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ABSTRACT

Child Care and Mothers' Lifetime Earnings: Some European Contrasts*

Patterns of female employment participation are compared in a variety of European countries with differing levels of child care provision. The earnings forgone over a lifetime by a woman bearing children (compared with the earnings of her childless counterpart) are simulated for four countries, using estimated parameters for the effects of participation, hours worked and wages. Western Germany and the United Kingdom each have larger earnings 'losses' than France and Sweden, where there is also more out-of-home provision for children of and below school age. The effect on mothers' lifetime earnings of various hypothetical extensions of child care in the UK is simulated.

JEL Classification: 826, 840 and 850
Keywords: child care, childbearing, comparisons, europe and opportunity cost

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Unfunded Discussion Paper

Submitted 06 December 1991

Day care in Europe and mothers' forgone earnings

Heather JOSHI * and Hugh DAVIES **

The ways in which societies divide their available labour resources between the tasks of generating income and rearing the next generation are diverse but, for better or worse, in Western industrial societies the primary providers of child care are generally presumed to be mothers. These economies have, over the past 40 years, seen a secular increase in the participation of mothers in paid work, though to markedly dissimilar levels. The arrangements made for the care of children also display marked differences. The purpose of this article is to explore the relationship between paid work and child care. Of all the possible arrangements which reduce the amount of time mothers must devote to the care of children – for example, participation of fathers and other relatives in child care, private purchase of child care services, adaptations of employment conditions to workers' parental roles – collectively subsidized child care facilities are particularly interesting, as they are directly amenable to public policy.

So far, female participation rates in industrial economies have only approached those of men where public arrangements for the care of pre-school children are widely accessible, as in Scandinavia and eastern Europe. It is reasonable to suppose that the provision of more and cheaper child care would support higher levels of female employment.

Of course, the various forms of child care provision have other functions, and may have other effects. They can extend education to pre-school children, and can have beneficial effects on children's social development. They may also play a crucial role in influencing decisions about childbearing, as they weaken any trade-off between having children and remaining in employment. The issues of educational and fertility effects, and the quality and quantity of children, are beyond the scope of this paper, but it may be noted in passing that Ermisch (1989) has demonstrated the

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theoretical possibility that subsidizing the care of children outside the family could have a pro-natal impact.

In the first two sections we review evidence on female employment and subsidized child care arrangements in a number of European countries, using aggregate data. We turn in the final section to the device of simulated lifetime earnings to illustrate the long-term effects of childrearing on women's contribution to measured output in the economy, i.e. National Income. The difference between the lifetime earnings of a woman without children and those of one with children represents the earnings forgone due to the presence of children. In economists' language, this amount is the earnings "opportunity cost" of having the children. Estimates of these opportunity costs are presented for illustrative representative cases in France, the former Federal Republic of Germany,[1] Great Britain and Sweden. These countries were chosen because suitable statistical estimates of relationships for both participation and wages were available. On the face of it, the contrasts between the results reflect contrasts in subsidized child care in these countries.

Our estimates are based on statistical relationships which predict the probability that a woman participates in the labour force, and her earnings if she does. From these formulae, we work out the probability of participation by women with different numbers of children and their year-by-year earnings, given their employment record to date. The approach builds on earlier estimates (Joshi, 1990) of the cash opportunity cost of childrearing for a typical British case. More details of the calculations presented here can be found in Joshi and Davies (1992), who also consider the effects of extending child care provision in Britain. Davies and Joshi (1992) provide a more complete technical explanation of the method, and its extension to British pensions.

Patterns of participation

While all countries have seen a rise in female participation to varying degrees, within countries women's participation has varied with the number and age of their children. The contrast in labour force participation rates between women with and without children is an indicator of the extent to which childrearing involves forgone earnings. Table 1 presents the percentage of women in employment, whether full or part time, for countries in the European Community (EC) and for Sweden. Mothers of children under 16 are divided into three groups according to the age of their youngest child. They are contrasted with women who have no child present in the household and who are not students. Women aged over 39 are omitted from the "no child" category in order to exclude most mothers whose children are all over 16, and to control for the low labour force attachment of older

[1] Hereinafter referred to as Germany.

Table 1. Employment rates for women in Europe, by age of youngest child, 1988 (%)

Country	Non-student women aged 16-39 without children	Women aged 16-59 with youngest child aged:		
		0-2	3-6	7-15
Eire	74.8	26.7	22.5	23.5
Spain	51.5	28.2	28.2	28.3
Netherlands	77.8	28.2	33.3	41.2
Germany (F.R.)	82.9	31.0	40.9	49.9
Great Britain	82.6	32.6	51.4	70.0
Luxembourg	78.0	33.1	39.1	39.6
Greece	56.1	38.6	39.9	44.0
Italy	54.1	40.0	41.9	44.2
France	77.5	50.3	58.6	66.6
Belgium	67.9	52.1	56.6	53.3
Portugal	64.5	58.0	63.5	63.7
Sweden	71.0	73.0	82.0	88.0
Denmark	83.8	74.0	78.9	84.8

Sources: For European Community, Eurostat Labour Force Survey, tabulations requested by P.A. Economic Consultants, Cambridge, and made available to the authors. It was not always possible to determine which co-resident child was a woman's youngest; such cases were excluded. For Sweden, Swedish Labour Force Survey, as reported by Gustafsson and Meisaari-Polsa (1991, table 13). Figures are for 1987 and apply to married and cohabiting women, at least one partner aged 16-64; age groups of children are 0-3, 4-6 and 7-16.

generations. The majority of the mothers are under 40; all of them are under 60. The exclusion of economically inactive students from the child-free employment rates removes the effects of substantial variation between countries in the rate of educational enrolment after age 16.

