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**Fertility and occupational mobility: can mothers have careers?**

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## **Abstract**

Achieving a work-life balance is central to questions concerning demographic trends in Europe. Does the reduction of inequalities between men and women require more opportunities for women to reconcile bringing up young children and an occupational activity? This article examines the relationship between fertility and occupational mobility, irrespective of movements in and out of work, considering women's careers in the long term.

Using information from the French censuses of 1982, 1990 and 1999 and birth and marriage records, we examine two questions. First, does the birth of a child prevent upward occupational mobility in subsequent years and raise the likelihood of stopping work? Second, does fertility rise after upward mobility, as women have the children they could not have before? The results revealed for men and women are compared, controlling for various socio-demographic factors.

The answer to the first question is clear: women's upward occupational mobility diminishes with the number of children. In addition to this main finding, we note that the presence of three children is associated with downward occupational mobility and unstable occupational status: more frequent exit from and entry into the labour market than for other parities. With four or more children, stopping work becomes extremely frequent, but not downward occupational mobility.

Occupational mobility does not seem to be associated with major changes in fertility behaviour. Fertility is, however, observed to rise sharply after an activity is begun, and to a lesser extent after stopping work, and also for women entering highly qualified occupations, who begin with fewer children but catch up in the long term.

# **Fertility and occupational mobility: can mothers have careers?**

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## **Introduction**

Achieving a work-life balance is central to questions concerning demographic trends in Europe. Does the reduction of inequalities between men and women require more opportunities for women to reconcile bringing up young children and an occupational activity? French family policy addresses the opportunities for parents to interrupt their occupational activity when a child is born, the conditions in which they return to work after an interruption, and child-care facilities to reduce or avoid this interruption of work. Research into the work-life balance usually focuses on women's occupational activity as observed by their employment status: employed active, unemployed or economically inactive. An hypothesis is that for men, the number of children has little influence on their careers (de Singly, 2004). In the short term, fertility often induces a change in women occupational activities through a reduction in working hours or a withdrawal from the labour force (Pailhé and Solaz, 2006).

This article examines the relationship between fertility and movements in and out of work, but also with occupational mobility (i.e. job change), considering women's and men's careers in the long term. The analysis addresses the following questions. First, does the birth of a child prevent upward occupational mobility in subsequent years and raise the likelihood of stopping work? Second, does fertility rise after upward mobility, as women have the children they could not have before? Do other types of occupational mobility cause changes in fertility behaviour? Do the same relations hold for men and women?

## **Data used**

Since 1968, the permanent demographic sample (*Échantillon démographique permanent*, EDP) of the French national institute for statistics and economic studies (*Institut national de la statistique et des études économiques*, INSEE) has monitored an extensive sample (one-

hundredth) of the French population, combining census and birth and marriage records. The EDP can be used to identify changes in occupational class from one census to another compared with past fertility, and also fertility according to occupational position at previous censuses<sup>1</sup>.

For this research, we describe both occupational careers and fertility behaviour before and after 1990, using information from three censuses (1982, 1990 and 1999) and birth records. We observed the population of women aged between 20 and 40 in 1990, using information on age, the level of education, marital status and the occupational class (OC) reported in the 1990 census, the OC reported in the 1999 census and finally the number of children from the birth records. To fill out the analysis, we also have the OC recorded in the 1982 census. For comparison, we also describe men's equivalent occupational careers and fertility. The sample used comprised 39,195 women and 37,300 men present in the 1982, 1990 and 1999 censuses.

#### *Classification of occupations*

For this research, we have used the first digit OC based on the French classification of "occupations and social categories" (Table 1). The retired and the unemployed are classified according to their former occupation if they declared one. The economically inactive, other than retired, are classified apart.

