Participation and Wage equations for Married Women in European countries

Catia Nicodemo
University of Tor Vergata, Rome*

January 2007
Preliminary and Incomplete Please do not quote

Abstract

This paper estimates the participation and the wage equations for married women, using panel 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.

The paper first shows the labor force participation equation that depends on the personal and family characteristics, the income in household and, in some countries, on the labor status of the husband. There is a considerable variation in the degree of labor market participation rate of women across countries.

Finally, I estimate the wage equation for females in a framework of unbalanced panel data models with sample selection. A test for selection bias and a correction procedure are used. The coefficients that affect the wage are very different across-countries.

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

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

*I'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 the intensity of female labor participation varies across European countries.

The Presidency Conclusions of the European Union Council in Lisbon (March 2000) set target for female employment rate was 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. Not every country is required to achieve these targets but the evaluation of their progress is usually done by comparing each country's performance with the average.

The literature proposes several explanations for higher female labor force participation, which include an increase in wage rates and educational attainment for women, reduction fertility and the increase of divorce rates, but this trend isn't uniform for all countries. The employment rates for female inactivity are much more different across countries than the unemployment rates (see figures 1 and 2).

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 grown more 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 option for part-time work and poor benefits for the family. As a consequence, women participate less in the labor market and have fewer children.

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

The Panel analyzed only 13 E.U. countries[1] 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. Firstly investigates 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 I calculate the wage equation in a structure of panel data models with sample selection. I consider different econometric methods to estimate this equation. First I consider there isn't sample selection so I use an OLS estimate. Secondly I try to estimate the wage equation with a Heckman Model, in a framework of panel data sample selection, and finally I consider a model of 2SLS where the equation of interest contains endogenous explanatory variables as well as unobserved heterogeneity. Due to the increased availability of longitudinal data and recent theoretical advances, panel data have become usually used in applied work in economics.

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 one I discuss the data set used in the analysis and I describe the intertemporal participation behavior and demographic characteristics. Section two describes the econometric method used to estimate the participation equation of married females. This equation 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 three I estimate the participation equation and the wage equation for married women, testing for selection bias and using a correction

[1]Austria, Belgium, Denmark, Finland, France,Germany, Greece, Italy, Ireland, Hollands, Portugal, Spain, The U.K.

procedure for this bias, as proposed by Wooldridge-Semikina (2006).

There is a significant 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 I follow the work of Jimenez and Borrego (1997), where they 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 model of Heckman.

There is a lot of literature that estimates the wage equation and problems related to heterogeneity and relativity under the assumption of strictly exogenous explanatory variables. 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.

The extension literature for endogenous explanatory variables in the primary equation is minimum and relatively recent.

Vella and Verbeek (1999) estimate a panel data model with censored endogenous regressors and selection, but don't allow a correlation between the unobserved effect and exogenous variables in the interest equation. Kyriazidou (2001) makes an estimation of dynamic panel data models with selection and lags of the dependent variable appear in the interest equation and in the selection equation. Garcia, Jimenez and Labega (2006) present an empirical example on Spanish data to estimate a wage equation and strike decision with a switching model. Finally we have Wooldridge and Semikina (2005) where they estimate a panel data sample selection and propose a test for selection bias and a procedure for correcting this.

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 collected data since 1994[2] in 15 European Union Member States under Eurostat (Statistical Office of the European Communities) coordination.
The data set covers about 130,000 individuals from 60,000 households in

[2]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).

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 31 and 53 years, who are married with or without children, and thus 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 individual (age , work experience, education, etc) and household 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 reported in Table 15.

In Table 2 I present the estimate labor force participation rate of married women in $1994-2000$ calculated dividing employed (at work or searching a work) by the total population in working age. There is a large heterogeneity from 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 business cycle. Ireland seems to be an exception because its employment rate is more similar to the Mediterranean countries, which can be interpreted as the result of cultural differences. Another exception is Portugal where the female participation rate is very high.

Descriptive Statistics

Table 3 present descriptive statistics on a selection of variables of interest, by country, for full sample married women, while in table 4 I 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) than the whole sample. Particularly, we observe a higher percentage of active women with a university degree and a few dependent children. The family benefits that include Child Benefit and Lone Parent Allowance (*familybenef*) are very small for Greece, Spain and Italy, both in the subsample and in the full sample, while the unemployed benefits for their husbands are small for Italy, Greece and U. K. but very high for Spain.

The same trend is followed by the total disability benefits in the household, except for U.K.

