
Married (t-1)	1.347* (.041)	1.175* (.049)	1.278* (.081)	1.947* (.059)
<b>Fertility behavior</b>				
Years since age 14	-0.178* (.004)	-0.148* (.006)	-0.189* (.010)	-0.185* (.007)
<b>Work behavior</b>				
In the labor force (t-1)	0.293* (.129)	-1.757* (.064)	-0.390 (.236)	-0.936* (.100)
Constant	1.569* (.137)	2.662* (.063)	2.297* (.214)	1.905* (.078)
$\rho$	-0.234* (.087)	0.833* (.031)	0.472* (.146)	0.574* (.066)
N	12240	10444	10443	9297

\*p<0.05

In addition to the effect of employment on fertility, the findings show that in all institutional settings women who attend school are less likely to give birth to their first child. The effect of educational level is not consistent across regimes and does not correspond to the human capital theory, which expects that higher education will lead to delays in family formation due to women's opportunity costs in the labor market. In the liberal and conservative regimes education has no effect on fertility, and in the two other regimes the effect of education is positive. The difference between the regimes possibly derives from their institutional and economic environments in the 1990s. While in all regimes highly educated women have better market opportunities, in an environment that supports women's employment, as in the social-democratic regime, highly educated women can afford having children since they have accumulated high employment-dependent benefits. In the southern countries, women with low education are probably more constrained economically and therefore less likely to enter parenthood.

The model shows that women are considerably more likely to conceive their first child within marriage, and the effect of marriage is especially high in the more traditional southern European regime (b=1.947 compared to 1.17-1.35 in the other regimes). The woman's birth cohort similarly affects the likelihood of entering parenthood in all regimes, with a higher likelihood of giving birth among women belonging to older cohorts. This finding is in line with the postponement of age at marriage and the increase in childlessness among more recent cohorts of women. The negative effect of the duration variable indicates that independently of other demographic and social characteristics, the likelihood of entering parenthood is declining as women get older. The higher birth probabilities of religious women in the liberal and southern European states are attributed to their more traditional attitudes towards family life and the religious prohibition against abortions; however, this effect is unexpectedly negative in the social democratic countries.

### The effect of women's employment on the birth of a second child

In his recent book, Esping-Andersen (2009) argues that childlessness "...is not the primary cause of low fertility. Basically, the issue boils down to the conditions that favor or disfavor second and higher order birth" (p. 86). Reconciling work and family demands becomes more difficult when there are more children at home. Therefore, in the following the effect of work on the decision to give birth to a second child is examined. In addition to the variables used before, the mother's age of entering parenthood and a duration variable were added to the fertility model, which includes separate indicators for "long duration" and "short duration," as explained above.

Table 3 presents the results for the fertility equation (the work equation results are presented in Appendix Table A2). The findings refute the initial expectations. After taking into account the simultaneity of work and family decisions, the effect of women's employment on the probability of having a second child is negative across all regimes, independently of the differences in their institutional and cultural characteristics. In particular, the negative effect of employment on fertility in the social-democratic regime refutes initial expectations. This may exemplify the contradictory effect of employment-supportive policies on women's work behavior (Hilgeman and Butts 2009; Mandel and Semyonov 2006; Stier and Mandel, 2009). While on the one hand such policies facilitate women's employment, on the other hand they encourage long separation from market work, taken probably for family building. As a consequence, women are unable to pursue a demanding career or enter lucrative jobs. It may be the case that women who enter a demanding career postpone (or forego) their second child. In this sense, their constraints are similar to those of women in the market regime.

**Table 3**

**The Effect of Work on the Likelihood of Having a 2<sup>nd</sup> Child in Four Welfare Regimes: Results from Bivariate Probit Model, Mothers of One Child Aged 20-45**

