

# **Labor Market Performance and the Timing of Births. A Comparative Analysis across European Countries**

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## **Abstract**

I use the 1994-2000 waves of the European Community Household panel for 13 European countries to study how varying institutional indicators across countries account for differences in the timing of second and third births and, hence, explain to some degree why total fertility rates in Europe have plummeted, particularly in Southern Europe. Transitions are hindered by economic uncertainty in high unemployment settings and by a woman's own long-term unemployment spells. Women in public sector and/or part-time employment transit faster than those in private and full time positions. Maternity benefits encourage transitions to second births. Spouse's education and job stability are critical in Spain and Italy, where households rely more heavily on men's income.

## INTRODUCTION

Delay in both marriage and age at first birth, as well as increases in extra-marital births and in cohabitation characterize the demographic evolution of developed countries during the last two decades. Among the changes that constitute the “second demographic transition”, the dramatic and rapid fall of total fertility rates to previously unseen levels has captured the attention of policymakers because of its implications for population decline (Van de Kaa 1987, United Nations Population Division 2003, Lee 2004). Total fertility rates have plummeted, particularly in Southern Europe, where total fertility rates averaged around 2.5 in the mid 1970s but only about 1.25 by the end of the 1990s. In several of these countries total fertility rates have remained below 1.3 since the late 1990s –what some refer to as the lowest-low fertility levels (Kohler, Billari and Ortega 2002). Though childlessness has increased somewhat, the abrupt reduction in the quantum of fertility across Europe is the most relevant factor.

Further, reversing historical trends, fertility rates and both female participation in the labor market and female employment rates have become positively correlated across OECD countries since the 1980s (Boix 1997, Morgan 2003, Adsera 2004 a). In countries with high female participation, such as the United States, New Zealand or Norway, fertility rates have stabilized close to replacement rates. By contrast, in countries with lower levels of female labor market attachment, such as Spain or Italy, fertility rates are approaching unity.

Several explanations have been proposed for the recent fertility experience including the role of institutional variation in labor markets and the stability of employment. As women have entered the labor market during the last decades, balancing work and family has become a central concern. Exit from the market at childbirth implies a loss of income for a family during the time spent with the child, as well as an increased risk of unemployment, particularly in the midst of the turbulent times experienced by European labor markets during the 1980s and

1990s. Therefore, the wide range of labor market arrangements present in OECD countries may account for variations in childbearing and participation decisions of women (Gustafsson et al. 1994, Esping-Andersen 1999, Pampel 2001, Adsera 2004 a).

Using the 1994-2000 waves of the European Community Household Panel (ECHP), I estimate Cox proportional hazard models to study the characteristics of women who transit to second and third births during the 1990s in 13 European countries. I focus both on time-varying institutional and economic indicators across countries as well as individual labor market information. I choose higher parities to better understand the causes of the reduction in the number of children mothers have.

## **ANALYTICAL FRAMEWORK**

The average total fertility rate in the OECD went down from 2.9 in 1960 to 2.0 in 1975 and then dropped to 1.6 in the late 1990s. As is apparent from Table 1, within that downward trend, fertility varies significantly across countries. In the United States and in Spain total fertility rates have declined from around 3 children in the early 1960s to, respectively, close to replacement level and to the among the lowest level in the world - 1.19 for the period 1995-2000. Fertility is close to 1.3 or below in Southern Europe as well as Germany and Austria. The highest rates belong to Nordic countries, Ireland and France.

Part of the variation and decline in fertility rates across Europe is explained by changes in timing. Thus, a comparative analysis of the spacing of births across countries for different parities provides information on underlying changes on timing that, otherwise, synthetic indexes may conceal. Figure 1 presents Kaplan Meier nonparametric estimates of the transition to second birth of women in 13 European Union countries who had a first child on 1992 or after. Time is measured in months since first birth and the graph shows the proportion of

women who have not had a second child at every point in time until five years after the first child was born. Data on individual fertility histories is obtained from the first seven waves (1994-2000) of the European Community Household Panel Survey (ECHP). Overall, half of the women have had their second child before four years from their first birth. Estimates, however, vary dramatically and significantly across countries. Five years after the first birth, whereas less than 45% of the Spanish, Portuguese and Italian women in the sample have given birth to a second child, over 75% of Dutch and Finnish mothers have. The cross-country variance in the spacing of third births is even larger.

Interestingly it is in Southern European countries, where the mean age at first birth has increased the most during the last decade, that transitions to second and third births are the slowest. Demographers have indicated that even if fertility rates for older women were to slightly recover in countries with very low fertility, fertility rates will unlikely rebound to the replacement level (Lesthaeghe and Moors 2000, Boongarts 2002). By looking at the timing of second and third births across Europe, it is apparent that, not only fertility rates are going to remain low, but also that the cross-country variation in fertility rates is not going to decrease in the near future.

**Preferences.** One obvious explanation for the extraordinary reduction in the number of children per women is a change in couple's preferences toward smaller families, larger investments per child and dual-careers. As women participate more intensively in the labor market, they trade-off children for less time-demanding alternatives (Butz and Ward 1979, Becker 1981, Galor and Weil 1996). Female labor force participation rates in the OECD climbed from 41% in 1960 to almost 48% in 1975 and then to 64% by the late 1990s. In addition, changes in values such as the emphasis on individual preferences within couples as

well as secularization have long been considered independent causes of family change during the last decades (Bumpass 1990: 483).

Table 2 presents data from the 1994 Family and Changing Gender Roles survey of the International Social Survey Program on the reported ideal number of children by men and women of different ages in the OECD. As we move from old to young cohorts, the preferred number of children declines. The fall does not match, however, the actual decline in fertility rates observed in Table 1. The distribution is quite homogeneous across European countries with averages, not far, but consistently lower than those of non-Europeans across all ages.<sup>1</sup> Of course, employing the preferred number of children as a measure of preferences has many limitations (Westoff and Ryder 1977). Still, since the ideal number children is relatively uniform across countries, it is apparent that, even if they may be central to the overall decline in family size, preferences alone cannot explain the wide variation in fertility rates observed in Table 1 (Boongarts 2002).

Postponement has been singled out as an explanation for the gap between stated preferences and completed fertility since it “brings risks that women will not have all the children they intend”(Morgan 2003: 599). In an attempt to balance work and family demands, European women are becoming mothers later and, as a result, are expected to bear fewer children by the end of their fertile-life (Kohler et al. 2002). Still, it is necessary to understand the variation in both the degree of postponement and the mismatch between intended and

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<sup>1</sup> Goldstein, Lutz and Testa (2002) present data from the 2001 Eurobarometer and show a relatively homogenous distribution for women 20-34 in the 15 European Union countries with an average around replacement level 2.1 and, with Austria (the lowest in Table 2) and Germany already below 2.

actual fertility and one explanation lies in how labor market institutions mediate the competing demands of home and the workplace.<sup>2</sup>

**Labor Market Institutions and Economic Uncertainty.** The broad differences in labor market arrangements across Europe, coupled with a sharp increase in unemployment and economic uncertainty, have become more relevant for fertility decisions during 1980s and 1990s, as Europe witnessed increased entry of women in the labor market. This paper focuses on why family size is shrinking at different rates across Europe by looking at how labor market institutions either hinder or favor transitions to high parities.

