Participation and Wage Equations for Married Women in European Countries

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August 2007
Preliminary and Incomplete Please do not quote

Abstract

This paper estimates the participation and the wage equations for married women, in a framework of panel data sample selection using data from the European Community Household Panel (EHCP) corresponding to the wave 1994-2001, for thirteen European countries and explores the difference across-countries in a labor supply contest.

There is a considerable variation in the degree of labor market participation rate of women across countries. The aim of this paper is to estimate the labor force participation equation for married females and explain how the variables such as personal and family characteristics, several source of income of the household and, in some countries, labor status of the husband influence on this equation and contribute to find fundamental differences across counties. We focus our attention on family benefits and family financial conditions.

The woman's labor participation increases with her potential wage and decreases when her non-labor income increases, so we explore the wage equation for females and which variables influence positively on this earn. We estimate the female wage equation in a framework of unbalanced panel data models with sample selection. The wage equations of females have several potential sources of bias so in this paper a panel data estimator, a test for selection bias and a correction procedure are used.

JEL. classification: *J2, J3, C2, C3*

Keywords: *Female participation, labor supply, family benefits, unbalanced panel data*

*we'm grateful to Sergi Jimenez-Martin and Robert Waldman for their encouragement and suggestions. Thanks also to Franco Peracchi, Nick Longford, Olaf Jöurgens for useful comments.

Introduction

Married women's increased participation in the paid labor force was one of the most important social changes in Europe in the twentieth century. The most rapid rise in married women's participation came after 1950 in every country, although at present the intensity of female labor participation varies across European countries. Unobserved characteristics are correlated with observed individual characteristic so in this paper panel data estimator has been used.

The Presidency Conclusions of the European Union Council in Lisbon (March 2000) set a target for female employment rate which is: 57 per cent of the population of working age for the year 2005 and 60 per cent for the year 2010. The targets for total employment are 67 and 70 per cent respectively. Achieving these targets is not mandatory, but the attained rate will be a basis for comparing each country's progress performance.

The literature proposes several explanations for higher female labor force participation, which include an increase in wage rates and educational attainment for women, a reduction of fertility and an increase of divorce rates, but this trend isn't uniform for all countries. The female economic inactivity rates are much more different across European countries and larger than the unemployment rates (see Figures 1 and 2). In Figure 1 we find that the unemployment and the inactivity rates are wider in Mediterranean countries (Spain, Italy, Greece and France) than in Northern countries, while Figure 2 describes the female activity rate, showing how Mediterranean countries are still far from the Lisbon target.

Both employment and participation are influenced by supply and demand factors. Employment may be low because many women don't want to enter the labor market, or participation may be low because too few jobs are being offered to attract women into the labor market. In the first case, low participation rates are explained by women's preferences and in the second by employers' preferences and discouragement on the part of the women. It is very difficult to disentangle these two effects, and it is made more difficult by the effect of wages on the participation and the employment rates.

In the frictionless neoclassical economic model, the participation rate drives the employment rate: employment rates differ across countries because of women's preferences, given technology and wage levels. The countries in our sample have similar technological structures and standards of living, so the differences in the employment and participation rates are more likely due to their institutional structures than to women's preferences.

Table 1 describes the evolution of the employment rate of women from 1960 to 2001 and the distance needed to achieve the Lisbon target. We observe that the female employment rate has increased in every country in the last forty years.

Northern countries tend to have a higher employment rate than Mediterranean countries, although this rule is not true for Belgium, Ireland and Portugal.

This may reflect the substantial difference among the countries' institutions, such as a rigid labor market, a limited opportunities for part-time work and poor benefits for the family. As a consequence, women participate less in the labor market and have fewer children.

In this work we focus on family financial conditions and family benefits and on how these may potentially explain the variation in the employment rate across countries. Recently, we can see how countries with high fertility rate (Finland, Denmark, The Netherlands, etc.) are associated with a high employment rate, contrarily to the past decades, where this correlation was negative (see Table 17 in the appendix). Normally, countries with a high fertility rate have implemented a robust policy in the childcare system (maternity and paternity leave, child benefits) but although if this policy may help women combine work and childbearing, family benefits may give an opposite incentive due the income effect. For example, in Greece, the monthly amount in euro of child benefits are: *1st child: 8.22, 2nd children: 24.65, 3rd children: 55.47, 4th children: 67.38*, while in Germany a woman receives these child benefits: *1st child: 154, 2nd child: 154, 3rd child: 154, 4th and subsequent: 179.*

This paper analyzes the intertemporal labor force participation behavior of married women, using eight longitudinal waves carried out by the European Community Household Panel (ECHP).

We analyzed only 13 E.U. countries in the Panel: Austria, Belgium, Denmark, Finland, France,Germany, Greece, Italy, Ireland, Hollands, Portugal, Spain and The U.K., for which the required information is available. Sweden and Luxembourg are excluded because their data are incomplete and the samples very small.

The sample is reduced to married women born between 1941 − 1965 in the survey 1994 − 2001. The sample comprises data on households and individuals.

This work compares the cross-country labor supply for married women in different countries. Earlier studies have shown that estimating wage equations by the Ordinary Least Squares (OLS) technique may produce bias results due to the heterogeneity, because unobserved characteristics are correlated with observed individual characteristics, so to correct this bias we have used a panel data estimator.

Firstly, we investigate the relationship between the participation decision and some variables such as: women's non-labor income, their education level, the presence of children, experience, the role of the family financial conditions and family benefits, the labor market status of the husband, and explores how these factors explain the differences in the level of participation of married women.

Afterwards, we calculate the female wage equation in a structure of panel

data models with sample selection. Due to the increased availability of longitudinal data and recent theoretical advances, panel data have become usually used in applied work in economics.
The hourly wage is taken from the supporting equation which is a standard Mincer wage equation with independent variables containing experience, experience square and education level. First we assume that there isn't sample selection so we use an OLS estimate. Then we fit the wage equation with the Heckman Model, in a framework of panel data sample selection.

The wage equations of females have the following potential sources of bias: first, unobserved heterogeneity for unobserved worker characteristics (ability). Second, sample selection bias, that occurs if unobservable characteristics, which affect the work decision, are correlated with characteristics that affect the process determining the work. Third, experience is likely to be non-strictly exogenous, even after controlling for heterogeneity and sample selection.

The paper is organized as follows. In section 1 we discuss the data set used in the analysis and we describe the intertemporal participation behavior and demographic characteristics. Section 2 describes the econometric method used to estimate the participation equation of married females. This method includes the personal and family characteristics of married women and the effect of husband's labor market status on the women's labor supply. In Section 3 we estimate the participation equation and the wage equation for married women, testing for selection bias and using a correction procedure for this bias, as proposed by Wooldridge-Semikina (2006).

There is a extensive literature on married women's labor force participation (see Killingsworth and Heckman (1986), Blundell and MaCardy (1999)) but few works have compared the thirteen European countries, in a framework of panel data for eight years. To estimate the participation equation we follow the work of Jimenez and Borrego (1997), who compare countries' data set carried out from the CHER (Consortium of Household European Data) and where they estimate the participation and wage equation for only three years with a two-step Heckman model.

The literature that estimates the wage equation and problems related to heterogeneity and relativity under the assumption of strictly exogenous explanatory variables is minimum and relatively recent. Verbeek and Nijman (1992) proposed two tests for selection in panel data.

Wooldridge (1995) proposed a test to correct the selection bias that occurs when unobserved effects are correlated with explanatory variables. Kyriazidou (1997) proposed a semiparametric approach for correcting the selection bias. Both the selection term and the unobserved effect are removed by difference between two periods. Rochina and Dustmann (2000) take into account that the non-strict exogeneity of regressors can be violated.

1 Sample characteristics

Data

The data analyzed in this work come from a survey by the European Community Household Panel (ECHP), a multi-country annual longitudinal survey which collected data since 1994[1] in 15 European Union Member States under the coordination of EUROSTAT (Statistical Office of the European Communities).

The data set covers about 130,000 individuals from 60,000 households in the fifteen countries which were EU members in 2000, reflecting population changes over time through a continuous evolution of the sample. The panel data cover a wide range of subjects such as demographics, labor force behavior, income, health, education and training, housing, poverty and social exclusion, etc. The survey is structured in the form of annual interviews with a particular representative sample of household members in each country. Interviews are conducted following a standardized questionnaire, although each country can modify the questionnaire's wording to some extent, to reflect their own institutional arrangements.

The sample is constructed as an unbalanced panel of all women between the ages of 25 and 55 years, who are married with or without children, and who are old enough to have finished their formal education and too young to retire. The size of this sample varies across the countries.

The variables refer to the personal characteristic of the individual (age, work experience, education, etc) and household income family (family income, family benefits, number of people in the house etc). Income, family and disability benefits are deflated local currency units.

Information on their husbands has also been extracted (including labor status, education and unemployment benefit if received). The definition of each variable used in estimates is listed in Table 17.

In Table 2 we present the estimate of the labor force participation rate of married women in $1994-2000$ calculated by dividing the number of economically active women (at work or seeking a work) by their total number. There is a large difference between Mediterranean European countries and Scandinavian countries like Finland and Denmark. The range varies from 50% for the first group to 90% for the second group, this may be caused by substantial differences in the organization of the welfare state. In the last two years the rate has been reduced for most of the countries, while Europe was in a recession. Ireland seems to be an exception because its employment rate is more similar to the Mediterranean countries, which can

[1] Belgium, Germany, Hollands, The U.K., Denmark, France, Greece, Ireland, Portugal, Italy and Spain started in 1994 (wave 1), Austria jointed in 1995 (wave 2), Finland joined in 1996 (wave 3).

be interpreted as the result of cultural differences. Another exception is Portugal where the female participation rate is very high.

Descriptive Statistics

Table 3 presents descriptive statistics on a selection of variables of interest, by country, for the whole sample of married women (total married women aged 25–55), while in Table 4 we compiled the summary statistics for a subsample (women in the labor market excluding self-employed) in the year 2001.

The data demonstrate large differences in female and male education levels among countries, mainly at second and tertiary level of school (from 13% of graduates in Portugal to 45% in Finland for females). The number of males with tertiary level of school is higher than the number of women with the same level of school, while the number of male with first level of school is greater in Mediterranean countries.

Concerning the subsample of employed married women, some of the averages are quite different (although these differences are not statistically significant) from the whole sample. In particular, we observe a higher percentage of active women with a university degree and a few dependent children. The family benefits that include Child Benefits and Lone Parent Allowance (*familybenef*) are very small for Greece, Spain and Italy, both in the subsample and in the full sample, while the amount of unemployment benefits for their husbands are small for Italy, Greece and the U.K. but very high for Spain. The same trend is followed by the total disability benefits in the household, except for the U.K.

All variables of income are measured in local currency units deflated by the average exchange rate in the sample year, and we take their logarithm.[2].

From Table 5 to Table 11 we compare the sample characteristics of women for which we consider the work activity status during the sample period (1994 – 2001) for each country. Given the large number of possible participation sequences during the panel, we choose only four of them.

In each table we have the descriptive characteristics of women for the full sample, for women who worked in each year (column 1, the participation sequence is 11111111), for women who never worked (column 2, sequence 00000000), for women who had only a single transition from nonemployment to employment (column 3, sequences 11111110, 01111111,.....), for women who had only a single transition from employment to nonemployment (column 4, sequences 00000001, 10000000,....) and in the last column for women who have more than one transition in participation to the labor market.
In all countries women who always worked, and so with more experience,

[2]For France and Austria the wage and the unemployed benefit are in gross amount, we use the net/gross ratio

tend to be better educated and older, except for Finland where the maximum grade of education is higher for all other sequences, and for France where it is greater for females who never worked. In general we observe that women who have worked for eight years have more children under age twelve and fewer dependent children, and that their household income is lower than women's who never worked, with the exception of the Mediterranean countries (Italy, Portugal, Greece and Spain).

Family benefits are higher for women who don't have experience in the labor market (Denmark and Greece are the exception), while the disability benefits paid to the family are greater for women who work except in Italy, Portugal and the U.K.

Regarding the level of education of their husbands, we note it's higher in the sample of women that worked every year, except for France and Ireland where we have the inverse, while for Italy husband's education is in general lower than wives education.