All variables of income are measured in local currency units deflated by the average exchange rate in the sample year, and I take their logarithm.[3].

From Table 5 to table 11 I compare the sample characteristics of women for which I 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, I choose only four of them.

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

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

Below each table, I've calculated the distribution of years of 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, nonlabor income, number of children, and in the policy that each government implements for female labor supply.

2 The Model

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.

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

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 11 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.

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, I 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 a 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 one 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

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

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 on workers, we do not get the population wage equation, but rather something else. As a result of this term, 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 equation 4 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 sometimes 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 inverse Mills ratio term:

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

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.

$$W = \beta' X_i + \varepsilon_i + \nu\lambda_i \quad (9)$$

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 indicate by i and a time series time dimension indicate by t.
Panel data have some benefits as: to 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 cause. 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 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 contains 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 recursivity, 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. I use this estimation when I accept that the potential experience is endogenous.

To test the sample selection we start with the model of Mundlak (1978), where if there is a correlation in selection equation between the individual α_i and Z_i, we need a set of individual exogenous instrument 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 $2SLS$ 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 is possible calculate the interaction terms the λ which time dummies and test the selection with a Wald test. This procedure for correcting the bias and inverse Mills ratio is a consistent estimator of the parameters.

If the null hypothesis is true , so there isn't selection, then OLS an consistent estimator for the primary equation if don't have endogenous variables.

I applied this procedure for estimate the wage equation for married women in ECHP.

3 Empirical estimates

Female participation equation

Given the panel structure of data set, I start analyzing the determinants of the equation participation of married women. I estimate this equation with a probit random effects model for panel data, because if we try to estimate probit with fixed effects we have serious problems due to 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 write before as:

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

where q_{it}(women1), is a dummy variable which takes 1 if the woman participates in labor market (working or seeking work) and 0 if she doesn't.

I excluded self-employed married women. The equation participation, q^*_{it}, is positive only if the dummy variable 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 benefit and income house 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 effect specific to individual and individual time-varying error.

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

The explanatory variables are divided into four 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 *age*two in each country is negative and significant, which means that the relation between age and female labor force participation decreases with the age, so means an inverted-U shape.

Probably the participation increases until women assume more family responsibilities.

Concerning education, I find a propensity to participate that increases with the education level. On the average the propensity to participate is about 30% from secondary degree and university degree and the effect is very large for several countries.

Education for females at the second and thirdly levels are significant for almost all countries, while the education of husbands is significative in few countries.

The second block of variables describe the fertility of women. I 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. The results show that the coefficients are significative and its sign in most countries is negative so women who have dependent children reduce their participation to work. Finally the effect of older children is not significative for most countries and generally positive.

The public policy on childcare could be very important to explain the participation of women across the countries.

The third set of variables represent the husband's labor status (*work status*) and their unemployment benefit (*longhunmp*). In several countries the labor status of husbands is significant, not for Mediterranean countries, where having an unemployed husband doesn't encourage women to participate in the labor market, but the sign of coefficients is positive so it means a positive influence on the participation of women, while the unemployment benefits are statistically insignificant for almost all countries but the sign is negative.

The potential experiences most important for labor force participation decision. A measure of potential experience assigns of market experience to women of the same age and educational status even though their labor market histories might differ. The coefficient of potential experience is significant than reflecting skill enhancement or seniority benefits, while the negative effect of potential experience captures reduce productivity over time, fewer market options available to older individuals.

Finally we have different sources of income in the household: (*logincome*) the total non-labor income in the house where the employment wife's income has been excluded, the disability benefits and family benefits. All income variables are deflated with CPI (Consumer price index) so a comparison among years is possible, but at the same time I use the PPP (Purchasing price power) that allows a comparison among countries.

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 income household that for the benefits in the family and disability benefits, so we may interpret that other sources of income have more influence in the participation, for example the wage of husbands and financial family conditions.

Women's wage equation

Now I estimate the wage equation with panel data sample selection, with three different models, OLS, Heckman two step for panel data and 2SLS. In the last model I consider the potential experience as endogenous.

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

We have selection bias because the dependent variable of 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 (ex. 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.

After testing the selection equation described before, I take wage equation 14 and I put inside the inverse Mill's ratio estimated by probit model for each period. I estimate this equation by OLS, Heckman and $2SLS$ models so the wage equation is:

$$w_{it} = x_{it}\beta + \gamma_i + \hat{\lambda}_{it} + e_{it} \tag{18}$$

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

The dependent variable w_{it} is the logarithm of the real monthly wage of married women. The vector of explanatory variables x_{it} includes education of women, time dummies, experience and experience square, 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, we observe only potential experience.