High unemployment has been at the center of European economic performance for the last two decades. Figure 2 provides information on female unemployment rates for a selection of countries. In all cases, unemployment rates started to climb from very moderate levels at the end of the 1970s. The increase was particularly sharp in Southern. In the United Kingdom and Sweden, female unemployment was less persistent and remained at manageable levels (below 10%) for most of the period. Temporary spells of unemployment that entail a reduction in a woman's opportunity cost of time may be viewed by some as cheap times to have children (Butz and Ward 1979, Galor and Weil 1996). However, the two main characteristics of European unemployment during the last two decades were its severity among young workers and its persistence. Table 3 presents data for both. Unemployment rates of women under 25 years were close to 50% in Spain and around 37% in Italy and Greece in 1995. Rates were more moderate in the rest of Europe. The percentage of jobless that had been out of work for more than one year was over 50% in Italy, Ireland, Spain, Portugal and Belgium (OECD

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<sup>2</sup> In the 1999 Spanish Fertility Survey, for example, economic constraints as well as economic pessimism were the highest ranked reasons to justify a mismatch between the desired and the actual number of children.

Employment Outlook). In a context where unemployment is high and persistent, a low attachment to the labor market early in life to cope with maternity demands may lead to permanent unemployment and large lifetime losses in income (Wright 1989, Macunovich 1995). The particular acuteness of unemployment in Southern European countries delayed household formation and brought about a major postponement of childbearing (Ahn and Mira 2001, Adsera 2002, Holdsworth and Irazoqui-Solda 2002), as young adults attempted to minimize unemployment risk and to increase lifetime income through early skill-acquisition either on the job or on continuous education. In 1998, Italy and Spain had the highest proportion of 25-29 year-old women studying, and not in the labor force among OECD countries (OECD 2001).

Besides moderate and short-lived unemployment, certain types of contractual arrangements minimize women's uncertainty when coping with work and family demands. Part-time arrangements, for instance, make women's dual roles more compatible and increase their certainty of re-employment should they decide to temporarily withdraw from the market – resulting in lower skill depreciation and income losses. Data in Table 3 demonstrate that the prevalence of such positions varies extraordinarily across Europe. Part-time as a share of total employment ranges from close to 40% in the Netherlands, to over 20% in the UK and Sweden until a low 7% in Southern Europe. Two-thirds of Dutch women work part-time whereas only 8% of Greek and around 12% of Italian, Portuguese and Finnish women do. Differences in the quantity of part-time positions are a result of both preferences but, most importantly, regulation. Labor legislation in some European Union countries penalizes part-time positions by either not ensuring pro rata entitlements such as seniority allowances, wage rates or vocational training, or by setting social security charges and other pay roll taxes at the same rate that those of full-time workers (OECD 1995). These regulations render part-time

unattractive both for the workers and the employers. Part-time prevalence in the Netherlands swelled from the moment workers were granted pro-rata entitlements in exchange for pro-rata social insurance contributions.

In addition, uncertainty is also low if jobs are protected and women are guaranteed to return to their previous employment after childbirth. Whereas in Europe most mature workers hold permanent positions protected by high firing costs, young workers hold more unstable jobs. Government employment constitutes a unique source of tenured jobs, which come also with generous parental leave and work schedules and possibly subsidized child-care (Rosen 1996). Again, the prevalence of public sector employment varies greatly across Europe. In Table 3, it ranges from around 30% of total employment in Nordic countries (and close to 25% in France) to half that size in most of the other countries. Where the government sector is large, women predominantly participate before childbirth and return to work as benefits stop (Gustafsson et al. 1996, Ronsen and Sundstrom 1996). Further, even if pay is moderate in the public sector and men do not benefit extensively from leave programs as women do, the income stability for a household that accompanies a public sector job is an asset in high unemployment settings such as Southern Europe. In those countries, young workers have been either consigned to precarious short-term contracts or resorted to self-employment. The lack of tenure and stable earnings that characterize those positions should induce postponement in both household formation and childbearing.

To sum up, I expect that jobs that allow women to exit the labor force temporarily without penalty (such as public employment) or ease entry after childbirth (through part-time) should accelerate transitions as opposed to transitory jobs (short-term contracts). Experiences of long-term unemployment spells may have particularly strong effects on child spacing if accompanied by a loss of skills and a permanent income effect, as well as an increase in

precautionary behavior. In regard to spouse's employment, stable jobs with relative good pay should provide a good environment for faster transitions, particularly in regions where men's earnings constitute the bulk of household income. In general, high and persistent unemployment in the country or region of residence should hinder long-term family decisions such as childbearing.

## **EMPIRICAL STRATEGY**

Following a large literature, dating from the seminal work of Newman and McCulloch (1984), I use individual level data to estimate Cox proportional hazard models of the timing of births across the European Union. For women  $i = 1, \dots, N$ , who each enter a state (e.g. first birth) at time  $t=0$ , the (instantaneous) hazard rate function for  $i$ th person at time  $t>0$  is assumed to take the proportional hazards form

$$\lambda_{it} = \lambda_0(t) \exp (X'_{it} \beta ) \quad (1)$$

where  $\lambda_0(t)$  is the baseline hazard function which may take a parametric or non-parametric form (see below);  $\exp (.)$  is the exponential function;  $X_{it}$  is a vector of covariates summarizing observed differences between individuals as well as the characteristics of the labor market where they live at time  $t$ ; and  $\beta$  is a vector of parameters to be estimated. I use a grouped robust variance as estimated by Lin and Wei (1989) to account for unobserved heterogeneity. The dependent variable in all estimates is months to a birth from the previous birth.

I draw individual fertility histories from the 1994-2000 waves of the European Community Household Panel Survey (ECHP), a unique dataset produced by the European Union Statistical Office (Eurostat), that presents comparable micro-level information for

households across the 15 European Union member states.<sup>3</sup> Since the survey does not include exact month of birth for children in Germany and Denmark, these countries are not included in the analysis. The 13 countries considered are Netherlands, Belgium, Luxembourg, France, Greece, the UK, Ireland, Italy, Spain, Portugal, Austria, Finland, and Sweden.

The ECHP survey provides detailed information on labor market activities for the interview year as well as for the previous year (or the recent past). In addition, some questions provide general information on market activities of the individual since 1989, as well as information on the first time the individual held a job. However, given the lack of complete retrospective labor market histories, the span of information available is too short to obtain any meaningful result on estimates of transition to first birth from teenage years.<sup>4</sup> Further, since the focus of the paper is to understand the abrupt reduction in the number of children per woman, I study transitions to second and third birth of women aged 18 to 45 who had either their first or second birth on or after January 1992. The estimates of transition to second birth contain data on 8,041 women with 3,362 observed second births, and those to third birth, 6,463 women with 1,075 observed third births. The size of the sample per country across years is fairly stable. Around 6% of the individuals are lost in each interview but a similar proportion is added from the new mothers and the new surveyed. For those who are lost before a second birth occurred, the observation is censored at the date of the last available interview.<sup>5</sup>

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<sup>3</sup> The dataset also includes, for latter waves, observations from the Luxembourg and the British household panels (PSELL and BHPS) converted for comparability with the ECHP.