Below each table, we've calculated the distribution of years that women spent in employment by country, and the average rate of participation (*partic*). This analysis illustrates a significant persistence in employment decisions of married women (full sample) observed annually. For example: if we take the individual employment of Germany in an independent context from a binomial distribution with fixed probability of 69,59% (the average participation during the period) we conclude that the 70% of the women in the sample would be expected to work each year and 30% would not. Compared this with the distribution of the work years, we find that the sample relative frequencies of women are 28% and 6% respectively. There is a considerable difference in the work propensity of women if we compare the frequency distribution of work years and the participation sequence. This heterogeneity is observable in the different levels of education, age, non-labor income, number of children, and in the policy that each government implements for female labor supply.

2 The Model

Female Participation equation

The participation equation is a discrete choice model, where the probability to participate (*pi*) is different for each individual and depends on the individual and household characteristics.

$$p_i = \Phi(X_{it})$$

where the $\Phi(X_{it})$ is the cumulative distribution of the standard normal. The participation equation can be written as:

$$q^*_{it} = a_i + \beta X_{it} + v_{it} \tag{1}$$

$$\mathbf{q_{it}} = 1[q^*_{it} \geq 0] \tag{2}$$

we need to calculate the marginal partial effect for a unit of change in a particulary explanatory variable X_{it}, because the coefficients estimates in equation 1 are not directly provided by this information.

The marginal effects are computed in the following expression:

$$\partial_i = d\Phi(X_{it})/d(X_{it}) = \phi(X_{it})\beta \tag{3}$$

Where $\phi(\cdot)$ is the density of standard normal distribution.

Female wage equation

To analyze the wage equation we need a model for selection bias. The Heckman bivariate normal selection model represents the classic way for dealing with selection on unobservable variables. The selection on unobservable occurs when the error term in the outcome equation is correlated with the treatment, or with the selection into the sample being used for estimation.

Starting with the Heckman model, we apply it to panel data because the sample selectivity is an acute problem in panel data and in cross section when we want to study the labor supply.

The bivariate normal selection model was developed in a context for estimating a population wage equation when only wage information on workers is observed (Gronau 1974 and Heckman 1976).

The difference between workers and non-workers determines the sample selection bias because some components of the work decision are relevant to the wage determining the process and the unobservable characteristics that affect the work decision and the wage.

The usual setup is as follows. We have the wage equation:

$$W = \beta' X_i + \varepsilon_i \tag{4}$$

where W is the hourly wage and is observed only for workers, X are observed variables related to productivity and ε_i is the error term that includes all unobserved determinants of wages; it does not matter whether X is observed for just workers or for everyone, as this information will only be used for workers. A reduced form employment equation is given by

$$\varpi^*_i = Z_i\gamma + \mu_i \tag{5}$$

where ϖ^* is a latent index that can be thought of as representing the difference between the observed wage and the reservation wage, that is the lowest wage at which the individual is willing to accept employment. ϖ_i is only observable and equal to 1 if $\varpi_i^* > 0$, where ϖ_i is an indicator variable for employment.

The Heckman model requires the following assumptions:

(a) $(\varepsilon, \mu) \sim N(0, 0, \sigma_\varepsilon^2, \sigma_\mu^2, \rho_{\varepsilon\mu})$;

(b) (ε, μ) is independent of X and Z;

(c) $var\mu = \sigma_\mu^2 = 1$

The first assumption represents a very strong functional form assumption -namely joint normality of the distribution of the error terms in the participation and outcome equations. The second equation assumes that both error terms are independent of both sets of observable variables. The final assumption is the standard normalization for the probit selection equation, which is identified only up to scale. Now if we take the expectations of the wage equation conditional on working we have

$$E(W_i|\varpi_i, X_i) = E(W_i|Z_i, X_i, \mu_i) = \beta X_i + E(\varepsilon_i|Z_i, X_i, \mu_i) \quad (6)$$

The first equality just recognizes the fact that the variables determining employment in this model are Z and μ. The second equality comes from the fact that the expected value of X given X is just X. The final term can be simplified by noting that selection into employment does not depend on X, only on Z and μ, so we have:

$$E(W_i|\varpi_i, X_i) = \beta X_i + E(\varepsilon_i|\varpi_i = 1) = \beta X_i + E(\varepsilon_i|\mu_i > -Z_i\gamma) \quad (7)$$

Thus, if we estimate the model using only data about workers, we do not get the population wage equation, but rather something else. As a result of this term, the OLS estimation on a sample of workers generally provides inconsistent estimates of the parameters of the population wage (or outcome) equation.

The first method to solve the problem of sample selection was proposed by Heckman in 1974 by a maximum likelihood estimator. With the assumption that ε_i and μi are i.i.d., $N(0, \sum)$, where $\sum$ is a variance matrix covariance for the errors, and (ε_i, μ_i) are independent of Z_i, we write the maximum likelihood as:

$$L = \frac{1}{N}\sum_i^N \{E_i * \ln[\int_{-Z_i\gamma}^{\infty} \phi_\varepsilon\mu(W - X_i\beta, \mu)d\mu]$$
$$+(1 - \varpi_i) * [\ln \int_{-Z_i\gamma}^{\infty} \int_{-\infty}^{\infty} \phi_{\varepsilon\mu}(\varepsilon, \mu)d\mu]$$

where $\phi_\varepsilon\mu$ represents the probability density function for a bivariate normal distribution. The previous expression is more similar to the Tobit estimator of type II. If $\phi_{\varepsilon\mu} = 0$ then the last equation is reduced to product of two marginal likelihoods.

The second method for estimating the bivariate normal selection model is that due to Heckman in 1979, it is often called the "Heckman two-step".

The first step of the two-step approach estimates a probit model of participation. The estimate of γ from this probit model is then used to construct consistent estimates of the the inverse Mills ratio term:

$$\lambda_{\mathbf{i}}(\mathbf{Z_i}\gamma) = \frac{\phi(Z_i\gamma)}{\Phi(Z_i\gamma)}; \tag{8}$$

where $\phi(\cdot)$ and $\Phi(\cdot)$, denote the probability density and cumulative distribution functions of the standard normal distribution. In the second stage, the outcome equation is estimated by OLS, where the equation wage includes both the original X and the constructed value of inverse Mills ratio.

$$W = \beta' X_i + \varepsilon_i + \nu\lambda_i \tag{9}$$

The inverse Mills ratio is sometimes called a "control function", a function that controls for selection bias (Heckman and Robb, 1985). With the inverse Mills ratio included, and under the assumptions noted above, the coefficients on the X represent consistent estimates of the parameters of the population wage equation. The coefficient on the inverse Mills ratio term estimates $\rho\sigma_\varepsilon$. Since $\sigma_\varepsilon > 0$ by definition, the sign of this coefficient is the same as the sign of ρ. The sign of ρ is often substantively useful information, as it indicates the correlation between the unobservable in the selection and outcome equations. The standard t-test of the null hypothesis that $\beta_\lambda = 0$ is a test of the null that there is no selection bias, conditional on the assumptions of the model.

The bivariate normal selection model is formally identified even if X = Z.

The identification comes from the non-linearity of the inverse Mills ratio. A model that simply included the predicted probability of participation from a linear probability model into the outcome equation would not be identified. However, the X = Z case often results in substantial collinearity between the predicted inverse Mills ratio term and the remaining covariates in the outcome equation. This will be especially strong when there is not much variation in the predicted participation probabilities, because then the non-linearities will not play a major role. This collinearity will, as always, lead to large standard errors. More generally, a large Monte Carlo literature illustrates the poor performance of the bivariate normal model with no exclusion restriction in finite samples. The exclusion restriction here is a variable that belongs in the participation equation but not in the outcome equation. In other words, it is an instrument.

Panel data sample selection

Sample selection is more frequently used in studies for cross-section and less common to estimate with panel data. Maddala (1993) defines panel data as data sets on the same individual for different period of time.

The observation in panel data has two dimensions: a cross-section dimension indicated by i and a time series time dimension indicated by t. Panel data have some benefits as: control for individual heterogeneity, less collinearity among variables, more variability, large numbers of available instruments, study for dynamics of adjustment etc. Limitations of panel data are a problem for nonresponse, attrition, measurement of errors, design and data collection problem etc.

More panels are incomplete, especially when the panel concerns the household, because some of them move outside the panel for different causes. In this case the panel is called unbalanced. More forms of selection bias and heterogeneity present in the panel data are eliminated by the fixed effects estimator under the assumption of strictly exogenous explanatory variables(see Verbeek and Nijman 1992). Recent papers have introduced some endogenous regressor as explanatory variables with selection bias and source of heterogeneity in equation of interest.

Consider the following model:

$$w_i t = x_{it}\beta + \gamma_i + \mu_{it} \tag{10}$$

$$\varpi^*_{it} = Z_{it}\gamma + \alpha_i + \varepsilon_{it} \tag{11}$$

$$\varpi_{it} = 1 \ if \ \varpi^*_{it} > 0 \tag{12}$$

where i, (i=1,......,N) denotes the individual and t,(1,....,T) denotes the panel. The dependent variable in the primary equation, $w_i t$, is only observed if $\varpi^*_{it} > 0$, so selection bias is introduced. The errors are decomposed in individual effects (α_i, γ_i), and idiosyncratic errors $(\varepsilon_{it}, \mu_{it})$, while x_{it} is a $1xK$ vector that may contain both exogenous and endogenous explanatory variables and β is a $Kx1$ vector of unknown parameters. We allowed a correlation between the unobserved effects and the regressor, and some of the elements of x_{it} are correlated with the idiosyncratic errors ε_{it}.

Given the distributional assumptions, it's possible to estimate the unbalanced panel data about a Heckman model for panel data and a two-stage least squares regression model ($2SLS$) if we have an endogenous regressor. These are methods of extended regression to cover models which violate ordinary least squares (OLS) regression's assumption of recursively, specifically models where the researcher must assume that the disturbance term of the dependent variable is correlated with the cause of the independent variable.

If there exists a correlation between the regressor and the idiosyncratic errors we assume a set of instruments denoted as z_{it} that are strictly exogenous on γ_i and not correlated with μ_{it}. We use these instruments in the first stage of 2SLS to create the new variables (called instrumental variables) which replace the problematic causal variables. The instruments are the exogenous variables with direct or indirect causal paths to the problematic causal variable but which have no direct causal path to the endogenous variable whose disturbance term is correlated with that of the problematic causal variable. We use this estimation when we accept that the potential experience is endogenous.

We can try to estimate with 2SLS technique, but the results are not coherent, because our *experience* variable is calculated as the difference between the age and the age when starting the first job.

To test the sample selection we start with the model of Mundlak (1978), where if there is a correlation in the selection equation between the individual α_i and Z_i, we need a set of individual exogenous instruments ξz_i, so α_i can be written as:

$$\alpha_i = \eta + \xi_i \bar{z}_i + f_i \tag{13}$$

where $\bar{z}_i$ is a vector of individual exogenous variables averaged across period time t. The selection indicator ϖ_i is rewritten as:

$$\varpi_{it} = 1[Z_{it}\gamma + \xi_i \bar{z}_i + \upsilon_{it} > 0] \tag{14}$$

where $\upsilon_{it} = fi_i + \epsilon_{it}$ has zero means normal distribution.

If $E(\upsilon_{it}|\mu_{it})$ is linear, then we have:

$$E(\mu_{it}|z_i, \gamma_i, \varpi_i) = \rho E(\upsilon_{it}|z_i, \varpi_{it}) \tag{15}$$

and the wage equation becomes:

$$w_{it} = x_{it}\beta + \gamma_i + \rho E(\upsilon_{it}|z_i, \varpi_{it}) + e_{it} \tag{16}$$

where e_{it} is an idiosyncratic error term uncorrelated with the regressor, the unobserved effect and the selection indicator. If ϖ_{it} is equal to one, using a probit estimation at each period t we obtain the estimation of $E(\upsilon_{it}|z_i, \varpi_{it} = 1)$ that is equal to $\lambda(\eta + \xi_i \bar{z}_i + Z_{it}\gamma)$, where $\lambda(\cdot)$ is the inverse Mills ratio. We put the estimation of $\hat{\lambda}_{it}$, in the wage equation and estimate this with a simple regression model or with the $2SLS$ model if we have endogenous regressor. We use t-statistic for testing the null hypothesis $H_0 : \rho = 0$.

To add more flexibility to the model it's possible to calculate the interaction terms to λ with time dummies and test the selection with a Wald test. This procedure for correcting the bias and the inverse Mills ratio is a consistent estimator of the parameters.

