

Labour force participation of women with children: disparities and developments in Europe since the 1990s

Olivier Thévenon (INED)¹

November 2007

Abstract: The aim of this paper is to identify how specific the increase of female labour market participation observed over the last fifteen years were to particular family statuses: mothers versus childless women, households with young children versus households with older children, mothers who had children early versus those who had children later. The analysis is based on European Union Labour Force Surveys (EU LFS) for the period from 1992 to 2005 and draws on the data available for some countries on household composition, and observes different cohorts of women across the different years of the survey. The labour market situations of women are modelled in order to identify trends in behaviour for given individual and family characteristics. The results are used to discuss the variety of changes in female labour market behaviour in group of countries that were considered as relatively similar at the beginning of the 90s. We find that changes were mainly favourable to mothers in Belgium, Spain, Portugal, Poland, the Netherlands and the UK. Some similarities and differences between countries identified in previous comparative research are reaffirmed, confirming the relative heterogeneity of the models of female employment in relation to standard welfare state typologies. Major differences and trends specific to certain countries were nevertheless identified. Some of these differences concern the relative importance of the number of children and of the age of the youngest on female labour market behaviour. But differences also relate to the variable impact of the age at which women have their first child. It suggests that varieties in macro-institutional contexts shape different opportunity for women to manage labour market commitment with family formation over their life-cycle.

Key words: female employment, labour supply, European employment

¹ olivier.thevenon@ined.fr; INED, 133 Boulevard Davout, 75980 Paris Cedex 20. Ana Franco and Sylvain Jouhette from Eurostat are greatly acknowledged for the provision of LFS data. This work is in great part followings of my collaboration with Prof. Jacques Zighera in the project 'Female Employment in National Institutional Context', financed by the European Commission. Previous versions of this work benefited of remarks from Cédric Afsa-Essafi, Ariane Paihlé, Dominique Meurs and Laurent Toulemon. All remaining errors are of course of my responsibility.

Introduction

The workforce participation rate of women in Europe has increased enormously since the 1970s. Female employment was given a fresh impetus in the 1990s as a key component of the European Employment Strategy launched by the European Union in 1997 on the basis of the Treaty of Amsterdam. The strategy advocates raising the women's workforce participation rate to boost growth and achieve the increase in the number of workers required to finance social protection. Women's work is also promoted as a way for households to lift themselves out of poverty.

This positive view of increased female employment is relatively recent. Previously, the prevailing view was that opening the labour market to women would exacerbate unemployment. Mainly, the increase in female employment is seen as one of the main reasons for the drop in fertility rates observed since the 1970s because of the incompatibility of working and bringing up children. European countries were therefore encouraged to introduce policies to facilitate the balance between work and family life in order to increase employment rates and minimise possible negative effects on fertility and family life. The viability of that option is illustrated by the positive correlation now observed in international comparisons between fertility rates and female employment rates, a correlation that is steadily rising (D'Addio and Mira d'Ercole, 2005).

Recent literature have argued that variations in the macro political economic context (briefly speaking in welfare regimes) shape nonetheless the extent to which individual determinants affect life-course behaviours, but also *how* they influence them (Blossfeld, 1996; Esping-Andersen, 1999; Billari, 2004). Thus, differences in regulation contexts affect the opportunity for women to work and the extent to which family characteristics produces heterogeneous behaviour (Blossfeld and Drobnic, 2001; Thévenon, 2003; 2006). Moreover, these macro-differences imply that similar characteristics may have different and possibly opposite impacts on female behaviour, which would lead to opposite equilibriums in terms of fertility and female employment standards in the absence of policy reforms and changes in employment contexts (Thévenon, 2004).

Such changes explain partly why women's workforce participation continued to head up in the 1990s in most European countries, albeit at different paces and in different patterns. The expansion of part-time employment in particular made a variable contribution to the overall increase depending on the country, since female full-time equivalent employment did not necessarily increase as a result. The opportunity to combine an occupation with children also followed different trends in different countries, with variable impacts depending on household composition. The main aim of this paper is to identify how specific these trends were to particular family statuses: mothers versus childless women, households with young children versus households with older children, mothers who had children early versus those who had children later. The labour market situations of women re modelled in order to identify trends in behaviour for given individual and family characteristics. The resulting model is used to discuss the variety of changes in female labour market behaviour in group of countries that were considered as relatively similar at the beginning of the 90s. The identification of trends more or less specific to given family situations would allow to focus attention to the changes in the institutional environment that may have caused these evolutions. For example, it would help to identify institutional innovations that seem to have been the most effective at enabling women with children to participate in the workforce. This analysis is based on European Union Labour Force Surveys (EU LFS) for the period from 1992 to 2005 and draws on the data available for some countries on household composition, and observes different cohorts of women across the different years of the survey.

Section I describes the trends in employment rates over the review period. Section II outlines the methodology and data set used to analyse women's behaviour and trends. Lastly, the effects specific to women with children are described in order to highlight similarities between countries and disparities that emerged over the review period.

I. Trends in female employment rates in Europe

I.1. Rising employment rates until 2005

In almost all European countries, female employment continued to climb during the 1990s and until 2005 for the total working-age female population (Table 1). In the 15-member European Union (EU-15), the female employment rate increased more sharply (+7.7%) than the male employment rate, which stagnated (+0.4%). In countries in recession during the review period, male employment even fell, whereas female employment continued to increase (except in Sweden). In Poland and the Czech Republic, the transition to a market economy was attended by a decline in both male and female employment rates. In the EU-15 as a whole, the gap between male and female employment rates narrowed considerably, from 22.8% to 15.5%. Trends in female employment rates varied widely between countries, although the gaps between countries narrowed because female employment rose faster in countries where the rate was lower at the outset. The maximum difference between employment rates fell from 40.6% in 1992 (between Denmark and Spain) to only 26.6% in 2005 (between Denmark and Poland). Dispersion between countries decreased overall, with the standard deviation between employment rates falling from 12.6% to 8.6%.

Table 1: Evolution of Employment rates : 1992-2005 (Population from 15 to 64 years old).

	Employment rate						Unemployment rate					
	Women			Men			Diff Women-Men		Women		Mens	
	1992	2005	Variation	1992	2005	Variation	1992	2005	1992	2005	1992	2005
Denmark	70.4	71.9	1.5	77.4	79.8	2.4	7.0	7.9	9.2	5.3	8	4.4
Sweden	73.1	70.4	-2.7	75	74.4	-0.6	1.9	4.0	4.4	7.7	6.8	7.9
Finland	63.7	66.5	2.8	66.9	70.3	3.4	3.2	3.8	9.6	8.6	13.6	8.2
Norway	67.5 ^a	72 ^a	4.5	76.8 ^a	78.3 ^a	1.5	9.3	6.3	4.8 ^a	4.4 ^a	6 ^a	4.9 ^a
Austria	58.9 ^a	62	3.1	77.8 ^a	75.4	-2.4	18.9	13.4	5 ^a	5.5	3 ^a	4.9
Belgium	44.3	53.8	9.5	68.2	68.3	0.1	23.9	14.5	10	3.5	5.1	7.6
Germany	55.7	59.6	3.9	76.7	71.2	-5.5	21.0	11.6	8.5	10.3	5.2	8.9
France	50.8	57.6	6.8	68.7	68.8	0.1	17.9	11.2	12.4	10.5	8.1	8.7
Luxemburg	45.7	53.7	8	76.5	73.3	-3.2	30.8	19.6	2.8	5.3	1.7	3.5
Netherlands	51	66.4	15.4	75.9	79.9	4.0	24.9	13.5	7.2	5.1	4.1	4.4
Portugal	55.2	61.7	6.5	77.6	73.4	-4.2	22.4	11.7	5.1	8.6	3.6	6.7
Spain	32.5	51.2	18.7	65.1	75.2	10.1	32.6	24.0	21	12.2	11.7	7
Italy	36.5	45.3	8.8	68.7 ^b	69.9	1.2	32.2	24.6	13	10.1	6.3	6.2
Greece	36.2	46.1	9.9	72.4	74.2	1.8	36.2	28.1	12.9	15.3	5	6.1
United-Kingdom	60.8	65.9	5.1	75.9	77.6	1.7	15.1	11.7	7.5	4.3	11.6	5.1
Irland	37.1	58.3	21.2	65.1	76.9	11.8	28.0	18.6	16	4.0	15.1	4.6
Poland	51.6 ^c	46.8	-4.8	66.2 ^c	58.3	-7.9	14.6	11.5	13 ^c	19.1	9.3 ^c	16.6
Czech Rep.	60.2 ^c	56.3	-3.9	77.1 ^c	73.3	-3.8	16.9	17.0	5.1 ^c	9.8	3.6 ^c	6.5
Hungaria	45.1 ^d	51	5.9	59.4 ^d	63.1	3.7	14.3	12.1	9 ^d	7.4	10.8 ^d	7
EU (15)	49.7	57.4	7.7	72.5	72.9	0.4	22.8	15.5	11.5	8.9 ^b	9.2 ^b	7
Ecart maximum	40.6	26.7	26.0	18.4	21.6	19.7	34.3	24.3	18.2	15.6	13.4	13.1
Ecart -type	12.6	8.6	6.9	5.7	5.5	4.9	10.0	6.7	4.6	4.1	3.8	2.8

Source : Employment in Europe, 2006 ; OECD for Norway ; a : 1994 ; b :1993 ; c :1997 ; d :1996

