

Increases in Female Labour Force Participation in Europe: Similarities and Differences

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Received 24 February 2004; accepted in final form 6 September 2004
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Vlasblom, J.D. and Schippers, J.J., 2004, Increases in Female Labour Force Participation in Europe: Similarities and Differences, *European Journal of Population*, **20**: 375–392.

Abstract. Low educational levels and the effect of children are recognized as the most important factors for low female participation rates. Over the last decades female labour supply in Europe has shown a large increase. This may be related to changes in the level of education or fertility. It is also possible that it is due to changes in behaviour, as influenced by the social and institutional context. Our results show that increases in the participation rates cannot be explained by changes in either educational level nor in the number and timing of children. Female labour supply increases at all educational levels for women with and without children. In other words, it is mainly changes in behaviour that drive the increase in participation rates over the last decades.

Key words: decomposition analysis, family formation, female labour supply, institutions

Vlasblom, J.D. et Schippers, J.J., 2004, Augmentation de l'activité féminine en Europe : similarités et différences, *Revue Européenne de Démographie*, **20**: 375–392.

Résumé. De faibles taux d'activité féminine vont généralement de pair avec un bas niveau d'instruction et la présence d'enfants. Dans les dernières décennies l'activité féminine a fortement augmenté en Europe. Cette augmentation peut être due aux évolutions des niveaux d'instruction et de la fécondité. Elle peut aussi être due à des changements de comportement, liés au contexte social et institutionnel. Nos résultats montrent que l'augmentation de l'activité féminine ne peut pas être expliquée par l'évolution du niveau d'instruction ni par les changements dans le calendrier ou l'intensité de la fécondité. L'activité féminine augmente chez toutes les femmes, quel que soit leur niveau d'instruction ou leur nombre d'enfants. Autrement dit, les changements de comportement sont le principal moteur de l'augmentation de l'activité féminine dans les dernières décennies.

Mots clés: activité féminine, analyse par décomposition, formation de la famille, institutions

1. Introduction

During the sixties and the seventies, the 'average' working woman was a young woman without children. At the turn of the century working women in Europe comprise both mothers and women without children, young and older women and women of different educational levels. (For an extensive review of these trends, see e.g. Rubery et al., 1998). The changes in female labour force participation and in the composition of the female labour force reflect two kinds of changes. On the one hand, women make different decisions with respect to education and family formation. So, even if today's generations of women were to show similar participation behaviour as women from the past, participation patterns would have changed over time. On the other hand, we also see that nowadays women show different labour supply behaviour compared to women with similar characteristics in the past. Now it is, for instance, no longer an exception for women with young children to be active in the labour market. So, even when characteristics of the female population would not have changed, participation patterns would have done so. Changes in behaviour of women with specific characteristics reflect both changing preferences and changing restrictions. Next to (or as a result of) their own changing opinions and preferences, society has changed too. Many EU-countries have developed childcare policies that allow women with young children to be active in the labour market and have a professional career. This, among other things, resulted in a change of the restrictions an individual woman is faced with. Even though female labour market participation rates have increased throughout Europe not all EU-countries show a similar picture. In some countries, the composition and the characteristics of the female population has changed more than in other countries. The same holds for the changes in behaviour.

In this article we want to establish in a quantitative manner the causes for the differential changes in female labour market participation for six of the EU-countries (France, West Germany, Italy, the Netherlands, Spain and the UK) over the last decade: is it mainly a compositional effect or is the behavioural effect the dominating force behind the increasing female labour market participation? Our analysis is based on data from the Labour Force Survey (LFS) of Eurostat. The countries in our study are thought to make a representative picture of changes in (Western) Europe. We do not include any transition economies (such as the former East Germany) as the situation in these countries differs considerably from the situation in more stable economies. To give a complete picture of European trends we would have liked to include also one of the Scandinavian countries. However, our data source (the LFS) did not allow us to do so. We estimate a model describing the relation between female labour force participation and characteristics for 2 years, 1992 and 1999. Next, a decomposition analysis of changes in labour

force participation rates over this decade is performed. This decomposition enables us to tell whether the overall changes in female participation rates are due to changes in the characteristics of the population or to changes in labour supply behaviour.

2. Changing female labour supply and characteristics

Over the last decade, an increase in female labour force participation is found in the six countries in our study (see the bottom line of Table 1), with the Netherlands showing the largest increase during the period 1992–1999. As can be seen, the increase occurs in all age categories, and is not restricted to specific age groups.