I use both participants and no-participants married women to estimate the selection equation, while to estimate the wage equation I use only the married women that participate to labor market for at least two waves.

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

In table 14 and 15 I 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 I put in regression equation the inverse Mill's ratio, calculated each year with a probit model (λ_{it}), to correct the sample selection and all regressors are considerate exogenous. In table 16 I tried to estimate a 2SLS model, considering the experience variable as endogenous. The set of instruments z_it used to control the endogenous experience contain : age and it's square, variables for children in three different ages, education of women and education of their husbands in two different levels, sources of income in household, and an indicator of the labor status of their husband. All this regressors are considered exogenous. The vector x_{it} in this case is a subset of z_{it} that includes education of women, time dummies, experience and experience square.

The result confirms that the Heckman model for panel data is an appropriate model to estimate the wage equation. First, not all variables which affect participation equation are also determinants to estimate the wage equation, and the magnitude of the effects are different. In table 15 we find that the selectivity correction term λ_{it} is significant for most countries and a negative sign is present for countries with a higher rate of employment.

Concerning the experience variable, the effect is different between the OLS and the Heckman models. While in the OLS model the experience decreases the wage for most countries, in the Heckman model, experience have a positive and significant effect for all European countries. The square of experience is negative and significant for both models in each country, which means that the relation between experience and wage is the same

[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.

after a high number of years of experience.

Regarding the effect of education we find that a higher education level increases the wage in several countries and the sign is statistically significant in panel data which are corrected for selection bias. We find the same results in the OLS regression, while a low level of education has a negative effect 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 the experience has a smaller effect than in Mediterranean countries. The effect of tertiary education is very low in Italy, while in the rest of countries the magnitude is larger. Having a primary education influences negatively the wage while the effect is reduced for countries with a high female employment rate.

In table 16 I estimate the wage equation with a model of 2SLS, and find that the experience has a positive effect on the wage, same the Heckman model, but coefficients are lower than in the Heckman model and they are more significant for Mediterranean countries. The education has the same effect in the Heckman model, a higher level of education incises negatively on the wage equation.

Conclusion

In this paper I first analyze the participation in labor market for married women in thirteen countries in Europe for a panel of eight years. I 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. Another factor that has a positive effect on participation is the age and the labor status of husbands.

Variables that influence negatively the labor market of females are: the household income, children, in particular dependent children, family and disability benefits.

These results mean that the economic policy plays an important role for increasing the participation equation, because for example an increase in the policy of childcare and nursery development provides women with more time to dedicate to the labor market. The targets imposed in the Presidency Conclusions of the European Union Council in Lisbon, in March 2000, are far away for most countries.

Concerning the wage equation, 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.

The magnitude of the effect of each variable is different across-countries.

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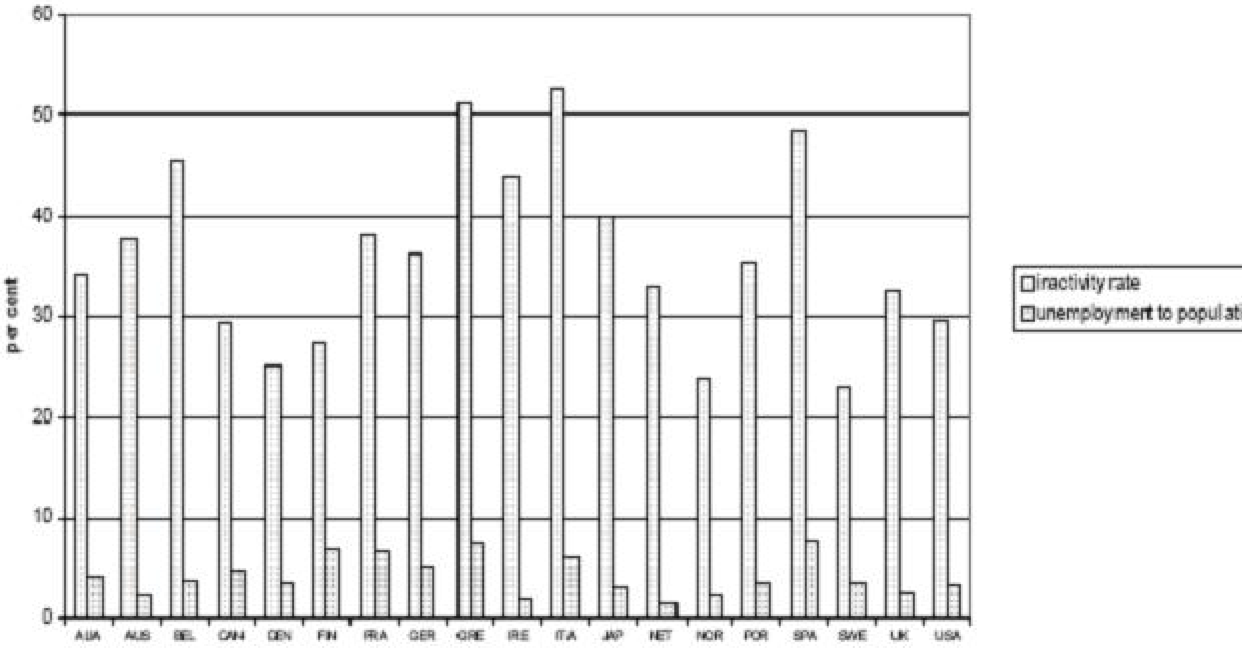
Figure 1: **Female inactivity and unemployment as per cent of population of working age, 2000**