In 1990, 40% of women aged 20 to 40 reported in the census to be clerical, services and sales employees, 5% in highly qualified occupations (managers, professionals and intellectual occupations), 15% middle-level occupations (school teachers, skilled technicians, foremen, medical and social workers, intermediary managerial and administrators, clergy), and 11% manual workers (skilled, unskilled and farm manual workers). Roughly 2% were self-employed in trade and crafts business and 1% were farm managers. One woman in four in this age group reported being inactive. The distribution by OC in 1982 and 1999 are quite different reflects the occupational careers between censuses in our study population (aged only 12 to 32 in 1982 and 29 to 49 in 1999). Being less than 32 years old in 1982, over half of the women were inactive in 1982, and inactivity fall down to 17% by 1999. The highly

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<sup>1</sup> This study derives from analysis performed in the framework of a research project into the impact of occupational mobility on mortality, based on EDP data, looking at variables likely to be linked to careers and mortality: educational qualifications, number of children, marital status (Cambois and Laborde, 2007). Our thanks go to Caroline Laborde, who extracted and formatted the data and helped with the statistical analysis.

qualified and middle-level OC gain most from the jobs started in this period, by recruiting among young educated women: just under 12% were in these occupations in 1999, compared with 7% in 1990, whereas 52% of the women were manual, clerical and sales workers at both dates. Men's distribution developed similarly from one census to the next, with more manual workers, highly qualified occupations and self-employed than among women, and fewer clerical, services and sales employees.

**Table 1. Distribution of men and women by occupational class in 1982, 1990 and 1999**

Occupational class	Women			Men		
	Census year			Census year		
	1982	1990	1999	1982	1990	1999
Farmers	0.8	1.2	1.2	2.2	3.1	3.6
Trade and craft business	1.0	2.2	2.9	2.1	5.2	7.8
Highly qualified occupations	1.5	4.9	7.6	3.0	9.0	13.9
Middle-level occupations	7.5	14.7	20.1	8.8	16.6	22.0
Clerical, services and sale employees	28.2	39.8	41.5	10.4	11.2	11.9
Manual workers	8.4	11.2	10.0	32.0	42.2	37.6
Economic inactivity	52.7	26.0	16.7	41.7	12.6	3.1
All	100	100	100	100	100	100

*Note: precise definitions of occupation classes are given in Annex 1.*

*Source: INSEE, Échantillon Démographique Permanent (EDP).*

*Population of reference: women and men aged 20 to 40 in the 1990 census, present in the 1982, 1990 and 1999 censuses.*

### *Control variables*

Marital status and the level of education are defined in censuses with the following categories. Marital status: unmarried; married or remarried; divorced; widowed. Level of education: No diploma, First level; second level, incomplete; second level, completed; third level (university).

### *Fertility history and fertility*

Table 2 provides two indicators of the women's fertility before and after 1990. Fertility before 1990 is described by the number of children born before 1990, with no information about timing of births, in particular the age of the most recent child. Fertility after 1990 is described by the birth of at least one birth between the 1990 and 1999 censuses, with no information about the dates of birth or number of children born in that period. The record combined with census data seems to under-estimate the birth event; we detail this issue in the discussion section.

**Table 2. Distribution of women and men by fertility before and after 1990**

	Women	Men
Number of children in 1990		
0	37.7	51.1
1	22.6	18.6
2	25.5	20.5
3	10.7	8.0
4 or more	3.5	1.9
All	100	100
Gave birth between 1990 and 1999		
Yes	36.2	37.3
No	63.8	62.7
All	100	100

*Source and population of reference: see Table 1.*

## **Methods of analysis**

### *Defining occupational mobility*

We first consider the relationship between fertility and occupational trajectories, using all the occupational changes revealed between censuses: fertility is observed for the 49 trajectories to compare possible differentials between occupational classes and within occupational classes according to the trajectories (controlling for age and number of children). Second, we summarise these occupational trajectories in a set of seven indicators that identify types of “careers”; upward or downward mobility, entry or exit from salaried work or activity, etc. Each trajectory is defined by the initial occupation, and therefore concerns only particular groups, in order to assess differences in fertility linked to various careers options, controlling for socio-demographic variables. For example, the first variable is only defined for those initially in middle-level occupations to detect potential distinction in fertility within this group for upward movers compared to the rest of the group. The seven careers indicators are described below (Appendix Table 2 resumes the population at risk for each indicator, the trajectories associated with its value -1 for yes, 0 for no- and the numbers concerned in each of the two intercensal periods are given for 1982-1990 and 1990-1999).

- Upward mobility from middle-level occupations. Among women and men in middle-level occupations in 1990, we identify movement into the highly qualified occupations, as compared with stability in this OC or other changes (towards self-employed, employees, manual workers or inactivity) in 1999.