Economic theory has provided us with a number of utility based, structural models of female labour supply (Killingsworth, 1983). According to these models, changes in labour supply can be explained by changes in possibilities (e.g. due to higher education) or by changes in preferences and restrictions (which show up as changes in labour supply given the possibilities). Over the last decade, substantial changes took place in the composition of the female population, for which we will give evidence in this Section. In Section 4, we will show that behaviour has also changed over the same period.

Higher education contributes to higher participation rates in at least three ways. Firstly, higher educational levels increase the opportunity costs of non-participation (Dankmeyer, 1996; Joshi, 1990, 1994; Joshi et al., 1996;

Table 1. Percentage of married and cohabiting women aged 25–59 working for pay, 1992 and 1999

	West Germany		Spain		France		Italy		Netherlands		United Kingdom	
	1992	1999	1992	1999	1992	1999	1992	1999	1992	1999	1992	1999
	25–29 years	61	65	35	49	65	65	42	42	69	81	66
30–34 years	57	65	38	48	63	65	48	49	57	72	64	73
35–39 years	61	65	37	46	66	69	50	51	58	71	70	74
40–44 years	65	69	35	46	68	71	48	51	57	68	75	77
45–49 years	63	69	27	39	65	71	41	46	49	69	77	80
50–54 years	55	62	25	30	57	66	31	36	41	52	69	73
55–59 years	40	45	19	22	39	43	17	22	25	34	56	57
Total	57	63	31	40	61	65	40	43	53	65	69	73

Working for pay: defined as working at least 1 h in reference week.

Source: LFS, 1992, 1999.

Mertens et al., 1998). Secondly, higher education stimulates the development of more modern norms concerning the combination of paid labour and unpaid care (e.g. Pott-Buter, 1993). And thirdly, higher education contributes to the development of tastes that favour women's desire to have their own professional career (Hakim, 1995). Our data show that in all countries included in this study, the general level of education has increased, even over a relatively short period.

Family composition has a strong effect on female labour force participation rates (Nakamura and Nakamura, 1991). In many European countries, the birth of a child is a major reason for women to diminish labour supply. As soon as children are present, unpaid work at home will take more time. This effect will be stronger the more children there are: it may be possible to combine one child with work, even at low ages of the child, but it will become more difficult when there are already some older children present. However, the effect of children is expected to become weaker when the youngest child grows older. Also, the effect of age and number of the children may depend on the age difference between the children: when this difference is large, children may well look after each other. On the other hand, the larger the age difference between the children, the longer will be the period in which young children are present in the household. Although many women do return to the labour market after some time, especially low-educated women do hardly return to the labour market after childbirth (see for example Dankmeyer, 1996; Joshi et al., 1996; Mertens et al., 1998; Wetzels, 1999).

Over the last decade, relatively large shifts in fertility took place all over Europe (see also Lesthaeghe and Willems, 1999). The first child is 'delayed' more and more, resulting in an increased period of 'childlessness'. Table 2 depicts which share of women in a certain age category is living in a household without children. In the younger age categories, changes in this share are mainly the result of changes in the number of children born and the timing of their birth. In the older categories, the changes are due to changes in the age children leave the household. Mothers' age at first birth has increased in all countries as can be seen in Table 2. As a result of this, an increasing part of the younger women is without children. In the Netherlands, even 49% of women aged 25–34 are without children. The largest increase of childlessness in this age category has occurred in Spain, where there has been a 10 percentage points increase in the number of women without children.

Also, the average number of children present in the household decreases in all countries. As to northern Europe, this shift is not very large. In West Germany and France it seems as if the shift reflects merely a change in the timing of children: lower numbers in early age categories go together with slightly higher number in older age categories. However, in southern Europe,

Table 2. Patterns in fertility of women: childlessness, age at first birth and number of children, by age category, 1992 and 1999

	West Germany		Spain		France		Italy		Netherlands		United Kingdom	
	1992	1999	1992	1999	1992	1999	1992	1999	1992	1999	1992	1999
Percentage without children ^a												
25–34 years	28	34	16	26	23	31	19	25	43	49	33	36
35–44 years	17	17	4	6	10	9	6	9	14	15	15	16
45–54 years	42	44	9	9	39	38	15	13	33	41	39	44
Total	29	31	9	12	23	26	13	15	30	34	29	32
Age at first birth ^b												
	25.9	26.5	25.9	26.2	25.4	26.2	25.8	26.0	26.6	27.5	26.0	27.0
Number of children ^c												
25–34 years	1.25	1.13	1.45	1.17	1.43	1.21	1.34	1.17	1.03	0.88	1.30	1.21
35–44 years	1.61	1.64	2.22	1.87	1.93	2.00	1.82	1.72	1.86	1.86	1.82	1.79
45–54 years	0.93	0.91	2.12	1.92	1.05	1.08	1.53	1.56	1.10	1.06	0.98	0.91
Total	1.25	1.24	1.97	1.73	1.51	1.44	1.57	1.52	1.34	1.28	1.37	1.30

^aChildren defined as children living in the household.