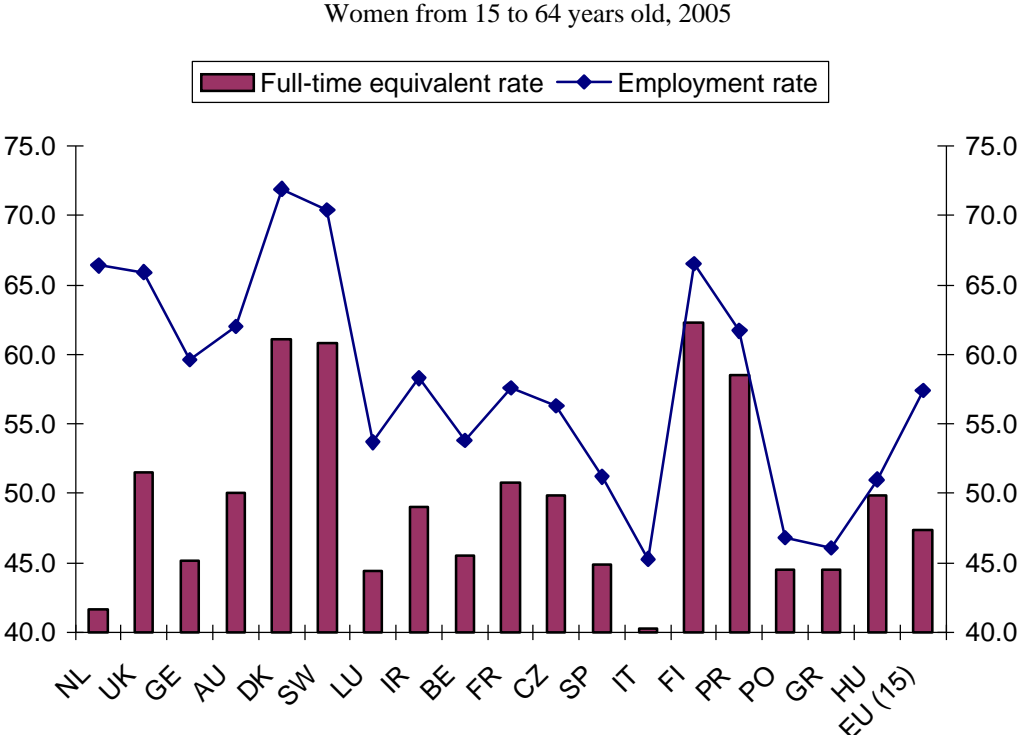
The ranking of countries did not change, however, with few exceptions. In 2005 as at the beginning of the period, female employment rates were highest in the Scandinavian countries, where the female employment rate was closest to the male employment rate, with more than 70% of women working in Norway, Denmark and Sweden. Employment rates declined in Denmark and Sweden until 1995 due to a recession, whereas they continued to rise in Norway, exceeding those of its Scandinavian neighbours at that time. As at the beginning of the period, the female employment rate in

Finland in 2005 was significantly lower at 66%, comparable to the levels in the UK and the Netherlands. Employment rates were more varied in continental European countries. The female employment rate was either above or in line with the EU-15 average prior to 2004 in Germany, Austria, the Netherlands and France, and significantly below that average in Belgium and Luxembourg.

The female employment rate was still the lowest in the Mediterranean countries (Spain, Italy and Greece) at the end of the period, despite a fairly steep increase, particularly in Spain, where women’s workforce participation rose from 32.5% in 1992 to 51% in 2005. The gap between the male and female employment rates in those countries was therefore much wider than average, although it narrowed over the review period. Portugal diverged from the other southern European countries with a female employment rate as high as Austria’s since 1999. The eastern European countries form a heterogeneous group. The female employment rate was comparable to the Mediterranean countries in Poland and Hungary, but on a par with the EU average in the Czech Republic. Female employment started to fall in the Czech Republic and Poland in the late 1990s, reflecting economic transition. The country where the female employment rate increased the most was Ireland, where the percentage of women in work rose from 37% to 58% over the review period.

Women’s workforce participation has therefore increased, but the number of hours worked vary widely, as shown by the comparison of employment rates converted to the full-time equivalent (Graph 1). Some gaps between countries narrowed, while others widened. The Nordic countries and Portugal stand out with higher full-time equivalent employment rates than other countries. Meanwhile the gap between employment and full-time equivalent employment rates narrowed in other countries. Finland caught up with the other Nordic countries. The gap between employment rates and the full-time equivalent was relatively small in southern countries (including Portugal) and eastern countries, where part-time work is uncommon (accounting for fewer than 20% of jobs in all those countries). The gap was widest in other countries, especially the Netherlands, the UK and Germany. Three-quarters of women are employed part-time in the Netherlands and more than four working women in ten in the other two countries.

Graph 1: Employment rates and full-time equivalent



The disparities observed in 2005 are not new since the countries’ relative positions remained stable over the period. These disparities were already examined by comparative literature in the 1990s.

II. Modelling trends in women's workforce participation

II.1. Analysing the work-family interface on the basis of the European Union Labour Force Survey

The data used here come from Eurostat's Labour Force Surveys (LFS), which contain annual harmonised results from the national Labour Force Surveys conducted in each EU country. The survey's main advantage is that it provides comparable aggregate data from a large sample about household structure and the spouses' educational level and employment status over a relatively long period of time, since results are available for some countries back to 1984. Two limitations are worth mentioning, however. Firstly there are no data on household composition for the northern European countries, which therefore cannot be included in the analysis, which is particularly regrettable as these countries are often cited as a benchmark in terms of work-family balance. Secondly the survey gives no information on income and wages or the cost of workforce participation induced by children for the review period. The data therefore cannot be used to identify the structural parameters of a woman's decision to work or not. However, the survey does provide detailed annual information on individuals' employment statuses in relation to their previous situation, their educational level and household composition. Moreover, the large national samples enable an analysis based on fairly precisely defined population categories that takes various interaction effects between variables into account².

Demographic information is also limited by the fact that only family ties between the household head or spouse and the other family members living in the household at the time of the survey are known. Consequently, not all the ties between household members are identified. In particular, there is no indication as to whether the child living in the household is the child of both spouses or of only one, which is the case in blended families. The children living in the household are therefore considered to belong to the household head, which amounts to an assumption that all children living in the household have a similar effect on the occupational behaviour of women, regardless of actual family ties. Furthermore, the survey does not identify children other than those of the household head and spouse, which means that it excludes children of women who do not live in "independent" households, which may be the case of young mothers still living with their parents. Lastly, only children living in the household are identified, not children who have moved out of their parents' home, even though they may continue to influence their mother's employment status. To limit that possibility and the bias it would induce, the sample was restricted here to women aged 20 to 45 for each year of the survey, which reduces the likelihood of children having left their mother's home.

II.2. Data coding

Employment status – considered here as a dependent variable – is modelled as a function of (i) individual characteristics such as age and educational level, (ii) "standard" characteristics of family composition (number of children, age of youngest child, presence of a spouse and spouse's financial situation), and (iii) the timing of the birth of the first child, which reflects the more or less persistent effects of past decisions. In total, seven variables were taken into account to model women's employment behaviour:

(1) Survey year – from 1992 (when information about educational level became available) to 2005. The survey years are aggregated into pairs (1992-1993, 1994-1995, 1996-1997, 1998-1999, 2000-2001, 2002-2003, 2004-2005) in order to have large enough sub-samples for each category.

(2) Woman's birth cohort – defined in accordance with the age interval of 20 to 44 for each survey year. Therefore only women born between 1944 and 1985 are considered for the 1992-2005 period, with the two extreme cohorts only taken into account in one survey year, 1992 and 2005 respectively. The cohorts are aggregated into sets of three years.

(3) Educational level – indicated by three levels, based on ISCED nomenclature: high (post-secondary education); intermediate (upper secondary education); and low (basic education).

² Data on Ireland are not included here, although female labour market participation strongly increased over the period, because information on household composition has been found to be non reliable.

(4) Presence of children – identified by the number of children belonging to the woman or her spouse, divided into five categories (0, 1, 2, more than 2, unknown), and (5) the age of the youngest child, divided into five categories: 0-2 years, 3-6 years, 7-11 years, 12-19 years and over 19 years.

(6) Presence of a spouse – indicated by three categories that take account of his employment status: no spouse, working spouse, non-working spouse. For a lack of data on household income, the financial situation of the spouse gives an indication of the household's standard of living and the division of paid labour between the sexes.

(7) Mother's age at the birth of the first child – introduced as a discriminatory variable for the employment behaviour of women with at least two children. This age is obtained by subtracting the age of the eldest child in the household from the current age of the mother, assuming that this child is the mother's. The mother's age at the birth of the first child is divided into four categories: 15-19 years, 20-24 years, 25-29 years, 30-34 years or 35 and above.

(8) Woman's employment status – broken down into non-working women, women seeking work, women who usually work fewer than 18 hours a week (short-time employment), women who usually work 18 to 32 hours a week (medium-time employment) or women who work 33 or more hours a week (full-time employment). Women on maternity leave are considered separately, not in order to study their behaviour but to avoid including them with working women. However, women on parental leave for more than six months are counted as non-working.

II.3. Modelling employment status

To isolate the effects stemming specifically from children, a log-linear model of the woman's employment status as a function of her family status was used. The model observes cohorts of women born in the same year for several years in order to isolate the effects specific to children from the effects of the mother's age and cohort. Furthermore, employment status is modelled here by considering fertility and education as data preceding employment, which may be adjusted according to family status. The model therefore indicates employment status trends at constant demographic behaviour. The model was computed for each of the EU-15 countries, to avoid some differences being overlooked owing to different sample structures.

The distribution of employment statuses (subscripted 8) is therefore modelled in a multiplicative form (linear in log) of independent parameters describing the links between the different explanatory variables, subscripted 1 to 7:

$$\hat{x}^{12345678}(p) = y^{12345678}(p) \cdot \mu_0 \cdot \mu^8(p) \cdot \prod_{i=1}^7 \mu^{i8} \cdot \prod_{i,j=1}^7 \mu^{ij8}$$

where $y^{12345678}(p)$ refers to the theoretically uniform distribution of employment statuses conditional on the other characteristics, μ_0 is a standardisation factor and $\mu^8(p)$ indicates the average distribution of statuses independently of the other characteristics. The influence of these characteristics is estimated by all the simple effects μ^{i8} for each independent variable i and level-one interaction effects μ^{ij8} . The predicted probability of each employment status p is then obtained by the relationship $\hat{x}^{12345678}(p) / y^{12345678}(p)$, which is equal to the product of the estimated parameters. It indicates the conditional probability of the employment status, given the individual and family characteristics and the survey year. The marginal effect of each variable or set of variables on the predicted frequency of employment statuses can then be deduced.