If the null hypothesis is true, so there isn't selection, then OLS has a consistent estimator for the primary equation provided there aren't endogenous variables. We applied this procedure to estimate the wage equation for married women in the ECHP.

3 Empirical estimates

Female participation equation

Given the panel structure of data set, we start analyzing the determinants of the equation participation of married women. We estimate this equation with a probit random effects model for panel data, because if we try to estimate the probit with fixed effects we have serious problems due to the large number of incidental parameters that make the estimator inconsistent, but a large T can solve this problem (see Arellano-Hanhn, 2006). The participation equation was written before as:

$$q^*_{it} = a_i + \beta X_{it} + \tau_i + v_{it} \tag{17}$$

$$\mathbf{q_{it}} = 1[q^*_{it} \geq 0] \tag{18}$$

where $q_{it}(active)$, is a dummy variable which takes 1 if the woman participates in labor market and 0 if she doesn't. We excluded self-employed married women. The participation equation, q^*_{it}, is positive only if the dummy variable (eq. 9) equals one. The decision to participate depends on a vector of explanatory variables X_{it}. This vector includes the personal and family characteristics of the woman: age, education, children, family benefits[3], household income without her wage income, and the characteristic of her husband (status of work, education and if he receives unemployed benefits); β is a vector of unknown parameters and τ_i and v_{it} are respectively time invariant effects specific to individual and individual time-varying error.

Tables 12 and 13 display the estimations of the panel probit participation equation and the marginal effects for the probit analysis for each country.

The explanatory variables are divided into three blocks. The first set of variables contains personal characteristics such as age (*age*), the square of age (*age*two), the woman education and the husband's education.

The sign of *age* is positive and significant in all countries, while *agetwo* in each country is negative and significant, which means that the relation between age and female labor force participation decreases with age. Probably the participation increases until women assume more family responsibilities.

[3]Family benefits include maternity leave. This involved a source of endogeneity when we want to estimate the participation equation, so we have excluded married women with children whose age is less than 1 year. We have to estimate the participation equation using an economic indicator as % GDP that each country spent for family allowance, and we have obtained the same results.

Concerning education, we find that the propensity to participate in the labor market increases with the level of education for females at the second and third levels which are statistically significant in most countries. Taking primary or lower education as a reference, having a secondary or tertiary degree increases, on average, the propensity to participate respectively about 13% and 30% in all countries. These effects are particularly larger in Italy, Greece, Portugal, Austria and Spain. Given this estimation, if we look at Table 13, we find that women who have a university degree relative to a primary degree, increase their probability to participate in the labor market to 28% for Greece and 20% for Spain.

On the other hand, the husband's schooling, *Husband secondary and tertiary education* is significant in a few countries, especially in Southern countries, so we can observe that women labor market participation generally grows if the husband has secondary or university studies compared with the reference category (primary studies).

The second block of variables describe the fertility of women. We construct the variables for children *children age 0-3*, *children age 3-6* and *children age 6-12*, which are dummy variables that take 1 if women have children with age under three, six and twelve years respectively. The results show that the coefficients are significant and their sign in all countries is negative for women that have children younger than three years so women who have dependent children reduce their participation to work. Having children with age between 3 and 6 years doesn't have a negative effect in the participation into the labor market for married women in some countries (Denmark, Finland, Portugal etc). The explanation to this fact is found in the important role that plays the policy of childcare in these countries, which could be very important to explain the participation of women across countries. Finally, the effect of older children is not significant for most countries and generally positive.

The third set of variables represent different sources of income in the household: the total non-labor income in the house where the employment wife's income has been excluded (*Logincome*), the disability benefits (*Disabilitybenef*), the family benefits (*Familybenef*) and a dummy variable representing if the husbands receive or not unemployment benefits (*Unemplobenef*). All income variables are deflated with CPI (Consumer price index) so a comparison among years is possible, and at the same time we use the PPP (Purchasing price power) that allows a comparison among countries.

Our estimates show that the coefficients of these variables are significant and have the expected signs in several countries. The woman's labor participation decreases when her non-labor income increases and when benefits in the household increase.

When we check the data we observe there is a negative income effect on married women's labor participation. All the income variables are significant for all European countries. The effect is larger for the household income than for the family benefits and disability benefits, so we may interpret that other sources of income have more influence in the participation as could be the wage of husbands. We find a higher effect of household income in Germany, Denmark and Finland, which are precisely those countries with highest female participation rate and better family financial conditions.

Regarding the family benefits, these may explain part of the difference in the employment rate across countries. In the year 2000, cash family benefits are distributed differently between Member States of Europe. In Figure 3 we see how the average *per capita* (age 0–19) of *family /child* benefits is around 70% in European countries. The level of *per capita* cash benefits depends on the national legislation (see Figure 4 in the appendix). The age limit to receive these benefits ranges from 16 years old in Ireland and Portugal to 20 years old in France. The family allowance for child is less favorable for Southern European countries.

The family benefits effect is large for Germany, Italy, Ireland, Spain, France, Austria, U.K. and The Netherlands where the percentage of cash benefits is very high and the conditions to obtain the benefit are more o less similar.

Having an unemployed husband who receives benefits doesn't encourage women to participate in the labor market because the sign of the coefficients is negative and significant especially for Northern countries.

Women's wage equation

Now we estimate the wage equation with panel data sample selection, with three different models, OLS and Heckman two step for panel data.

When we want to estimate the wage equation for married women we face different problems: selection bias, heterogeneity and eventually endogeneity.

We have selection bias because the dependent variable of the wage equation can be measured only if the individual participates to the labor market. The literature offers estimators for correcting this problem (Heckman 1979, Powell 1994).

Heterogeneity is associated with the unobserved ability and motivation of an individual (e.g. education), and if this unobserved individual effects are correlated with the regressor of the model, the simple estimations with OLS are inconsistent, while panel data solve this problem.

We have pooled all the observations for the different countries, and allowed the coefficients to vary among countries both in the hourly wage equation and in the selection (participation) equation.

After testing the selection equation described in section 2, to estimate the hourly wage equation 14 we calculate a probit on the selection participation equation for each year and we take the inverse Mill's ratio and put it in the wage equation. We estimate this equation by OLS, Heckman and $2SLS$

models. In particular, some variables appear in the selection equation, yet they do not appear in the hourly wage equation, so we have:

$$w_{it} = x_{it}\beta + \gamma_i + \hat{\lambda}_{it} + e_{it} \tag{19}$$

This equation is analyzed on a sample that is limited for married women born between 1941–1965, excluding those self-employed. We've dropped observations that are inconsistent, and excluded women when the years of experience exceeds the age, when experience was missing, and when they report a positive number of hours of work and zero wage.

The dependent variable w_{it} is the logarithm of the real hourly wage of married women. The vector of explanatory variables x_{it} includes time dummies, experience and experience square, tenure, tenure square and education of women in two different levels. The experience has been calculated as the difference between the present age and the age when starting the first job.[4]. More papers use the actual experience but for the ECHP data set we can't observe any variables to calculate this, and we observe only potential experience.

We use both participants and non-participants married women to estimate the selection equation, while to estimate the wage equation we only use married women that participate to the labor market for at least two waves.

Furthermore, in few countries some variables were dropped for estimation because they were perfect predictors of one of the two alternatives.

In Table 14 and 15 we represent the estimation of the wage equation using the OLS regression model, where there isn't correction for sample selection and endogeneity, and the Heckman model for panel data selection, where we put in the regression equation the inverse Mill's ratio, calculated each year with a probit model ($_t$), to correct the sample selection and where all regressors are considerate exogenous.

The results confirm that the Heckman model for panel data is an appropriate model to estimate the wage equation. First, not all variables that affect the participation equation are also determinant to estimate the wage equation, and the magnitude of the effects is different. In Table 15 we report the selectivity correction term λ_{it} and the interaction terms between lambda and dummies for time $_t$. We can see that the lambda terms are significant and sometimes negatively signed in most countries, which suggests that the error terms in the selection and primary equations are negatively correlated with the coefficient on lambda ($\rho_{eu}\sigma_u$), which means (unobserved) factors that make participation more likely tend to be associated with lower reservation wages.

[4]Similar regressions were also computed using experience calculated by age minus year schooling minus 6. The results do not vary with the measure of experience.

Concerning the experience variable, the effect is more different between the OLS and the Heckman models applied to panel data. The OLS model tends to overestimate the coefficients . The experience has a positive and significant effect for all European countries on the hourly wage equation, except for France. This effect is large and strongly significant for the U.K., Ireland, Spain, Italy and Portugal. The square of the experience is negative and significant for both models in each country, which means that the relation between the experience and the wage is the same after a high number of years of experience.

Regarding the effect of education we find that both models give the same results: a higher education level increases the wage in several countries and the sign is statistically significant. The estimated coefficients are significantly larger in the Heckman model than in the OLS estimation, indicating that the selection bias down the wage returns to experience in the OLS model. The low level of education has a negative effect and significant on the wage for both estimations.

The magnitude of the effect of each variable is different across-countries in the Heckman model. In northern countries education has a smaller effect than in Mediterranean countries. The effect of tertiary education is very large for Spain, Italy, the U. K., Austria, Portugal, while in the rest of the countries the magnitude is lower. Having a primary education influences negatively the wage while the effect is reduced for countries with a high female employment rate.

Our results to estimate participation equation and wage equation appear in line with previous work by Mroz(1987) and others.

Conclusion

In this paper we first analyze the participation in labor market for married women in thirteen countries in Europe for a panel of eight years. We found that the level of education has a positive influence on the participation, and women who have a university degree participate more in the labor market. This effect is especially strong for Mediterranean countries.

Variables that influence negatively the labor market of females are: the household income, children, in particular dependent children, family and disability benefits. Women who receive family benefits tend not to entry in the labor market. These results mean that the economic policy plays an important role for increasing the participation equation, for example a nursery development provides women with more time to dedicate to the labor market. Another way to indirectly increase the participation rate of females is to avoid the negative income effect, for example to transfer the family benefits not in form of lump sum or tax benefits but in form of goods or "baby tickets" (money to be spent only for children). The targets imposed in the Presidency Conclusions of the European Union Council in Lisbon, in March 2000, are far away for most Southern countries.

Concerning the wage equation,we confirm the need to control for sample selection bias (as shown by the fact that the inverse of the Mills' ratio appears to be significant).

We find important differences among countries in the effect on the hourly wages, both the experience and a higher level of education have a positive effect on it, while a low level of education has a negative effect in most countries. An elevate hourly wage increases the desire of women to participate in the labor market.