Source: Oecd

Figure 2: **North and Mediterranean Countries Female inactivity rate, 2000**

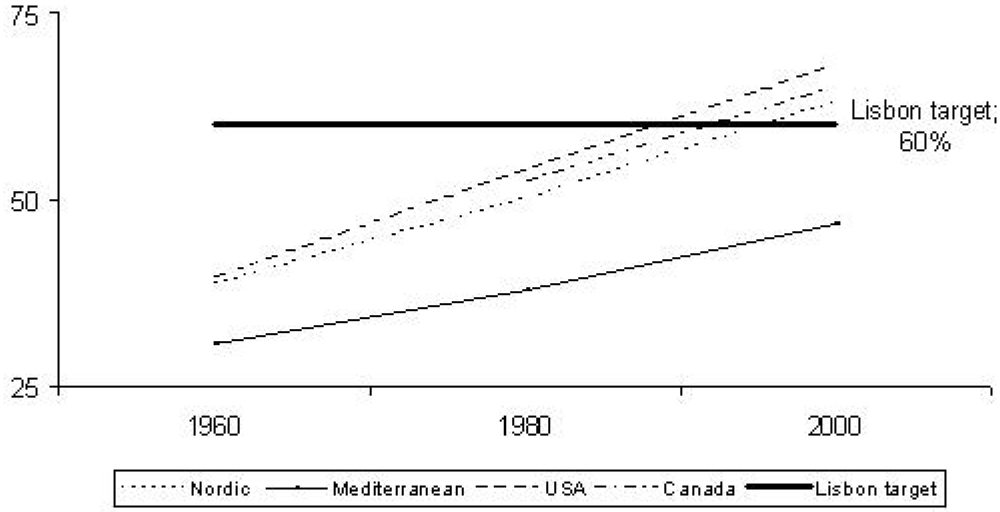


Table 1: **Female employment rate 1960 – 2000 Persons aged 15 to 64 years**

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
Hollands	-	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: **Female employment rate**

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 full sample**

Country	**n.obs**	**age**	**female secondary education**	**female tertiary education**	**children age 6-12**	**children age 3-6**	**children age 0-3**	**adulthou**	**loginCome**	**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, Full sample: all married women was born 1941-1965

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 was born 1941-1965, employed or search a job