The model also integrates all the interaction effects up to level three between the different explanatory variables in order to examine the interactions and how they changed over time (i.e. with birth year or survey year)³. The model also minimises the discriminatory information in order to

³ Sample size and the definition of relatively aggregated definition of categories make here possible stable estimation of these interactions.

identify the effects that contribute the most to the information, i.e. that explain most of the variance in employment behaviour⁴.

III. Results of the estimate

The following sections present the results of the estimated effects of the presence of children. The effect of the number of children is described first, with an indication of its average effect over the period and its trend. The influence of the child's age, and of the mother's age at the birth of the first child are then discussed.

III.1. Presence of children and women's employment status

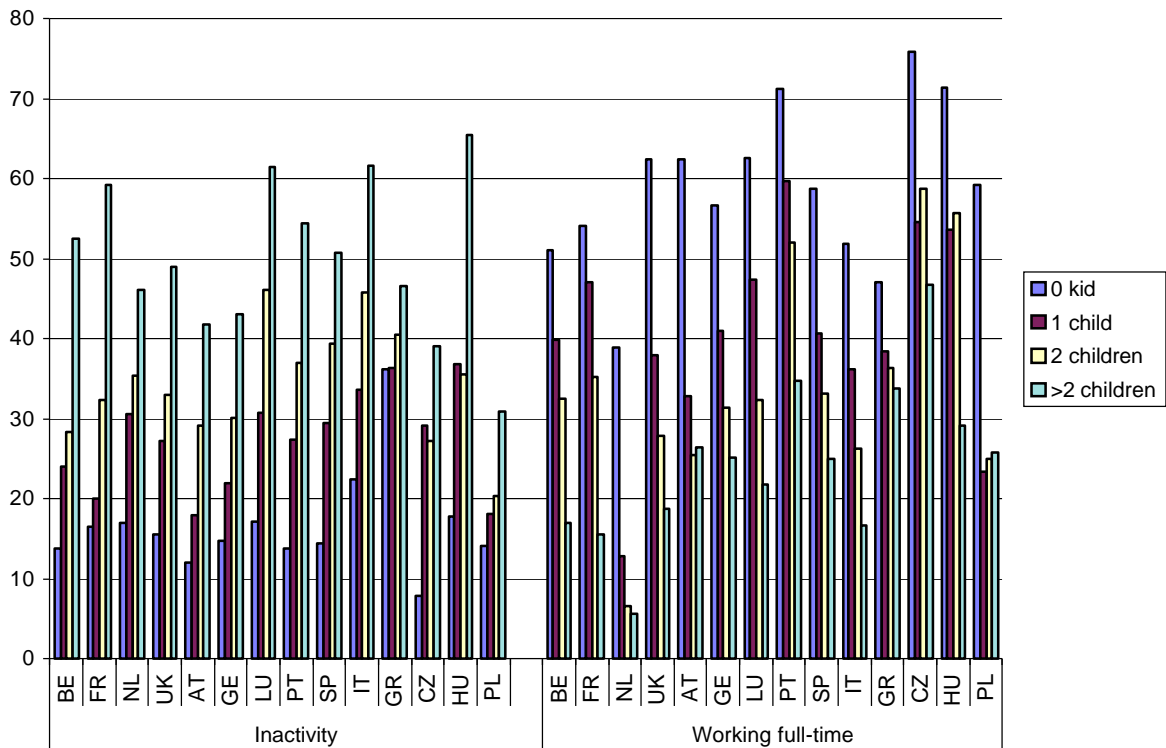
Graphs 2 show the marginal effect, *ceteris paribus*, of children on women's employment in each country. First the average effect over the period is shown (Graphs 2a and b) then its trend over the survey years (Graphs 2c). The average influence of children, *ceteris paribus*, on the probability of each employment status p is estimated by the following relationship: $\hat{x}^{48}(lp) = y^{48}(lp) \mu^8(p) \mu^{48}(lp)$, where $\mu^{48}(lp)$ is the effect of the number of children.

In all countries, the probability of not working rises with the first birth, and continues to increase with the number of children. In most countries, each birth rank has a fairly similar effect. There are, however, some exceptions to these trends. In France and Belgium, the probability of not working increases significantly with the rank of the child and especially with three children, and a single child has little effect on the probability of not working in France. The impact of children is also particularly low in Greece where it is far more common for childless women not to work than in other countries⁵. In the Czech Republic and Hungary, the presence of one child, and the birth of a third child both increase the probability of not working.

⁴ Log-linear model is here estimated by minimising the residual discriminant information between observed and modelled distributions, which is equivalent to the maximisation of modelled information under the usual constraints of variance analysis (Gokhale and Kullback, 1978). This procedure has the advantage of allowing the decomposition of the total information into partial contributions that measures the relative importance of each independent variable and cross-interaction between variables on the dispersion of a dependent variable (Zighera, 1985; 2001; Thévenon, 2003).

⁵ The probability of being actively searching for a job is also increased in Greece, Italy and Spain for women with one child compared to childless women, which illustrates the difficulty to find a job and/or an adapted child care solution.

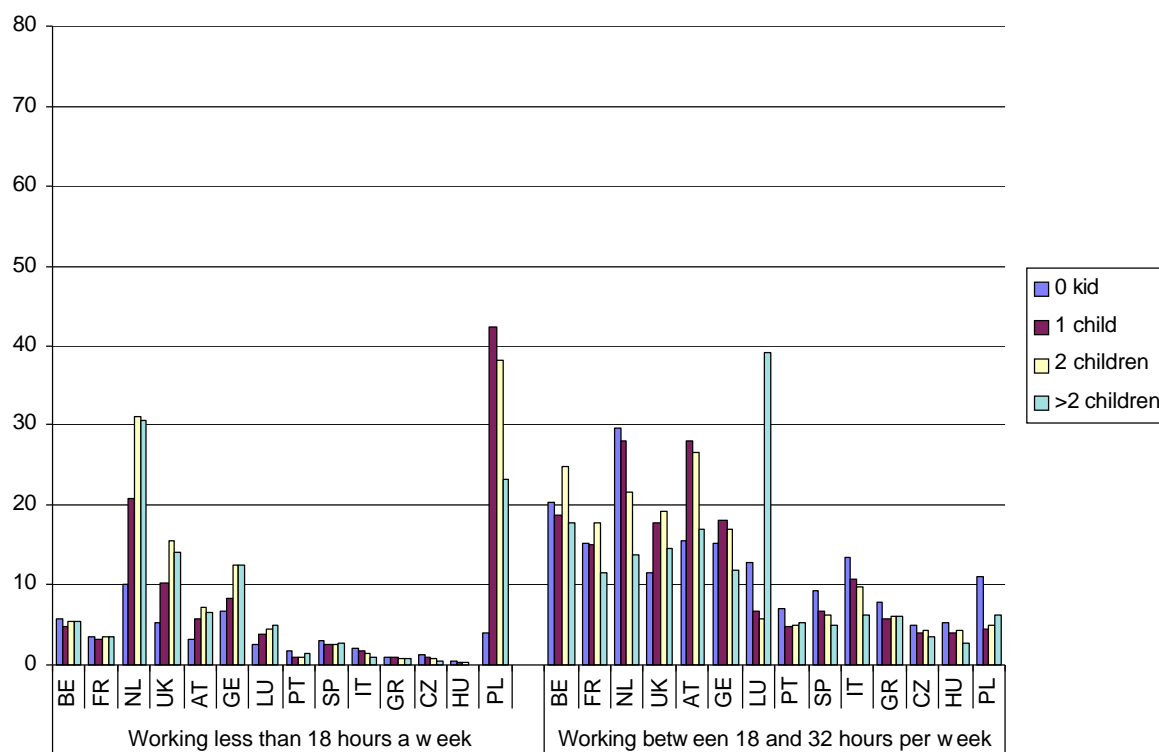
Graphs 2a: Influence of children on the probability of being Inactive or Working Full-time



However, children also have different effects on employment from country to country. On the whole, having a child strongly reduces the probability of working more than 32 hours a week. The first child has the biggest impact in most countries, except Belgium, Portugal and Luxembourg, where the effect of subsequent children is similar. The presence of one child has little influence in France, but that influence increases with the number of children.

The probability of working part-time is broadly insensitive to the number of children, except in some cases where part-time employment is more common in general. In Austria, for example, although medium-time work is more widespread among women with one child than among childless women, the probability decreases when a woman has at least two children (whereas the probability of working full-time remains steady): as family responsibilities grow, women more frequently choose not to work rather than to work medium-time. A similar, but more pronounced, profile is observed in Poland, but in relation to short-time work. In the UK, the probability of working medium-time or short-time increases up to two children. In the Netherlands, childless women are much more likely to be in medium-time employment than in other countries (and the presence of a child has little effect on that probability). Short-time work is also a way of adjusting working hours to family responsibilities since its probability increases with the presence and number of children.