<sup>4</sup> See Adsera (2004 b) for an analysis of how labor market institutions matter for first births.

<sup>5</sup> Several works have concluded that attrition biases in the ECHP are relatively mild and lower for individuals living in couples as most individuals in this sample (Nicoletti and Peracchi 2002, Ehling and Rendtel 2004).

The paper uses data on demographic characteristics as well as information on labor market institutions and aggregate economic conditions to explain the spacing of second and third births. Estimates of the effects of individual labor market attributes should be interpreted with caution. Given that labor supply and fertility are likely to be jointly determined, coefficients on labor market status cannot be given a direct causal interpretation (Lehrer and Nerlove 1986, Browning 1992). In studies on the effects of changes of family size on labor supply, for example, the endogeneity problem has been found to be important among less educated women but negligible for men (Angrist and Evans 1998). Notwithstanding the inability to interpret the effect of women's employment covariates causally, the direction and significance of the estimates provides crucial information on the types of positions that are associated with faster transition to births. Given the substantial differences in the provision of some of these jobs across European countries, as seen in Table 3, results shed light on the aggregate country implications for fertility levels. Of course in countries where part-time is hard to obtain and entails a reduction in benefits, for example, we expect those women who self-select to those positions to be more inclined to motherhood. Thus, an increase in part-time availability could draw immediately into those positions only women who were marginal in their decision to a second child. Still, a drastic change in regulation should bring about, over time, a change in expected costs of maternity and a reassessment of decisions by other women. In addition to lessen the endogeneity bias, all time varying employment and income covariates are lagged 7 months. Women may change their employment status just before the birth and lagging activity status decreases the reversed causality problem. In addition, since we are focusing on higher parities, many employment changes are likely to have already occurred around first birth, when most reallocation occurs (Browning 1992). Results were robust for a range of lags from 6 to 12 months and 7 months were chosen to maximize the sample

available. Aggregate institutional and economic measures are also lagged one year to proxy the environment when conception decisions took place.

## **COVARIATES**

### **Personal Characteristics**

I control for whether a woman is a foreigner and whether she was born outside the European Union. Information on previous fertility history includes age at first birth, time intervals between births and the gender of previous children. The education level of the woman and her spouse are provided at each interview. Unfortunately, a continuous measure of education such as years of schooling is not available. I distinguish among those with less than upper secondary, upper secondary (the omitted category) and tertiary education. With regard to civil status, the survey distinguishes between marriages and consensual unions. Since information on changes in marital status is only provided yearly, I consider the date of change of civil status to be either the month the individual moves in the household or January of the year the individual indicates that change occurred. Estimates control for monthly variation of marriage status and for whether the woman is "living in a couple" regardless of her civil status. Not having a spouse is the omitted category.

### **Employment and Income**

The ECHP provides three types of information regarding employment: a) monthly labor market status on the year previous to the interview; b) most frequent labor market activity on the year of the interview; c) dates of start and end of current and last jobs. As a result I can reconstruct fairly well an individual's labor history during the years of the interview as well as the most recent months. Estimates use information on the activity status of both the woman and her spouse, when present. Covariates for working and unemployment status are included and

inactivity is the omitted category. Among those working I distinguish between full or part time jobs, and those who are self-employed. Furthermore I control for the type of contract (fixed or permanent), its length as well as the sector of employment (public or private). The ECHP also provides information for each individual on the existence of long-term unemployment spells (more than 12 months) since 1989 and whether the household is receiving unemployment benefits or family allowances at each interview. Finally, individual work income information is included and transformed to PPP terms for comparability across countries.

### **Labor Market Conditions**

Given that economic performance has varied dramatically during the last decade, I include variables that track the changing conditions of the labor market. Female unemployment rates in the country of residence are used to measure the underlying uncertainty in the labor market. Time-varying country indicators such as income per capita, prevalence of public sector employment and maternity benefits are also included. Data on the structure of the labor market was obtained from the OECD *Labour Force Statistics* and completed, whenever needed, using national official statistics. GDP per capita is measured in purchasing power parity terms (\$1995) and was obtained from the OECD *Economic Outlook*. The US Department of Health and Human Services regularly publishes *Social Security Programs Throughout the World*, a compendium of social legislation for most world countries. I combined that information with data from various issues of the OECD *Employment Outlook* to generate an annual variable that interacts the number of weeks of maternity leave with the replacement rates, a percentage of previous earnings, during maternity leave.

### **TRANSITIONS TO SECOND BIRTHS**

## **Aggregate and Individual Economic Conditions**

Table 4 presents estimated hazard rates of the transition to a second birth. Since the purpose of the paper is to study whether labor market characteristics explain spacing and whether this accounts for differences in fertility across Europe, columns 1 and 2 do not include country dummies. However, to compare results to within country variation, column 3 does include them.

**Personal Characteristics.** In all columns, the age at first birth decreases the hazard to second birth and the gender of the first child is not significant. Not surprisingly, women with a spouse (as opposed to those alone) experience faster transitions, particularly those married. Both a woman's and her spouse's education increase the hazard to second birth. This may indicate catch-up after an initial delay, since highly educated couples become parents latter on average (Adsera 2004 b).

**Employment and Income.** The next set of covariates describes the labor market position of a woman and her spouse. As noted, coefficients on a woman's individual labor market attachment in these estimates cannot be interpreted as causal parameters since an obvious self-selection process exists. However, the sign and magnitude of the coefficients are an important indication of which situations are the most favorable for women to bear children.

Since the inception of the microanalysis of fertility choices in the 1960s, the standard expectation has been that working mothers trade off children in favor of less time demanding alternatives (Becker 1960, 1981, Willis 1973, Butz and Ward 1979). In line with this prediction, working mothers experience, in all columns, substantially slower transitions than those who stay at home. Still, a close observation of the results reveals that a complete analysis of hours of employment as well as the sector is required to entirely understand the effect of work on transitions. Woman's part-time and public sector employment coefficients are

significant and positive. Figure 3 simulates the instantaneous hazard to second birth for women with different degrees of labor market attachment using estimates in column 1. Women working full time in the private sector have the lowest hazard to a second birth, a third lower than inactive women. Working in the public sector, as opposed to the private sector, or working part-time, as opposed to full time, clearly increases this hazard. A woman working part-time in the public sector has a 20% higher hazard than an inactive woman. Simulated results of the survival function presented in Table 5 (first box) show that, eight years after becoming mothers, 80% of women working part-time in the public sector would already have second child, as compared to only 60% of those working in the private sector full time. Around 73% of women who are either inactive or working part-time in the private sector would have had a second child by then.

One of the most distinctive characteristics of European unemployment since the mid 1980s has been its persistence. Independent of her labor market situation, a woman's past experience of a long-term unemployment spell sometime after 1989 has a lasting negative impact on her childbearing trajectory.<sup>6</sup> The estimated survival function, in Table 5 (middle box), shows that, eight years after the first birth, the proportion of women with a second child is 70% among those who have not recently experienced long-term unemployment but only around 60% among those who have.