^bAge at first birth: age at which the oldest child living in the household at the time of interview is born, average over women aged 25–59.

^cNumber of children: the number of children actually living in the household at the time of interview.

Source: LFS, 1992, 1999.

the delay of childbearing apparently goes together with a reduction in fertility: the average number of children has become lower for all age categories. This change has been especially large in Spain.

Apart from own preferences, behaviour is also influenced by *restrictions*. Part of these restrictions is on an individual level: income and time restrictions within the household. However, the institutional context can also provide strong incentives or restrictions on individual behaviour. Taxation systems that are household-based (like the German one) lead to lower participation rates than individual-based systems such as the Swedish and – to some extent – the Dutch system (Gustafsson, 1992; Sainsbury, 1999; Vlasblom et al., 2001). Higher levels of childcare will increase female labour supply, as the combination of work and family will become easier (Den Dulk, 2001). Not only childcare will be of importance; other regulations such as the existence of paid leave in order to care for sick children and the characteristics of the educational system also matter. Finally, labour supply may be influenced by the presence of anti-discrimination legislation, legislation concerning equal opportunities and affirmative action.

3. Data and computational details

The data we use for our empirical analysis are provided by Eurostat, and are based on the European Labour Force Survey (LFS). We use data from 2 years: 1992 and 1999. The yearly samples can be interpreted as representative samples of the total population. The data are weighted data that Eurostat considers to be representative for the total (female) population. The advantage of using this data set is that for a number of years data are available, using the same (or comparable) definitions over years and over countries. However, using the LFS also has a few disadvantages. The first is that the database is strictly individually based. A number of individual characteristics are known, such as age, household status, level of education (in a 3-level classification), number of children in the household, year of birth of the children, labour market status, working hours, etc. However, it is impossible to get precise information on characteristics of household members, such as age and educational level of a partner. Although data are available for several years, it is not possible to follow individuals over time (even for those countries where the data are based on 'true panels'). Comparisons over time are therefore always comparisons based on pseudo-cohorts. Finally, due to data-regulations at Eurostat, the analyses cannot be done at the individual level. Data are available in the form of contingency tables for a restricted number of variables, which thus lead to aggregated, grouped data.

As we are interested in the labour market behaviour of women, we confine ourselves in several ways. First, we restrict ourselves to the group of (potential) workers. In other words, to women that are out of full-time education, and not in retirement age. Also, we restrict our sample to the women for whom the combination of family and participation is relevant. We will therefore focus on women that do have a partner (either cohabiting or legally married), and do not live with their parents (or the parents of her partner). As the combination of work and care is less an issue for the older women, we restrict the age range to 25–45 years of age. Restricting it even further to 25–35 years will prohibit us from testing for the effects on labour supply of both young and older children. Note that LFS records children living with their parents without giving information on their dependency, which should be no problem given our age restrictions.

In principle, we would like to include the wage and other household income, as economic theory considers this an important explanatory factor for female labour force participation (see amongst others Grift, 1998; Vlasblom, 1998). However, this information is not present in the data set we used for this study. The same holds for the characteristics of the partner of the woman, and especially his income. Leaving out these variables can cause some omission bias. However, educational level and age are included. As wage

rates depend heavily on educational level and age, these variables will act as instrumental variables for the wage. There are no instrumental variables available for the partner's income.

We use a reduced form model of labour supply in which labour supply is explained by the characteristics of women, including the number and spacing of the children. For the empirical specification, we use a bivariate logit model to explain the participation decision. As we use grouped data, we use a weighted specification of this model in which every cell is weighted with the number of observations in that cell.

Using the estimation results of this model, we can perform a decomposition analysis (Oaxaca, 1973). Doing so, we can compute whether the observed changes in participation can be related to changes in the explanatory characteristics such as educational level, number and timing of children, etc, or to the effect the educational level and the children have on labour supply. Henkens et al. (2002) use this kind of approach to explain differences in labour supply behaviour between married and cohabiting women in the Netherlands in 1989 and 1998. We, however, do not use a formal decomposition analysis but our approach is very much based on this kind of analysis. We follow the approach of Van den Berg and Grift (2001), who analysed the evolution of union membership over time. Starting from the average values of the explanatory variables in the base year 1992 and the corresponding estimated coefficients of the model in this year, we compute the predicted participation rate for the average individual in 1992. Next, in a number of steps we change per factor (age/cohort, educational level and family formation) first the value of the explanatory value to the value of the second year, 1999, and next, the effect of these variables to the estimated value of 1999. By computing predicted participation rates for each step, we can get insight into the relative importance of each separate factor in explaining the total change in participation rates. As our explanatory variables are on three main issues, we use a decomposition in six steps. As age merely reflects an effect of 'generation', which is exogenous to the woman, we change age as the first variable; next we change the effect of the age. Decisions on education are – in most cases – made before the decision on number and timing of children. Therefore, we change education as the second group of variables, followed by the effect of education. Finally, we change the variables related to family formation and composition and the effect of these on labour force participation.