Graph 2b: Influence of children on the probability to work part-time

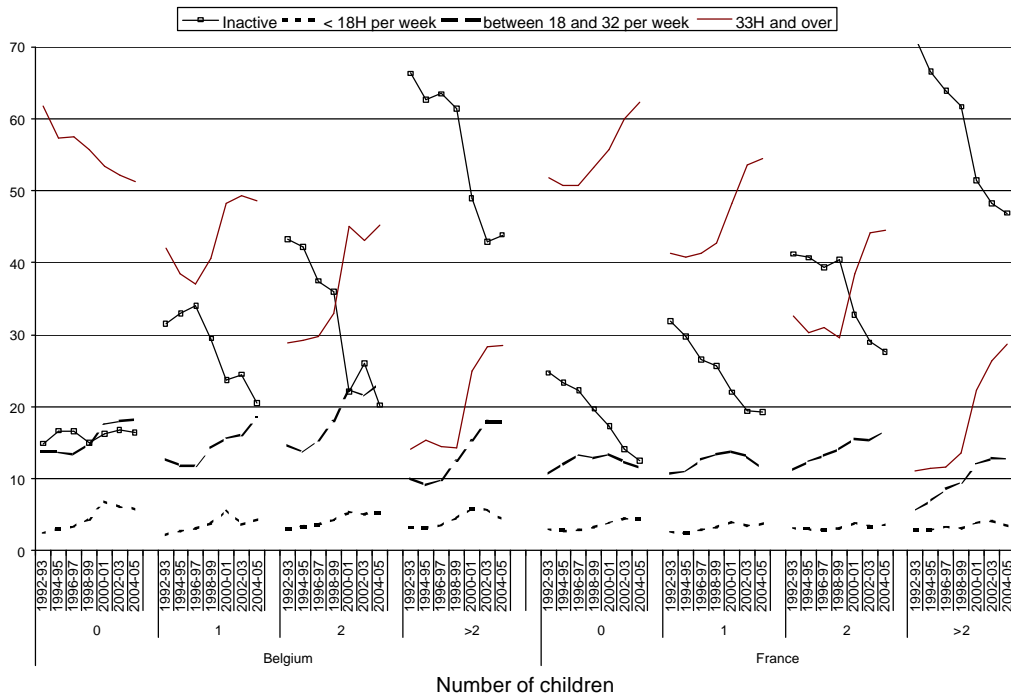


The model also identifies the influence of children on women's employment over the survey years to examine whether the trend was the same or different for women with children and without and according to the number of children. Graphs 2b show the effect of children factoring in the effect of the survey year ($\mu^{18}(ip)$) and its interaction with the number of children ($\mu^{148}(ilp)$).

In practically all countries, the probability of not working decreased as the number of children rose. The increase in female employment evidently benefited mothers more than childless women in some countries where growth was rapid. In Belgium, the frequency of not working remained relatively constant for childless women, *ceteris paribus*, whereas it decreased considerably among mothers of one child and even more among mothers of two or more children. Their probability of working full-time or medium-time increased strongly, whereas the frequency of full-time employment decreased among childless women in favour of medium-time and short-time work. In France the probability of not working decreased, mainly in favour of full-time work, regardless of the number of children. However, for mothers of two children, this trend did not emerge until 2000, when their probability of being employed full-time and medium-time rose sharply, by even more than among women without children or with only one child. That specific lag can undoubtedly be attributed to the extension of the parental allowance to mothers of two children in 1994 (previously only mothers of three children were eligible). The scheme enables mothers to withdraw from the workforce and receive a maximum benefit of around €600 per month for the child's first three years⁶. However, the increase in the probability of employment for all mothers of two children (and not only those with a child aged under three) from 2000 onwards shows that these mothers benefited as much from the improvement in the labour market and a more favourable environment for work-family balance as other mothers and women without children. Mothers of two or more children even seem to have benefited more from the improvement since unemployment strongly decreased and medium-time work also became more probable for this category.

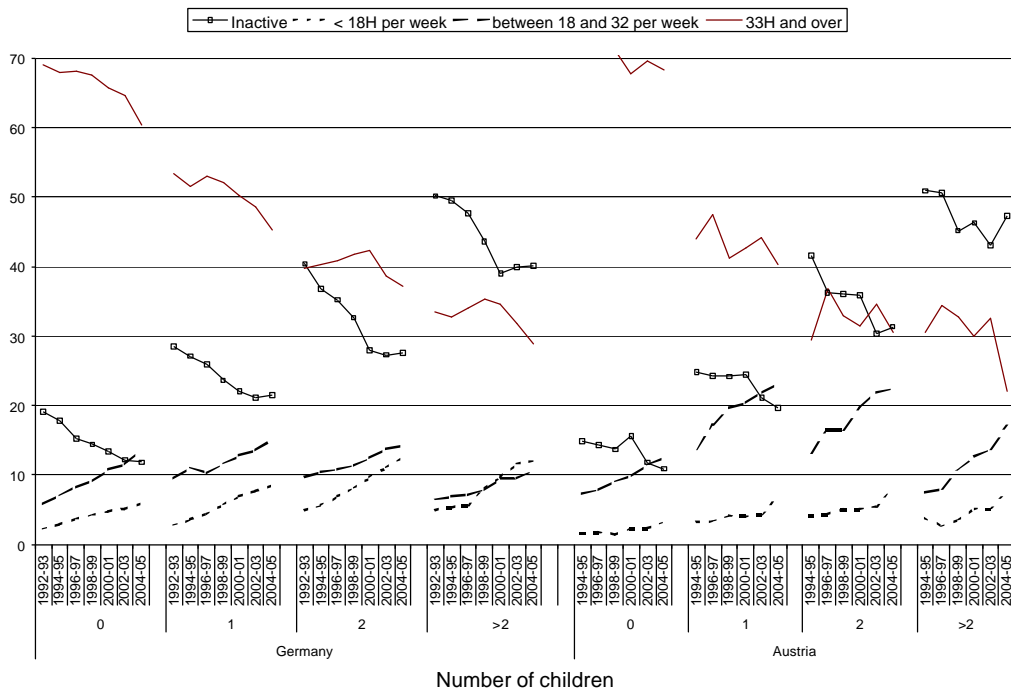
⁶ Piketty (2005) found that the 1994 reforms had an important negative impact of labour market participation of women with two children and the youngest under 3 years : in a period of 3 years, their activity rate drop down to its level of the beginning 80s, with between 150.000 and 200.000 women withdrawing from labour market.

Graphs 2c: Evolution of the influence of children on labour market status in Belgium and France



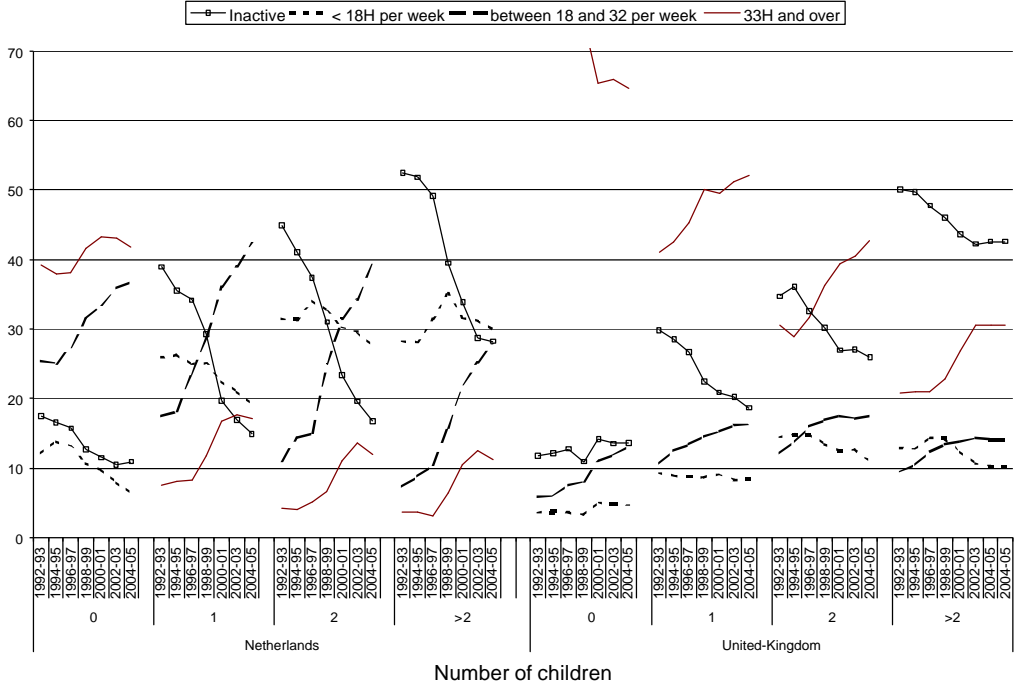
In Germany and Austria, the probability of being employed full-time decreased in favour of medium-time and/or short-time work, regardless of family status. In Germany, mothers of two or more children were decreasingly likely to be employed full-time from 2000 onwards, and more likely to be in medium-time or short-time work. Employment of women with children thus became more concentrated on shorter working hours, which suggests a marginalisation of their employment status.