- Upward mobility from clerical, services and sales employees and manual work. Among employees and manual workers in 1990, we identify upward mobility into middle- or highly qualified occupations, as compared with stability (stability or changes within these two OC) and other changes (towards self-employed and inactivity) in 1999. Employee and manual workers are grouped together due to the unclear frontier between some occupations of these two groups<sup>2</sup>.
- Downward mobility. Among women and men in middle level- or highly qualified occupations, we identify movements to employees or manual worker and movements to middle level OC among those previously in highly qualified OC, as compared with stability and other changes (towards self-employed and inactivity) in 1999.
- Entry into self-employment. Among salaried women and men, we identify those who became farmers or self-employed in trade and crafts business, as compared to stability or other changes (between salaried OC and towards inactivity) in 1999.
- From self-employed to salaried. Among self-employed women and men, we identify movement into salaried work OC, as compared with remaining self-employed or withdrawing from activity in 1999.
- Entry into activity. Among the economically inactive women and men in 1990, we identify entry into any OC, as compared with remaining economically inactive in 1999.
- Exit from activity. Among economically active women and men in 1990, we identify exit from activity, as compared with remaining in any OC (stability or change) in 1999.

We examine first the relationship between women's occupational trajectories and observed subsequent fertility. For each type of mobility observed between the 1982 and 1990 censuses we present fertility between 1990 and 1999, taking account of sex, age, and number of children already present in 1990. Fertility from 1990 to 1999 among women and men classified by their trajectories from 1982 to 1990 can be used to describe how the previous occupational trajectory influences fertility.

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<sup>2</sup> We test the robustness of our results by considering mobility from manual worker to clerical worker as an upward mobility, and the reverse as a downward mobility. There is little change to the results, but closer study of these specific pathways shows that consideration must be given to distinctions within manual workers and within clerical workers. This will be explored later if we can detail more specifically the OC in the available datasets.

## *Analysis*

We first examine fertility and past career, looking at the probability of having at least one child between 1990 and 1999 for the 49 occupational trajectories between 1982 and 1990 (controlling for age and the number of children in 1990). Then, using the careers indicators, we specify this relationship more closely by examining variations in fertility within specific groups according to the career options (upward, downward, self-employment, exit from work, etc. To that end, we estimated the relative fertility associated with each occupational trajectory under consideration by regression, taking account of age and number of children in 1990<sup>3</sup>.

Conversely, we examine the same sets of trajectories between the 1990 and 1999 censuses to see if previous fertility had an impact on careers. Regression analysis reveals to what extent the number of children in 1990, an indicator of past fertility, influences the likelihood of following a given career option.

It is implicitly hypothesised that the intercensal occupational trajectory (1982-1990) “explains” fertility in the following intercensal period (1990-1999), and that the number of children born before a census (1990) “explains” the occupational trajectory in the immediately following intercensal period (1990-1999). Other possible interpretations are considered in the discussion.

Finally, we examine concurrent fertility and career, looking at the probability of having at least one child between 1990 and 1999 for the 49 occupational trajectories between 1990 and 1999 (controlling for age and the number of children in 1990). This analysis describes shorter-term relationships between occupational mobility and fertility. Since we do not know the date of any occupational changes that may occur, the order of events for the birth of a child and the occupational change is not known; the observed relationship cannot therefore be

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<sup>3</sup> The odds ratio defined as the ratio of a probability to unity less that probability. This ratio is useful both for values close to zero and those close to unity, particularly when it is expressed as a logarithm (logit). To compare a set of probabilities to a reference probability, it is preferable to compare the odds to the reference value, as an odds ratio or differences in logit (log odds ratios), which are the regression coefficients. The regression is used to estimate the logit of the probability of having at least one child between 1990 and 1999 as a linear function of age, number of children born before 1990, and occupational trajectory.



simply interpreted causally. The data may, however, be used to confirm trends observed in the analyses described above.