Two remarks have to be made on this approach. Firstly, due to the fact that we use the 'average individual', we only take into account changes in the average levels, and not the effects of changes in the distribution of the characteristics. Secondly, the results obtained are not unique: changing parameters and characteristics in a different order will lead to other predicted values. However, our main results are not very much affected by the ordering.

4. Changing labour supply behaviour

The estimation results of the labour supply model can be found in Table 3 for the years 1992 and 1999. As explanatory variables we include age, educational level, the number of children present in the household, the age of the youngest child in the household, and the age difference between the youngest and the oldest child. We also include interaction terms for both the number of children and the age of the youngest child with the age of the woman. As the general patterns between the two years do not differ, we discuss the estimation results for 1999 only, and compare those to the results of 1992 when necessary. It should be noted that despite the general similarities, the differences between 1992 and 1999 are statistically significant.

Comparing the results for the six countries we see a number of similarities. Also, all results are in line with our expectations, and confirm earlier results from the literature. From Table 3, we can see that for all countries there is an age-pattern in which participation rates first rise with age and after a certain age decline again. The age at which the maximum is reached is relatively low in West Germany, the Netherlands and the UK (about 30 years of age), and relatively high in the Mediterranean countries including France (about 36 years of age). This reflects the fact that in the northern countries participation rates are highest for the youngest cohorts, and fall gradually for older cohorts, while in the southern countries women enter the labour market relatively late. The effect of age changes over time: compared to the 1992 results, the age profile in all countries shifted to the right, with the exception of Spain. The shift has been largest in West Germany. This implies that the younger cohorts show higher participation rates, and also that the younger cohorts do not decrease their participation rates as much as the older cohorts did.

It should be stressed that due to the fact that the data are cross-sectional, the age pattern reflects a generation effect, and probably not a 'true' age-effect. However, as we do not have true panel data, or a succession of repeated cross-sections, we cannot distinguish between these two. Also, as the period under study is relatively short, we cannot get a precise view on whether or not the differences between age and cohort groups are gradual or that there is a clear break for some groups.

To ease the comparison of the effects of educational level and children, we computed predicted labour supply for a number of selected women. These predicted participation rates are presented in Table 4.

From this table, we can see that the effect of education is comparable in all countries: there is a difference in participation rates between high- and low-educated women, with the low-educated women working significantly less than the high-educated women. This difference is relatively large in Spain. The low participation rates for low-educated women confirm our hypothesis

Table 3. Estimation results for the logit model on female participation rates per country, 1992 and 1999