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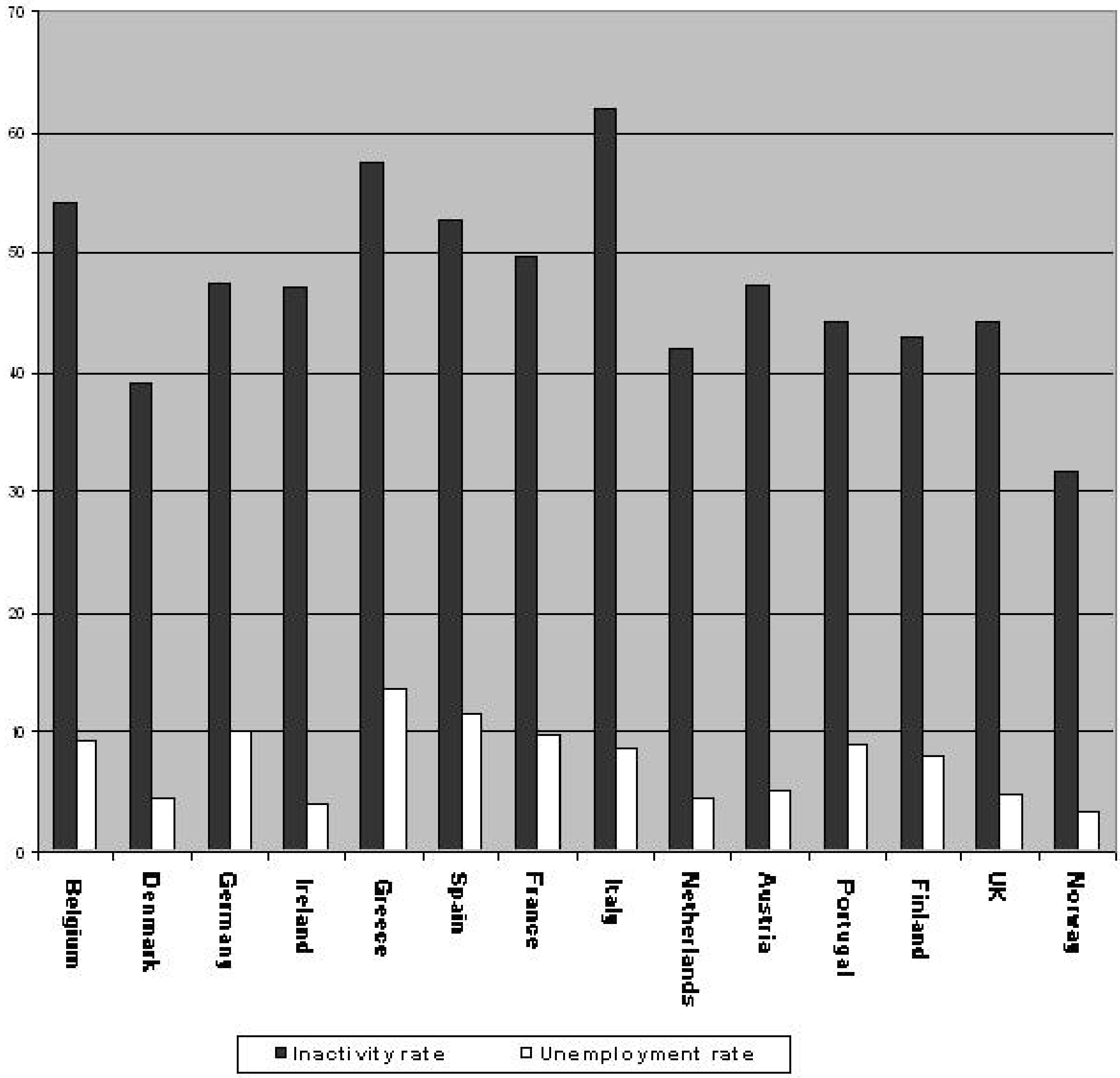
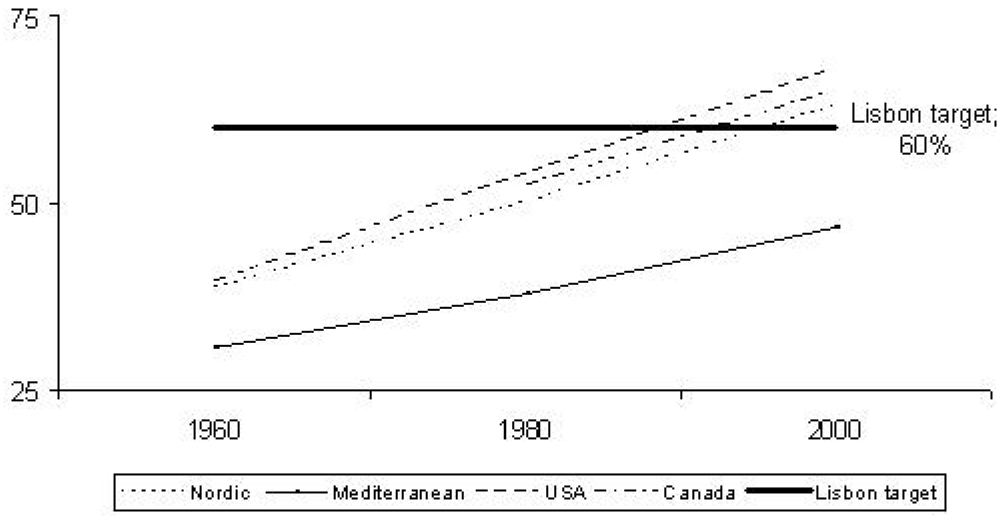
Figure 1: **Female inactivity and unemployment rates as per cent of population of working age, 2006**



Source: EUROSTAT

Figure 2: **Female activity rate in Northern and Mediterranean Countries**



Source: OECD

Table 1: **Female employment rate 1960 – 2000. Persons aged 15 to 64 years**

Country	1960	1980	2000	Men 2000	Lisbon Distance (a)
Denmark	42,70	66,20	71,20	80,40	11,20
Finland	54,90	65,00	64,30	69,70	4,30
Norway	26,10	58,40	73,40	88,10	13,40
Sweden	38,10	67,60	72,10	76,20	12,10
U.K.	43,10	54,50	65,20	79,30	5,20
Belgium	29,60	35,00	51,10	69,80	-8,90
Germany	35,00	34,80	58,10	73,50	-1,90
Ireland	-	32,20	52,20	74,00	-7,80
Holland	-	35,70	62,10	81,10	2,10
Austria	-	53,40	59,30	78,10	-0,70
Greece	-	30,70	40,40	70,20	-19,60
Italy	28,10	33,20	39,70	68,50	-20,30
Spain	21,00	28,40	40,30	70,30	-19,70
Portugal	-	47,10	60,10	75,90	0,10
France	42,90	50,00	53,10	69,80	-8,90

(a) Lisbon distance is the percentage difference between the female employment rate in 2000 and 60% (b) source OECD 2000

Table 2: **Married women employment rate 1994-2001, ECHP data by country**

Country	1994	1995	1996	1997	1998	1999	2000	2001
Germany	68,01	66,52	65,88	65,43	66,02	64,79	64,02	63,80
Denmark	89,61	89,90	86,35	87,10	86,33	86,25	85,01	84,69
Holland	56,23	64,93	58,53	58,19	59,46	57,21	56,38	57,47
Belgium	70,41	70,63	70,64	69,19	67,71	66,55	64,50	65,61
France	64,31	66,52	65,81	63,77	63,91	64,12	62,79	61,69
U.K.	64,27	63,97	65,29	65,55	64,31	63,15	63,40	60,87
Ireland	32,99	34,47	36,31	39,64	41,46	43,33	45,87	43,62
Italy	40,79	40,49	39,31	39,91	39,16	39,25	37,16	37,47
Greece	38,39	38,40	36,16	35,84	34,99	30,89	32,41	31,26
Spain	34,51	36,56	37,68	37,28	37,28	35,87	36,62	38,23
Portugal	59,95	58,49	58,52	57,87	57,62	57,88	55,80	55,26
Austria	-	51,61	52,20	50,33	50,50	49,63	49,88	49,51
Finland	-	-	86,71	86,39	84,18	84,17	83,95	80,70

Table 3: **Summary statistics of whole sample**

Country	n.obs	age	female secondary education	female tertiary education	children age 6-12	children age 3-6	children age 0-3	adulthou	login-come	disability-benef	family-benef	work status	husband secondary education	husband tertiary education	unemploy-benef
Germany	*1203*	46,55	0,57	0,18	0,17	0,04	0,01	2,56	10,67	0,30	4,74	0,85	0,56	0,33	0,69
		6,97	*0,50*	*0,38*	*0,38*	*0,19*	*0,11*	*0,75*	*0,78*	*1,62*	*3,71*	*0,35*	*0,50*	*0,47*	*2,27*
Denmark	*551*	46,64	0,52	0,15	0,12	0,11	0,07	2,26	12,20	0,48	3,79	0,93	0,53	0,36	0,26
		7,04	*0,50*	*0,35*	*0,32*	*0,32*	*0,25*	*0,52*	*0,84*	*1,88*	*3,75*	*0,25*	*0,50*	*0,48*	*1,41*
Holland	*1049*	45,45	0,00	0,99	0,19	0,15	0,07	2,48	10,80	0,74	4,15	0,91	0,01	0,00	0,16
		6,48	*0,07*	*0,08*	*0,39*	*0,36*	*0,26*	*0,75*	*0,83*	*2,39*	*3,51*	*0,28*	*0,10*	*0,07*	*1,10*
Belgium	*436*	43,95	0,34	0,19	0,10	0,13	0,06	2,57	13,87	0,83	5,98	0,96	0,36	0,40	0,34
		6,10	*0,47*	*0,39*	*0,30*	*0,33*	*0,23*	*0,82*	*0,48*	*2,44*	*3,38*	*0,20*	*0,48*	*0,49*	*1,58*
France	*850*	45,85	0,12	0,61	0,22	0,10	0,06	2,61	11,92	0,65	2,99	0,90	0,10	0,25	0,47
		6,27	*0,32*	*0,49*	*0,41*	*0,30*	*0,23*	*0,78*	*0,76*	*2,11*	*3,68*	*0,30*	*0,30*	*0,43*	*1,95*
U.K.	*881*	46,30	0,16	0,40	0,13	0,11	0,07	2,42	9,75	0,69	3,87	0,89	0,18	0,50	0,08
		7,28	*0,37*	*0,49*	*0,34*	*0,31*	*0,25*	*0,69*	*0,71*	*2,24*	*3,65*	*0,31*	*0,39*	*0,50*	*0,72*
Ireland	*297*	46,39	0,43	0,33	0,17	0,16	0,08	2,97	10,01	0,47	5,09	0,92	0,39	0,21	0,80
		6,72	*0,50*	*0,47*	*0,38*	*0,37*	*0,27*	*1,04*	*0,50*	*1,93*	*3,01*	*0,27*	*0,49*	*0,41*	*2,41*
Italy	*712*	45,59	0,52	0,30	0,15	0,13	0,07	2,79	10,30	0,27	0,40	0,85	0,46	0,17	0,03
		6,55	*0,50*	*0,46*	*0,36*	*0,33*	*0,26*	*0,87*	*1,07*	*1,45*	*1,57*	*0,36*	*0,50*	*0,38*	*0,22*
Greece	*341*	44,87	0,33	0,35	0,14	0,11	0,07	2,89	15,10	0,22	0,38	0,89	0,27	0,35	0,28
		6,29	*0,47*	*0,48*	*0,35*	*0,31*	*0,26*	*0,95*	*1,53*	*1,31*	*1,60*	*0,32*	*0,44*	*0,48*	*1,41*
Spain	*490*	45,09	0,22	0,41	0,16	0,13	0,08	2,95	14,73	0,73	0,19	0,90	0,18	0,32	0,39
		6,46	*0,41*	*0,49*	*0,37*	*0,34*	*0,27*	*1,02*	*1,05*	*2,39*	*1,20*	*0,29*	*0,39*	*0,47*	*1,70*
Portugal	*618*	45,92	0,12	0,70	0,12	0,09	0,04	2,78	14,46	0,44	3,73	0,88	0,12	0,12	0,22
		7,03	*0,32*	*0,46*	*0,32*	*0,28*	*0,20*	*0,86*	*1,11*	*1,79*	*2,88*	*0,32*	*0,32*	*0,33*	*1,33*
Austria	*404*	44,64	0,68	0,19	0,14	0,09	0,03	2,76	12,79	0,27	5,11	0,87	0,80	0,11	0,27
		6,30	*0,47*	*0,39*	*0,35*	*0,28*	*0,18*	*0,88*	*0,51*	*1,49*	*3,79*	*0,34*	*0,40*	*0,31*	*1,45*
Finland	*713*	47,37	0,39	0,16	0,11	0,12	0,05	2,37	11,76	1,76	3,83	0,88	0,39	0,39	0,78
		6,90	*0,49*	*0,37*	*0,31*	*0,32*	*0,23*	*0,61*	*0,77*	*3,12*	*3,58*	*0,33*	*0,49*	*0,49*	*2,34*