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	experience	husband secondary education	husband tertiary education	work status	unemploy-benef
Germany	0.534***	-0.063***	0.883***	0.239**	0.121**	-0.765***	-0.604***	-0.584***	-0.031***	-0.101***	-0.036***	0.334***	0.388***	-0.196*	-0.021**
	0.039	*0.004*	*0.137*	*0.093*	*0.061*	*0.069*	*0.084*	*0.042*	*0.011*	*0.011*	*0.009*	*0.1*	*0.119*	*0.117*	*0.009*
Denmark	0.740***	-0.084***	0.959***	0.555***	0.044	0.004	-0.464***	-0.767***	-0.055***	-0.106***	-0.056***	0.491***	0.720***	-0.281	-0.026*
	0.068	*0.007*	*0.142*	*0.121*	*0.132*	*0.111*	*0.129*	*0.093*	*0.018*	*0.014*	*0.017*	*0.131*	*0.149*	*0.23*	*0.016*
Holland	0.697***	-0.072***	0.395***	0.204**	0.139	-0.290***	-0.318***	-0.292***	-0.105***	-0.124***	-0.162***	0.122	0.17	-0.494*	-0.007
	0.061	*0.007*	*0.128*	*0.095*	*0.088*	*0.089*	*0.104*	*0.051*	*0.013*	*0.012*	*0.004*	*0.108*	*0.124*	*0.265*	*0.016*
Belgium	0.717***	-0.081***	1.583***	0.373***	0.227*	0.073	-0.047	-0.245***	-0.008	-0.038***	-0.137***	0.229*	0.091	-0.630**	-0.019
	0.084	*0.009*	*0.173*	*0.119*	*0.127*	*0.113*	*0.133*	*0.07*	*0.018*	*0.015*	*0.011*	*0.12*	*0.159*	*0.28*	*0.02*
France	0.654***	-0.075***	0.880***	0.272***	0.247***	-0.204***	-0.583***	-0.246***	-0.062***	-0.041***	-0.063***	0.297***	-0.122	-0.027	0.021*
	0.051	*0.006*	*0.143*	*0.079*	*0.094*	*0.073*	*0.088*	*0.044*	*0.01*	*0.012*	*0.004*	*0.078*	*0.135*	*0.14*	*0.012*
U.K.	0.557***	-0.062***	0.529***	0.084	0.168	-0.417***	-0.955***	-0.100**	-0.080***	-0.150***	-0.075***	0.210*	0.047		-0.040*
	0.054	*0.006*	*0.102*	*0.101*	*0.103*	*0.079*	*0.095*	*0.049*	*0.014*	*0.012*	*0.008*	*0.112*	*0.103*		*0.021*
Ireland	0.276***	-0.029***	1.019***	0.373***	0.214**	-0.551***	-0.214**	-0.385***	-0.108***	-0.108***	-0.137***	0.166*	0.431***	-0.356**	-0.030**
	0.072	*0.008*	*0.169*	*0.105*	*0.084*	*0.088*	*0.101*	*0.068*	*0.019*	*0.016*	*0.019*	*0.093*	*0.154*	*0.144*	*0.013*
Italy	0.745***	-0.078***	1.598***	1.194***	0.068	-0.159**	-0.267***	-0.161***	-0.034**	-0.004	-0.149***	0.196**	0.816***	-0.288**	-0.042
	0.052	*0.006*	*0.202*	*0.1*	*0.078*	*0.081*	*0.095*	*0.027*	*0.015*	*0.017*	*0.005*	*0.097*	*0.195*	*0.145*	*0.084*
Greece	0.631***	-0.067***	1.820***	0.538***	0.009	0.005	-0.370***	-0.076***	-0.009	-0.070**	-0.137***	0.167	0.472***	-0.178	-0.009
	0.069	*0.008*	*0.17*	*0.13*	*0.094*	*0.119*	*0.142*	*0.022*	*0.023*	*0.03*	*0.006*	*0.117*	*0.157*	*0.175*	*0.029*
Spain	0.443***	-0.047***	1.759***	0.751***	0.111*	-0.157**	-0.351***	-0.143***	-0.005	-0.01	-0.096***	0.11	0.353***	0.019	0.002
	0.049	*0.005*	*0.126*	*0.095*	*0.067*	*0.072*	*0.087*	*0.025*	*0.017*	*0.012*	*0.005*	*0.092*	*0.11*	*0.089*	*0.01*
Portugal	0.469***	-0.053***	1.050***	0.304*	-0.057	-0.249**	-0.325***	-0.160***	0.029*	-0.041***	-0.122***	0.202	0.625**	0.057	-0.036*
	0.059	*0.006*	*0.226*	*0.173*	*0.089*	*0.1*	*0.126*	*0.033*	*0.015*	*0.014*	*0.006*	*0.172*	*0.259*	*0.178*	*0.019*
Austria	0.935***	-0.116***	1.483***	0.518***	0.126	-0.923***	-0.216	-0.358***	-0.042**	-0.075***	-0.050***	0.013	0.105	-0.032	-0.040**
	0.083	*0.009*	*0.355*	*0.168*	*0.114*	*0.122*	*0.15*	*0.082*	*0.017*	*0.019*	*0.016*	*0.204*	*0.36*	*0.285*	*0.019*
Finland	1.071***	-0.117***	0.784***	0.149	-0.066	-0.027	-0.930***	-0.803***	-0.052***	-0.070***	-0.069***	0.344***	0.571***	-0.242	-0.031**
	0.081	*0.009*	*0.153*	*0.117*	*0.114*	*0.112*	*0.141*	*0.097*	*0.018*	*0.012*	*0.017*	*0.111*	*0.144*	*0.187*	*0.014*

note pvalue: .01 - ***; .05 - **; .1 - *; Standard deviation in italics, Year dummy variables are included but not reported