### Mothers move upwards less

#### *Occupational mobility in 1982-1990 and 1990-1999*

Half the women in our sample aged 20 to 40 in 1990 were in the same occupational class in both 1982 and 1990 censuses (Table 3); 19% of the women were economically inactive at both censuses, 18% employees, approximately 5% manual workers and a similar number in middle-level occupations. Most of the mobility concerned the economically inactive young women of 1982 joining activity in 1990: one-third of women aged 20 to 40 in 1990 were inactive in 1982 and reported an occupation in 1990. In all, 6% of the women in our sample became inactive by 1990 (mainly among employees and manual workers). Between 1982 and 1990, 22% changed OC to become employee in 1990 (mainly among inactive, manual workers and in middle-level occupations) and 14% changed to enter middle- or highly qualified OC. Conversely, 10% moved out of the employee class and 2% out of middle- or highly qualified OC (in the case of middle-level occupations into inactivity or employee class). The self-employed classes (farmers or trade and crafts business), few in numbers in the female population of that age (3% in 1982), display considerable movement: 0.9% of the sample were in self-employed classes at both censuses, 2.5% entered self-employed classes and less than 0.8% left.

**Table 3. Women's occupational trajectories from 1982 to 1990**

	OC in 1990							All
	Farmers	Trade and craft business	Highly qualified occ.	Middle-level occ.	Employees	Manual workers	Inactivity	
<b>OC in 1982 :</b>								
Farmers	0.5	0.0	0.0	0.0	0.1	0.0	0.1	0.8
Trade and craft bus.	0.0	0.4	0.0	0.1	0.2	0.1	0.2	1.0
Highly qualif. occ.	0.0	0.0	<b>1.1</b>	0.2	0.1	0.0	0.1	1.5
Middle-level occ.	0.0	0.1	0.8	<b>5.0</b>	0.9	0.1	0.6	7.5
Employees.	0.1	0.7	0.5	<b>3.0</b>	<b>18.3</b>	<b>1.6</b>	<b>4.0</b>	28.2
Manual workers	0.1	0.2	0.0	0.3	<b>1.6</b>	<b>4.7</b>	<b>1.5</b>	8.4
Inactivity	0.5	0.8	<b>2.4</b>	<b>6.3</b>	<b>18.6</b>	<b>4.7</b>	<b>19.4</b>	52.7
All	1.2	2.2	4.9	14.8	39.9	11.2	25.8	100.0

*Source and population of reference: see Table 1. Trajectories comprising over 1% of the population are in bold italic.*

Given the of our sample ageing during this period, changes in occupation between 1990 and 1999 were rather different from those observed from 1982 to 1990. First there is greater stability (57% of the women vs half in 1982 and 1990 censuses) and fewer entries in activity (16% moved from inactivity to OC vs one-third between 1982 and 1990) (Table 4). The largest group was stable employees (27%), then stable in middle-level occupations (10%), inactive (10%), manual workers (6%) and highly qualified occupations (3%). From 1990 to 1999, 7% of the women in our sample became inactive (rather more than in the previous period).

The most frequent trajectories were into employee class (13% of women) and into middle-level or highly qualified occupations (14% of women). The former were mainly previously inactive or manual workers; the latter, were inactive women (more frequently than in the previous period), employees and in middle-level occupations. Most of the women who changed OC were initially employees (13%) or to a lesser extent, middle-level occupations (mainly becoming employees or inactive) or highly qualified occupations. Finally, 2.5% of the women became self-employed (farmer or trade and craft bus.), 1.7% left self-employment, and 2% were stable self-employed; compared with the previous period, there were as many newly self-employed, more remained self-employed and more also left self-employment.

**Table 4: Women’s occupational trajectories from 1982 to 1990**

OC in 1990 :	OC in 1999							All
	Farmers	Trade and craft business	Highly qualified occ.	Middle-level occ.	Employees	Manual workers	Inactivity	
Farmers	0.7	0.0	0.0	0.0	0.1	0.1	0.1	1.2
Trade and craft bus.	0.0	0.9	0.1	0.2	0.7	0.2	0.2	2.2
Highly qualif. occ.	0.0	0.1	<b>3.4</b>	0.7	0.3	0.0	0.3	4.9
Middle-level occ.	0.0	0.3	1.4	<b>9.9</b>	2.0	0.3	0.9	14.7
Employees	0.1	0.9	0.7	<b>4.9</b>	<b>27.1</b>	<b>1.9</b>	<b>4.2</b>	39.8
Manual workers	0.1	0.1	0.1	0.6	<b>3.1</b>	<b>5.8</b>	<b>1.4</b>	11.2
Inactivity	0.3	0.5	<b>1.9</b>	<b>3.9</b>	<b>8.2</b>	<b>1.7</b>	<b>9.6</b>	26.0
All	1.2	2.9	7.6	20.1	41.5	10.0	16.7	100.0