The countries are arranged in ascending order of the percentage of mothers of children in the youngest age group (under 3) who had paid work. This ranges from 27 per cent in Eire to 74 per cent in Denmark. In most of these countries the level of participation of women with children rose markedly during the 1970s and 1980s, but there have been persistent contrasts between countries in the pattern of participation by women with different family responsibilities. These have been documented in several recent studies (Delacourt and Zighera, 1988; Zighera, 1989; Calhoun, 1990). In a few countries there is little difference in women's employment rate irrespective of whether they have responsibility for children, and regardless of the latter's age or number. In table 1, Denmark and Sweden appear to be in the "no difference" category at the top end. Other countries fall into two main groups: those where the employment rate is strongly related to the age of the youngest child and those where the number of children is more important than the age.

Britain, Germany and the Netherlands have been put into the "age-of-youngest-child" category by the studies cited above, and in table 1

they display markedly lower rates of employment among mothers of babies and toddlers (0-2 years) than among mothers whose children are of school age. Britain shows the strongest contrast in the table between a rate for mothers of children aged 0-2 (33 per cent) and that for women whose children were aged 7-15 (70 per cent). This pattern is generated by a process in which most women leave employment at the birth of their first child and rejoin after a break in employment, often only when their last child reaches school age. Normal as such a pattern of employment seems to a British resident, it is atypical in continental Europe where, as table 1 bears witness, different employment patterns obtain.[2]

In the remaining countries (Belgium, France, Greece, Italy and Portugal), employment rates among the mothers of young children are higher and differ less from those whose children are older. For most of these countries (except Greece and Portugal), the number of children makes more difference to mothers' employment rates than does their age (see the studies cited above). In such countries, for example Belgium and Italy, women are less likely to drop out of the labour force when they have their first child.

The snapshots of current participation rates can only hint at the range of possible employment histories in different countries. Such contrasts have been confirmed in retrospective data collected in the 1990 Eurobarometer Survey, comparable across countries (Kempeneers and Lelièvre, 1992). In Scandinavia continuous employment histories predominate; in other northern countries of the EC histories are predominantly broken at childbearing; in southern countries (including France and Belgium) histories tend to polarize between those who are employed continuously and those who are little or never employed.

Child care systems

Behind these observed contrasts lie differences in the institutions providing child care in the countries concerned. These institutions reflect historical, economic, cultural and political factors, embodying and creating attitudes about how far the proper place of mothers and their young children is together in the home. We now turn to two indicators of institutional variation; the provision of subsidized day care and the length of the school day.

In most of the countries of Europe there is a shortage of subsidized day care. Where subsidized provision is low, women often say that they are prevented from taking paid work by lack of available child care (Martin and Roberts, 1984). Comparing localities within Sweden, Gustafsson and Stafford

[2] Eire and Luxembourg are also classified as "age-of-youngest-child" countries by Zighera, though the differences by age of child are less marked in table 1. The low participation rates of Spain belong to a "number-of-children" pattern according to Zighera (1989) and to a "no-effect-of-children" category according to Calhoun.

(1988) have shown that the level of day care provision is a determinant of women's labour force participation.

Employment of mothers of pre-school children implies that someone else is taking care of the children, at least while the mothers are at work. Table 2 summarizes subsidized child care provision for the same countries as in table 1. It covers services such as day care centres or child-minders whose provision is subsidized from public funds, but not tax allowances granted for private arrangements or subsidies from employers. The countries ranking lowest on the proportion of mothers of the under-3s employed also rank lowest on provision of subsidized day care for this age group: 2 per cent provision in Britain, Eire, Luxembourg and the Netherlands (i.e. one place for every 50 children aged under 3), 3 per cent in Germany. At the other end of the scale, there is 20 per cent provision in Belgium, France and Italy, 31 per cent in Sweden and 48 per cent in Denmark. Portugal appears out of line, because the figures do not cover private child-minding arrangements, formal and informal. In all the southern European countries the involvement of grandmothers in child care is still especially frequent as the older generation of women has been less caught up in the rise of women's employment.

In the next age band, 3 years to compulsory school age, provision is generally higher, but follows a similar international gradient. Apart from Portugal (again out of line), Britain had the lowest proportion of places for 3-4-year-olds, mainly in nursery schools offering part-day coverage only. Given its place on the under-3 league table, Germany made relatively extensive use of kindergartens (some of which are open all day) for pre-primary children. Subsidized provision for this age group was highest in Belgium and France (95+ per cent) and Italy (85+ per cent), where children attend pre-primary schools *(écoles maternelles)* open, in France at least, for the whole day. In Denmark the 85 per cent coverage of 3-6-year-olds involves a mixture of pre-primary schooling, kindergartens, organized family day care (child-minding), mixed-age centres and nurseries and out-of-school hours facilities in schools. In Sweden public day care has been growing rapidly and is now widespread. It takes the form of day care centres or publicly employed minders ("day care mothers"). As it is the responsibility of local government, the levels and price of provision vary from place to place, and charges are generally income-related. The goal of a place for all pre-school children, set for 1991, was not met. By 1987 public day care coverage for the entire age group from birth to 7 years was 47 per cent. Swedish parental leave after a birth, at 90 per cent of salary for 12 months (extended to 15 months in 1990), is the most generous such provision in western Europe. It is combined with a system of parental leave to care for sick children which also facilitates mothers' employment, not least because this right is being taken up extensively by fathers (in contrast to that for the care of infants) (Lewis and Aström, 1992).