Table 13: **Marginal effects of labor force participation**

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	experience	husband secondary education	husband tertiary education	unemploy-benef	work status
Germany	0.086***	-0.010***	0.168***	0.054***	0.014	-0.198***	-0.125***	-0.160***	-0.011***	-0.034***	-0.006***	0.065***	0.075***	-0.011***	-0.068**
	0.006	0.001	0.011	0.01	0.013	0.015	0.018	0.007	0.001	0.002	0.001	0.012	0.013	0.002	0.027
Denmark	0.085***	-0.010***	0.141***	0.087***	0.014	0.007	-0.066***	-0.176***	-0.003*	-0.025***	-0.004***	0.048***	0.072***	-0.013***	-0.067*
	0.006	0.001	0.011	0.01	0.018	0.014	0.019	0.011	0.002	0.002	0.001	0.011	0.012	0.002	0.04
Holland	0.117***	-0.011***	0.168***	0.089***	0.062***	-0.074***	-0.026	-0.078***	-0.023***	-0.023***	-0.030***	0.026	0.017	-0.007***	-0.06
	0.008	0.001	0.016	0.014	0.015	0.016	0.019	0.009	0.002	0.002	0.004	0.017	0.02	0.003	0.052
Belgium	0.110***	-0.012***	0.290***	0.081***	0.075***	-0.073***	-0.094***	-0.138***	-0.002	-0.016***	-0.023***	0.02	0.005	-0.020***	-0.207***
	0.01	0.001	0.015	0.015	0.022	0.02	0.023	0.012	0.002	0.002	0.001	0.016	0.017	0.003	0.055
France	0.100***	-0.011***	0.166***	0.088***	0.045***	-0.037**	-0.100***	-0.112***	-0.019***	-0.019***	-0.007***	0.056***	-0.02	0	-0.083***
	0.008	0.001	0.015	0.012	0.015	0.015	0.017	0.008	0.002	0.002	0.002	0.012	0.015	0.002	0.029
U.K.	0.047***	-0.005***	0.107***	0.054***	0.068***	-0.115***	-0.173***	-0.058***	-0.017***	-0.038***	0.010***	0.033**	-0.027**	-0.019***	
	0.008	0.001	0.01	0.013	0.016	0.016	0.018	0.007	0.002	0.001	0.002	0.014	0.01	0.004	
Ireland	0.071***	-0.008***	0.320***	0.072***	0.054***	-0.114***	-0.018	-0.163***	-0.023***	-0.022***	-0.011**	0.079***	0.073***	-0.011***	-0.094***
	0.012	0.001	0.02	0.014	0.019	0.016	0.019	0.011	0.003	0.003	0.005	0.014	0.019	0.002	0.028
Italy	0.054***	-0.005***	0.327***	0.191***	-0.003	-0.041***	-0.025**	-0.053***	-0.012***	-0.001	0.014***	0.029***	0.056***	0.014	-0.096***
	0.005	0.001	0.02	0.009	0.01	0.009	0.011	0.004	0.002	0.002	0.001	0.008	0.015	0.012	0.015
Greece	0.060***	-0.006***	0.290***	0.066***	0.013	-0.002	-0.028**	-0.040***	0.004**	-0.003	0.001	-0.001	0.079***	-0.007*	-0.013
	0.006	0.001	0.019	0.011	0.011	0.012	0.012	0.004	0.002	0.003	0.001	0.01	0.014	0.003	0.021
Spain	0.043***	-0.004***	0.387***	0.157***	-0.005	-0.047***	-0.045***	-0.040***	-0.005	0.001	0.002	0.015	0.049***	0	0.025
	0.006	0.001	0.014	0.013	0.011	0.01	0.012	0.004	0.003	0.002	0.001	0.011	0.011	0.002	0.017
Portugal	0.011	0	0.380***	0.116***	-0.031*	-0.071***	-0.086***	-0.062***	0.005**	-0.015***	0.023***	0.076***	0.016	-0.002	0.051
	0.009	0.001	0.021	0.022	0.018	0.019	0.022	0.006	0.002	0.002	0.002	0.022	0.031	0.004	0.043
Austria	0.109***	-0.014***	0.289***	0.105***	-0.002	-0.227***	-0.019	-0.104***	-0.014***	-0.020***	0.002	0.005	-0.043	-0.015***	-0.031
	0.014	0.002	0.025	0.016	0.024	0.022	0.03	0.013	0.002	0.003	0.005	0.021	0.034	0.003	0.065
Finland	0.105***	-0.011***	0.119***	0.026**	0.002	0.019	-0.155***	-0.168***	-0.003	-0.016***	0.009**	0.047***	0.070***	-0.012***	-0.133***
	0.01	0.001	0.014	0.012	0.017	0.016	0.024	0.011	0.002	0.001	0.004	0.011	0.013	0.002	0.039