*Source and population of reference: see Table 1. Trajectories comprising over 1% of the population are in bold italic.*

#### *Specific trajectories*

Table 5 shows the proportions of women who experienced the selected careers we considered: 10% of women who were in middle-level occupations in 1982, and 10% of women who were employee and manual worker, moved upward by 1990; 14% of women in highly qualified

and middle-level OC moved downwards; nearly 3% of salaried women in 1982 have become self-employed by 1990, and conversely, 28% of self-employed in 1982 joined a salaried job by 1990. Finally, more than 60% of the inactive women joined an OC and almost 14% of women in OC in 1982 exit from activity by 1990.

**Table 5: Proportion of women likely to experience each type of occupational mobility and proportion experiencing this mobility in 1982-1990 and 1990-1999.**

Occupational trajectories :	Between 1982 and 1990		Between 1990 and 1999	
	Proportion at risk	Career mobility	Proportion at risk	Career mobility
Upward from middle level occupations	7.4	10.8	14.7	9.6
Upward from manual work or employee occupations	36.1	10.4	51.0	12.2
Downward from middle- or highly qualif. occupations	8.9	14.0	19.6	16.9
From salaried occ. to self-employed occupations	45.1	2.6	70.6	2.4
From self-employed to salaried occupations	1.7	28.1	3.4	38.3
Entry into one occupational class	54.0	62.1	27.2	60.6
Exit from activity	46.8	13.6	73.9	9.6
No move	100.0	19.3	100.0	62.5

*See table A1 in Appendix for precise definition of occupational trajectories*

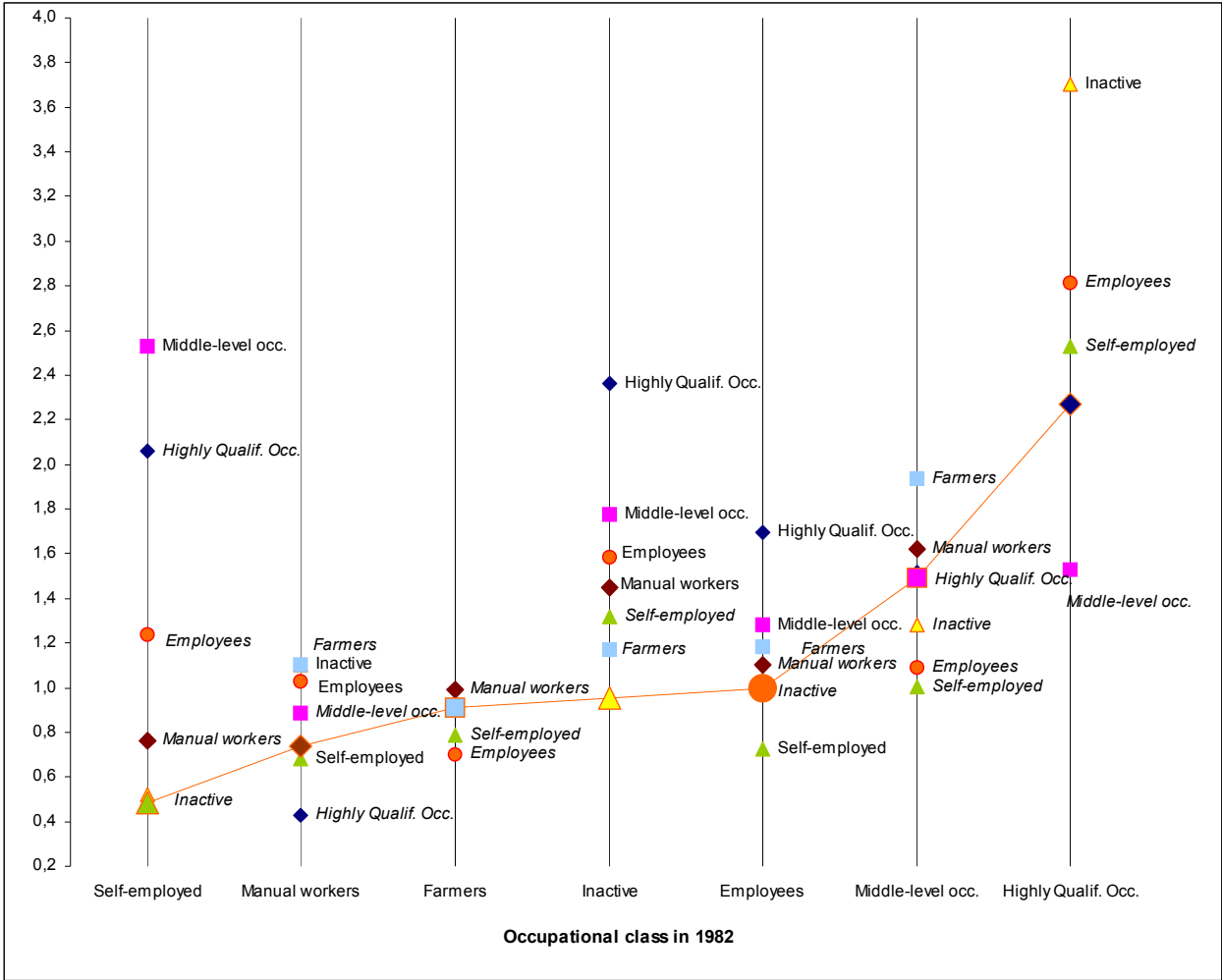
*Source and population of reference: see Table 1.*