Even if family labor supply decisions are jointly determined with fertility, coefficients on men's employment have a more direct interpretation since self-selection has been found to be a minor concern (Angrist and Evans 1998). Women with a spouse working as a bureaucrat

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<sup>6</sup> These women have already surpassed the negative odds of not having a first child. Adsera (2004 b) finds a large effect of long-term unemployment on transitions to first birth across Europe.

or in a part-time have not significantly higher hazards than others in the cross-country sample, but a spouse working in the public sector enters significantly when country dummies are included in column 3. Only the coefficient for a self-employed spouse is positive and significant in all estimates. A closer look at the sectors of employment and remuneration of those workers should shed light on the cause of that link. Earnings of self-employed on average are lower than those of the total working population. However, more widespread earnings underreporting and the flexibility of schedules may constitute an asset. Further, self-employment has been an alternative to standard work for young workers in the midst of high unemployment, particularly in Southern Europe. Some of these workers might be relatively better than other peers. Spouse's unemployment enters negatively and significantly in column 1 but not when work income is included in column 2. As expected, a higher income from the spouse increases the hazard to second birth, while the opportunity cost of higher earnings, discourages woman from fast transitions.

**Labor Market Conditions.** The uncertainty generated by high (and persistent) female unemployment clearly slows down transitions to second birth both across and within countries. Results confirm previous findings of a negative effect of unemployment, and particularly, long-term unemployment since the mid 1980s in transitions to the first three parities across Europe (Adsera 2004 b). Coefficients on the aggregate level of public employment are highly unstable across estimates. Better maternity benefits boost second births. Interestingly, transitions occur faster in relative richer countries, but within countries, as income has grown over time, women have delayed childbearing in each country (column 3). More development in a country is likely to come hand in hand with higher female labor force participation and higher opportunity costs of childbearing. Thus, results in column 3 are expected by the standard microanalysis of fertility. The interesting result is the fact than in the richer countries

in Europe, labor market institutions seem to be more accommodating to balancing motherhood and work than in relatively poorer countries where female participation is still below average levels but has risen rapidly during the last decades.

## **Additional Variables**

To round off our analysis of second births Table 6 presents similar estimates to Table 4 with a set of additional independent variables.

**Part-Time Availability.** I construct measures of the proportion of all workers interviewed in each wave who are part-timers both for the private sector and for the public sector and lagged them one year. I interact each one of these measures with the working status of each woman depending on whether they are public or private sector employees. This covariate aims to measure the expectations about part-time availability in a sector that each woman forms before deciding on childbearing. Both coefficients in column 1 are highly significant, particularly that of the private sector. Figure 4 presents simulations of the instantaneous hazard for women in each sector for varying aggregate levels of part-time employment in their sector of work. The hazard of a woman working in the private sector in a country with no part-time was estimated to be 0.542. The hazard for women working in the private sector in countries with 10% of part-timers, such as Spain, is only half to that of women in countries where part-time extends to almost 50% of the working population, such as the Netherlands. Numbers for the public sector are similar. Simulations in Table 5 (bottom box) show that, eight years after the first birth, around 80% of women working in a public sector with wide part time availability, but only around 55% of those working in a private sector with few part time positions would have had a second child.

**Public Sector in France.** The Appendix shows the distribution of public employees at different age brackets across some OECD countries. France has the youngest cohort of public employees in the sample and females constitute almost 60% of them. Over 20% of French public employees are under 30 years of age.<sup>7</sup> Column 2 in Table 6 includes a separate variable for French public employees. French women have a significantly higher hazard to second births that public employees elsewhere (a combined hazard of 1.842).

**Benefits.** In column 3 a family receiving unemployment benefits seven months ago has a lower hazard to a second birth, whereas a family receiving family allowances has a faster transition to a second child (regardless of whether income is included or not).

**Unstable contracts.** As noted before, job stability has become a crucial issue for workers during periods of high unemployment in Europe in the last twenty years. Changes in the types of contracts available, particularly for the young, accompanied rising levels of unemployment. In 1984, for example, as a response to deteriorating economic conditions and to stimulate new employment, the Spanish government introduced important changes in labor law that allowed non-permanent contracts for new hires. The percentage of female workers holding temporary contracts in Spain went up from around 5% in 1984 to over 35% in less than 10 years. Similarly, especially in Italy, employers subcontracted the services of self-employed workers, who were *de facto* working full time in the firm, as a means to reduce non-wage costs, such as social security contributions. The emergence of unstable and short-term contracts increased turnover in the labor market. However, it did not imply stable employment for young couples, a pre-condition for securing mortgages and accelerating household formation in those

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<sup>7</sup> Only the German central government (enlarged after reunification) has a higher proportion, but only 20% of employees are female and its overall size is small within the total German public sector largely dominated by the Lander.

countries. In columns 4 and 5 I control for whether the couple's work contracts are permanent and whether there are shorter than one year. Women with non-permanent contracts have a significantly slower transition to a second child. When the length of the contract is also included in column 5, only those women with very fragile labor arrangements have a low hazard. The coefficient, however, is not significant, potentially due to some multicollinearity of both variables. As for the spouse, only when both measures are included, non-permanent contracts work in a positive fashion, whereas very unstable contracts slow down second-time fatherhood. Both coefficients, however, are not significant. Whether these constitute two different groups of workers (in sectors, remuneration or educational background) deserves further research.

### **Country Regressions**

I have also run the first model in Table 4 separately for each country and found some idiosyncratic features presented in Table 7. A first interesting observation is that a highly educated spouse matters the most for Southern Europe. Highly educated men can provide better and more stable income to families that depend relatively more on spouse's income and are more sensitive to job-uncertainty than other countries (Ahn and Mira 2001, Adsera 2002). While in France the relation is U-shaped; among Britons, transition to a second child is homogenous across spouse's educational groups. Second, long-term unemployment spells hinder transitions for all countries except for the UK, where surprisingly the coefficient is positive and significant. A means-tested welfare system – and related higher rates of teenage pregnancy- may answer for this finding. In Italy and, particularly, in Spain the detrimental effect is sizable and significant. Third, coefficients on public sector employment show that public sector employment for women matters the most in France whereas spouse's job stability

carries a premium in Southern Europe. Finally, in France, where the public sector has expanded during the last years and has hired a higher proportion of young workers than other European countries, the coefficient for the overall size of public employment as a percentage of total employment (lagged one year) also enters significantly in the estimates.

## **THIRD BIRTHS**

### **Personal Characteristics**

Table 8 presents Cox estimates of transition to third birth. Both the time interval between the first two children and the age at first birth decrease the hazard to a third child. There is no clear effect of foreign birth, and, though hazard rates for non-EU born are rather large, they fail to attain any meaningful level of significance. Having already had either two boys or two girls boosts third births –a result that points to a taste for variety. The fact that consensual unions are less common in Southern Europe, where fertility is lower, may partly account for the lack of significant difference between marriage and union in the transition to third birth. Estimates indicate a slight U-shape effect of women’s education that is only clearly significant when women are compared to their fellow nationals in column 3.<sup>8</sup> Those with intermediate levels of education (upper secondary) seem, on the one hand, to be caught by the constraints of the market and have, on average, lower wages and worse career expectations than college-graduates, particularly in a market with high unemployment. On the other hand, they may have higher demands (in terms of child quality) and better family planning formation than those less

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<sup>8</sup> A similar nonlinear relationship of education and third births in Europe has already been found in the literature (Hoem and Hoem 1989, Kravdal 1992, Adsera 2002, 2004 b). Kravdal (2001) notes that when the first three births among Norwegian women are modeled jointly, the high fertility among better educated is partly explained by selection.

educated. As a result, that particular group has a slower transition to third births. Finally, as a hint of positive income effects, the coefficient of a spouse's college education is large and highly significant in all cases.