note pvalue: .01 - ***; .05 - **; .1 - *; Standard deviation in italics, Year dummy variables are included but not reported

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

Country	**experience**	**exp2**	**female tertiary education**	**less female secondary education**	**unmployment-benef**	**logincome**	**disability-benef**	**family-benef**	**children age6-12**	**children age 3-6**	**children age 0-3**
Germany	0.189***	-0.464***	0.760***	-0.363***	-0.020**	-0.502***	-0.104***	-0.026**	0.153***	-0.857***	-0.826***
	0.023	0.042	0.105	0.099	0.009	0.044	0.014	0.01	0.058	0.089	0.103
Denmark	0.178***	-0.440***	0.319***	-0.762***	-0.034**	-0.365***	-0.119***	-0.043***	0.193*	-0.062	-0.462***
	0.041	0.07	0.086	0.131	0.017	0.081	0.017	0.013	0.102	0.099	0.124
France	-0.031***	-0.076***	0.812***	-0.114	0.018	-0.145***	-0.042***	-0.044***	0.374***	-0.362***	-0.785***
	0.011	0.021	0.162	0.081	0.012	0.041	0.012	0.009	0.084	0.077	0.095
U.K.	0.044**	-0.234***	0.492***	-0.144*	-0.031	-0.001	-0.144***	-0.072***	0.225***	-0.603***	-1.032***
	0.02	0.037	0.08	0.078	0.02	0.045	0.015	0.013	0.065	0.087	0.11
Ireland	-0.009	-0.080**	0.967***	-0.539***	-0.052***	-0.013	-0.080***	-0.065***	0.325***	-0.572***	-0.324***
	0.026	0.039	0.167	0.096	0.013	0.052	0.017	0.016	0.089	0.094	0.108
Italy	-0.099***	0.029**	0.738***	-0.563***	-0.069	-0.069***	-0.001	-0.006	0.066	-0.134***	-0.273***
	0.01	0.014	0.223	0.073	0.065	0.015	0.007	0.008	0.044	0.049	0.06
Greece	-0.085***	0.039**	0.704***	-0.425***	-0.024	-0.02	-0.022**	-0.016	0.064	-0.124*	-0.336***
	0.013	0.018	0.121	0.078	0.018	0.021	0.011	0.015	0.064	0.071	0.083
Spain	-0.069***	0.021	1.053***	-0.751***	-0.012	-0.040**	-0.011	-0.016	0.141**	-0.278***	-0.440***
	0.011	0.016	0.138	0.091	0.008	0.017	0.009	0.015	0.056	0.061	0.076
Portugal	-0.057***	-0.035*	0.601***	-0.785***	-0.026	-0.087***	-0.035***	0.039***	0.017	-0.229***	-0.303***
	0.012	0.02	0.177	0.15	0.016	0.023	0.011	0.012	0.062	0.079	0.106
Austria	0.197***	-0.520***	1.147***	-0.441***	-0.037**	-0.188***	-0.057***	-0.01	0.067	-0.947***	-0.565***
	0.037	0.061	0.239	0.146	0.017	0.054	0.019	0.014	0.092	0.131	0.179
Finland	0.294***	-0.666***	0.625***	-0.202*	-0.030**	-0.357***	-0.061***	-0.063***	-0.038	-0.055	-0.804***
	0.028	0.051	0.096	0.11	0.014	0.066	0.012	0.015	0.076	0.123	0.127

note pvalue: .01 - ***; .05 - **; .1 - *;Year dummy variables are included but not reported. Standard error in italics