#### *Occupational mobility in 1982-1990 and fertility in 1990-1999*

We first compared the probability of having a child from 1990 to 1999 according to the 49 trajectories observed from 1982 to 1990. Odds ratios are estimated to provide the relative fertility, taking account of age and number of children in 1990 with the most frequent trajectory (stable employee OC) taken arbitrarily as the reference (odds ratio = 1). The results are given in Figure 1. In this figure, the OC reported in 1982 census are on the x-axis and the vertical line shows the differentiated odds ratio of fertility within these 1982 OC associated with the OC joined by 1990. Trajectories in italics are those whose odds ratio does not significantly vary from the stable in each 1982 class. Stable groups are generally the largest proportion in each OC, showing a fertility risk close to the average of the whole class. In the figure, we ordered the 1982 OC according to the level of the odds ratios of these stable groups and connecting them by a line: the trajectories above the line illustrate higher probability of having a child between 1990 and 1999 (controlling for age and existing children) than the stable, and those below the line a lower likelihood. This display shows the wide range of fertility probabilities from one OC to another, but also shows disparities within each OC according to occupational trajectory. It helps to situate the level of fertility of movers compared to stable groups at origin and at destination.

In our population, the stable groups of women in 1982 and 1990 display large differences in fertility in the following years (between 1990 and 1999): the stable self-employed in crafts and trade business has the lowest relative risk of fertility (OR=0.4) as well as manual workers (OR=0.6) whereas stable women in middle-level or highly qualified occupations have relatively high fertility probability (OR=1.5 and 2.3). Fertility varies largely within OC according to past careers as for instance in the self-employed class of 1982: those who became salaried in middle-level occupations with highest fertility (OR=2.6) and those remaining self-employed or withdrawing from activity having the lowest (OR=0.5).

**Figure 1. Women’s relative fertility (odds ratio of likelihood of having at least one child) in 1990-1999 according to occupational trajectory in 1982-1990, for comparable age and number of children in 1990.**



Source and population of reference: see Table 1.

In general, the women who had moved into middle-level or highly qualified OC display the highest fertility risk between 1990 and 1999 and much higher than their stable counterparts

(except for women previously manual workers who had fertility lower than stable manual workers, but the difference is not statistically significant at the 5% level). Their risk is close to the one of women who were already in middle- level or highly qualified occupations in 1982. We can notice that the average number of children in 1990 for the latter women was very low (“stable” column in Table 6) controlling for age. Women moving up from middle-level to highly qualified occupations did not have higher fertility than those who did not move.