Table 2. Places in publicly funded child care services as percentage of all children in the age group [1]

Country	Year of data	% provision for children:			Age when compulsory schooling starts	Length of school day (hours)
		Under 3	From 3 to school age	In primary schools [2]		
Eire	1988	2	35-40	<0.5	5	4.5-6.5
Spain	1988	...	65-70	<0.5	6	8
Netherlands	1989	2	50-55	1	5	6-7 [3]
Germany (F.R.)	1987	3	65-70	4	6-7	4-5
Great Britain	1988	2	35-40	<0.5	5	6.5
Luxembourg	1989	2	55-60	1	5	4-8
Greece	1988	4	65-70	<0.5	5.5	4-5
Italy	1986	20	85 [4]	...	6	4
France	1988	20	95 [4]	...	6	8
Belgium	1988	20	95 [4]	...	6	8
Portugal	1988	6	35	6	6	6.5
Sweden	1987	31	79	...	7	...
Denmark	1989	48	8	29	7	3-5.5

[1] The proportion of children receiving subsidized care may be higher than the percentage shown above, since the latter refers to places which are sometimes shared by more than one child on a part-time basis. [2] Care outside school hours. [3] Interrupted by a two-hour break, normally not supervised at school. [4] Enrolment in day care institutions and with municipal "day care mothers".

Source: Moss (1990), table 3.

Table 2 also indicates variations in school hours between countries, which may limit mothers' availability for paid work. The relatively long school day in Belgium and France facilitates full-time employment by mothers, while the countries with shorter school days tend to be those where mothers often work part time. It is said that the short school day in Germany helps to explain the relatively low labour supply of mothers of German schoolchildren (OECD, 1988, p. 142). The long midday break in the Netherlands may have a similar effect. Kempeneers and Lelièvre (1992) also note the inhibiting effect of limited school hours on full-time work in northern European countries. With the exception of Denmark, few countries appear to have developed services for children out of school hours (see the last column of table 2). In Denmark (as in Sweden), where the school day is relatively short, the high levels of mothers' employment result from a combination of out-of-school-hours facilities with extensive part-time employment.

Inevitably, there is a strong association between the proportion of children attending day care and the proportion of mothers in paid work. However the correspondence is not complete. In general there are proportionately more mothers of children under 3 in employment than there are places for children under 3 in subsidized day care, mainly because private arrangements, formal or informal, are also made for the care of these

children. Conversely, for children between the age of 3 and compulsory school age, the proportion receiving subsidized day care tends to exceed the proportion of mothers in paid employment with youngest children in the roughly equivalent age group (3-6). (With their particularly high dependence on non-subsidized facilities, Britain and Portugal are clear exceptions.) Children in this age band are less likely to be their mothers' youngest than those aged under 3, but there could be a genuine excess of day care over maternal employment. Furthermore, for children of this age, especially, pre-school care (including nursery schools, pre-primary schools and kindergartens) has educational value and is therefore also used by families where the mother has no job. Kempeneers and Lelièvre conclude, from their review of child care and school institutions, that: "Certain countries, for ideological reasons in part, provide a more or less favourable environment for economically active mothers, and so determine distinct behaviours and aspirations" (1992, p. 89).

We formulate hypotheses that the type of child care available influences the way in which children affect mothers' lifetime earnings. In "age-of-youngest-child" countries, where most mothers of young children stay at home, the cost of mothers' time in the home is not much affected by the number of children. In such regimes the total effect on employment will be sensitive to how closely births are spaced (see Joshi, 1990). Unless births are abnormally far apart, the impact of the first child on mothers' earnings will be significantly greater than that of subsequent children.

Where out-of-home child care is used, its cost to the parents will normally increase with the number of children to be taken care of, and if facilities for children of different ages are in different places, costs and inconvenience may rise disproportionately with the number of children. This tends to occur in "number-of-child" countries, and we conjecture that the earnings opportunity cost of having children will tend to rise roughly in step with the number of children in these countries.

The calculation of forgone earnings

We now turn from these aggregate data to the calculation of forgone earnings for illustrative individuals. Ideally, one would calculate forgone earnings on the basis of comparable, and probably purpose-built, sets of survey data for each country. Our methods here are more modest: we explore the implications of existing research findings in the belief that a good deal can already be said on this basis.

We calculate the impact on the National Income of the diversion of a mother's time from the labour market to childrearing, i.e. mothers' gross earnings. Both the private and the social costs of having children depend, of course, on other considerations as well, but these cash opportunity costs may be considerable and it is of interest to examine them, even though other elements are involved.

The relationships we use are based on data collected around 1980 on participation, hours and wages in Britain, France, Germany and Sweden; details may be found in Joshi and Davies (1992). An illustrative hypothetical life-history is generated, frozen in time, for all four countries. We assume that a representative woman in each country has a probability of participation of 85 per cent at age 20 (roughly corresponding to levels current in these countries in the mid-1980s). She participates for a full year whenever her probability of doing so is greater than 50 per cent. Earnings are calculated using the most appropriate wage formula available from existing econometric analyses of women's earnings in the country concerned. These formulae all allow for earning power to rise with accumulated employment experience. We assume that participation rates are synonymous with employment, i.e. that there is no unemployment. To ensure consistent treatment across countries, we have not treated paid leave at the time of childbearing as generating earnings (the treatment in official statistics varies across countries). Thus we have assumed that Swedish mothers forgo a year of gross earnings at each birth, though they would in fact be receiving a transfer payment from the Parental Insurance System, worth 90 per cent of annual pay. In the French calculations, we have adjusted gross earnings in the year of childbirth for an assumed three months of maternity leave if the model predicts any employment in that year.

French mothers' employment histories have been noted for a polarity between those with continuous employment and those who drop out of paid work at childbearing (Dex and Walters, 1992; Kempeneers and Lelièvre, 1992). The former seldom have large families. In assuming an 85 per cent participation probability, we deal here with a representative of the more employment-oriented sub-population of French women. As part-time employment has been rare in France until recently, employment there is assumed to be full time.