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

Country	experi-ence	exp2	female tertiary education	less female secondary education	lambda
Germany	0.022***	-0.033**	0.429***	-0.067*	-0.465***
	0.008	0.015	0.033	0.038	0.089
Denmark	0.005	-0.022*	0.130***	-0.093***	-0.152***
	0.006	0.012	0.019	0.032	0.051
France	0.015***	-0.022**	0.452***	-0.268***	-0.002
	0.005	0.01	0.035	0.031	0.054
U.K.	0.001	-0.011	0.293***	-0.167***	-0.246***
	0.006	0.012	0.039	0.038	0.077
Ireland	0.004	-0.026	0.550***	-0.429***	-0.159
	0.017	0.031	0.046	0.052	0.124
Italy	0.027***	-0.049***	0.171***	-0.347***	0.014
	0.004	0.009	0.021	0.021	0.047
Greece	0.038***	-0.083***	0.241***	-0.354***	0.104***
	0.006	0.016	0.03	0.038	0.035
Spain	0.050***	-0.096***	0.370***	-0.472***	0.057
	0.009	0.02	0.038	0.044	0.039
Portugal	0.046***	-0.099***	0.483***	-0.652***	0.116***
	0.006	0.014	0.035	0.033	0.029
Austria	0.031**	-0.055**	0.396***	-0.205***	-0.106
	0.013	0.026	0.058	0.05	0.083
Finland	0.006	-0.011	0.236***	-0.036	-0.145**
	0.006	0.011	0.021	0.024	0.062

note pvalue: .01 - ***; .05 - **; .1 - *;Year dummy variables are included but not reported. Standard error in italics

Table 16: **Estimates for the hourly wage equation, 2SLS model**

Country	**experience**	**exp2**	**lambda**	**less female secondary education**	**female secondary education**	**female tertiary education**
Germany	0.016*	-0.021	-0.227***	0.474***	0.128	0.069
	0.009	*0.018*	*0.067*	*0.154*	*0.153*	*0.155*
Denmark	0.001	-0.007	-0.109***		-0.132***	-0.230***
	0.006	*0.012*	*0.030*	*0.013*	*0.016*	*0.025*
The Netherland	0.014	-0.024	-0.233***	-0.136	-0.436***	-0.467***
	0.010	*0.021*	*0.059*	*0.124*	*0.125*	*0.129*
Belgium	0.025**	-0.036	-0.038	0.158**	-0.112	-0.326***
	0.010	*0.023*	*0.024*	*0.067*	*0.070*	*0.074*
France	0.064***	-0.107***	0.073	0.624***	0.112	-0.145
	0.010	*0.020*	*0.050*	*0.125*	*0.124*	*0.124*
U.K.	0.004	-0.008	-0.206***	0.543***	0.297**	0.118
	0.010	*0.018*	*0.061*	*0.126*	*0.127*	*0.125*
Ireland	-0.036**	0.058*	-0.038	-0.201***	-0.736***	-1.054***
	0.016	*0.031*	*0.115*	*0.040*	*0.036*	*0.050*
Italy	0.064***	-0.119***	0.020**	0.723***	0.529***	0.190*
	0.009	*0.020*	*0.047***	*0.101*	*0.099*	*0.099*
Greece	0.106***	-0.238***	0.147***	0.528***	0.290***	
	0.013	*0.034*	*0.041***	*0.043*	*0.042*	
Spain	0.111***	-0.200***	0.138***	0.819***	0.393***	
	0.013	*0.026*	*0.042*	*0.038*	*0.042*	
Portugal	0.058***	-0.109***	0.108***	0.130***	-0.443***	-0.984***
	0.009	*0.019*	*0.027*	*0.042*	*0.049*	*0.043*
Austria	0.048**	-0.071	-0.023**		-0.429***	-0.638***
	0.023	*0.044*	*0.068***		*0.060****	*0.065*
Finland	0.016**	-0.024	-0.046		-0.249***	-0.304***
	*0.008***	*0.016*	*0.041*		*0.017*	*0.022*

note pvalue: .01 - ***; .05 - **; .1 - *;Year dummy variables are included but not reported. Standard error in italics

Table 17: **Variable definitions**

Variable	**Definition**
Women	Sample of women married age 30-54
Women1	=1 if the woman work or seek for a job , 0 otherwise
Active	=1 if women participation to 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 the women has children less than 12years old, 0 otherwise
Children age 3-6	children with age 3–6 years
Children age 0-3	children with age 0–3 years
Ownerhouse	Dummy =1 if the house is owner
Adulthou	Number of adults in the household
Familybenef	Log family benefits in the household
Logincome	Log of nolabor income in the household exclusion of income wife
Disabilitybenef	Log real 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
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	Log of unemployment benefit of husband
Work status	Status of work of husband
Lambda	Inverse Mills ratio
Lam*	Lambda interaction with dummy time