	<b>Social democratic welfare regime</b>	<b>Liberal welfare regime</b>	<b>Conservative welfare regime</b>	<b>Southern European regime</b>
<b>Education</b>				
Presence in educational system (t-1)	-0.390* (.055)	0.272* (.058)	-0.076 (.138)	-0.171* (.089)
Academic degree	0.359* (.046)	0.183* (.050)	0.053 (.075)	0.652* (.066)
<b>Social and Demographic characteristics</b>				
Religious women	0.245* (.054)	0.072* (.027)	0.125* (.049)	0.043 (.033)
Older women	-0.287* (.046)	-0.087 (.049)	-0.167* (.079)	-0.079 (.046)
Married (t-1)	0.390* (.032)	0.355* (.032)	0.320* (.061)	0.560* (.053)
<b>Fertility behavior</b>				
Age at first birth	0.024* (.005)	0.007 (.005)	-0.014 (.009)	0.015* (.005)
Short duration	-0.065* (.004)	-0.064* (.004)	-0.076* (.007)	-0.082* (.004)
Long duration	-0.791* (.048)	-0.757* (.058)	-0.642* (.102)	-0.616* (.046)
<b>Work behavior</b>				
In the labor force (t-1)	-1.759* (.309)	-1.724* (.033)	-1.596* (.046)	-1.500* (.028)
Constant	0.714* (.142)	0.914* (.123)	0.736* (.234)	-0.413* (.146)
$\rho$	0.993* (.002)	0.994* (.001)	0.986* (.004)	0.992* (.002)
N	7490	5820	6526	5808

\*p<0.05

The comparison between the models for the second and first births reveals some differences in the effects of most control variables. Having an academic degree increases the likelihood of having a second child (the effect is not significant in conservative countries). In the liberal regime the effect of staying in school is also positive, probably because women in this setting find it easier to combine studies with motherhood and use the time out of the labor force to improve their skills. In all countries, married women and those who are more religious are also more likely to have a second child. Older women are less likely to give birth a second time in the social-democratic and conservative regimes. It is possible that employment-supportive policies have improved considerably over time in these settings, thus in the 1990s younger women are provided with much better conditions to combine work and family. Cohort has no significant effect in the two other settings. Finally, mother's age at the first birth positively affects the likelihood of having a second child in most settings (except for the conservative countries), while the duration since last birth has a negative effect.

To further examine the effect of work on fertility, the analysis was limited to include only women who participated in the labor force prior to giving birth. For these women, the analysis was focused on the effect of their hours of work on fertility. Accordingly, It was asked whether women working fulltime are less likely to give birth, and to what extent the institutional context in the 1990s is important in determining these relationships. As Table 4 suggests, the results are in line with the former analyses – in the social-democratic countries, women who worked fulltime prior to entry into parenthood are more likely to give birth compared to those working part time ( $b=2.281$ ). In contrast, in the liberal and conservative countries those who work fulltime are less likely to give birth and the effect, though negative, is not significant in the southern European countries. When a second birth is considered, the effect of working fulltime is negative for all settings, strengthening earlier findings.

**Table 4**  
**The Effect of Hours of Work on the Likelihood of Having a Child<sup>a</sup>**

	<b>Social-Democratic welfare regime</b>	<b>Liberal welfare regime</b>	<b>Conservative welfare regime</b>	<b>Southern European regime</b>
<b>First birth</b>				
Worked fulltime	2.281* (0.224)	-1.431* (.052)	-2.444* (.152)	-0.764 (.574)
<b>Second birth</b>				
Worked fulltime	-1.479* (.041)	-1.583* (.043)	-1.208* (.097)	-1.320* (.057)

\* $p < 0.05$

<sup>a</sup> The models include all the control variables as in Tables 2 and 3, respectively for first and second births.

On the whole, the conclusion may be that work activity is an obstacle to family size in the 1990s, even in those settings that provide ways to alleviate the tension between family and work demands. More importantly, taking the results of the two first births together, it seems that the institutional context affects mainly the decision to enter parenthood and its timing, but the fertility levels not as much.

## Discussion

This paper was aimed at assessing the effect of women's employment on their fertility behavior across countries representing different cultural, institutional and economic environments in the 1990s. During that period, the relationship between fertility and employment changed and a fertility rebound is evident. Theoretical arguments (as well as empirical findings) have emphasized the role of "family-friendly" policies in alleviating the conflict between family and work obligations, asserting that well developed welfare states facilitate women's, especially mothers', economic activity (Gornick and Meyers 2003; Mandel and Semyonov 2005). In this study, this assertion is extended by arguing that the effect of women's employment on their choice to bear children may depend on the institutional arrangements within which work and fertility decisions are taken. For this purpose, Esping-Andersen's (1990; 1999) welfare regime categorization (with some modifications) is used to differentiate countries according to their contextual configuration and its effect on fertility and employment decisions.