Women who moved out of highly qualified occupations in 1982 towards inactivity by 1990 had very high fertility between 1990 and 1999. For the other occupational classes, cessation of activity by 1990 is not associated with higher fertility than their stable counterparts, except for manual workers. The women who entered or returned to OC had higher fertility than those who remained inactive, with a slight non-significant difference for those who entered self-employed occupations. Self-employment also appears to be associated with lower fertility in the years following the start of self-employment. Conversely, moves from self-employment to salaried work is associated with high fertility in the following years, and even more so if the final OC is higher in the social scale.

**Table 6. Women’s number of children in 1990 by occupation class, relative to employee (reference class). Number of children at comparable ages by OC in 1982 and 1990 and for the “stable” (same OC in 1982 and 1990).**

	OC in 1982	OC in 1990	Stable
Farmers	0.41	0.47	0.61
Craft and trade bus.	0.00	0.07	0.11
Highly qualified occ.	-0.20	-0.40	-0.06
Middle-level occ.	-0.16	-0.19	-0.01
Employees	0	0	0
Manual workers	0.15	0.11	0.07
Eco. inactivity	0.29	0.60	0.94

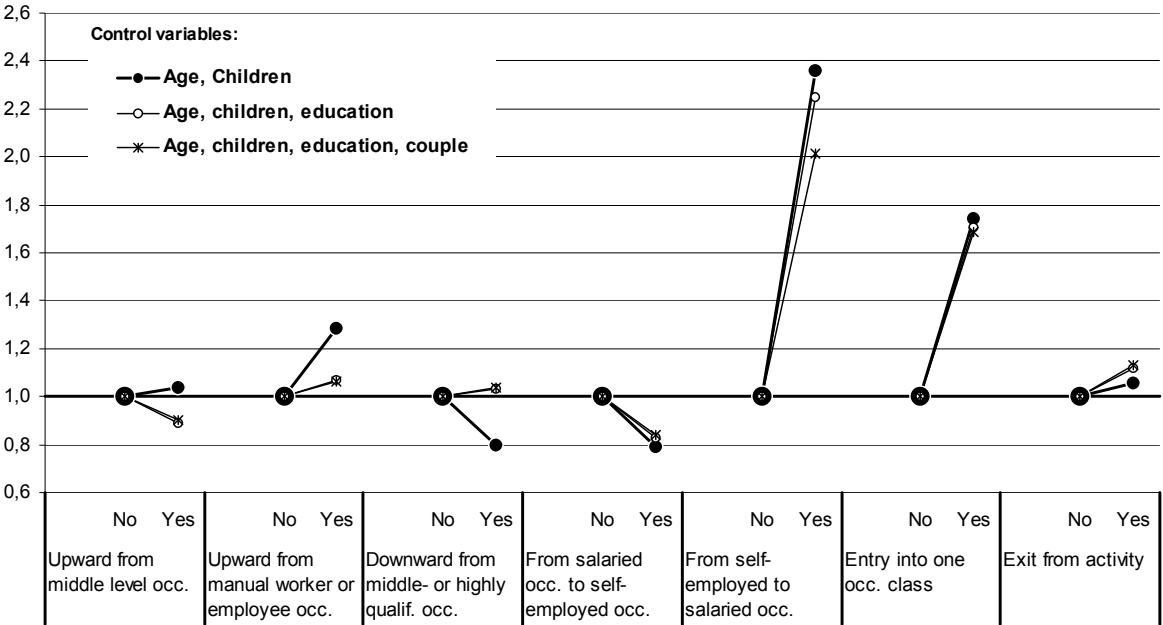
*Note: differences estimated by linear regression*

*Source and population of reference: see Table 1.*

In further analysis we identify variations in fertility in various groups according to specific career options as described in Table 5, controlling for the effects of other variables associated with fertility, such as marital status and level of education in 1990: for example, within 1982 inactive class, comparison of the 1990-1999 fertility probabilities of who entered into OC in 1990 and those who were inactive in both 1982 and 1990 censuses. Results are shown in Figure 2.

As suggested in the previous analysis, the largest effect concerns women who were self-employed in 1982: those who became salaried by 1990 had much higher fertility (OR=2.4), controlling for age and number of children in 1990, than women who remained self-employed. It is also confirmed that entry into work is also associated with higher fertility: of women who were economically inactive in 1982, those who were working in 1990, controlling for age and number of children in 1990, had higher fertility (OR= 1.7) than those who were still inactive in 1990.