### **Employment and Income**

Again, the variation of hazard rates across different job categories points to the types of arrangements that reduce the trade-off from childbearing. The coefficient on working status is negative but only significant when work income is not included in columns 1 and 3. A complete simulation of results in column 1 in Table 8 is included in Figure 3. The estimated hazard rate of women either in public sector or part-time jobs is equal to that of stay-home mothers, while that of part-timers in the public sector is a 33% larger. The coefficient on public employment is significantly larger when work income is included in column 2. Thus, among similarly paid jobs, the stability and benefits that come hand in hand with public sector employment are valued characteristics in the attempt to balance work and family. The negative effect of women's long-term unemployment spells continues to show significantly on the transition to third birth. As for spouse's employment, only self-employment and, puzzlingly, long-term unemployment spells enter positively and significantly. This last group is, nonetheless, very small. Higher women earnings deter third births as the opportunity cost of forgone work-time increases, but men's income is not significant.

### **Labor Market Conditions**

Again, the uncertainty spawned by high unemployment discourages large families. Female employment is significant and negative in cross-country estimates. Women in countries whose government sectors have expanded during the years of the sample experience faster transitions

(column 3), but the coefficient is not significant in the pooled samples. The positive and highly significant coefficient of log income per capita in columns 1 and 2 indicates that during the last decade, in richer European countries, women have transitioned faster to third births and, as a result, ended up having more children on average. Adsera (2004 b) finds a similar result for individuals born after 1962 across European countries.

## CONCLUSIONS

Fertility rates across the OECD have plummeted from an average of 2.9 in 1960 to 1.6 in the late 1990s, but cross-country variance has remained substantial. In several Southern European countries they have already remained below 1.3 since the late 1990s. Though childlessness has somewhat increased, the abrupt reduction in the quantum of fertility across Europe is the driving force behind these changes.

Changes in preferences cannot explain the bulk of the change: preferred family size, at around replacement level, is quite homogeneous within the European Union. Instead, delayed childbearing, triggered by the fast entry of women in the labor force and by economic uncertainty in European labor markets during the 1980s and 1990s, emerges as the key reason for the gap between intended family size and completed fertility as late starters tend to have fewer children by the end of their fertile-life (Kohler et al. 2002, Morgan 2003). Nevertheless there are substantial differences in both the degree of postponement and the mismatch between intended and actual fertility across Europe. This paper has argued that this variation is explained by how the wide range of labor market institutions within the European Union and the uncertainty generated by persistent unemployment mediate the competing demands of home and the workplace. I have used the 1994-2000 ECHP surveys to study the timing of

second and third births among European women of 13 nations to show what labor arrangements either hinder or favor transitions to high parities.

I find that transitions are hindered by economic uncertainty in high unemployment settings and by a woman's own long-term unemployment spells. The proportion of women with two children eight years after the first birth was 70% among those who had not experienced a recent long-term unemployment spell but only around 60% among those who had. Both women's in public employment, with liberal leave programs and job security, as well as those in part-time positions transit faster to high parities than those in full-time positions in the private sector. Further, a woman working part-time in the public sector has a 20% higher hazard to a second child than an inactive woman. Given the wide range of part-time regulation and provision of public employment across Europe, results indicate that in countries where those positions are more readily available transitions should be faster on average. Spouse's government employment that provides household income stability is critical in Southern Europe where households rely more heavily on men's income. Finally, generous regulations in maternity benefits moderately boost transitions to second births.

As it should become apparent from the empirical analysis in this paper, the positive cross-country relation between female labor force participation and fertility in the OECD since the mid-eighties is "at first sight, paradoxical...but it has a simple explanation. As women enter the labor force, the flexibility of the labor market as well as its ability to generate employment have a determinant role in the number of children families are willing to have. In Scandinavian and Anglo-Saxon countries, work and children are compatible goods "(Boix 1997). Although, the fast entry of women in the labor market has had a depressing effect on family sizes across all the OECD, the impact has been most acute in countries departing from (and still at) relatively lower levels of female activity rates. In countries with high female

participation, and, either flexible employment (and low joblessness), such as the United Kingdom, Netherlands, United States, or large government sectors, such as the Nordic countries, fertility rates are amongst the highest. Rosen (1996) notes that the fact that all growth in employment in Sweden since 1970 to the early 1990s was confined to the local public sector and mostly to women was meant to encourage both fertility and female labor market participation. Results in the paper indicate that France might be moving along the same path. The growth implications of this strategy are controversial and deserve further analysis elsewhere. By contrast, in countries with lower levels of participation, small government sectors and rigid markets have not tapered the uncertainty of young workers in the presence of rampant unemployment and depressed fertility rates toward the unity level.

As women enter the labor force and participation rates across OECD countries slowly converge to the highest levels, work and family will be only compatible in those countries where institutions reduce the uncertainties connected with childbearing. Southern European countries, with laws penalizing part-time employment, need to rethink the long-term consequences of these regulations --in terms of both population decline and the constraints they impose in couple's fertility preferences. Further, policies geared towards full-employment should bring about pro-natalist effects in countries with the lowest fertility rates. It is true that smaller future cohorts in these countries could, in absence of massive migration, lower pressure in labor and housing markets and result in improved economic conditions and potentially a boost in fertility. Nonetheless, they will still be responsible of supporting the increasing burden of generous welfare policies geared toward the elder. Overall, it is apparent that in the near future most European countries will remain significantly below replacement levels.

**APPENDIX.** Employment Ratio by Gender and by Age Group in the Public Sector.

	<b>% Female<sup>a</sup></b>	<b>% Under 30<sup>b</sup></b>	<b>% Under 40<sup>b</sup></b>
<b>Austria</b>			
Central Government	36	13.6	44.8
<b>Finland</b>			
Central Government	45.8	13.71	40.94
Total	60.9	N.A.	N.A.
<b>France</b>			
Central Government	48.9	16.8 <sup>a</sup>	43.5 <sup>a</sup>
Total	58.5	20.7 <sup>a</sup>	47.7 <sup>a</sup>
<b>Germany</b>			
Central Government	21.2	28.6	53.2
Total	50.2	14.1	39.4
<b>Greece</b>			
Central Government	39.3	3.0	24
Total	49.8	N.A.	N.A.
<b>Ireland</b>			
Central Government	50	N.A.	N.A.
<b>Italy</b>			
Total	50.1	N.A.	N.A.
<b>Netherlands</b>			
Central Government	30.5	12.0	43.9
Total	34.5	13.9	38.9
<b>Norway</b>			
State	44	13.35	40.34
<b>Portugal</b>			
Central Government <sup>c</sup>	59.4	14.6	46.1
<b>Sweden</b>			
Central Government	44.6	11.0	33.7
<b>United States</b>			
Federal Government	44.4	4.74	25.92
Total	55.8	N.A.	N.A.