Findings show that institutional arrangements can affect the timing of the first birth, but policies and arrangements to facilitate mothers' employment cannot affect the level of fertility. Whereas the impact of women's employment on their probability of having a first child varied across regimes, as expected, this was not the case with the second birth. In all regimes, women's employment reduces the likelihood of having an additional child, indicating that policies and market conditions could not solve the inherent incompatibility between family and work two decades ago, and probably cannot solve it today either (see Brodmann, Esping-Andersen and Guell 2007). Policies and arrangements for combining work and family may provide incentives for women to enter parenthood in general, and to participate in the labor market before they give birth in particular, in order to accumulate benefits and rights. However, these policies, which encourage long separation from paid employment, impede women's ability to develop a successful market career. This is mainly because all labor markets still value employment continuity as a necessary condition for successful employment (Gornick and Meyers 2003; Mandel and Semyonov 2006). It is therefore plausible to argue that employment activity was and may still be consequential for the level of fertility as well as its pattern along the life course. This is because there are still major differences between countries in reconciling work and family, and even though most countries have increased the amount and types of support to families over time, work is still an obstacle to childbearing (Threvenon 2012). Hence, this kind of analysis should be considered as a first step toward a better assessment of the influences of family-supportive policies.

However, factors other than institutional arrangement captured in the welfare regime typology may affect fertility decisions. Women's lifestyle preferences, for example, may enhance the desirability of children, or alternatively may lead women whose prime interest is in developing market careers to delay or avoid childbirth. Using Hakim's terms (2003), it is possible that women prefer to devote most of their time to paid work and concentrate on their careers rather than on family life. In this case, neither family policies nor favorable conditions in the labor market would change their preferences, hence their fertility behavior. In order to affect the level of fertility, then, countries need to change the organization of work to promote men's involvement in home duties and to raise levels of gender equity in family-oriented social institutions (McDonald 2000), and to implement policies (such as direct transfers to parents), as evident in some countries, which explicitly encourage the level of fertility.

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## Appendix Table A1

## Effect of First Birth on Work in Four Welfare Regimes: Results from Bivariate Probit Model, Mothers of One Child Aged 20-45

	Social democratic	Liberal	Conservative	Southern European
<b>Education</b>				
Presence in educational system (t-1)	-1.118* (.044)	0.104* (.039)	-0.545* (0.035)	-0.545* (0.035)
Academic degree	0.312* (.059)	0.104 (.061)	-0.006 (.113)	0.817* (0.053)
<b>Fertility behavior</b>				
Years since age 14	-0.131* (.009)	0.036* (.005)	-0.094* (.012)	-0.013* (0.004)
<b>Work behavior</b>				
Work experience(t-1)	0.267* (.013)	0.146* (.007)	0.185* (.018)	0.123* (.006)
Constant	1.713* (.092)	-0.290* (.052)	1.546* (.136)	-0.120* (.046)

\*p&lt;0.05

## Appendix Table A2

## Effect of Second Birth on Work in Four Welfare Regimes: Results from Bivariate Probit Model, Mothers of One Child Aged 20-45

	Social democratic	Liberal	Conservative	Southern- European
<b>Education</b>				
Presence in educational system (t-1)	-0.444* (.055)	0.241* (.053)	0.025 (.137)	-0.187* (.085)
Academic degree	0.278* (.047)	0.255* (.051)	0.051 (.078)	0.783* (.071)
<b>Fertility behavior</b>				
Age at first birth	0.046* (.004)	0.037* (.003)	0.012 (.007)	0.045* (.004)
Years since last birth	0.130* (.005)	0.120* (.004)	0.123* (.006)	0.109* (.004)
<b>Work behavior</b>				
Work experience (t-1)	0.046* (.004)	0.019* (.002)	0.019* (.004)	0.029* (.002)
Constant	-1.379* (.110)	1.399* (.091)	-1.148* (.191)	-2.131* (.108)

\*p&lt;0.05