Participation profiles

The probability that a woman participates in paid work depends, amongst other things, on her age and on the number and ages of her children. These factors affect participation in different ways from country to country, as explained above. Figure 1 plots our calculations of the chances of participating for representative women in the four countries. In each country we consider women with zero, one, two and three children, with childbearing at ages 25, 28 and 31. The British pattern shows clearly the impact both of the arrival of the first child and of the age of the youngest. These imply a precipitate fall in the chances of remaining in employment at the first birth and a rising probability of rejoining the labour force as the first child grows older. Subsequent births would reduce the chances of being employed (though not by very much) and prolong the period when the probability of employment stays below 50 per cent. Probabilities recover fairly steeply.

The German picture is similar, also showing the impact of the first birth as greater than that of subsequent births, as befits an "age-of-youngest-child" country. The "first birth shock" we infer for Germany (Stützer and Schwartz, 1991) is not as dramatic as that for Britain, although table 1 might have led us to expect an even lower participation rate for mothers of infants and toddlers in Germany than in Britain. This may be because the equation we have used for the former takes account of the presence of a child aged under 3, rather than under 1. The break at age 3 may be reasonable for Germany, reflecting the widespread availability of kindergarten facilities from that age, as shown in table 2. The graphs also suggest that it takes German mothers somewhat longer to resume paid work than their British counterparts.

Despite these details, the graphs for Britain and Germany are broadly similar and contrast markedly with the other two countries. In neither France nor Sweden is the impact of children on the chances of employment anywhere near the magnitudes simulated for Britain and Germany. Both have profiles of the same shape; falling by steps, and lowest at the time of the third birth. This is because child effects in these countries are determined by the number of children, rather than the age of the youngest.

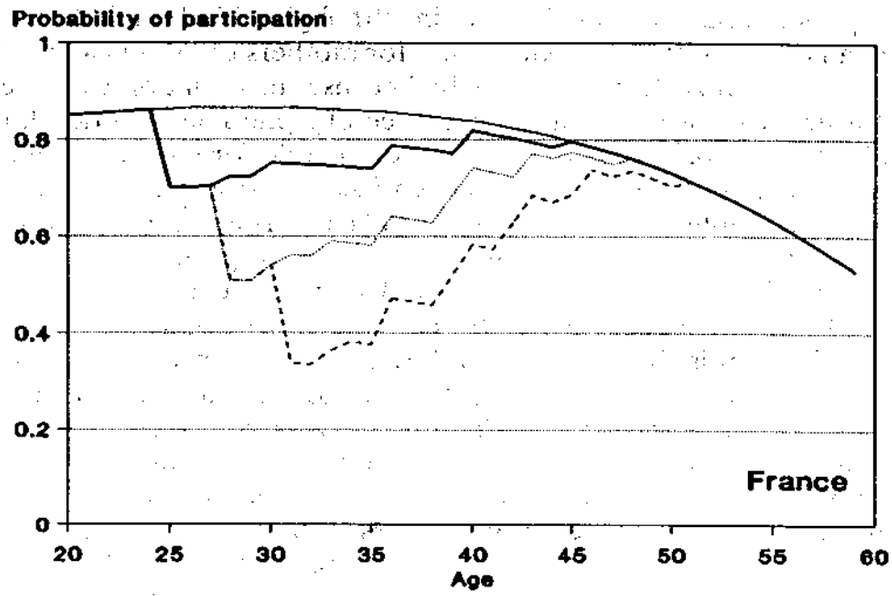
In Sweden the whole level of the profiles with children is higher, but the mother's probability of employment drops just below the crucial level for the first two years of the third child's life. Nor are the child effects in the French case strong enough to reduce the chances of employment below the 50 per cent trigger until the third child arrives, inducing a spell of eight years below that level. The women who actually have three children in France are a distinct minority: they tend to be the "dedicated mothers" (Blanchet et al., 1991), who drop out of employment for long periods, at or before the birth of their first child. Most women stay in the labour force while they produce two children, but faced with the high earnings cost of a third child tend to stop at that. This suggests a strong link between labour market attachment and childbearing, which has not been built into our model.

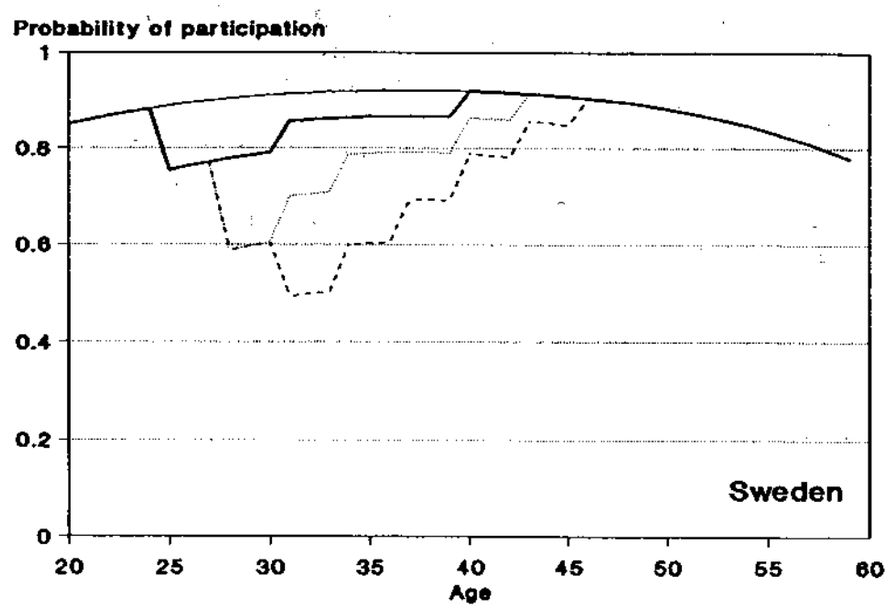
Effects of having two children

We first compare the lifetime employment and earnings of women with zero and two children. The two-child case is given prominence as this is the most popular family size in all four countries. The effect on earnings loss of other family sizes is considered afterwards.