Source: OECD Public Management Service, 2001. a) Data are 1998; b) Data 1999 or 2000; c) Data 1996

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**Table 1** Total Fertility Rates (TFR) across developed countries.

	<b>1975-1980</b>	<b>1985-1990</b>	<b>1995-2000</b>
Austria	1.64	1.45	1.36
Belgium	1.70	1.56	1.60
Denmark	1.68	1.54	1.75
Finland	1.64	1.66	1.74
France	1.86	1.81	1.76
Germany	1.52	1.43	1.34
Greece	2.32	1.53	<b>1.30</b>
Ireland	3.48	2.29	1.90
Italy	1.89	1.39	<b>1.21</b>
Luxembourg	1.51	1.48	1.73
Netherlands	1.60	1.56	1.60
Norway	1.81	1.80	1.85
Portugal	2.41	1.59	1.46
Spain	2.57	1.48	<b>1.19</b>
Sweden	1.66	1.91	1.56
United Kingdom	1.72	1.81	1.70
United States	1.79	1.92	2.05

**Source:** Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2002 Revision*

**Table 2** Ideal number of children in OECD Countries

Country	WOMEN			MEN		
	25-34	35-44	45-54	25-34	35-44	45-54
<i>Europe</i>						
AUT	2.1	2.2	2.1	2.2	2.2	2.2
ITA	2.2	2.2	2.3	2.2	2.2	2.2
NTH	2.6	2.7	2.8	2.4	2.4	2.4
SP	2.3	2.3	2.4	2.3	2.1	2.3
SWE	2.6	2.4	2.5	2.4	2.3	2.5
UK	2.3	2.2	2.2	2.3	2.3	2.1
<b>Europe</b>	2.34	2.38	2.41	2.33	2.33	2.37
<b>Non-Europe</b>	2.48	2.52	2.56	2.44	2.58	2.52
<b>OECD</b>	2.39	2.43	2.46	2.37	2.41	2.42

Source: Author calculations from ISSP 1994.

**Table 3** Youth Unemployment, Long-Term Unemployment and Prevalence of Public Employment and Part Time Employment across European Countries in 1995

	Unemployment		Public Sector <sup>a</sup>	Part-Time	
	% of female under 25 years	% total +12 month	% total employed	% total employed	% female employed
Austria	6.2	27.5	22.5	13.9	26.9
Belgium	23.7	62.4	19.0	13.6	29.8
Denmark	12.3	28.1	30.2	21.6	35.4
Finland	28.1	37.0	23.3	8.2	11.1
France	32.2	42.3	24.6	15.6	28.9
Germany	8.0	48.3	15.5	16.3	33.8
Greece	37.7	51.2	12.2	4.8	8.4
Ireland	17.4	61.4	13.3	12.1	23.1
Italy	37.6	63.6	17.9	6.4	12.7
Luxembourg	7.8	23.2	10.8	7.9	20.3
Netherlands	12.7	46.8	12.0	37.4	67.2
Norway	11.8	26.5	31.2	26.5	46.5
Portugal	17.6	50.9	18.4	7.5	11.6
Spain	49.1	56.9	15.5	7.5	16.6
Sweden	14	15.8	32.1	24.3	40.3
United Kingdom	12.2	43.6	14.2	24.0	44.3

**Source:** *OECD Employment Outlook* OECD (Paris), various issues. Part-Time employment data use national definitions. (a) Data 1994

**Table 4** Estimated Hazard Rates of Time to Second Birth.

	(1)	(2)	(4)
<i>Individual</i>			
Foreign	0.881 (-1.56)	0.843 (-1.81)	0.923 (-0.96)
Non Eu	1.028 (0.25)	1.142 (1.00)	0.969 (-0.28)
Age First Birth	0.963 (-9.44)	0.955 (-9.54)	0.961 (-9.76)
First Boy	1.003 (0.10)	0.969 (-0.79)	0.998 (-0.05)
Married	1.791 (9.53)	1.535 (6.55)	1.935 (10.48)
Living in couple	1.178 (2.08)	0.951 (-0.32)	1.413 (3.71)
Wom. Tertiary Ed.	1.309 (5.70)	1.431 (6.55)	1.192 (3.58)
Wom. Up Second. Ed.	1.152 (3.48)	1.128 (2.62)	1.089 (2.04)
Sp. Tertiary Ed.	1.418 (7.42)	1.306 (4.89)	1.286 (5.21)
Sp. Up Second.Ed.	1.124 (2.86)	1.072 (1.50)	1.045 (1.05)
<i>Employment and Income</i>			
W.working (t-7)	0.687 (-7.76)	0.771 (-3.98)	0.727 (-6.50)
W.Unemp (t-7)	1.013 (0.22)	0.989 (-0.18)	0.993 (-0.12)
Sp.working(t-7)	0.986 (-0.28)	1.039 (0.52)	1.043 (0.82)
Sp. Unemp (t-7)	0.857 (-1.84)	1.036 (0.33)	0.883 (-1.46)
W. ever Unemp +1yr	0.767 (-5.02)	0.767 (-4.74)	0.846 (-3.09)
Sp.ever Unemp +1yr	1.068 (1.14)	0.994 (-0.10)	1.136 (2.12)
W.Public Sec (t-7)	1.229 (3.82)	1.319 (4.53)	1.220 (3.69)
Sp.Public Sec (t-7)	1.079 (1.46)	1.084 (1.45)	1.122 (2.17)
W.Self. Emp (t-7)	1.075 (0.78)	0.969 (-0.31)	1.128 (1.27)
Sp.Self.Emp (t-7)	1.185 (3.21)	1.259 (3.96)	1.262 (4.30)
W.Part T (t-7)	1.450 (6.71)	1.345 (4.70)	1.267 (4.12)
Sp.Part T (t-7)	1.180 (1.04)	1.280 (1.54)	1.080 (0.47)
W. Work Income (t-7)		1.000 (-3.85)	
Sp. Work Income (t-7)		1.000	

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		(4.09)	
<i>Country</i>			
Fem. Unem (t-12)	0.983 (-5.18)	0.989 (-3.22)	0.963 (-2.49)
% Gov Employ (t-12)	1.002 (0.44)	0.991 (-1.63)	0.998 (-0.09)
Maternity Benefit (t-12)	1.022 (8.36)	1.019 (5.21)	0.997 (-0.60)
Log Income per capita (t-12)	1.521 (4.39)	1.649 (4.69)	0.389 (-2.40)
Country dummies	No	No	Yes
Subjects	8041	6488	8041
Failures	3362	2540	3362
Log Likelihood	-27145.1	-19597.1	-27032.4

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**Table 5** Simulated Proportions of Women With Two Children.

Time since first birth	Labor market status since first birth				
	Inactive	Full time private sector	Part time private sector	Full time public sector	Part time public sector
5 years	0.597	0.465	0.596	0.536	0.672
8 years	0.727	0.59	0.726	0.666	0.796

Time since first birth	Long-term unemployment spell after 1989	
	Yes	No
5 years	0.485	0.579
8 years	0.613	0.709

Time since first birth	% Part-time in sector of employment					
	Private Sector			Public sector		
	10%	20%	50%	10%	20%	50%
5 years	0.435	0.482	0.632	0.533	0.568	0.679
8 years	0.558	0.609	0.761	0.662	0.699	0.804

Note: Simulations from results in columns (1) of Tables 4 and 6. All variables, unless specified, are set at the mean.