Standard deviations in italics, whole sample:
all married women aged 25–55

Table 4: **Summary statistics of sub-sample**

Country	num. Obs	age	female secondary education	female tertiary education	children age 6-12	children age 3-6	children age 0-3	adulthou	login-come	disability-benef	family-benef	work status	husband secondary education	husband tertiary education	unemploy-benef
Germany	1058	46.60	0.56	0.18	0.17	0.03	0.01	2.55	10.64	0.26	4.62	0.85	0.56	0.33	0.70
		6.89	*0.50*	*0.38*	*0.37*	*0.18*	*0.11*	*0.75*	*0.74*	*1.52*	*3.73*	*0.35*	*0.50*	*0.47*	*2.27*
Denmark	546	46.59	0.51	0.14	0.12	0.12	0.07	2.25	12.20	0.47	3.81	0.93	0.53	0.36	0.26
		7.01	*0.50*	*0.35*	*0.32*	*0.32*	*0.25*	*0.52*	*0.85*	*1.86*	*3.75*	*0.25*	*0.50*	*0.48*	*1.41*
Holland	815	45.32	0.00	0.99	0.20	0.14	0.07	2.46	10.75	0.78	4.00	0.90	0.00	0.00	0.18
		6.32	*0.00*	*0.09*	*0.40*	*0.35*	*0.26*	*0.73*	*0.91*	*2.44*	*3.52*	*0.29*	*0.00*	*0.07*	*1.18*
Belgium	428	43.90	0.34	0.19	0.11	0.13	0.06	2.57	13.87	0.84	5.99	0.96	0.36	0.40	0.35
		6.04	*0.47*	*0.39*	*0.31*	*0.33*	*0.23*	*0.82*	*0.48*	*2.46*	*3.38*	*0.20*	*0.48*	*0.49*	*1.60*
France	850	45.85	0.12	0.61	0.22	0.10	0.06	2.61	11.92	0.65	2.99	0.90	0.10	0.25	0.47
		6.27	*0.32*	*0.49*	*0.41*	*0.30*	*0.23*	*0.78*	*0.76*	*2.11*	*3.68*	*0.30*	*0.30*	*0.43*	*1.95*
U.K.	783	46.22	0.16	0.38	0.14	0.11	0.07	2.43	9.75	0.63	3.83	0.90	0.19	0.51	0.07
		7.13	*0.37*	*0.49*	*0.35*	*0.31*	*0.25*	*0.69*	*0.71*	*2.13*	*3.64*	*0.30*	*0.39*	*0.50*	*0.68*
Ireland	272	46.18	0.44	0.31	0.18	0.16	0.08	2.97	10.04	0.45	5.16	0.93	0.40	0.21	0.69
		6.54	*0.50*	*0.46*	*0.38*	*0.37*	*0.28*	*1.04*	*0.47*	*1.88*	*2.97*	*0.25*	*0.49*	*0.41*	*2.23*
Italy	707	45.62	0.52	0.30	0.15	0.13	0.07	2.80	10.30	0.27	0.40	0.85	0.46	0.18	0.03
		6.56	*0.50*	*0.46*	*0.36*	*0.33*	*0.26*	*0.87*	*1.07*	*1.45*	*1.58*	*0.36*	*0.50*	*0.38*	*0.22*
Greece	335	44.84	0.33	0.34	0.14	0.11	0.07	2.89	15.10	0.22	0.38	0.89	0.27	0.36	0.24
		6.27	*0.47*	*0.48*	*0.35*	*0.31*	*0.26*	*0.94*	*1.54*	*1.33*	*1.61*	*0.31*	*0.45*	*0.48*	*1.31*
Spain	483	45.11	0.22	0.41	0.16	0.13	0.08	2.96	14.73	0.75	0.20	0.90	0.19	0.33	0.38
		6.43	*0.42*	*0.49*	*0.37*	*0.33*	*0.28*	*1.03*	*1.06*	*2.41*	*1.21*	*0.29*	*0.39*	*0.47*	*1.68*
Portugal	614	45.91	0.12	0.70	0.12	0.09	0.04	2.78	14.45	0.43	3.72	0.88	0.12	0.12	0.20
		7.04	*0.32*	*0.46*	*0.32*	*0.28*	*0.21*	*0.85*	*1.11*	*1.77*	*2.88*	*0.32*	*0.32*	*0.33*	*1.29*
Austria	386	44.58	0.68	0.18	0.14	0.08	0.03	2.77	12.79	0.24	5.09	0.88	0.80	0.11	0.29
		6.23	*0.47*	*0.38*	*0.34*	*0.27*	*0.17*	*0.89*	*0.51*	*1.45*	*3.80*	*0.33*	*0.40*	*0.32*	*1.49*
Finland	707	47.35	0.39	0.16	0.11	0.12	0.06	2.37	11.75	1.74	3.83	0.88	0.39	0.39	0.77
		6.89	*0.49*	*0.37*	*0.31*	*0.32*	*0.23*	*0.61*	*0.77*	*3.09*	*3.58*	*0.33*	*0.49*	*0.49*	*2.33*

Standard deviations in italics, sub-sample: all married women aged 25–55, employed

Table 5: **Sample characteristic and years spent in to work**

	Germany					Denmark					
	Empl. 8 years	**Empl. 0 Years**	**Single trans. to Work**	**Single tras. from Work**	**Multi. trans.**		**Empl. 8 years**	**Empl. 0 Years**	**Single trans. to Work**	**Single tras. from Work**	**Multi. trans.**
age	44.91	40.10	42.38	35.60	38.58	**age**	44.34	43.57	44.32	33.92	37.63
less female secondary education	0.34	0.11	0.23	0.18	0.23	**less female secondary education**	0.41	0.00	0.24	0.37	0.41
female secondary education	0.52	0.65	0.59	0.64	0.62	**female secondary education**	0.48	0.29	0.64	0.55	0.52
female tertiary education	0.13	0.24	0.17	0.17	0.15	**female tertiary education**	0.11	0.71	0.13	0.08	0.08
children age 6-12	0.18	0.18	0.22	0.12	0.15	**children age 6-12**	0.14	0.00	0.13	0.08	0.07
children age 3-6	0.03	0.22	0.07	0.24	0.17	**children age 3-6**	0.14	0.14	0.19	0.27	0.36
children age 0-3	0.03	0.10	0.05	0.20	0.17	**children age 0-3**	0.07	0.14	0.10	0.38	0.34
logincome	10.67	10.98	10.70	10.72	10.72	**logincome**	12.24	12.20	12.15	12.23	12.30
disabilitybenef	0.30	0.32	0.27	0.16	0.13	**disabilitybenef**	0.20	8.10	0.74	0.74	0.56
familybenef	5.27	7.49	5.88	5.43	5.63	**familybenef**	4.98	2.24	4.20	4.86	6.01
husband secondary education	0.52	0.57	0.57	0.58	0.58	**husband secondary education**	0.53	0.43	0.56	0.52	0.51
husband tertiary education	0.39	0.28	0.33	0.28	0.31	**husband tertiary education**	0.40	0.14	0.27	0.40	0.35
unemploybenef	0.57	0.81	0.69	0.76	0.61	**unemploybenef**	0.21	0.00	0.25	0.70	0.39
partic.	1.00	0.00	-	-	-	**partic.**	1.00	0.00	-	-	-
N. Years work						**N. Years work**					
0	-	100				**0**	-	100			
1	-	-	23.46	9.11	14.36	**1**	-	-	39.10	11.92	15.67
2	-	-	11.39	13.24	14.89	**2**	-	-	10.15	13.25	16.74
3	-	-	10.25	13.72	12.99	**3**	-	-	6.39	12.91	14.26
4	-	-	9.45	13.24	12.41	**4**	-	-	6.77	12.14	13.05
5	-	-	8.09	13.66	11.66	**5**	-	-	5.26	13.36	11.05
6	-	-	8.88	13.36	11.77	**6**	-	-	4.14	13.69	10.79
7	-	-	10.25	13.54	11.36	**7**	-	-	5.64	12.14	9.42
8	100	-	18.22	10.13	10.56	**8**	100	-	22.56	10.60	9.02

Table 6: **Sample characteristic and years spent in to work**

	Holland						Belgium				
	Empl. 8 years	**Empl. 0 Years**	**Single trans. to Work**	**Single tras. from Work**	**Multi. trans.**		**Empl. 8 years**	**Empl. 0 Years**	**Single trans. to Work**	**Single tras. from Work**	**Multi. trans.**
age	44.41	40.85	42.08	38.84	38.80	**age**	42.98	40.67	40.71	34.74	36.12
less female secondary education	0.50	0.11	0.48	0.41	0.01	**less female secondary education**	0.53	0.17	0.60	0.54	0.53
female secondary education	0.37	0.24	0.32	0.28	0.00	**female secondary education**	0.31	0.17	0.31	0.20	0.34
female tertiary education	0.12	0.64	0.15	0.31	0.99	**female tertiary education**	0.16	0.67	0.10	0.26	0.13
children age 6-12	0.15	0.16	0.14	0.15	0.15	**children age 6-12**	0.10	0.00	0.08	0.04	0.09
children age 3-6	0.17	0.30	0.25	0.21	0.26	**children age 3-6**	0.12	0.33	0.28	0.18	0.35
children age 0-3	0.08	0.15	0.19	0.17	0.27	**children age 0-3**	0.03	0.00	0.18	0.32	0.33
logincome	10.76	10.92	10.81	10.65	10.67	**logincome**	13.87	14.07	13.88	13.85	13.76
disabilitybenef	0.61	0.37	0.17	0.60	0.62	**disabilitybenef**	0.70	0.00	1.13	1.24	0.63
familybenef	3.94	6.17	4.71	4.20	4.67	**familybenef**	6.64	6.86	6.41	5.22	6.27
husband secondary education	0.31	0.15	0.43	0.23	0.00	**husband secondary education**	0.35	0.17	0.42	0.24	0.36
husband tertiary education	0.38	0.32	0.38	0.48	0.01	**husband tertiary education**	0.42	0.33	0.36	0.50	0.44
unemploybenef	0.13	0.04	0.19	0.15	0.10	**unemploybenef**	0.28	0.92	0.31	0.72	0.44
partic.	1.00	0.00	-	-	-	**partic.**	1.00	0.00	-	-	-
N. Years work						**N. Years work**					
0	-	100				**0**	-	100			
1	-	-	13.95	11.30	10.31	**1**	-	-	41.78	10.57	14.25
2	-	-	9.30	13.34	11.80	**2**	-	-	8.00	13.27	15.37
3	-	-	9.20	13.85	12.75	**3**	-	-	6.67	13.79	14.90
4	-	-	9.89	13.65	13.75	**4**	-	-	5.78	13.66	13.69
5	-	-	10.19	13.75	13.23	**5**	-	-	5.33	13.53	12.48
6	-	-	10.78	13.03	13.35	**6**	-	-	5.33	13.40	10.97
7	-	-	11.87	12.12	13.00	**7**	-	-	4.89	12.50	9.89
8	100	-	24.83	8.96	11.80	**8**	100	-	22.22	9.28	8.46

Table 7: **Sample characteristic and years spent in to work**

	France					U.K.					
	Empl. 8 years	**Empl. 0 Years**	**Single trans. to Work**	**Single tras. from Work**	**Multi. trans.**		**Empl. 8 years**	**Empl. 0 Years**	**Single trans. to Work**	**Single tras. from Work**	**Multi. trans.**
age	44.81	33.50	43.53	33.32	37.37	**age**	44.47	38.27	42.32	35.53	38.17
less female secondary education	0.29	0.50	0.36	0.44	0.35	**less female secondary education**	0.46	0.31	0.48	0.45	0.53
female secondary education	0.14	0.10	0.10	0.14	0.11	**female secondary education**	0.14	0.22	0.14	0.32	0.20
female tertiary education	0.58	0.39	0.53	0.41	0.52	**female tertiary education**	0.39	0.47	0.38	0.23	0.27
children age 6-12	0.27	0.25	0.19	0.03	0.10	**children age 6-12**	0.15	0.16	0.12	0.08	0.12
children age 3-6	0.09	0.25	0.14	0.29	0.32	**children age 3-6**	0.13	0.47	0.17	0.23	0.19
children age 0-3	0.04	0.50	0.13	0.37	0.29	**children age 0-3**	0.06	0.16	0.11	0.21	0.22
logincome	11.98	12.12	11.93	11.64	11.81	**logincome**	9.77	9.80	9.79	9.70	9.75
disabilitybenef	0.48	0.21	0.65	0.47	0.68	**disabilitybenef**	0.66	1.51	0.13	0.51	0.32
familybenef	3.21	3.57	3.52	4.02	4.02	**familybenef**	4.27	6.64	5.03	4.57	4.79
husband secondary education	0.11	0.15	0.12	0.12	0.09	**husband secondary education**	0.17	0.20	0.15	0.27	0.23
husband tertiary education	0.26	0.43	0.30	0.33	0.27	**husband tertiary education**	0.52	0.49	0.53	0.52	0.55
unemploybenef	0.39	1.97	0.46	0.79	0.50	**unemploybenef**	0.03	0.34	0.00	0.22	0.11
partic.	1.00	0.00	-	-	-	**partic.**	1.00	0.00	-	-	-
N. Years work						**N. Years work**					
0	-	100				**0**	-	100			
1	-	-	35.81	11.13	13.96	**1**	-	-	24.28	9.72	10.74
2	-	-	9.23	13.66	15.66	**2**	-	-	9.85	13.16	12.03
3	-	-	9.68	13.79	15.90	**3**	-	-	7.98	13.41	13.39
4	-	-	6.53	12.82	13.01	**4**	-	-	7.64	13.83	13.22
5	-	-	6.31	13.79	12.12	**5**	-	-	7.81	13.41	13.71
6	-	-	3.83	12.10	11.46	**6**	-	-	9.68	13.58	13.51
7	-	-	5.41	13.14	8.36	**7**	100	-	10.19	13.83	12.11
8	100	-	23.20	9.58	9.53				22.58	9.05	11.28