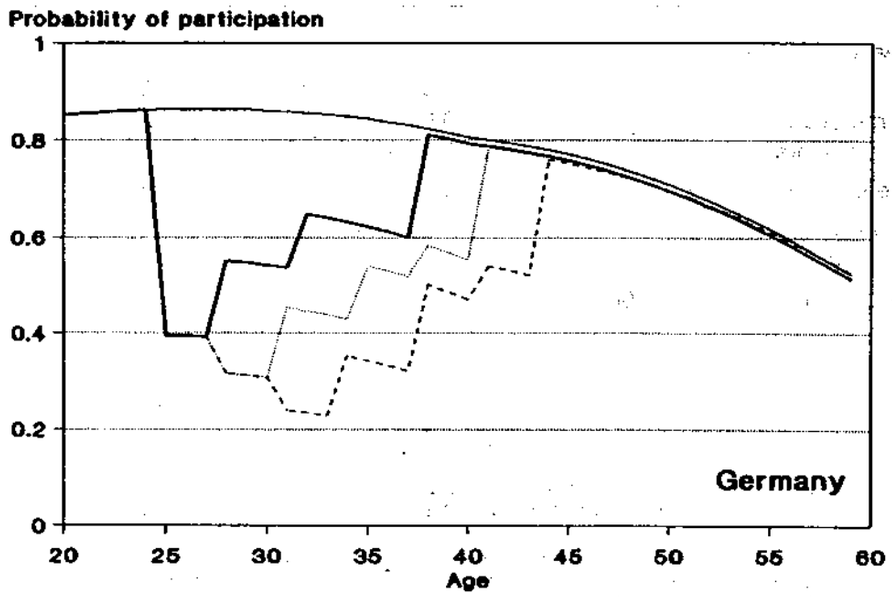
The participation profiles plotted in figure 1 imply that the representative woman without children is employed continuously from age 20 to 59. She works full time throughout in France; in Sweden, Britain and Germany she switches into part-time employment at ages 58, 53 and 45 respectively, in line with the current predominance of part-time work among women at those ages. The top panel of table 3 shows the net difference, in terms of years (and full-time equivalent years) spent in the labour force, between this base scenario and the case of a woman bearing two children.

Figure 1. Probability of participation by age of woman





0 children — 1 child — 2 children — 3 children


Probability of participation
1
0.8
0.6
0.4
0.2
0
20
25
30
35
40
45
50
55
60
Age
Germany

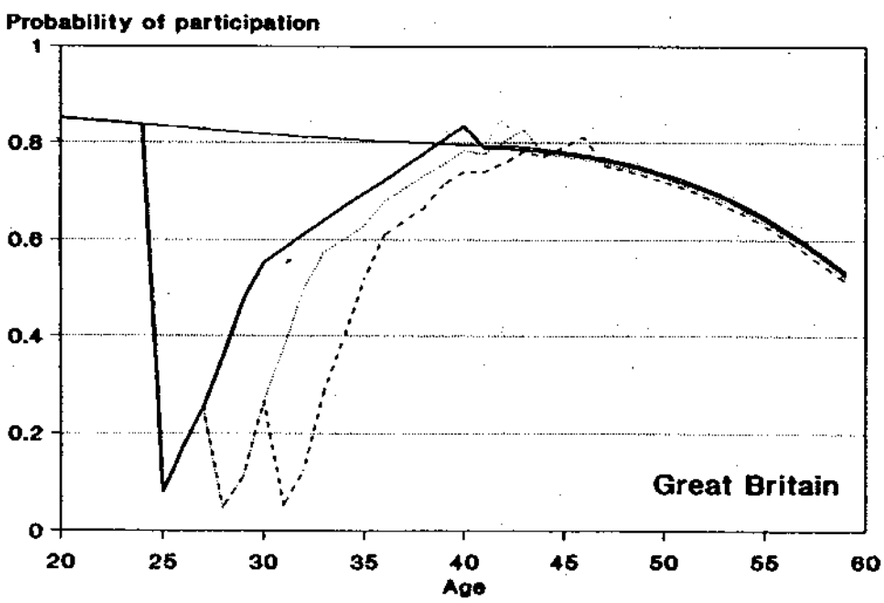

Probability of participation
1
0.8
0.6
0.4
0.2
0
20
25
30
35
40
45
50
55
60
Age
Great Britain

Table 3. Effects of bearing two children on employment and earnings

Loss factor	France [1]	Germany	Great Britain	Sweden [2]
Lost years:				
All years	0.0	−10.0	− 8.0	− 2.0
Full-time years	0.0	−16.0	−22.0	−15.0
Part-time years	0.0	6.0	14.0	13.0
Full-time equivalent years	0.0	−12.9	−15.9	− 4.8
Lost earnings (as % of childless earnings) [3]	1.0	48.6	57.4	16.1
Components of lost earnings (as % of total):				
Due to lost years	0.0	60.1	32.1	30.7
Due to lost hours	0.0	17.6	33.3	45.7
Due to lower pay	100.0	22.4	34.5	23.6

Note: Probability of participation fixed at 0.85 at age 20. The base case is a woman worker who has no children and is continuously employed to age 60. Years of work and costs are measured from ages 25-59 inclusive.