	West Germany		Spain		France		Italy		Netherlands		United Kingdom	
	1992	1999	1992	1999	1992	1999	1992	1999	1992	1999	1992	1999
Constant	0.152 (0.73)	-1.607** (0.67)	-5.284** (1.01)	-2.238** (0.95)	-3.035** (0.84)	-5.898** (0.99)	-6.841** (0.88)	-7.802** (0.99)	-2.439 (1.19)	-5.166** (1.19)	-0.028 (0.86)	-1.142 (1.02)
Age	0.149** (0.05)	0.239** (0.04)	0.331** (0.06)	0.185** (0.06)	0.264** (0.05)	0.425** (0.06)	0.479** (0.05)	0.518** (0.06)	0.493** (0.07)	0.325** (0.11)	0.145** (0.05)	0.235** (0.06)
Age squared/100	-0.285** (0.07)	-0.387** (0.06)	-0.461** (0.09)	-0.272** (0.08)	-0.384** (0.07)	-0.605** (0.09)	-0.705** (0.08)	-0.726** (0.08)	-0.828** (0.11)	-0.533** (0.17)	-0.249** (0.07)	-0.386** (0.09)
Low educated	-0.455** (0.04)	-0.778** (0.03)	-0.775** (0.06)	-0.637** (0.05)	-0.466** (0.04)	-0.685** (0.04)	-0.993** (0.04)	-1.134** (0.04)	-0.574** (0.06)	-0.861** (0.08)	-0.399** (0.04)	-0.969** (0.05)
High educated	0.450** (0.05)	0.400** (0.04)	0.972** (0.08)	0.853** (0.06)	0.571** (0.06)	0.603** (0.06)	0.960** (0.09)	0.791** (0.08)	0.849** (0.07)	0.672** (0.11)	0.639** (0.06)	0.685** (0.06)
Effect first child	-3.119** (0.13)	-2.398** (0.11)	-1.341** (0.18)	-1.721** (0.16)	-1.047** (0.13)	-1.714** (0.13)	-1.358** (0.15)	-1.460** (0.16)	-3.655** (0.18)	-2.654** (0.27)	-2.785** (0.13)	-2.605** (0.14)
Effect subsequent children	-1.456** (0.12)	-1.195** (0.11)	-0.901** (0.17)	-1.077** (0.18)	-1.533** (0.12)	-1.877** (0.14)	-1.549** (0.16)	-1.702** (0.18)	-2.190** (0.17)	-1.918** (0.27)	-1.395** (0.12)	-1.424** (0.14)
Age * number of children/10	0.285** (0.03)	0.210** (0.03)	0.193** (0.04)	0.221** (0.04)	0.219** (0.03)	0.327** (0.04)	0.287** (0.04)	0.298** (0.04)	0.531** (0.05)	0.424** (0.07)	0.288** (0.03)	0.282** (0.04)
Age youngest child	0.219** (0.03)	0.111** (0.03)	0.094 (0.04)	0.082** (0.04)	0.156** (0.04)	0.180** (0.04)	-0.105** (0.03)	-0.170** (0.04)	-0.036 (0.05)	-0.008 (0.08)	0.291** (0.04)	0.202** (0.04)
Age * age youngest child/100	-0.304** (0.08)	-0.053 (0.08)	-0.202 (0.09)	-0.146 (0.09)	-0.289** (0.09)	-0.288** (0.10)	0.274** (0.08)	0.392** (0.09)	-0.236* (0.13)	0.064 (0.19)	-0.444** (0.09)	-0.247* (0.11)
Age difference youngest - oldest child/10	0.497** (0.07)	0.217** (0.07)	-0.113 (0.09)	-0.001 (0.09)	0.248** (0.08)	0.249** (0.08)	0.080 (0.08)	0.118 (0.08)	-0.199 (0.15)	-0.115 (0.20)	0.250** (0.09)	0.272** (0.11)
Log L	-4,594.90	-4,724.30	-4,327.90	-4,603.80	-4,477.50	-4,417.80	-4,603.50	-4,255.40	-2,552.00	-1,757.90	-3,742.80	-2,950.70
# individuals (*10E6)	6.55	7.42	3.75	3.78	7.02	6.72	5.91	5.98	2.03	2.05	6.47	6.1
# data cells	7781	8363	7231	7325	7713	7925	7381	7049	4479	3471	6932	6053

The reference category for education level is 'intermediate level of education'. Heteroscedastic consistent standard errors in parenthesis. **, significant at 1%, *, significant at 5%. Source: LFS 1992, 1999, own computations.

Table 4. Predicted participation rates for selected women aged 40

	West Germany		Spain		France		Italy		Netherlands		United Kingdom	
	1992	1999	1992	1999	1992	1999	1992	1999	1992	1999	1992	1999
Low educated												
No children	82	77	47	57	74	71	57	58	80	83	83	80
One child, aged 2	38	44	33	35	70	62	48	46	42	61	52	50
One child, aged 5	46	51	34	38	74	67	47	43	45	62	62	58
Two children, aged 2 and 5	31	34	27	29	55	46	36	31	33	49	45	41
Medium educated												
No children	87	88	66	72	82	83	78	81	88	89	88	91
One child, aged 2	49	63	51	51	79	76	71	73	56	78	62	72
One child, aged 5	58	69	53	53	82	80	71	71	59	79	61	79
Two children, aged 2 and 5	42	53	45	43	66	62	60	59	46	70	55	64
High educated												
No children	91	92	84	86	89	90	90	90	94	94	93	95
One child, aged 2	61	72	73	71	87	85	87	85	75	88	76	84
One child, aged 5	68	77	75	73	89	88	86	84	77	88	82	88
Two children, aged 2 and 5	53	63	68	64	77	75	80	76	67	82	69	78

Source: own computations, based on Table 3.

that low-educated women do not have enough opportunities to stay in the labour market or have to make relatively large costs to do so. This suggests that increased educational levels of women could realise higher participation rates of women. Compared to 1992, the difference between the high- and the low-educated women changed. Especially in the UK, this difference increased sharply. It can be seen that the position of the intermediate educated women changes over time: the difference in participation rates between low- and medium-educated women became larger while that between high- and medium-educated women became smaller. This implies that the medium-educated women are becoming 'more like high-educated women' with respect to participation rates, again stressing the fact that the low-educated women are more and more 'lagging behind'. This confirms that low-educated women did benefit the least from the 'new opportunities' for women on the labour market (Joshi et al., 1996).