Table 8: **Sample characteristic and years spent in to work**

	Italy					Greece					
	Empl. 8 years	**Empl. 0 Years**	**Single trans. to Work**	**Single tras. from Work**	**Multi. trans.**		**Empl. 8 years**	**Empl. 0 Years**	**Single trans. to Work**	**Single tras. from Work**	**Multi. trans.**
age	44.56	39.40	42.95	33.56	37.24	**age**	43.41	39.86	41.91	34.00	37.90
less female secondary education	0.18	0.20	0.21	0.10	0.18	**less female secondary education**	0.43	0.14	0.42	0.19	0.32
female secondary education	0.58	0.20	0.49	0.61	0.53	**female secondary education**	0.40	0.43	0.46	0.51	0.36
female tertiary education	0.24	0.60	0.30	0.29	0.30	**female tertiary education**	0.17	0.43	0.12	0.30	0.32
children age 6-12	0.17	0.10	0.13	0.04	0.07	**children age 6-12**	0.16	0.00	0.11	0.09	0.10
children age 3-6	0.12	0.40	0.19	0.15	0.30	**children age 3-6**	0.12	0.14	0.19	0.34	0.26
children age 0-3	0.06	0.20	0.15	0.22	0.32	**children age 0-3**	0.06	0.14	0.09	0.38	0.29
logincome	10.37	10.16	10.33	9.77	10.10	**logincome**	15.19	15.09	15.07	14.80	15.03
disabilitybenef	0.04	0.08	0.04	0.04	0.02	**disabilitybenef**	0.13	0.05	0.44	0.09	0.12
familybenef	0.05	0.07	0.03	0.03	0.07	**familybenef**	0.35	0.07	0.40	0.86	0.56
husband secondary education	0.52	0.20	0.54	0.48	0.42	**husband secondary education**	0.28	0.43	0.32	0.51	0.36
husband tertiary education	0.18	0.10	0.17	0.10	0.19	**husband tertiary education**	0.49	0.14	0.53	0.21	0.28
unemploybenef	0.03	0.00	0.02	0.04	0.04	**unemploybenef**	0.23	3.22	0.14	0.15	0.42
partic.	1.00	0.00	-	-	-	**partic.**	1.00	0.00	-	-	-
N. Years work						**N. Years work**					
0	-	100				**0**	-	100			
1	-	-	31.73	10.18	12.38	**1**	-	-	40.25	9.24	11.95
2	-	-	10.82	13.61	14.27	**2**	-	-	11.02	13.65	14.37
3	-	-	7.93	13.77	14.29	**3**	-	-	5.51	14.06	14.26
4	-	-	7.21	12.85	13.05	**4**	-	-	5.51	13.25	12.80
5	-	-	6.97	13.86	12.64	**5**	-	-	8.05	13.45	12.46
6	100	-	7.21	13.77	12.51	**6**	-	-	4.66	11.85	11.27
7			9.13	13.77	11.11	**7**	-	-	5.08	13.05	11.72
8			18.99	8.18	9.76	**8**	100	-	19.92	11.45	11.16

Table 9: **Sample characteristic and years spent in to work**

	Spain						Portugal				
	Empl. 8 years	**Empl. 0 Years**	**Single trans. to Work**	**Single tras. from Work**	**Multi. trans.**		**Empl. 8 years**	**Empl. 0 Years**	**Single trans. to Work**	**Single tras. from Work**	**Multi. trans.**
age	44.13	35.83	41.78	35.48	37.36	**age**	43.90	43.25	42.24	33.23	37.35
less female secondary education	0.53	0.08	0.43	0.43	0.42	**less female secondary education**	0.26	0.08	0.20	0.20	0.17
female secondary education	0.26	0.17	0.20	0.19	0.23	**female secondary education**	0.16	0.29	0.10	0.29	0.19
female tertiary education	0.21	0.83	0.37	0.37	0.35	**female tertiary education**	0.58	0.64	0.70	0.51	0.65
children age 6-12	0.22	0.17	0.12	0.06	0.09	**children age 6-12**	0.16	0.25	0.10	0.03	0.06
children age 3-6	0.18	0.17	0.16	0.07	0.20	**children age 3-6**	0.09	0.25	0.11	0.19	0.31
children age 0-3	0.08	0.17	0.10	0.13	0.28	**children age 0-3**	0.03	0.04	0.03	0.39	0.27
logincome	14.87	14.38	14.71	14.36	14.63	**logincome**	14.61	13.58	14.53	14.27	14.36
disabilitybenef	0.33	0.06	0.82	0.31	0.59	**disabilitybenef**	0.25	2.07	0.45	0.11	0.30
familybenef	0.19	2.02	0.14	0.27	0.54	**familybenef**	4.62	6.12	4.82	3.73	4.64
husband secondary education	0.25	0.15	0.22	0.22	0.19	**husband secondary education**	0.15	0.12	0.11	0.10	0.15
husband tertiary education	0.46	0.07	0.41	0.30	0.38	**husband tertiary education**	0.15	0.07	0.18	0.12	0.12
unemploybenef	0.26	0.04	0.16	0.52	0.47	**unemploybenef**	0.06	0.06	0.38	0.22	0.12
partic.	1.00	0.00	-	-	-	**partic.**	1.00	0.00	-	-	-
N. Years work						**N. Years work**					
0	-	100				**0**	-	100			
1	-	-	26.72	10.44	11.44	**1**	-	-	29.04	8.56	11.64
2	-	-	9.24	13.57	12.90	**2**	-	-	11.40	12.84	13.44
3	-	-	8.40	12.94	12.35	**3**	-	-	6.99	13.67	13.17
4	-	-	8.57	13.36	12.71	**4**	-	-	8.46	13.56	12.63
5	-	-	7.73	13.78	12.54	**5**	-	-	4.41	13.08	12.53
6	-	-	6.55	13.57	13.16	**6**	-	-	6.62	13.44	12.08
7	-	-	9.41	12.11	12.93	**7**	-	-	7.72	13.67	12.63
8	100	-	23.36	10.23	11.96	**8**	100	-	25.37	11.18	11.88

Table 10: **Sample characteristic and years spent in to work**

	Austria						Finland				
	Empl. 8 years	**Empl. 0 Years**	**Single trans. to Work**	**Single tras. from Work**	**Multi. trans.**		**Empl. 8 years**	**Empl. 0 Years**	**Single trans. to Work**	**Single tras. from Work**	**Multi. trans.**
age	44.35	40.71	42.88	33.70	37.06	**age**	44.19	42.50	43.25	36.27	38.29
less female secondary education	0.17	0.02	0.14	0.02	0.17	**less female secondary education**	0.49	0.50	0.57	0.52	0.46
female secondary education	0.68	0.57	0.69	0.72	0.70	**female secondary education**	0.39	0.25	0.32	0.30	0.45
female tertiary education	0.15	0.40	0.17	0.26	0.13	**female tertiary education**	0.12	0.25	0.10	0.18	0.09
children age 6-12	0.15	0.21	0.15	0.09	0.09	**children age 6-12**	0.12	0.25	0.12	0.09	0.06
children age 3-6	0.05	0.29	0.15	0.21	0.26	**children age 3-6**	0.17	0.50	0.24	0.30	0.30
children age 0-3	0.03	0.07	0.07	0.33	0.16	**children age 0-3**	0.08	0.25	0.15	0.23	0.26
logincome	12.83	12.79	12.75	12.69	12.73	**logincome**	11.83	12.10	11.89	11.81	11.77
disabilitybenef	0.19	0.00	0.13	0.20	0.09	**disabilitybenef**	1.63	0.00	1.25	1.18	1.04
familybenef	5.45	6.93	5.22	6.33	6.18	**familybenef**	4.83	5.85	5.13	4.69	5.27
husband secondary education	0.82	0.79	0.82	0.84	0.75	**husband secondary education**	0.37	0.25	0.44	0.50	0.50
husband tertiary education	0.11	0.07	0.11	0.09	0.17	**husband tertiary education**	0.44	0.50	0.39	0.25	0.32
unemploybenef	0.24	1.05	0.33	0.88	0.37	**unemploybenef**	0.47	2.03	0.65	1.59	0.86
partic.	1.00	0.00	-	-	-	**partic.**	1.00	0.00	-	-	-
N. Years work						**N. Years work**					
0	-	100				**0**	-	100			
1	-	-	37.55	10.31	14.39	**1**	-	-	45.91	15.28	21.02
2	-	-	15.71	16.09	16.51	**2**	-	-	13.98	17.47	23.10
3	-	-	9.20	15.78	14.88	**3**	-	-	11.35	17.47	19.91
4	-	-	5.36	15.94	14.75	**4**	-	-	11.61	18.23	17.75
5	-	-	8.05	15.47	14.81	**5**	-	-	5.54	18.01	9.76
6	-	-	7.66	15.16	13.05	**6**	100	-	11.61	13.54	8.46
7	100	-	16.48	11.25	11.60						

Table 11: **Sample characteristic and years spent in to work**

Ireland					
	Empl. 8 years	**Empl. 0 Years**	**Single trans. to Work**	**Single tras. from Work**	**Multi. trans.**
age	43.59	43.67	41.59	36.13	40.47
less female secondary education	0.38	0.17	0.21	0.09	0.21
female secondary education	0.49	0.33	0.65	0.52	0.47
female tertiary education	0.12	0.50	0.15	0.39	0.33
children age 6-12	0.14	0.17	0.18	0.17	0.14
children age 3-6	0.31	0.17	0.24	0.22	0.21
children age 0-3	0.16	0.08	0.18	0.39	0.23
logincome	10.00	10.10	10.00	9.88	9.97
disabilitybenef	0.43	0.00	0.00	0.40	0.30
familybenef	5.91	6.48	5.85	4.86	5.72
husband secondary education	0.43	0.17	0.50	0.61	0.42
husband tertiary education	0.32	0.33	0.24	0.09	0.18
unemploybenef	0.15	2.89	0.18	1.19	0.80
partic.	1.00	0.00	-	-	-
N. Years work					
0	-	100			
1	-	-	41.55	9.63	13.12
2	-	-	14.53	13.64	14.66
3	-	-	8.11	13.37	14.75
4	-	-	8.11	13.90	14.62
5	-	-	8.45	13.64	14.09
6	-	-	5.74	12.83	11.84
7	-	-	5.74	13.90	9.32
8	100	-	7.77	9.09	7.60

Table 12: **Probit estimates of labor force participation**, (dependent variable: *Active*)