[1] Earnings lost during the years of childbirth are shown as "due to lower pay". [2] Years of childbirth are assumed to be years of non-participation. [3] Joshi and Davies (1992) also compute the present value of the earnings loss with interest rates of 5 and 10 per cent.

Comparing the child-free scenario with that of bearing two children at ages 25 and 28, the simulations put a mother's loss of employment at eight years in Britain, ten in Germany, two in Sweden and none in France.

The British case involves dropping out of employment until the younger child reaches age 5. We also quantify the effect on years worked part time – an increase of 14. The two British children thus make an impact of 15.9 full-time equivalent years of employment. In the German case the loss of employment also occurs while the children are young (up to the second child's seventh birthday in this example), but the net increase in part-time employment (six years) is less than in the British case, as is the full-time equivalent of the employment cost (12.9 years). Thus the British case displays a higher employment loss than the German but there must be more doubt about the precise ranking of these two cases than about the contrast they present vis-à-vis the other two countries.

The French example, on the assumptions used here, involves departure from employment at the time of the first and second births only during the period of maternity leave. Since, on our assumptions, there are no effects on hours, in the French case the earnings cost of two children is just half a year's pay. By contrast, Swedish mothers following the "combination strategy" are very much affected by reduced hours, even though part-time hours are relatively high in Sweden. In the calculations for the woman with two children, employment is interrupted only for two years of parental leave, but

involves 15 fewer years of full-time employment than with no births, with an extra spell of part-time work while there is a child under 12. Allowing for the additional hours in part-time work, the full-time equivalent loss is 4.8 years, more than in the French example but nowhere near that in the other two countries.

Earnings profiles

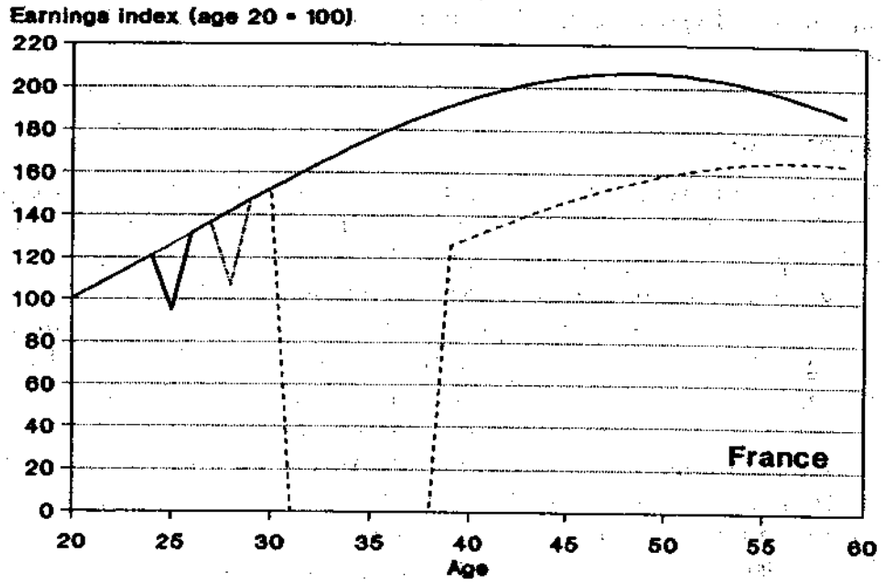
Lifetime earnings for the four scenarios in the four countries are plotted in figure 2. These show the earnings interruptions implied by the participation patterns depicted in figure 1, and also the effects of reduced hours and wage rates. The effect of experience on the rate of pay can be seen in the steepness of the upward slope of earnings in the base case, and in the size of the gap between the earnings of women with children and the base case at the mid-life maximum when both are employed full time. The effects on wages are strongest in France. This accords with the finding of Dex and Walters (1992) that the pay penalty for interrupting employment is stronger in France than in Britain. With the wage formulae we used, it appears still weaker in Germany and weakest in Sweden.

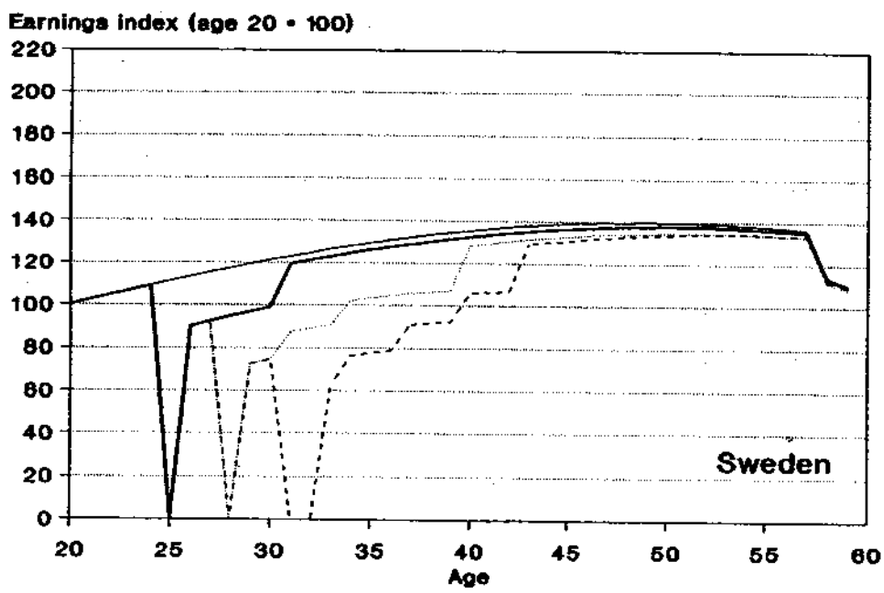
Table 3 also shows earnings lost from age 25 (when the first birth is assumed to take place) to age 59, expressed as a percentage of the earnings of a childless woman. In the British case, earnings forgone for two children amount to 57 per cent of the gross earnings after age 25; in other words, the hypothetical British woman would forgo more than half her prospective earnings at age 25 by embarking on the employment and earnings path typically associated with a two-child family. The corresponding figures for Germany, Sweden and France (49, 16 and 1 per cent) reflect the ranking of lost full-time equivalent years in the labour force. For a two-child family, forgone earnings appear to be much greater in Britain and Germany than in either Sweden or France.