Evolution of the influence of children on labour market status in Germany and Austria



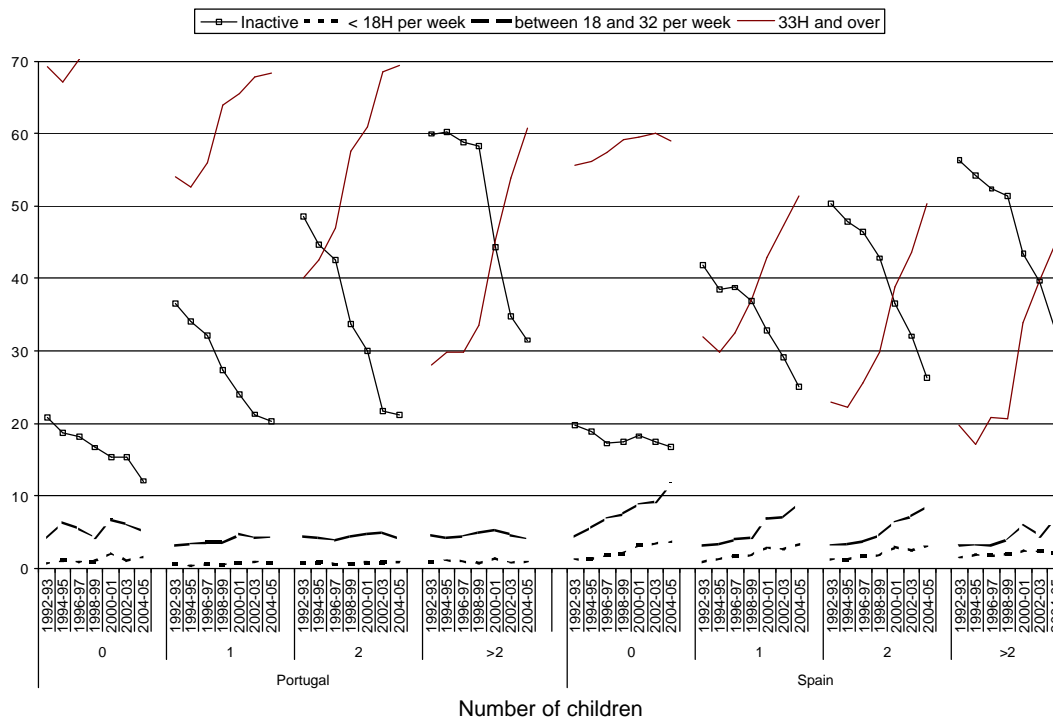
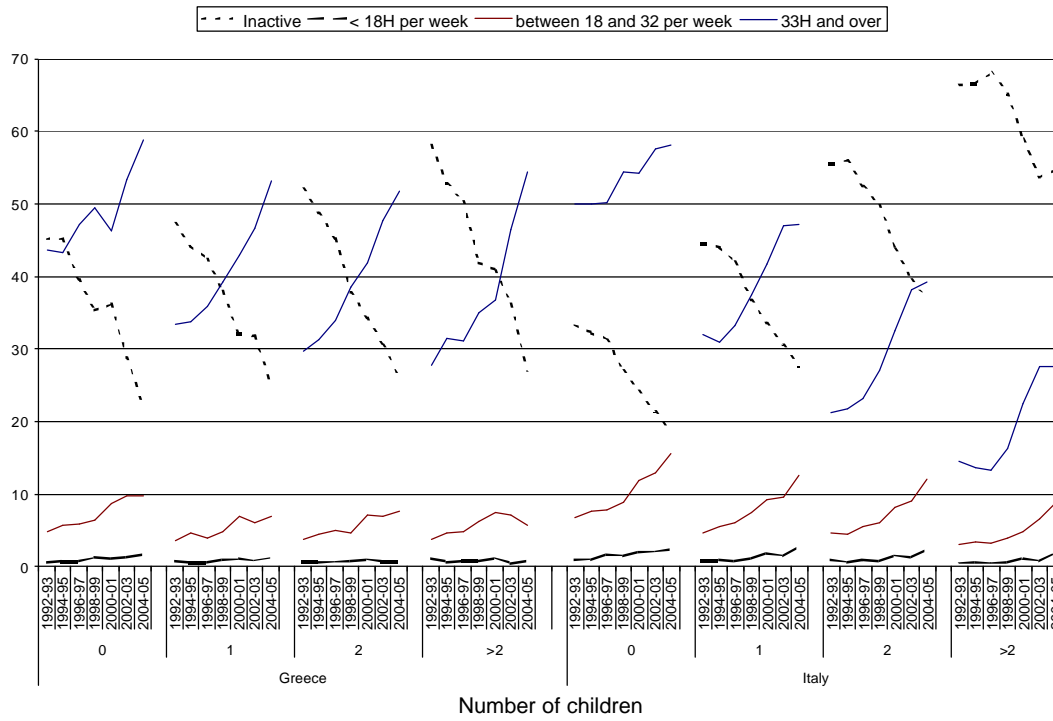
In the Netherlands, the probability of working medium-time or full-time increased relative to working short-time, particularly among women with children. This can undoubtedly be attributed to an expansion of childcare facilities, particularly at the workplace, since almost 30% of children aged under three were in childcare in 2003-2004 compared with only 8% in 1993 (Table 3). The probability of mothers working also increased considerably in the UK. At the end of the period, the frequency of full-time employment had increased for mothers, but decreased for women without children. The increase coincided with the introduction of policies aimed at attracting non-working mothers back to the workforce (OECD, 2005).

Evolution of the influence of children on labour market status in the Netherlands and the United-Kingdom



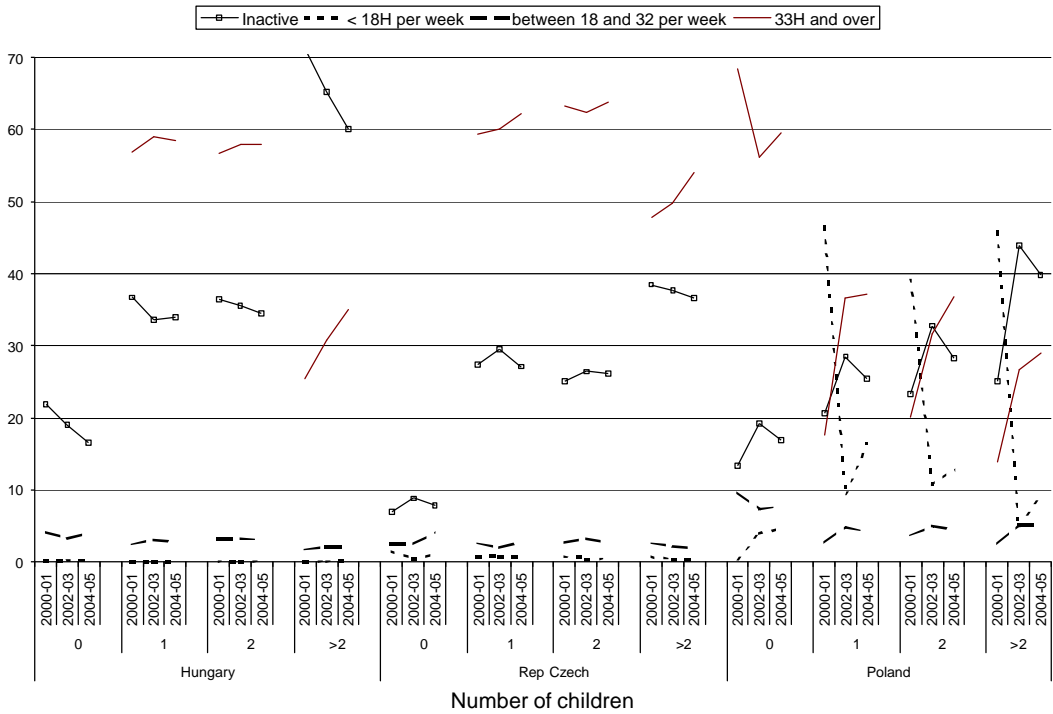
In the southern countries, the trend shows a strong decline, all other things being equal, in the probability of not working in favour of full-time work and – to a significantly lesser extent – in favour of medium-time employment. There were nevertheless disparities by number of children. In Greece and Italy, there was no appreciable difference in the trend for women with children or without. Conversely, in Portugal and even more so in Spain, the changes were fairly small for childless women, but huge for women with children. That difference indicates that the increase in female employment rates can assuredly be attributed to policies designed to facilitate work-family balance, particularly the expansion of childcare facilities in those countries from the mid-1990s onwards. In Portugal in 2003, more than 23% of children under two and 75% of children aged three to six attended formal childcare centres, which generally accept children on a full-time basis (Table 3). In Spain almost 21% of children under three attended a childcare service, compared with only 2% in 1993. By contrast, only 6.3% and 7% of children under three in Italy and Greece respectively attended childcare in 2003-2004.

Evolution of the influence of children on labour market status in Southern European Countries



The observation period was shorter for eastern countries because they only recently joined the European Union. Not working was less common than full-time work among childless women and among mothers of more than two children in Hungary. Major changes also took place in Poland, but there was a contrast between women without children and mothers. Overall, the probability of not working or being unemployed in 2005 was higher than in 2000 for all women because of a downturn in the labour market, which also affected the male population. However, the probability of being employed full-time decreased for women without children but increased for all mothers. Thus, the effect of the recession seems to have been to make it easier for mothers who did access the labour market to enter full-time employment.

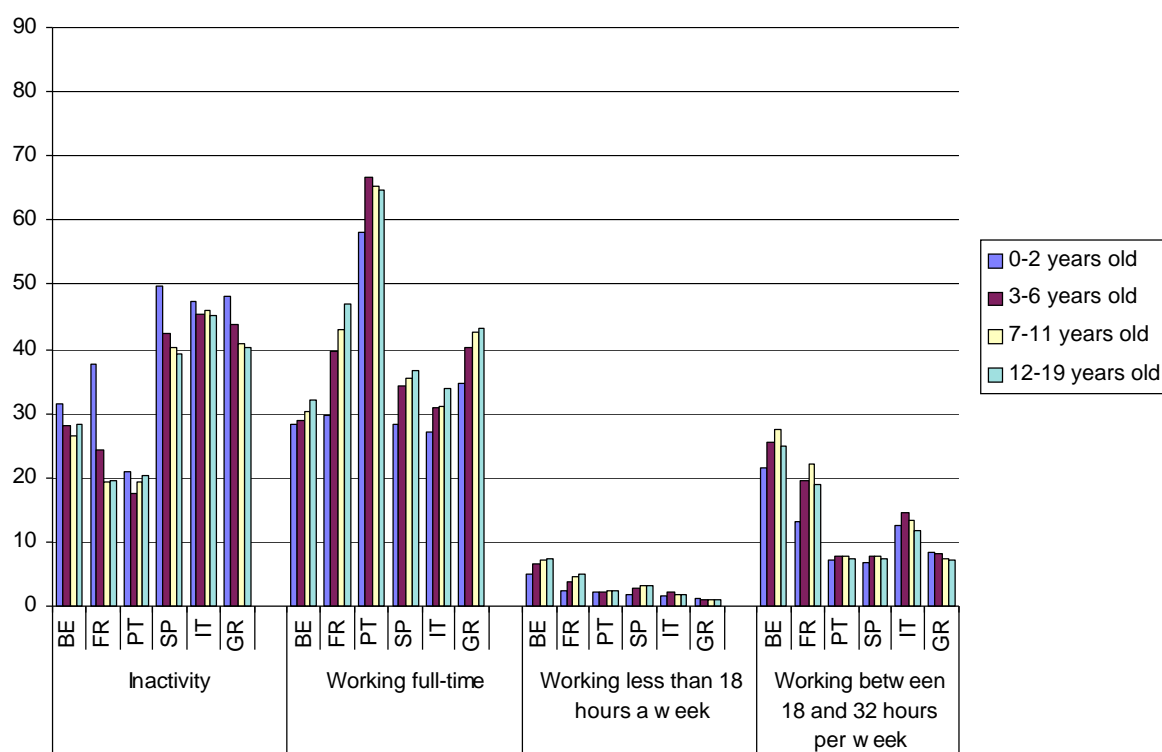
Evolution of the influence of children on labour market status in Eastern European Countries