Country	**age**	**agetwo**	**female tertiary education**	**female secondary education**	**children age 6-12**	**children age 3-6**	**children age 0-3**	**logincome**	**family-benef**	**disability-benef**	**husband secondary education**	**husband tertiary education**	**unemploy-benef**
Germany	0,129	-0,017	0,977	0,403	0,194	-0,322	-1,516	-0,446	-0,071	-0,136	0,280	0,304	-0,178
	0,027	*0,004*	*0,093*	*0,064*	*0,055*	*0,042*	*0,051*	*0,040*	*0,008*	*0,014*	*0,069*	*0,084*	*0,057*
Denmark	0,269	-0,031	0,617	0,360	0,162	0,427	-1,642	-0,554	-0,056	-0,082	0,138	0,135	-0,230
	0,036	*0,005*	*0,088*	*0,076*	*0,107*	*0,060*	*0,073*	*0,065*	*0,011*	*0,010*	*0,078*	*0,089*	*0,076*
The Nether.	0,052	-0,013	0,378	0,100	0,230	-0,248	-1,938	-0,237	-0,020	-0,118	-0,051	-0,061	0,007
	0,035	*0,005*	*0,080*	*0,063*	*0,065*	*0,050*	*0,059*	*0,031*	*0,009*	*0,010*	*0,069*	*0,077*	*0,089*
Belgium	0,373	-0,052	0,981	0,408	0,230	0,290	-1,676	-0,242	-0,063	-0,053	0,228	0,275	-0,259
	0,049	*0,006*	*0,108*	*0,090*	*0,109*	*0,065*	*0,078*	*0,052*	*0,012*	*0,011*	*0,086*	*0,105*	*0,104*
France	0,265	-0,034	0,808	0,333	0,195	0,026	-1,778	-0,195	-0,028	-0,066	0,198	-0,009	-0,011
	0,028	*0,004*	*0,073*	*0,054*	*0,077*	*0,043*	*0,051*	*0,032*	*0,006*	*0,009*	*0,053*	*0,077*	*0,065*
U.K.	0,178	-0,024	0,344	0,091	0,158	0,066	-2,192	-0,067	-0,051	-0,143	0,109	0,014	-0,405
	0,032	*0,004*	*0,068*	*0,074*	*0,087*	*0,053*	*0,063*	*0,034*	*0,009*	*0,010*	*0,080*	*0,068*	*0,107*
Ireland	-0,032	-0,002	0,868	0,342	0,204	-0,162	-1,467	-0,303	-0,086	-0,094	0,229	0,317	-0,188
	0,047	*0,006*	*0,123*	*0,082*	*0,080*	*0,062*	*0,072*	*0,055*	*0,014*	*0,014*	*0,075*	*0,116*	*0,090*
Italy	0,271	-0,038	2,163	1,300	0,130	-0,259	-0,404	-0,138	-0,017	-0,003	0,320	0,926	0,077
	0,038	*0,005*	*0,178*	*0,088*	*0,072*	*0,058*	*0,061*	*0,020*	*0,011*	*0,019*	*0,082*	*0,181*	*0,128*
Greece	0,289	-0,040	1,667	0,694	0,039	0,241	-1,708	-0,108	-0,068	-0,055	0,352	0,585	0,186
	0,046	*0,006*	*0,132*	*0,107*	*0,086*	*0,073*	*0,086*	*0,022*	*0,017*	*0,029*	*0,096*	*0,127*	*0,152*
Spain	0,072	-0,015	1,369	0,643	0,126	-0,077	-1,584	-0,097	-0,078	-0,012	0,139	0,348	-0,043
	0,033	*0,004*	*0,084*	*0,069*	*0,062*	*0,051*	*0,059*	*0,017*	*0,013*	*0,011*	*0,067*	*0,080*	*0,065*
Portugal	0,257	-0,039	1,262	0,390	-0,018	0,226	-2,001	-0,081	0,024	-0,054	0,082	0,215	-0,414
	0,038	*0,005*	*0,159*	*0,115*	*0,078*	*0,061*	*0,073*	*0,024*	*0,011*	*0,014*	*0,117*	*0,178*	*0,138*
Austria	0,383	-0,055	1,344	0,635	0,277	-0,265	-2,158	-0,138	-0,055	-0,089	0,206	-0,168	-0,395
	0,058	*0,008*	*0,253*	*0,141*	*0,107*	*0,082*	*0,111*	*0,071*	*0,014*	*0,025*	*0,182*	*0,277*	*0,138*
Finland	0,270	-0,029	0,648	0,143	0,004	0,275	-2,040	-0,406	0,008	-0,075	0,125	0,297	-0,174
	0,040	*0,005*	*0,102*	*0,091*	*0,096*	*0,068*	*0,086*	*0,066*	*0,012*	*0,010*	*0,082*	*0,097*	*0,074*

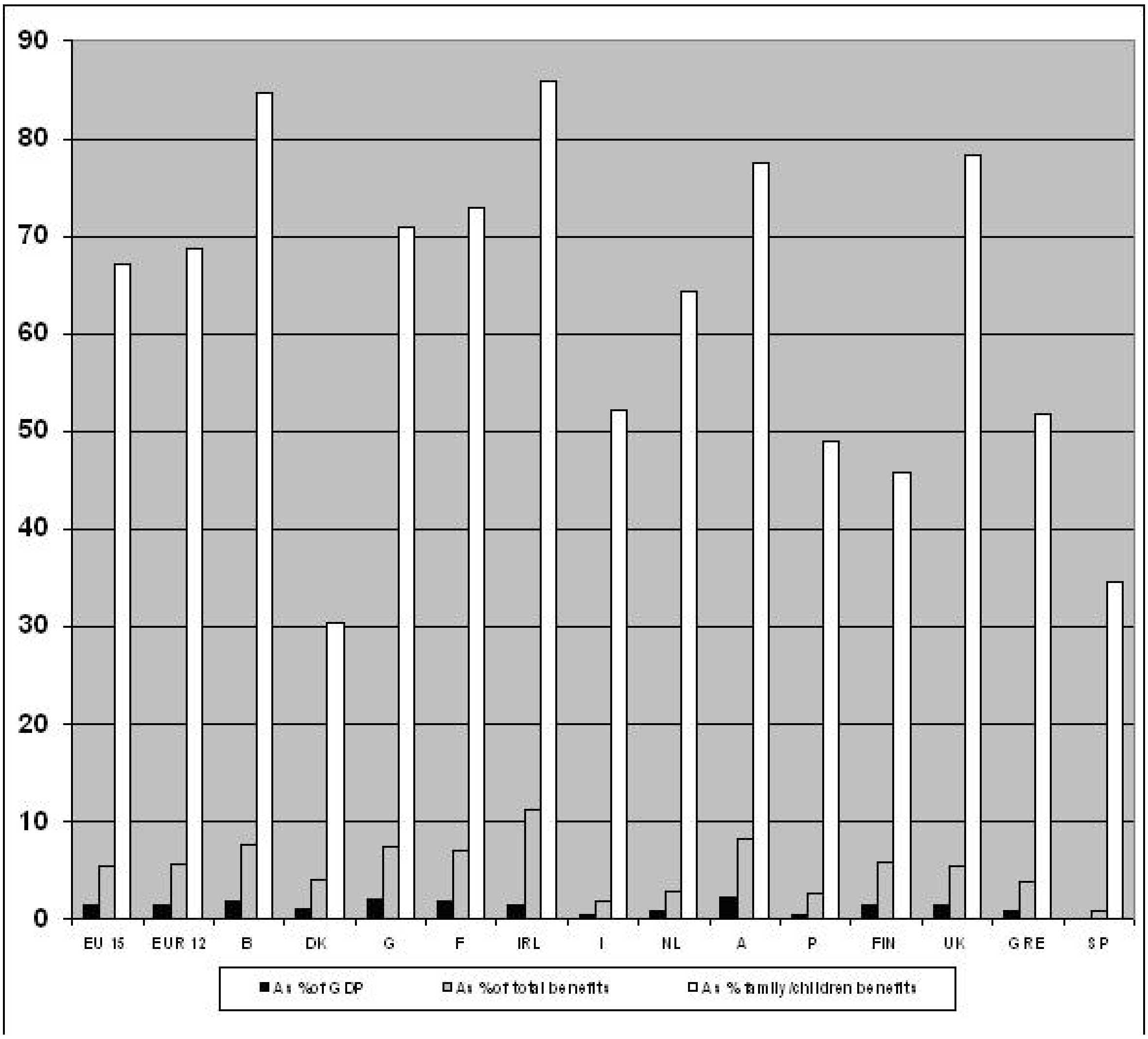
Standard deviation in italics. Year dummy variables and constant are included but not reported.

Table 13: **Marginal effects of labor force participation**, (dependent variable: *Active*)

Country	age	agetwo	female tertiary education	female secondary education	children age 6-12	children age 3-6	children age 0-3	logincome	family-benef	disability-benef	husband secondary education	husband tertiary education	unemploy-benef
Germany	0,033	-0,005	0,204	0,096	0,050	-0,099	-0,388	-0,161	-0,017	-0,039	0,057	0,074	-0,110
	0,005	*0,001*	*0,009*	*0,009*	*0,012*	*0,010*	*0,011*	*0,008*	*0,001*	*0,002*	*0,010*	*0,012*	*0,014*
Denmark	0,054	-0,006	0,149	0,104	0,043	0,112	-0,463	-0,156	-0,006	-0,028	0,031	0,025	-0,098
	0,007	*0,001*	*0,014*	*0,014*	*0,021*	*0,012*	*0,017*	*0,013*	*0,002*	*0,002*	*0,014*	*0,016*	*0,020*
The Netherl.	0,042	-0,007	0,194	0,082	0,079	-0,041	-0,413	-0,065	-0,021	-0,027	0,009	0,019	-0,028
	0,006	*0,001*	*0,012*	*0,012*	*0,013*	*0,012*	*0,011*	*0,007*	*0,002*	*0,002*	*0,014*	*0,016*	*0,020*
Belgium	0,059	-0,009	0,303	0,126	0,083	0,054	-0,449	-0,100	-0,007	-0,015	0,033	0,023	-0,149
	0,007	*0,001*	*0,013*	*0,013*	*0,019*	*0,014*	*0,015*	*0,010*	*0,002*	*0,002*	*0,014*	*0,015*	*0,021*
France	0,072	-0,009	0,225	0,140	0,069	0,023	-0,400	-0,092	-0,015	-0,019	0,065	0,004	-0,044
	0,005	*0,001*	*0,010*	*0,009*	*0,013*	*0,010*	*0,009*	*0,007*	*0,001*	*0,002*	*0,010*	*0,011*	*0,015*
U.K.	0,040	-0,005	0,099	0,052	0,075	0,000	-0,537	-0,028	-0,018	-0,043	0,030	-0,016	-0,195
	0,005	*0,001*	*0,010*	*0,012*	*0,016*	*0,012*	*0,011*	*0,007*	*0,002*	*0,002*	*0,014*	*0,010*	*0,027*
Ireland	0,025	-0,004	0,281	0,106	0,054	-0,030	-0,347	-0,134	-0,026	-0,028	0,079	0,067	-0,094
	0,008	*0,001*	*0,019*	*0,014*	*0,020*	*0,015*	*0,013*	*0,011*	*0,003*	*0,003*	*0,014*	*0,020*	*0,018*
Italy	0,035	-0,005	0,446	0,287	0,000	-0,001	-0,284	-0,045	-0,016	-0,004	0,059	0,046	0,021
	0,005	*0,001*	*0,012*	*0,008*	*0,012*	*0,010*	*0,008*	*0,003*	*0,002*	*0,003*	*0,008*	*0,015*	*0,023*
Greece	0,043	-0,006	0,426	0,143	0,026	0,044	-0,249	-0,056	-0,001	0,003	0,036	0,110	0,034
	0,006	*0,001*	*0,016*	*0,013*	*0,015*	*0,013*	*0,009*	*0,005*	*0,003*	*0,004*	*0,012*	*0,016*	*0,028*
Spain	0,008	-0,002	0,375	0,175	-0,020	-0,033	-0,282	-0,036	-0,021	0,001	0,027	0,071	-0,005
	0,005	*0,001*	*0,011*	*0,011*	*0,013*	*0,010*	*0,008*	*0,004*	*0,003*	*0,002*	*0,011*	*0,011*	*0,014*
Portugal	0,032	-0,005	0,316	0,149	-0,025	0,025	-0,434	-0,022	0,001	-0,018	0,072	0,038	-0,028
	0,006	*0,001*	*0,014*	*0,015*	*0,017*	*0,013*	*0,012*	*0,005*	*0,002*	*0,003*	*0,017*	*0,024*	*0,031*
Austria	0,046	-0,007	0,282	0,163	0,050	-0,055	-0,452	-0,077	-0,017	-0,024	0,031	-0,037	-0,107
	0,008	*0,001*	*0,020*	*0,015*	*0,022*	*0,018*	*0,016*	*0,013*	*0,002*	*0,004*	*0,021*	*0,031*	*0,025*
Finland	0,064	-0,007	0,136	0,038	0,009	0,083	-0,513	-0,137	0,002	-0,019	0,029	0,067	-0,101
	0,007	*0,001*	*0,016*	*0,015*	*0,020*	*0,014*	*0,017*	*0,013*	*0,002*	*0,002*	*0,014*	*0,015*	*0,017*
All	0,013	-0,020	0,295	0,137	-0,011	-0,044	-0,430	-0,032	0,008	-0,017	-0,041	0,046	-0,049
	0,001	*0,002*	*0,003*	*0,003*	*0,004*	*0,003*	*0,002*	*0,006*	*0,003*	*0,006*	*0,003*	*0,003*	*0,005*

Standard deviation in italics. Year dummy variables and constant are included but not reported.