Sources of earnings loss for two children

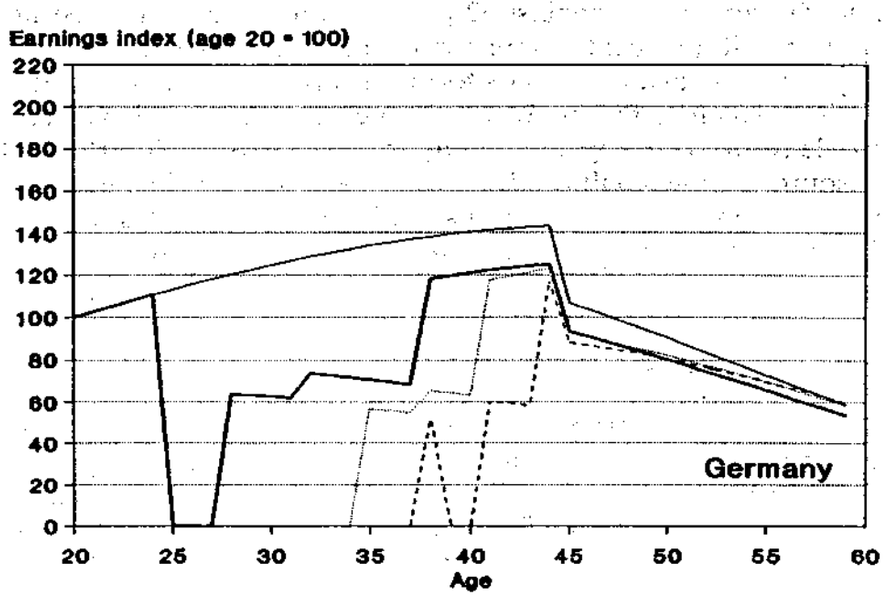
The earnings loss due to having children has three components. Firstly, there are the earnings lost in years out of the labour force (lost years). Secondly, there are losses because a mother may work fewer hours than a childless woman (lost hours). These two factors diminish the employment record and hence future earning power. This effect, plus the penalty of lower hourly rates of pay for part-time work, produce the third component (lower pay). We calculate the effect of the part-time penalty for Britain only. In the case of France we assume our illustrative woman never takes part-time employment; analysts in Sweden have not found any penalty to part-time wages there (Gustafsson, personal communication), but there may be a part-time penalty in Germany which we have not taken into account.

Figure 2. Annual earnings over life cycle





0 children — 1 child — 2 children — 3 children


Earnings index (age 20 = 100)
220
200
180
160
140
120
100
80
60
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20
0
20
25
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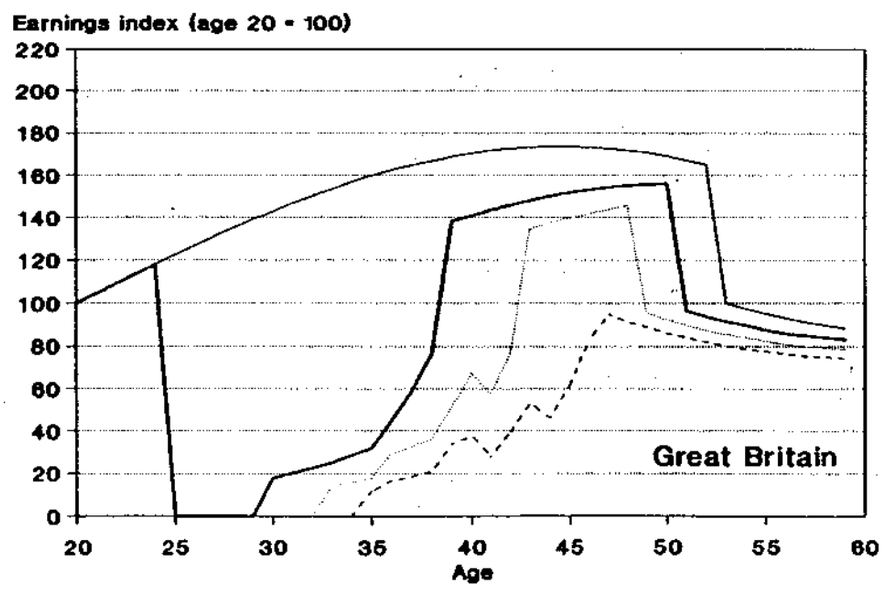
35
40
45
50
55
60
Age
Germany


Earnings index (age 20 = 100)
220
200
180
160
140
120
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0
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25
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45
50
55
60
Age
Great Britain

For Britain each of these three components accounts for approximately one-third of the total. In the German case lost employment is relatively more important, 60 per cent as against 32 per cent for the British. Lost hours are less important (18 per cent compared with 33 per cent), as is the effect of lower pay (22 per cent). Lost hours form the largest component of the cost of the Swedish two-child family. In the French example we have treated the maternity leave as lowering annual pay in the year of each birth, and this is the sole source of the small total earnings loss. As part-time employment is growing more common in France, it should be noted that lost hours may be becoming part of the French picture too, though not allowed for here.