III.2. A more or less persistent effect of the age of the youngest child

The age of the youngest child also has a variable influence depending on the country, particularly because of major differences in institutional childcare available over the child’s life cycle, namely parental leave, preschool, school and after-school childcare facilities (Table 2). Employment status varies only minimally with the age of youngest child in Belgium and in southern European countries (Graphs 3). In Spain, however, not working falls off sharply once the youngest child turns three, because parental leave comes to an end and preschool childcare and education facilities cater for more children than in Italy and Greece (Table 2).

Graphs 3: Influence of the age of the youngest child on labour market status⁷

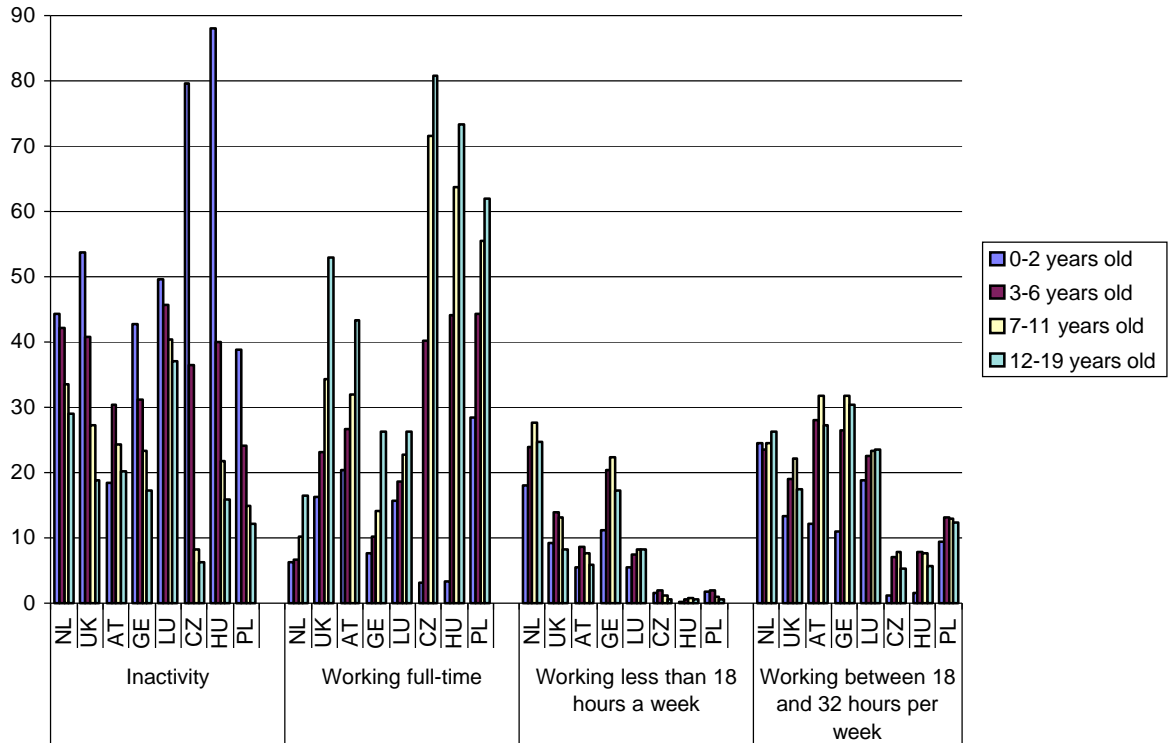


The age of the youngest child has the biggest impact – albeit a different one – in eastern countries and the UK. In eastern Europe, the age of the youngest child mainly has a negative effect on the probability of not working and a positive effect on the probability of working full-time, whereas part-time employment is barely affected since it is not widespread in general. Above all, the entry of children into the preschool education system appears to be a determinant stage insofar as the probability of the mother’s not working drops sharply when she has a child aged 3 to 6. Conversely, the probability of being employed full-time increases, and even more significantly with older children. In the UK, the effect is considerable but more evenly spread over the child’s life cycle. As the child grows older, the frequency of medium-term work increases, until the child reaches the age for entry into the primary education system (six or seven), when the increase in full-time work is strongly predominant. Working hours thus seem to be adjusted gradually to the time restrictions posed by the preschool and school system. The preschool childcare and education system looks after children aged three and four for only about four or five hours a day, which strongly limits mothers’ working hours (Table 2). The primary education system offers longer care, which is more compatible with normal working hours.

The age of the child also has an effect, albeit a smaller one, in the Netherlands, where the probability of not working decreases gradually in favour of medium-time work until the child is at least seven, and in favour of full-time work after that age. The entry of the youngest child into the primary education system also seems to be an important factor in the likelihood of Dutch mothers working full-time.

⁷ As for previous variables, these graph figures the pure effect of age of the youngest child on female labour market status :

$$\hat{\chi}^{58}(\text{mp}) = y^{58}(\text{mp}) \mu^8(\text{p}) \mu^{58}(\text{mp}).$$



In France, the turning point is around the age of two, since from the age of three, the probability of not working falls strongly, mainly in favour of full-time work but also of medium-time work. Full-time work and children are thus combined earlier in the child's life cycle. That pattern, specific to France, can be attributed to a wide range of childcare options and *écoles maternelles* (preschools) that accept children from the age of two for a large portion of the day (Thévenon, 2006). The proportion of non-working mothers increases again when the youngest child is over 20, since the mother's work is probably less necessary to provide for the household, i.e. when the child becomes an adult and can provide for some of his/her needs, the mother withdraws from the workforce.

Lastly, Austria is unique, since having a child aged three to six is associated with a higher probability of not working than when the child is younger. However, this is probably due to the fact that a large minority of women withdraw from the workforce because of a lack of facilities to care for children when parental leave ends (OECD, 2003). The situation differs in Germany since more mothers tend not to work when they have a child under three. Subsequently, they usually return to medium-time work until the youngest child enters the secondary education system. The entry of children into secondary school induces a sharp increase in full-time work in both countries. The organised care of children by the school system thus has a strong and persistent influence on mothers' employment and working hours over the child's life cycle.

Table 2 : Childcare institutions : parental leave, care and preschool services, school organization

	Duration of parental leave (in weeks, 2005/06) ⁰		Participation in care and preschool services of children under age 6 ¹							Primary Education ²		
	Duration in full-time paid equivalent	Unpaid parental leave	0-2 years			3-5 years old				Age at entrance into primary school	Daily organization	
			1993/94	2003/04	Var.	1993/94	2003/04	Var.	Daily attendance in preschool services ²		Usual daily attendance	Out-of-school care
Austria	21.84	-	3	6.6	3.6	75	74	-1	Variable ; max 7am-7pm	6 years	Generally limited to mornings	15.8% of children care in institutions on afternoons
Belgium	2.4	-	30	33.6	3.6	95	99.6	4.6	At least 10h per day in Wallonie 8h30am-3pm ou 5 in flemish regions	6 years	9am-3h30pm	7h30am-9am 3h30pm-6pm
Germany	11.4	52	2.2 (ouest) ^a 41.3 (est) ^a	9	-	78	80.3	2.3	Part-time in West regions (24% of full-time places supplied in 2002) Full-time in Eastern regions	6 years	7h30/8h30am-11h30 ou 1pm	7h30-4/5pm
France	40.2		23	28	5	100	100	0	8h30am-4pm ; free wednesday	6 years	8h30am-4pm but can be arranged development of weeks with 4 schooling	Care on afternoon until 6pm
Luxembourg	-	-	-	14	-	-	72.3		8am-4pm et limited to mornings 3 days per weeks over 6 schooling days	6 years	8am-4pm and limited to mornings 3 days per weeks over 6 schooling days	Out-of-school care in some municipalities
Netherlands	-	24	8	29.5	21.5	71	70.2	-0.8	Mainly at part-time	5 years	5h30 per schooling day	Only 3% of children experienced ot-of-school care in 2001 ³
Portugal	-	24	12	23.5	11.5	48	77.9	29.9	10-12am per day at max	6 years	9/9h30am-3h30pm	No precise information
Spain	-	156	2	20.7	18.7	84	98.6	14.6	7h per day (Max 9h)	6 years	9/10am-4/5pm but some autonomous communities limit school to mornings	No precise information
Italy	3.6	24	6	6.3	0.3	91 ^b	100	9	between 25 and 48 hours per week	6 years	8/8h30am-12/12h30am et 2 afternoons per week	No precise information
Greece		28	3	7	4	70	46.8	-23.2	8h30-12h15am or 4pm	6 years	8h10-1h30pm ou 4pm	
United-Kingdom	-	26	2	25.8	23.8	60	80.5	20.5	Part-time : 4 ou 5 hours in kindergartens (3 and 4 years old children have 2h30 of free education)	5 years	9am-1-2pm	19% of 6 to 12 years old children experienced out-of-school care in 2001
Poland	22.7	-	-	2	-	-	36.2	-	between 5 et 9h per day		8am-2/3pm	Out-of-school care in few schools
Czech Rep.	15.6	-	-	3	-	-	85.3	-	Full-time, half-day or occasionally depending of services		7am-5pm max	
Hungaria	56	52	-	6.9	-	-	86.9	-	Minimum 4h but adapted to worging life constraints of parents		8am-3pm	Out-of-school care for 3 or 4 hours

Source : 0. OCDE Family database : http://www.oecd.org/document/4/0,2340,en_2649_34819_37836996_1_1_1_1,00.html. Full-time equivalent measures the period obtained if the leave were paid at a 100% wage rate.