Figure 3: **Cash Family benefits in 2000**



Source: EUROSTAT

Table 14: **Estimates for the monthly wage equation, OLS model.**

Country	female tertiary education	less female secondary education	expe-rience	exp2	login-come	fam-ily-benef	dis-abili-ty-benef	chil-dren age6-12	chil-dren age 3-6	chil-dren age 0-3
Germany	0,165	-0,042	0,018	-0,048	0,027	0,005	-0,016	-0,021	0,095	-0,229
	0,020	0,023	0,005	0,012	0,015	0,006	0,003	0,016	0,025	0,071
Denmark	0,133	-0,102	0,013	-0,029	0,033	-0,006	-0,002	0,019	-0,017	0,009
	0,014	0,020	0,004	0,009	0,012	0,003	0,002	0,017	0,013	0,016
The Neth.	0,168	-0,036	0,012	-0,028	0,007	-0,007	-0,001	-0,038	0,009	0,086
	0,015	0,015	0,003	0,007	0,009	0,003	0,002	0,017	0,014	0,014
Belgium	0,230	-0,138	0,007	-0,012	0,000	-0,002	0,001	-0,013	-0,003	0,003
	0,020	0,025	0,004	0,012	0,006	0,003	0,003	0,024	0,018	0,019
France	0,258	-0,113	-0,001	-0,003	0,052	-0,015	-0,012	-0,010	0,025	0,046
	0,030	0,027	0,005	0,012	0,018	0,006	0,003	0,043	0,026	0,029
U.K.	0,165	-0,106	0,024	-0,060	0,034	-0,004	-0,018	-0,001	0,031	0,108
	0,022	0,021	0,004	0,010	0,012	0,005	0,003	0,021	0,020	0,020
Ireland	0,420	-0,188	0,026	-0,063	-0,020	-0,008	0,002	-0,033	0,021	0,018
	0,031	0,026	0,006	0,015	0,015	0,005	0,004	0,028	0,021	0,023
Italy	0,225	-0,220	0,012	-0,021	0,019	-0,017	-0,012	0,022	-0,001	-0,002
	0,030	0,017	0,004	0,010	0,005	0,006	0,004	0,019	0,016	0,017
Greece	0,277	-0,113	0,006	-0,018	0,011	-0,010	-0,003	0,039	0,048	0,051
	0,024	0,023	0,004	0,012	0,004	0,008	0,005	0,022	0,020	0,021
Spain	0,289	-0,189	0,008	-0,006	0,008	0,002	0,007	-0,005	0,024	0,024
	0,026	0,023	0,004	0,010	0,006	0,005	0,004	0,020	0,020	0,019
Portugal	0,462	-0,405	0,014	-0,032	0,026	-0,013	0,000	-0,017	0,001	-0,024
	0,031	0,025	0,003	0,009	0,007	0,004	0,003	0,018	0,014	0,015
Austria	0,205	-0,140	0,006	-0,011	0,061	0,008	-0,001	-0,003	0,009	-0,134
	0,031	0,026	0,006	0,013	0,023	0,007	0,003	0,020	0,023	0,037
Finland	0,187	-0,021	0,007	-0,016	0,006	-0,005	-0,003	0,016	0,026	-0,016
	0,014	0,017	0,003	0,008	0,012	0,002	0,002	0,014	0,014	0,017

All married women aged 25–55, employed at least two waves.Year dummy variables are included but not reported. Standard error in italics

Table 15: **Estimates for the monthly wage equation, Heckman model.**

Country	female tertiary education	female secondary education	expe- rience	exp2	lambda	lam2	lam3	lam4	lam5	lam6	lam7	lam8
Germany	0,169	-0,081	0,000	-0,009	0,237	-0,057	-0,606	-0,706	-0,361	-1,538	-1,772	-1,360
	0,020	*0,022*	*0,004*	*0,011*	*0,094*	*0,086*	*0,405*	*0,246*	*0,286*	*0,367*	*0,534*	0,406
Denmark	0,164	-0,127	0,012	-0,027	0,138	-0,097	-0,151	-0,186	-0,191	-0,248	-0,229	-0,182
	0,014	*0,021*	*0,003*	*0,008*	*0,048*	*0,045*	*0,059*	*0,067*	*0,058*	*0,072*	*0,087*	0,081
The Neth.	0,200	-0,036	0,013	-0,033	-0,003	0,011	-0,047	-0,070	0,167	0,035	0,085	0,510
	0,015	*0,015*	*0,003*	*0,007*	*0,119*	*0,116*	*0,190*	*0,139*	*0,181*	*0,147*	*0,142*	0,171
Belgium	0,246	-0,138	0,007	-0,013	-0,041	0,053	0,081	0,056	0,013	0,060	0,023	0,054
	0,019	*0,025*	*0,004*	*0,011*	*0,063*	*0,073*	*0,071*	*0,074*	*0,071*	*0,067*	*0,072*	0,079
France	0,313	-0,128	0,000	-0,001	-0,051	-0,002	0,058	0,241	0,146	0,193	0,071	0,170
	0,031	*0,027*	*0,004*	*0,011*	*0,071*	*0,073*	*0,095*	*0,107*	*0,151*	*0,160*	*0,129*	0,143
U.K.	0,174	-0,126	0,017	-0,046	-0,149	0,072	-0,207	-0,010	-0,444	-0,037	-0,069	-0,312
	0,023	*0,023*	*0,003*	*0,009*	*0,055*	*0,058*	*0,512*	*0,166*	*0,651*	*0,370*	*0,223*	0,272
Ireland	0,487	-0,241	0,029	-0,074	-0,173	0,276	0,698	0,391	0,207	0,258	0,971	0,943
	0,031	*0,026*	*0,006*	*0,015*	*0,148*	*0,145*	*0,379*	*0,213*	*0,377*	*0,317*	*0,335*	0,477
Italy	0,266	-0,250	0,014	-0,026	-0,093	0,061	0,266	0,128	0,533	0,076	-0,270	0,192
	0,029	*0,017*	*0,004*	*0,009*	*0,078*	*0,079*	*0,116*	*0,161*	*0,183*	*0,220*	*0,351*	0,125
Greece	0,359	-0,183	0,010	-0,028	0,217	-0,021	-0,107	-0,096	-0,116	-0,190	-0,165	-0,149
	0,023	*0,022*	*0,004*	*0,013*	*0,069*	*0,073*	*0,083*	*0,077*	*0,073*	*0,076*	*0,079*	0,077
Spain	0,339	-0,229	0,011	-0,013	-0,065	0,073	0,090	0,142	0,121	0,107	0,088	0,146
	0,026	*0,024*	*0,004*	*0,011*	*0,061*	*0,065*	*0,064*	*0,069*	*0,066*	*0,071*	*0,069*	0,069
Portugal	0,552	-0,457	0,018	-0,040	-0,067	0,116	0,126	0,124	0,087	0,074	0,078	0,089
	0,029	*0,023*	*0,003*	*0,009*	*0,066*	*0,070*	*0,067*	*0,068*	*0,068*	*0,068*	*0,068*	0,070
Austria	0,262	-0,152	0,012	-0,020	0,086	-0,065	-0,096	-0,058	-0,028	-0,142	-0,114	-
	0,033	*0,026*	*0,006*	*0,013*	*0,057*	*0,098*	*0,071*	*0,064*	*0,061*	*0,089*	*0,068*	
Finland	0,220	-0,042	0,004	-0,009	-0,073	-	0,003	-0,012	-0,036	-0,077	-0,100	-
	0,015	*0,017*	*0,003*	*0,008*	*0,056*		*0,065*	*0,069*	*0,061*	*0,058*	*0,093*	
All	0,260	-0,180	0,010	-0,025	-0,023	0,028	0,044	0,056	0,048	0,063	0,011	0,021
	0,007	*0,006*	*0,001*	*0,003*	*0,021*	*0,020*	*0,021*	*0,022*	*0,021*	*0,022*	*0,022*	*0,022*

All married women aged 25–55, employed at least two waves.Year dummy and constant variables are included but not reported. Standard error in italics

Table 16: **Variable definitions**

Variable	**Definition**
Women	Sample of women married age 25-55
Women1	=1 if women work or seek for a job, =0 otherwise
Active	=1 if women participate to the labor market, =0 otherwise
Dum*	Dummy for time
Age	Age of individuals
Agetwo	Square of age /10
Female education less than secondary	=1 if the woman has third level education, =0 otherwise
Female secondary education	=1 if the woman has second level of education, =0 otherwise
Female tertiary education	=1 if the woman has first level of education, =0 otherwise
Children age 6-12	=1 if women have children less than 12 years old, =0 otherwise
Children age 3-6	=1 if women have children with age 3–6 years
Children age 0-3	=1 if women have children with age 0–3 years
Familybenef	Log of the family benefits in the household
Logincome	Log of the non-labor income in the household excluding wife's income
Disabilitybenef	Log of the disability benefits in the household
Logwage	Natural log of the women's hourly real wage
Experience	Potential experience (present age - age when started work)
Exp2	Square of potential experience/100
Tenure	Years of experience in current job
Ten2	Square of tenure
Husband less than secondary school	=1 if the husband has first level of education, =0 otherwise
Husband secondary education	=1 if the husband has second level of education, =0 otherwise
Husband tertiary education	=1 if the husband has second level of education, =0 otherwise
Unemploybenef	= 1 if the husband receives unemployment benefits, =0 otherwise
Lambda	Inverse Mills ratio
Lam*	Lambda interaction with dummy time

Appendices

Table 17: **Demographic Data**

Country	**Change population aged 0-19 between 1991 and 2000 (i991=100)**	**Proportion population aged 0-19 in 2000**	**Total fertility rate in 1991**	**Total fertility rate in 2000**
EU 15	94,2	22,9	1,53	1,48
EUR 12	92,4	22,4	1,46	1,43
BL	98,4	23,6	1,66	1,66
DK	102,4	23,7	1,68	1,77
GER	100,9	21,3	1,33	1,36
FR	96,6	25,6	1,77	1,88
IRL	90,9	30,8	2,08	1,89
IT	85,1	19,8	1,31	1,24
NL	103,1	24,4	1,61	1,72
AU	98,9	22,8	1,49	1,34
PT	83,7	23	1,57	1,52
FIN	100	24,7	1,79	1,73
GRE	84,7	21,8	1,38	1,29
SP	78,5	21,4	1,33	1,24
UK	101,7	25,3	1,81	1,64

Source: EUROSTAT

Figure 4: **Family benefits in the Member States of the European Union,**

Country	Family benefits			parental leave, education allowance	Other legal family benefits
	Age limit	variation according to income	variation with age		
Belgium	18 years (vocational training, further education: 25 years)	no	yes	no	birth grants, adoption allowance
Denmark	18 years	yes (only for the supplementary allowance)	yes	yes	birth grants, adoption allowance, child care allowance, allowance for single parent
Germany	18 years (unemployed people : 21 years; vocational training, further education: 27 years)	no	no	yes	advance payment of maintenance
Greece	18 years (further education: 22 years)	no	no	no	allowance for single parent
Spain	18 years	yes	no	yes	birth grants (for the third child and multiple births)
France	20 years (from the second child)	no	yes	yes	birth grants, adoption allowance, child care allowance, allowance for single parent, allowance at beginning of the school year, advance payment of maintenance, family supplement
Ireland	16 years (further education: 19 years)	no	no	no	birth grants, allowance for single parent, family supplement
Italy	18 years	yes	no	no	birth grants (from the third child), adoption allowance
Luxembourg	18 years (vocational training, further education: 27 years)	non	yes	yes	birth grants, allowance at beginning of the school year, advance payment of maintenance
Austria	19 years (unemployed people: 21 years; vocational training: 26 years)	no	yes	yes	birth grants, allowance for single parent, advance payment of maintenance, special unemployment assistance
The Netherlands	17 years (vocational training, further education: 24 years)	no	yes	no	
Portugal	16 years (vocational training, further education: 24 years)	yes	yes	no	funeral grant
Finland	17 years	no	no	yes	birth grants, adoption allowance, child care allowance, allowance for single parent, advance payment of maintenance
Sweden	16 years (further education: 20 years, children in secondary school)	no	no	yes	adoption allowance, advance payment of maintenance
United-Kingdom	16 years (further education: 19 years)	no	no	no	birth grants and adoption allowance, child care allowance, "working families' tax credit", advance payment of maintenance
Iceland	16 years	yes	yes	no	child care allowance, allowance for single parent, educational pension, advance payment of maintenance
Norway	18 years	no	yes	yes	birth grants and adoption allowance, child care allowance, allowance for single parent, advance payment of maintenance

Source: MISSOC