**Table 6** Estimate Hazard Rates of Time to Second Birth: Additional Controls.

	(1)	(2)	(3)	(4)	(5)
W.Public Sec (t-7)	1.380 (3.82)	1.229 (3.09)	1.303 (4.33)	1.327 (4.61)	1.326 (4.59)
Sp.Public Sec (t-7)	1.083 (1.52)	1.087 (1.40)	1.105 (1.79)	1.083 (1.43)	1.084 (1.44)
W.Pub.S. (t-7) x % PT in Pub S. (t-12)	2.753 (4.50)				
W.Private.S. (t-7) x % PT in Private S. (t-12)	4.057 (7.34)				
W.Pub.Sect (t-7)*France		1.499 (3.27)			
Sp.Pub.Sect (t-7)*France		1.019 (0.13)			
Unemp. Benefits (t-7)			0.900 (-2.65)		
Family Allowances (t-7)			1.684 (11.43)		
W.NoPermanent Cont (t-7)				0.848 (-2.44)	1.076 (0.44)
Sp.NoPermanent Cont (t-7)				1.005 (0.09)	1.258 (1.51)
W. Contract less 1yr. (t-7)					0.767 (-1.52)
Sp. Contract less 1yr. (t-7)					0.788 (-1.51)
Subjects	8041	6488	6488	6488	6488
Failures	3362	2540	2540	2540	2540
Log Likelihood	-27135	-19592.4	-19530.1	-19594.1	-19592

Note: Education, previous birth history, work, unemployment, part time, self-employment, work income (except in 1) and country level variables also included. Robust standard errors adjusted on individuals.

**Table 7** Estimate Hazards Rates of Time to Second Birth: Country Regressions.

	<b>France</b>	<b>UK</b>	<b>Italy</b>	<b>Spain</b>
<i>Spouse Education</i>				
Sp. Tertiary Ed.	1.183 (1.09)	1.103 (0.83)	<b>1.413</b> <b>(1.62)</b>	<b>1.640</b> <b>(2.86)</b>
Sp. Up Second. Ed.	<b>0.673</b> <b>(-2.95)</b>	0.994 (-0.04)	1.106 (0.79)	0.876 (-0.75)
<i>Long Term Unemp.</i>				
W. ever Unemp +1yr	0.810 (-1.36)	<b>1.553</b> <b>(2.11)</b>	<b>0.812</b> <b>(-1.65)</b>	<b>0.756</b> <b>(-1.76)</b>
<i>Public Sector</i>				
W.Public Sec (t-7)	<b>1.540</b> <b>(3.02)</b>	1.122 (0.58)	1.335 (1.36)	1.254 (0.73)
Sp.Public Sec (t-7)	1.093 (0.58)	1.315 (1.57)	<b>1.383</b> <b>(1.98)</b>	<b>1.693</b> <b>(2.59)</b>
% Gov Employ (t-12)	<b>1.847</b> <b>(1.62)</b>	1.085 (1.07)	1.053 (0.25)	0.619 (-0.94)
Subjects	733	877	935	695
Failures	321	377	303	219
Log Likelihood	-1781.18	-2184.07	-1780.3	-1183.24

**Note:** Estimates include all independent variables in Table 4, column 1.

**Table 8** Estimated Hazard Rates of Time to Third Birth.

	(1)	(2)	(3)
<i>Individual</i>			
Foreign	0.851 (-1.11)	0.745 (-1.69)	0.942 (-0.40)
Non Eu	1.345 (1.55)	1.335 (1.23)	1.318 (1.41)
Age First Birth	0.915 (-10.03)	0.915 (-8.33)	0.913 (-10.1)
Two Boys	1.312 (3.63)	1.303 (3.08)	1.327 (3.79)
Two Girls	1.335 (4.02)	1.425 (4.36)	1.378 (4.47)
Months 1 <sup>st</sup> to 2 <sup>nd</sup> child	0.988 (-8.23)	0.985 (-8.04)	0.989 (-7.51)
Married	1.112 (0.98)	0.920 (-0.73)	1.142 (1.23)
Living in couple	1.378 (2.21)	1.540 (1.31)	1.194 (1.08)
Wom. Tertiary Ed.	1.042 (0.47)	1.167 (1.53)	0.962 (-0.44)
Wom. Up Second. Ed.	0.892 (-1.55)	0.920 (-1.04)	0.854 (-2.11)
Sp. Tertiary Ed.	1.406 (4.05)	1.373 (3.29)	1.369 (3.73)
Sp. Up Second.Ed.	1.080 (1.06)	1.036 (0.43)	1.071 (0.92)
<i>Employment and Income</i>			
W.working (t-7)	0.745 (-3.15)	0.850 (-1.37)	0.727 (-3.39)
W.Unemp (t-7)	0.943 (-0.59)	0.937 (-0.61)	0.867 (-1.42)
Sp.working(t-7)	0.946 (-0.62)	1.079 (0.59)	0.947 (-0.59)
Sp. Unemp (t-7)	1.150 (1.02)	1.295 (1.54)	1.039 (0.27)
W. ever Unemp +1yr	0.792 (-2.37)	0.816 (-1.96)	0.869 (-1.41)
Sp. ever Unemp +1yr	1.199 (1.83)	1.188 (1.61)	1.186 (1.66)
W.Public Sec (t-7)	1.339 (2.87)	1.504 (3.57)	1.339 (2.89)
Sp.Public Sec (t-7)	0.984 (-0.17)	0.978 (-0.22)	1.026 (0.26)
W.Part T (t-7)	1.323 (2.67)	1.241 (1.86)	1.200 (1.72)

Sp.Part T (t-7)	0.984 (-0.06)	0.937 (-0.24)	0.870 (-0.54)
W.Self. Emp (t-7)	1.044 (0.24)	0.951 (-0.27)	1.181 (0.94)
Sp.Self.Emp (t-7)	1.281 (2.68)	1.168 (1.46)	1.359 (3.35)
W. Work Income (t-7)		0.999 (-2.42)	
Sp. Work Income (t-7)		0.999 (-1.53)	
<i>Country</i>			
Fem. Unem (t-12)	0.982 (-2.84)	0.980 (-2.98)	0.983 (-0.60)
% Gov Employ (t-12)	1.012 (1.48)	1.011 (1.20)	1.069 (2.42)
Maternity leave (t-12)	0.999 (-0.16)	1.002 (0.27)	0.997 (-0.30)
Log Income per capita (t-12)	2.586 (5.65)	3.217 (6.22)	1.970 (0.93)
Country dummies	No	No	Yes
Subjects	6463	5571	6463
Failures	1075	838	1075
Log Likelihood	-8624.81	-6417.46	-8560.71