1. Pour 1993 : Bettio F., Prechal S. (1998), *Care in Europe*, Report for European Commission, Employment and social affairs; a :1996 ; b : 1991 Pour 2003/04 : OCDE Family and Education databasis, http://www.oecd.org/document/4/0,2340,en_2649_34819_37836996_1_1_1_1,00.html

2. Eurybase : http://www.eurydice.org/portal/page/portal/Eurydice/DB_Eurybase_Home.

3. OECD (2002 ; 2004 ; 2005) : *Babies and Bosses : reconciling work and family life*, Paris vol. 1, 3 et 4.

III.3. Variable behaviours depending on the mother's age when the first child is born

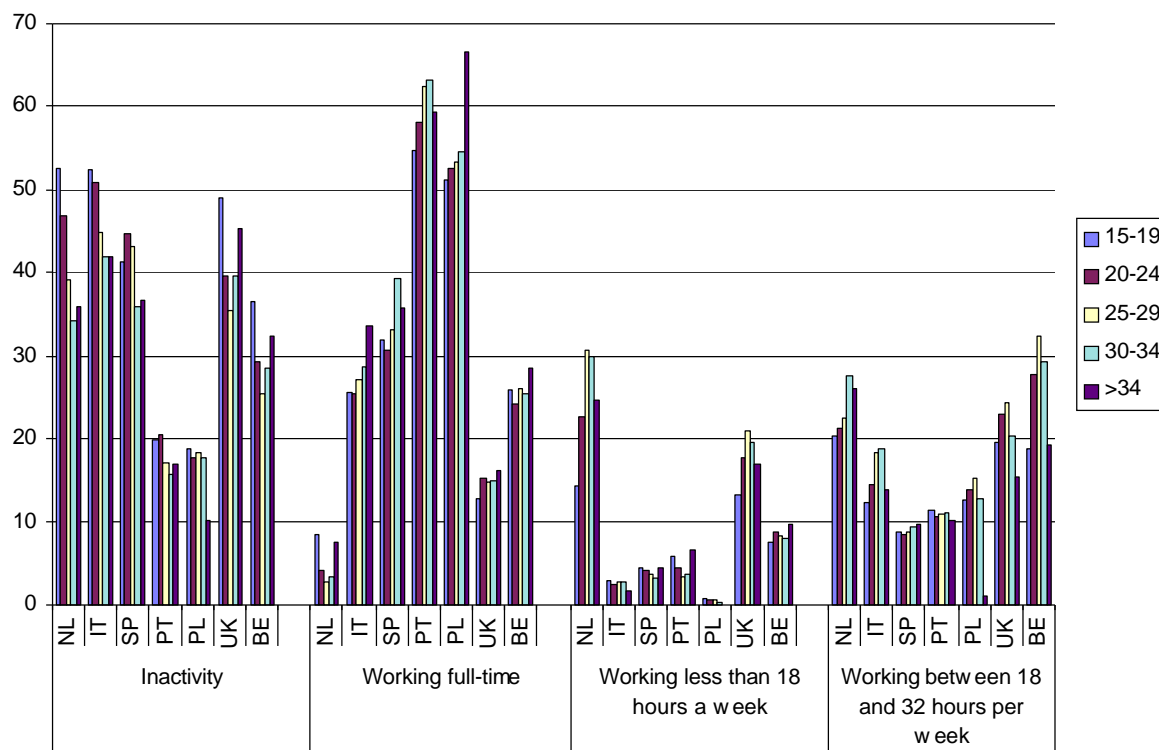
The age of the mother at the birth of the first child is also a differentiating factor in the behaviour of women with at least two children (Graphs 4)⁸. However, the impact of this indicator is variable because it is influenced by two effects. On the one hand, the woman's age at the birth of the first child will affect the age of the eldest child and the age difference with the youngest child. When the woman is older at the birth of first child, at a given survey date, the elder child will be younger and have a smaller age difference with the younger child, which can have a negative influence on the mother's decision to work. On the other hand, delaying the first birth can be advantageous for career development and the acquisition of work experience prior to having children. Stopping work after the birth of a child is therefore all the less likely when the first birth is late because of its opportunity cost. Consequently, full-time work is also more probable.

The first type of effect can be expected to prevail in countries where childcare restrictions are relatively persistent over the child's life cycle, including the elder child's life cycle, and where the mother's more or less temporary withdrawal from work is relatively inevitable or strongly encouraged. In that case, the later birth of the first child is not a signal of a stronger attachment to employment but more probably of a decision to postpone withdrawal from employment in order to have children to a stage in the life cycle where the household has sufficient resources. Conversely, the second effect is more likely to prevail in countries where career advancement depends strongly on length of service in a first job, which also encourages women to delay having children. Both cases are observed here, with some situations also appearing more heterogeneous.

In one group of countries, an older age at the birth of the first child clearly induces a strong decrease in the probability of not working, all other things being equal. That is the case in the Netherlands, where the probability of working short-time, then medium-time increases when having a family is delayed. The birth of children at a later age is therefore a factor that plays strongly in favour of deciding to work, probably because of the experience that can be gained prior to having children. However, part-time work is more probable in the Netherlands because of specific restrictions stemming from the childcare available for several relatively young children. In Italy, both full-time work and medium-time work are more probable when children are delayed.

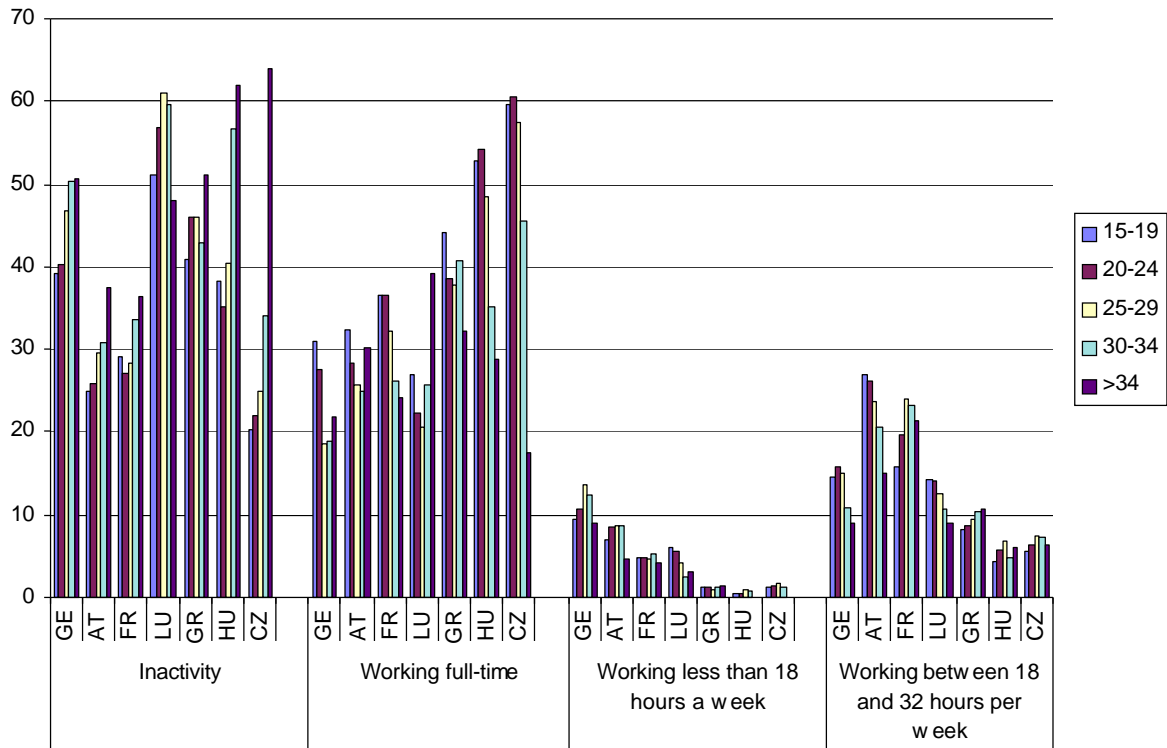
⁸ These graphs illustrate the estimated frequency associated with the age of mothers at first birth : $\hat{\chi}^{68}(np) = y^{68}(np) \mu^8(p)$
 $\mu^{68}(np)$.

Graph 4: Differentiation of labour market status according to the age of women at first birth
In Netherlands, Italy, Spain, Portugal, Poland, United-Kingdom and Belgium



Conversely, an older age at the birth of the first child has a positive influence on the probability of not working in another group of countries, including Germany, Hungary and the Czech Republic, Luxembourg, and – although to a lesser extent – Austria, France and Greece. However, the choices made differ depending on the case. In the first four countries and France, it is mainly the probability of working full-time that decreases while non-working increases. However, in France, medium-time work is also positively affected, as if some women who delay the birth of children were in a financial situation that enabled them to reduce the number of hours they work. In Austria, it is mainly the probability of working medium-time that decreases while non-working becomes more probable, as if women who delay the birth of children opt more often not to work than to work part-time. The birth of the first child after age 35 nevertheless increases the probability of subsequently working full-time. In Luxembourg, delaying the birth of children until age 30 implies an increase in the probability of not working at the expense of working full-time, but the trend is inverted and more significant when the birth of the first child comes later. Evidently, having a first child after age 35 is combined more frequently with full-time work.