Other family sizes

While there are marked differences in the level and composition of earnings forgone when we compare countries considering only two-child families, there are also contrasts in how far costs differ with one, two or three children. At other family sizes the relativities between the four countries, and in some cases their ranking, change from the above picture.

In Britain and Germany the lost earnings associated with one child are well over half those for two children. In the French case the first and second child have an equal effect and in the Swedish case the extra cost of the second child exceeds that of the first. According to our calculations, it is the earnings losses for the third child which show the most marked variation between countries. France is especially noteworthy: in our model the third child induces an eight-year interruption in employment. This raises the total loss of earnings from 1 per cent with two children to 38 per cent: nearly half of the loss with three births is due to pay effects, which are negligible in the one- and two-child scenarios. In Sweden, too, the arrival of a third child has a major effect, inducing a two-year gap in employment. This raises the total earnings loss to 25 per cent of what would have been earned with no children. Of the four countries, the three-child family has the lowest cash opportunity cost in Sweden; France is an intermediate case and the cost is highest in Germany (62 per cent) and Britain (70 per cent). See figure 3.

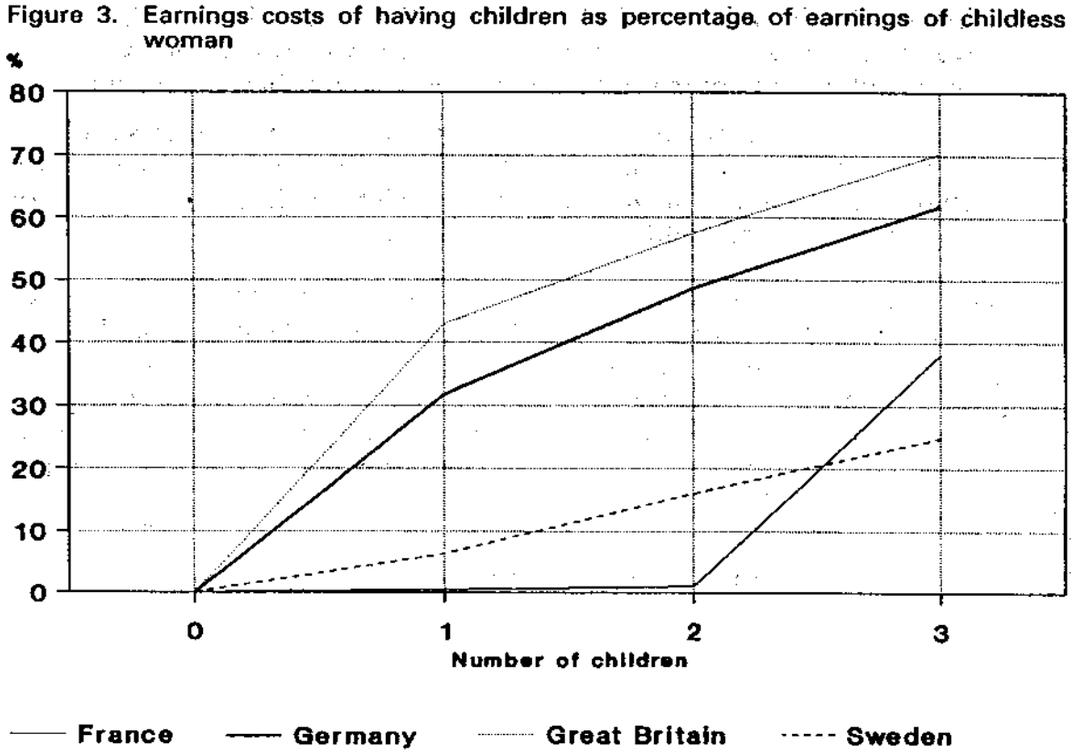
Thus we see that earnings losses are loaded disproportionately on the first child in Britain and Germany, the two "age-of-youngest-child" countries. These patterns bear out the hypotheses in the previous section and show a close correlation with the availability of child care facilities.

Conclusions

The foregoing analysis leads us to formulate a number of conclusions:

1. The disruption of mothers' employment by childbearing and rearing varies in degree and pattern across contemporary Europe. These

Figure 3. Earnings costs of having children as percentage of earnings of childless woman



variations are associated with different levels and patterns of subsidized child care and other factors such as the length of the school day.

2. A detailed reconstruction of women's lifetime earnings for Britain, Germany, Sweden and France shows, for illustrative cases of two-child families, successively smaller reductions in lifetime earnings compared with the reference case of no children. This ranking of forgone earnings is plausibly attributable to greater availability of child care facilities, and the long school day in France.

3. Where home care is the predominant child care system, the effect of having children on mothers' employment works through the age of the youngest child. In these cases, the earnings lost by having children are disproportionately large for the first child.

4. In addition to helping ensure a better supply of skilled labour in countries short of such labour, extending subsidized day care would increase the mothers' earnings not just while the children are receiving day care but throughout their working lives, as well as benefiting the children in terms of their pre-school education and socialization. Conversely, dismantling day care services, as is happening in Poland

(Suszura, forthcoming) and elsewhere in the former Eastern Bloc, will have long-run as well as immediate consequences for women's earning power and will of course reduce the supply of much-needed skills.

5. The short German school day appears to restrict the labour supply of German mothers, suggesting that, like their British counterparts, they would benefit from changes in policies which made it easier to work longer hours during children's school years.

This paper has not addressed the question of how child care policies might affect the birth rate. It is indeed plausible that help with child care boosts not only women's labour force membership and the quality of family life, but also the level of fertility. Forms of child care provision and forgone earnings are only two elements in the costs and benefits of having children and should not be expected to furnish a full explanation of the differing levels of fertility in the four countries considered. However, we hope our estimates will contribute to the continuing debate over the influence of economic, cultural and political factors on childbearing.

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