The presence and age of children proved to be an important factor in the decision to participate. The effect of the first child on participation is large in all countries, except for France. Table 4 shows that in West Germany in 1999 the participation rate of medium educated women is 88% for women without children and 63% for women with one child aged 2: the 'child penalty' of the first child is about 25 percentage points. For low educated women the child penalty is larger, while for high-educated women the reduction is lower. When the youngest child becomes older, the negative impact of the child's presence is gradually mitigated and participation rates rise again (in West Germany to 69% when the child is aged 5). In Italy, the effect is the other way round: the older the youngest child, the lower the participation rate of the mother. As can be seen in Table 3, the effect of the age of the youngest child is also dependent on the age of the mother. The older the woman, the lower her participation rate is (given the age of the child). This may indicate that women of older generations show a smaller increase in labour supply when the child grows older. In other words: mothers from younger generations are more prone to re-enter the labour market (or withdraw less) than mothers from older generations. Again, in Italy, the estimated effect is the other way round.

When subsequent children are born, participation rates are again decreasing. As Table 4 shows, in most countries the birth of subsequent children does lead to a change in participation, but not as large as the change at the first birth. This can be seen by comparing participation rates of women with no children to those of women with one child aged 2 on the one hand and women with one child aged 5 and women with two children aged 2 and 5 on the other. The impact of the 2-year old is smaller when there is already a child in the household. In France and Italy, however, the impact of a subsequent birth is larger than that of the first birth. This suggests that in these countries, problems of combining motherhood and family severely increase

when the family becomes larger. This effect of the second child, however, depends on the age difference between the two children. As can be seen from the estimation results in Table 3, in all countries, except Spain and the Netherlands, a larger difference in age between the youngest and the oldest child leads to higher participation rates. We expected the duration of the period with small children to be the most important factor in influencing labour supply; our estimation results point in the direction of the 'intensity' of this period. In the Netherlands and to a lesser extent in Spain, however, a longer period with young children leads to lower participation rates of women. This may have to do with the tendency among mothers to take care *themselves* of their children instead of relying too much on different forms of formal or informal childcare. The effects of the age difference, either positive or negative, are not very strong.

By comparing results for 1992 and 1999, it can be seen that changes in behaviour took place that resulted in increases in female participation rates. As a result, the 'penalty' for having a child changed, and the size of this change depends on the educational level of the woman. Using again West Germany as an example, the participation level of medium educated women without children rose from 87 to 88%, while the participation rate of medium educated women with one child aged 2 rose from 49 to 63%. As a result the effect of the child has become much lower: instead of almost 40% in 1992 the penalty is 25% in 1999. This pattern shows up for medium and high-educated women in all countries, the effects being largest in the Netherlands. For the low-educated women, however, the effect of children increased, mainly due to the fact that the participation rates of women with children decreased. West Germany and the Netherlands are the exception: the participation rates of women with children increased more than the participation rates of women without children, resulting in a smaller effect of children. This finding supports the one by Joshi et al. (1996) that mainly the high-educated women benefit from childcare provisions, leading to higher participation rates of high-educated women with children.

5. Unravelling the changes in female participation rates

In Section 4, it was shown that female labour supply behaviour changed over time, leading to changes in female participation rates, given specific characteristics. In Section 2, we already showed that characteristics of the female population changed over time, possibly also leading to changes in average participation rates. To distinguish between the effects of behaviour and characteristics, we will use a 'decomposition' to determine the relative contribution of the changes to the total change in participation rates. The results are presented in Table 5.

Table 5. Decomposition results for the changes in female labour force participation rates over the last decade

Parameters	1992	Age 1999 Education 1992 Children 1992	Age 1999 Education 1999 Children 1992	1999	Total differ- ence			
Characteristics	1992	Age 1999 Education 1992 Children 1992	Age 1999 Education 1999 Children 1992	1999				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
West Germany	63.9	63.4	66.1	66.0	64.0	64.7	69.1	5.2
Spain	35.2	35.4	42.4	47.8	49.2	51.2	46.8	11.6
France	66.9	66.9	67.0	71.1	69.8	70.3	69.6	2.7
Italy	47.1	47.5	52.2	55.4	53.2	55.2	49.1	2.0
Netherlands	63.5	63.3	75.8	75.4	73.1	74.2	77.1	13.6
United Kingdom	72.3	72.3	77.7	80.5	78.9	78.6	78.9	6.6

In this table predicted participation rates are shown, using the average values of the explanatory factors in the population and estimated behaviour in both 1992 and 1999. Column (1) starts with using average values and behaviour in 1992, in columns (2) to (7) in successive steps we change the values of characteristics and the corresponding estimated parameters to the value of 1999, as shown in the heading of the columns. Column (7) gives predicted participation using values of 1999 for all parameters and characteristics. Column (8) gives the predicted difference between 1992 and 1999.