Figure 1

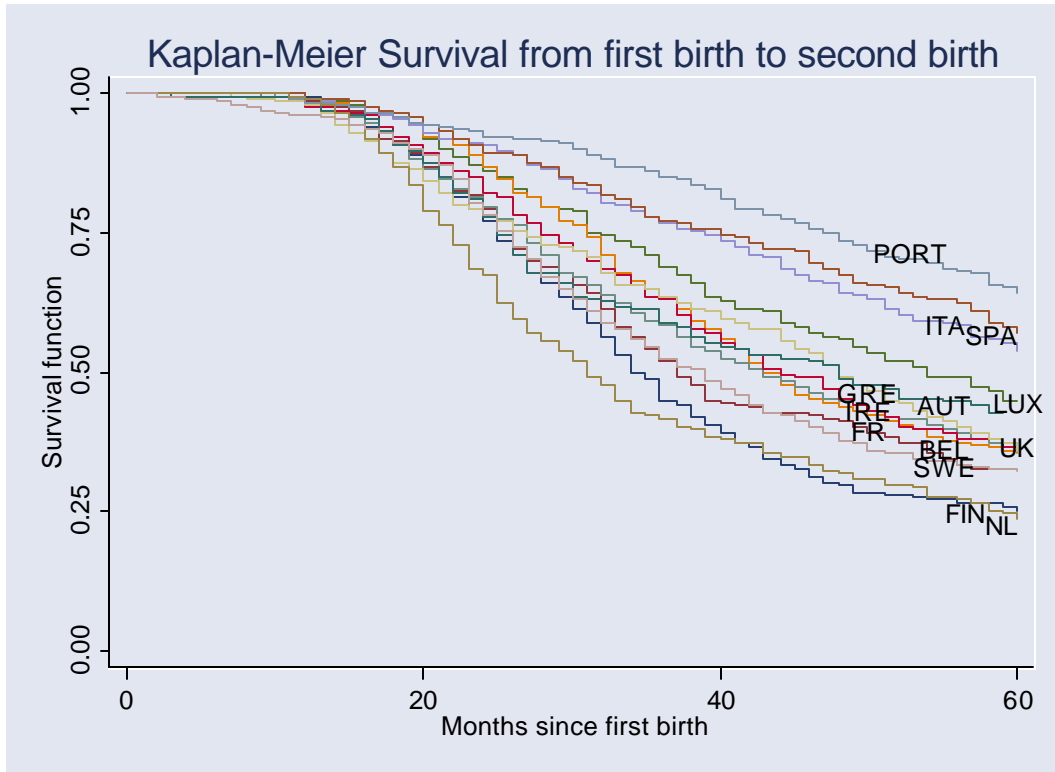


Figure 2. Female Unemployment Rates

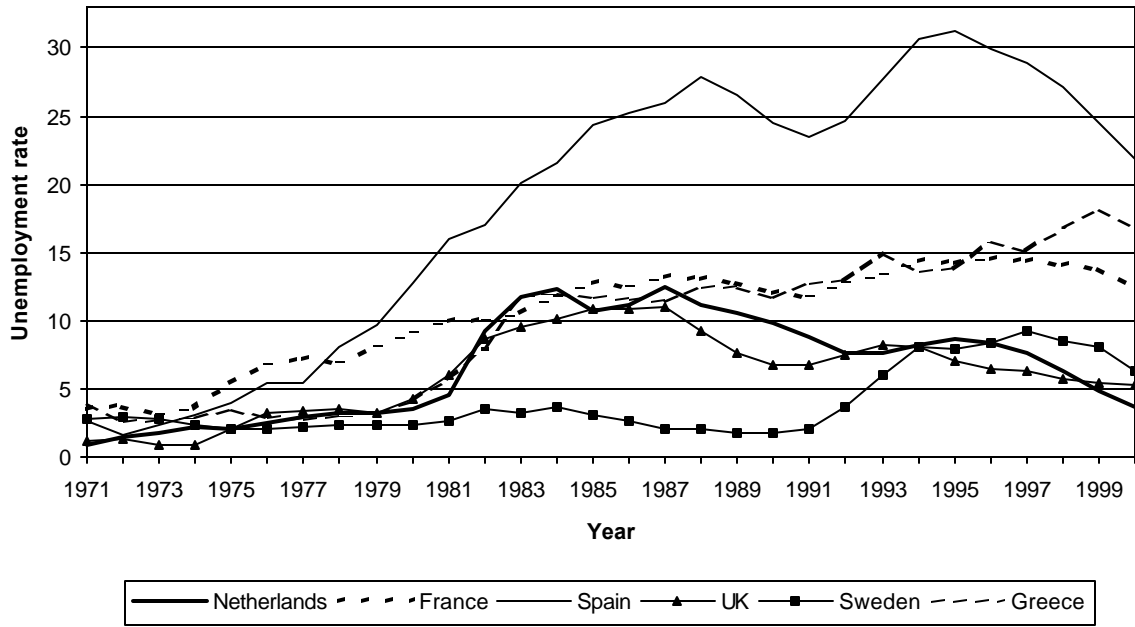


Figure 3 Woman Employment and Hazard to Births

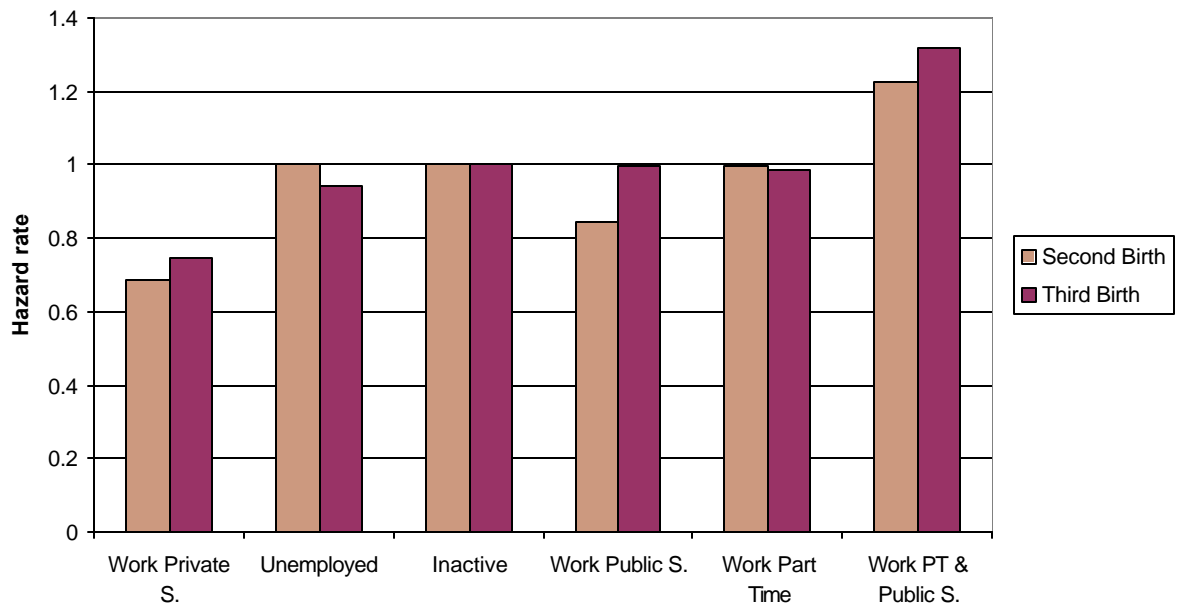


Figure 4 Hazard to Second Birth: Sector of woman's employment and Part Time availability in the sector last year