*Differentiation of labour market status according to the age of women at first birth
In Netherlands, Italy, Spain, Portugal, Poland, United-Kingdom and Belgium*



Finally, the effect on not working of the mother's age at the birth of the first child is also non-monotonous in the UK and Belgium. For example, the probability of not working decreases when a child is born before age 30, then increases. Conversely, it is mainly the probability of working part-time (medium-time and short-time in the UK and medium-time in Belgium) that increases then decreases. When children are delayed until 30, women's probability of opting for part-time work rather than not to work increases, but the choice is reversed when the first child is born after 30, as if the decision not to work were favoured by delaying children.

IV Abstract and conclusions

While the level of male employment stagnated – or even declined in some countries – after the early 1990s, female employment continued to rise until 2005. That increase varied between countries, however, with Spain and Ireland recording the biggest increases in female employment rates. Nevertheless, in 2005, female employment rates were highest in northern European countries, and lowest in Mediterranean and eastern European countries. The trend in part-time work was variable: widespread in the Netherlands, the UK and Germany, but accounting for a very small share of working women in eastern and southern Europe.

Modelling women's employment statuses made it possible to identify trends in behaviour specific to some countries or some family statuses, and to draw attention to the institutional changes targeting those particular situations. Those trends were mainly favourable to mothers in Belgium, Spain, Portugal, Poland, the Netherlands and the UK. Some similarities and differences between countries identified in previous comparative research were reaffirmed, confirming the relative heterogeneity of the models of female employment in relation to standard welfare state typologies. Major differences and trends specific to certain countries were nevertheless identified. Some of these differences concern the relative importance of the number of children and of the age of the youngest on female labour market behaviour, as stated in previous comparative studies (see Thévenon, 2007 for a survey).

Moreover, we found here that differences also relate to the variable impact of the age at which women have their first child. Thus, it clearly suggests that varieties in macro-institutional contexts shape different opportunity for women to manage labour market commitment with family formation over their life-cycle.

Several points in common between France and Belgium were confirmed, even though the female employment rate is almost 4 percentage points lower in Belgium. Female employment in those two countries is mainly full-time, and the probability of working full-time is mainly affected by the presence of a third child, whereas the first child has a much larger impact in other countries. However, our analysis also highlights several differences. In France, the effect of a first child is much smaller, and the rate of non-working decreases rapidly with the child's age, which is attributable to the early acceptance of children into school via *écoles maternelles*, which are attended by almost all children from the age of three. A later arrival of the first child also increases the probability of not working in France, whereas that probability decreases initially in Belgium in favour of medium-time working, as if women were encouraged to delay having children in order to work. Furthermore, labour market trends benefited all women in France from 2000 onwards, whereas the probability of not working decreased in Belgium mainly for mothers.

The Mediterranean countries (Spain, Italy, Greece) form another group with common characteristics, but which showed different trends. Female employment rates in those countries were the lowest in the early 1990s, but they strongly increased, narrowing the gap with other countries. Full-time employment remained the largely predominant norm, regardless of household size. The presence of children however strongly increases the probability of not working, with the first child having a major impact, except in Greece where non-working rates among women without children are higher. The age of the child also has a fairly low impact on behaviour. However, Spain stands out with a much steeper rise in female employment from the mid-1990s onwards. That increase particularly benefited women with children, probably because of a fairly substantial expansion of childcare facilities.

Portugal stands out strongly from the previous group with a much higher employment rate from the outset, which continued to rise. The need for women to work in order to supplement household income undoubtedly explains the larger deviation from the norm of husband as breadwinner and wife as homemaker, which is still widespread in the other southern European countries. As in the other southern countries, part-time work is fairly uncommon but the presence of young children is less often an obstacle to full-time work in Portugal. The workforce participation of women with at least two children also strongly increased over the period, probably because of the expansion of the network of childcare facilities for young children and tax reforms designed to make women's work more profitable, regardless of family status (OECD, 2004).

The other continental European countries – Germany, Austria, Luxembourg and the Netherlands – form a relatively heterogeneous group. Germany and Austria have employment rates above the EU-15 average, which increased relatively little since the early 1990s. The probability of working decreased in line with household size, and medium-time work is an option that enabled a large share of Austrian mothers to stay in work from the birth of the first child. Women are far more likely not to work in Germany when they have children under three, and they usually do not return to the workforce, even medium-time, until the child turns three. In both countries, normal working hours become much more common when the child enters the primary education system. Having a first child later in life increases the probability of deciding not to work. In Luxembourg, women's workforce participation is much lower and strongly affected by the presence of children, regardless of the age of the youngest child.

The Netherlands differs significantly from the above two countries in the diffusion of part-time work whether or not there are children. The frequency of medium-time work in fact increased the most over the period across all family configurations and especially when there were children. In addition, the number of hours worked is an adjustment variable that is changed in line with family responsibilities, since the probability of working medium-time decreases with the number of children even as the frequency of short-time increases (even though its frequency decreased over time). The frequency of medium-time work nevertheless increased sharply for mothers over the period, while the

share of short-time work diminished, which seems to indicate more favourable conditions for work-family balance. The frequency of full-time work also increased, and generally rises when the child enters the primary education system. The timing of the first birth is a major determinant, since delaying the first child reduces the probability of not working in favour of short-time or medium-time work. Clearly, behaviour is frequently adjusted in the Netherlands via the number of working hours, which is a more similar mode of adjustment of the work-family interface to that observed in the UK than in the other continental European countries.

However, part-time work is less common in the UK, where female employment remains highly polarised by family status. In addition, delaying having children until after age 30 increases the likelihood of deciding not to work, as though women delayed their withdrawal from the workforce. Full-time employment is highly predominant among women without children and much less common among women with children. However, although its share decreased in relative terms over the period for women without children, its frequency increased significantly among mothers, probably partly because of policies introduced in the mid-1990s to “activate” their participation in the workforce (OECD, 2005). The frequency of full-time work is however also highly dependent on the entry of the youngest child into primary education, because childcare for younger children outside the household is still very limited.

Lastly, the three eastern countries considered here (Czech Republic, Hungary and Poland) also display strong differences. The number of children and the age of the youngest child are highly discriminating factors in women’s employment status. These trends were observed for these countries over a shorter period because the data have only been available since 2000, but an increase in the probability of working full-time, especially for mothers of one or two children, was observed for Poland. However, the presence of a child induced a much more frequent shift to part-time work in Poland, whereas non-working was more probable in the other two countries. However, in all cases, workforce participation is highly dependent on the entry of the youngest child into the primary education system, since there are few childcare facilities for children under six.

Very broadly, the persistent effect of the age of the youngest child on women’s workforce participation and on the number of hours worked underscores the importance of policies to facilitate the work-family balance throughout the child’s life cycle, whereas attention is often focused too exclusively on care for very young children. Furthermore, the differentiation of behaviour in some countries induced by the timing of the birth of the first child highlights the adjustment of demographic behaviour that is occurring simultaneously with the adjustment in employment behaviour. This points up one of the limitations of this analysis, which considers demographic behaviour as a factor exogenous to employment behaviour, whereas decisions about fertility and employment may actually be more planned.

Références

Billari F. (2004), « Becoming an Adult in Europe : a Macro(/Micro)-demographic perspective », *Demographic Research*, Special coll. 3, Max Planck Gesellschaft.

Blossfeld, H. P. (1996), « Macro Sociology, Rational Choice Theory and Time », *European Sociological Review*, 12:181-206.

Blossfeld H.P., Drobnic S. (2001), *Careers of Couples in Contemporary Society*, Oxford University Press, Oxford.

D’Addio-Dervaux A., Mira d’Ercole M. (2005), « Fertility trends and the impact of policies », *Social, Employment and Migration Working Papers*, OECD, Paris.

Esping-Andersen G. (1999), *Social Foundations of Postindustrial Economies*, Oxford University Press, London.

Gokhale, D. , Kullback, S., 1978, *The information in contingency tables*, Marcel Dekker, New York and Basel.

- OECD (2003), *Babies and Bosses : reconciling work and family life. Austria, Ireland, Japan*, vol. 2, Paris.
- OECD (2004), *Babies and Bosses : reconciling work and family life. New-Zealand, Portugal, Switzerland*, vol. 3, Paris.
- OECD (2005), *Babies and Bosses : reconciling work and family life. Canada, Finland, Sweden, United-Kingdom*, vol. 4, Paris.
- Piketty Th. (2005), « L'impact de l'allocation parentale d'éducation sur l'activité féminine et la fécondité en France, 1982-2002 », in *Histoires de familles, histoires familiales*, Les cahiers de l'Ined. N°156, p. 79-109.
- Thévenon O. (2003), *Les relations emploi-famille en Europe. Fondement socio-économique des comportements féminins en Allemagne, France, Espagne, aux Pays-Bas et Royaume-Uni*, PhD Thesis in Economics, Université Paris X-Nanterre.
- Thévenon O. (2004), « Les enjeux pour l'emploi féminin de la Stratégie Européenne pour l'Emploi », *Revue de l'OFCE*, 90, juillet 2004, pp. 379-417.
- Thévenon O. (2006), « Régimes d'Etat Social et convention familiale : une analyse des régulations emploi-famille », *Economies et Sociétés*, série Socio-économie du travail, 27, 6, pp.1137-1171.
- Thévenon O. (2007), « L'activité féminine après l'arrivée d'enfants : disparités et évolutions en Europe à partir des Enquêtes sur les Forces de Travail », document de travail INED, 148, 70p.
- Zighera, J., (2001), « Minimisation of discrimination information as a tool for the analysis of massive surveys – loglinear and logit modelling revisited », document de travail Fenics, Université de Paris X-Nanterre.
- Zighera, J.A., (1985), « Partitioning information in a multidimensional contingency table and centring of log-linear parameters », *Applied stochastic models and data analysis*, vol. 1, p. 93-108.