Source: LFS 1992, 1999, own computations based on Table 3.

The table should be read row by row: the first column in the table shows the participation rate of the average individual (which is not the average participation over all individuals). In West Germany, the participation rate of the average 1992-individual is 63.9%. Changing the age to the average value in 1999 but keeping the effect of age at the 1992-value shows that due to the ageing of the population, participation levels go down slightly by 0.5 percentage points. However, the behavioural change between 1992 and 1999, leads to an increase in participation levels by about 2.7 percentage points, as reflected by the difference between the second and the third column of the table. This increase in participation rates over the last decade due to a shift in the age-participation behaviour is observed in almost all countries except France. Comparing the size of this shift in the age-participation behaviour to the total change, it can be seen that the change in the age-participation behaviour accounts for a large part of the total rise in female participation rates. For the Netherlands, this is in accordance with the results of Henkens et al. (2002) who found that the change in participation rates is primarily due to a change in behaviour.

Turning to West Germany again, the shift in the average educational level of the population did not have any effect on the participation level: the values in the third and fourth column are equal. However, West Germany and the Netherlands are the exception: in the other countries the increase in educational level induced an increase in female labour force participation of about 4 percentage points. There is an effect of the change in behaviour given educational level: in West Germany the change in behaviour leads to a decrease in the average participation level of 2 percentage points. This decrease in participation rates due to a change in behaviour is seen in all countries. As we already saw in Table 4, the effect of being higher educated (relative to the medium level educated women) diminishes in all countries. In other words, the difference in participation behaviour between the educational levels decreases. Due to social changes working for pay becomes common. This tendency may continue until educational level will no longer be a major determinant of labour force participation. The effect of changes in educational levels and the changes in behaviour given this level did not contribute to overall changes in labour supply over the last decade. In total the effect of changes with respect to the educational level of women is even negative. However, once again it should be noted that much of the educational effect might be absorbed by the age effect. The massive influx of younger generations of female workers coincided with a sharp increase in educational levels.

Finally, the model allows for computing both the effect of changes in the size and composition of families on female labour supply, as well as the effect of changing behaviour related to these factors. The difference between the 5th and the 6th column in Table 5 reflects the changing effect of family composition on labour supply. These changes contribute positively to the overall increase in female labour force participation over the last decade. The size of this effect, however, is small and even non-existent in West Germany. The difference between the 6th and the 7th column in the table shows that women's behaviour, given the size and composition of the average household, changed over the last decade. In West Germany and the Netherlands female labour supply increased by about 3 percentage points as a result of this change in behaviour. So, labour supply did not only change due to a change in the number and timing of children (columns 5–6), children also have become a less severe restriction on female labour force participation (columns 6–7). This can be explained by the fact that West Germany and the Netherlands have witnessed serious institutional changes over the last decades: changes on the labour market allowed for more part-time work in both countries and, in the Netherlands, the supply of formal childcare has increased enormously. In the southern countries, however, there is a decrease in labour supply as a result of a change in behaviour. As female participation rates have been increasing all over Europe, the pressure on informal childcare provided by family members became higher. As a result a growing number of

families will not succeed in finding proper childcare. It might be that in Spain, and to a lesser extent in Italy, women attained increasingly higher educational levels, while at the same time the nucleus family replaced the extended family. This implies that the incentive to participate has become stronger and, at the same time, the possibility to get informal childcare has reduced. This, in turn, results in the fact that the presence of (young) children has become a more important factor in the decision on labour force participation.

As the estimated behaviour related to children is the 'combined effect' of preferences, social norms and restrictions, one wonders which of these three caused this decrease in participation rates. Part of the change may be found in the deteriorating economic situation in some of the countries included in this study, which has hit women with children harder than women without children, especially when childcare is expensive and not easily available. This may also be an additional explanation for the fact that in the Netherlands the effect of children became smaller: due to an increasing labour shortage childcare has become more available during the last decade, in order to pull women with children to the labour market (Lundholm and Ohlsson, 1998; Remery et al., 2003). The second explanation may be that as a result of the increased level of education, the labour market situation of women improved. Therefore, they may choose to let their labour market participation depends more on their family situation. This can also explain the decrease in participation rates due to changes in characteristics in France and the UK: the relative improvement of women's labour market position due to an increased educational level gave women the opportunity to 'use' some of this gain to have more time for other activities besides work, i.e. children.

Overall, we can conclude that increases in participation rates could be attributed mainly to generational effects: given the number and timing of children, married and cohabiting women from younger and higher educated generations show higher participation levels than women from older generations. Finally, the effect of the number and timing of children differs between countries: it contributed negatively in the southern countries, and positively in the northern countries. In West Germany and the Netherlands only part of the increase in participation rates was due to changes in the effects of children. These changes may be related to changes in the institutional context. As institutions such as childcare and tax-exemptions are an important aspect of the restrictions we may therefore conclude that changes in these institutions helped increase female participation rates. However, although the effect is present, institutional changes are not the main factor in the increases that are observed over the last decade.

6. Conclusions

The last decade showed increasing female participation rates in Europe. Especially the participation rates of married women increased. This article aims at comparing female labour market participation between 1992 and 1999 for six European countries. To do so, we use data on West Germany, Spain, France, Italy, the Netherlands and the United Kingdom from the European Labour Force Survey, provided by Eurostat.

Descriptive statistics show that not only participation behaviour, but also some characteristics of the population changed. In all countries, there has been a shift towards higher education and postponement of family formation. Next to that there is an increase in the number of women that remain childless, while women that do become mothers tend to have fewer children. All these changes may also contribute to the increase in female labour supply.

To discern between the relative weight of changing behaviour given characteristics and changing characteristics given behaviour, we estimate a logit model explaining female labour supply in the six countries in both years. The model is estimated on data from the European Labour Force Survey for 1992 and 1999. We use women's age, educational level and the number and age of their children (present in the household) as explanatory factors. The results are as expected: low-educated women work less than high-educated women, older women work less than younger women, and women without children show higher participation rates than women with children.

Our estimation results show that participation rates have increased for women both with and without children, and for both low and high-educated women. On the other hand, the difference in labour supply between groups has changed: the differences between high and low educated women have diminished. As having a job is increasingly more common in all European countries, the educational level becomes less and less important as a predictor for labour supply. Children do remain an important factor for predicting labour supply, although in northern Europe (West Germany and the Netherlands) their impact on labour supply has slightly diminished. In southern Europe, the difference in labour supply between women with and without children even increased over the last decade.

To gain more insight in the relative contribution of changes in characteristics and changes in behaviour, we also performed a decomposition analysis. The outcomes of this analysis suggest that education and child-related changes in participation rates are present but not very important. In all countries, the rise in educational levels contributed to an increase in female labour supply. However, as participation became more and more 'normal' amongst all groups in society, the effect of educational level decreased in all countries. Moreover, in all countries there has been a shift in fertility patterns, which resulted in a higher female labour supply. In other

words, women are 'synchronizing' their labour and their family career, i.e. there is a tendency among women to postpone the first child, to have the children at shorter intervals, and to go for a lower number of children as 'completed family'. The result of this is an increase in female participation rates, not because the combination becomes easier, but because other choices are adapted to the fact that a paid job is preferred to having children. In Spain, Italy and France this increase in participation rates was more than counterbalanced by the fact that having children became apparently more difficult to combine with work. In West Germany, the Netherlands and the UK the increase in labour supply was even larger, because in these countries the effect of children on labour supply became smaller, leading to higher participation rates given the number and age of children.

However, the main conclusion is that increases in female participation rates are primarily explained by the changing effects of age on female labour supply. As argued before, these effects should be interpreted as behavioural differences between generations (i.e. realized by changes in behaviour which are not explicitly related to children or educational level). In other words, we come to the conclusion that norms and values in society changed in such a way that the working wife and gradually also the working mother has become more and more the standard in all European countries. This change in norms is reflected and perhaps stimulated by the change in organization of the welfare state: in many EU-countries policies are aimed at increasing female participation rates by easing the combination of work and family. However, as we find no large contribution of the effect of children, we are led to the conclusion that although these policies may be important from the perspective of the household, they are more the result of changing labour supply patterns than the cause of it.

Acknowledgements

This research is part of the research program 'Levenslopen, transitie en de combinatie van arbeid en zorg', financed by NWO (014-21-070-prog.d). This article also benefits from research financed by the European Union as part of the research project Female Employment and Fertility in National Institutional Contexts (FENICs), with contributions of the Universities of Nanterre, Bielefeld, Erlangen, Barcelona (Autonoma), Utrecht, and Warwick. (<http://www.warwick.ac.uk/ier/fenics/index.html>).

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