**Figure 2. Women’s relative fertility (odds ratio of likelihood of having at least one child) in 1990-1999 for particular sets of occupational trajectory in 1982-1990, for comparable age, number of children, qualifications and marital status in 1990.**



Note: See Table A1 for precise definitions of career trajectories  
*The odds ratios are plotted with controlling for age and number of children, plus qualifications, plus marital status, respectively.*  
*Source and population of reference: see Table 1.*

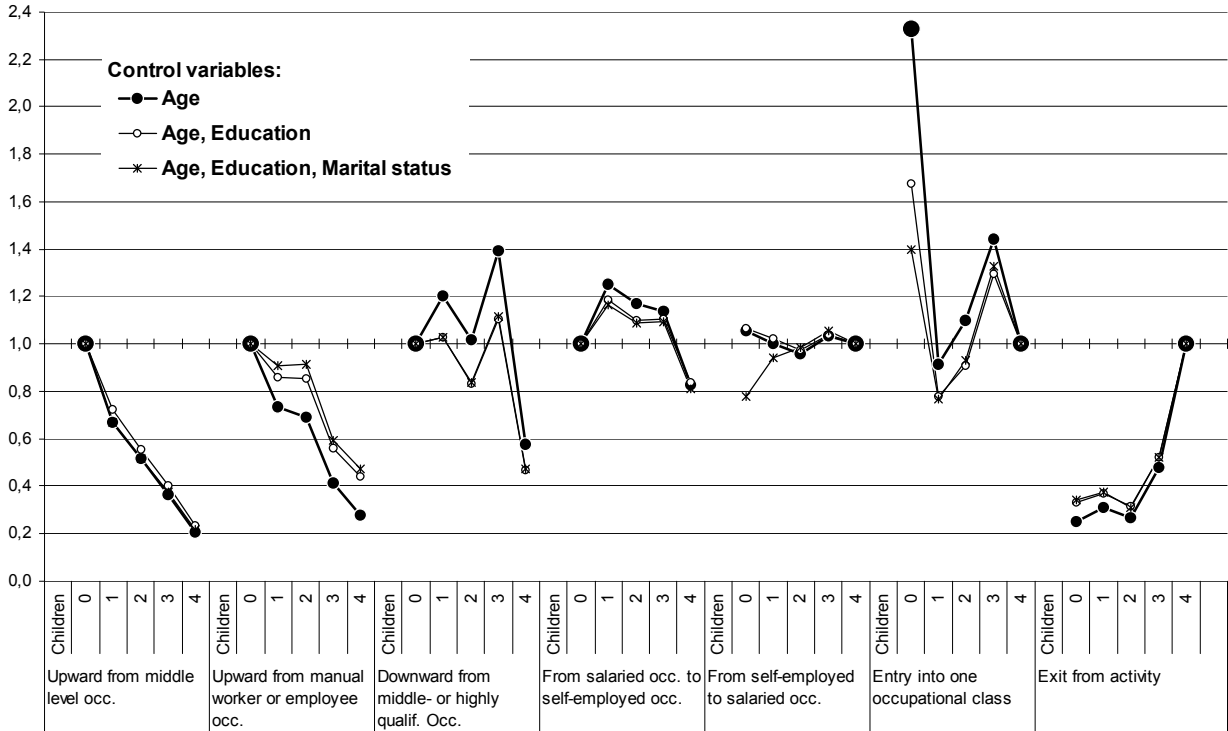
Women who stopped work between 1982 and 1990 then had a higher probability of having a child, but the contrast is slight (1.13) and only becomes significant (5% threshold, p=0.044) when fertility is controlled for educational qualifications, since fertility increases with education and women more often stop work when they are poorly qualified.

The other effects are not statistically significant in our regressions: the higher fertility of manual workers or employees who move up into higher- or middle-level occupations disappears when controlled for educational qualifications.

*Number of children in 1990 and occupational mobility in 1990-1999*

A relationship can thus be seen between some trajectories and the level of fertility in later years. Conversely, how does fertility affect occupational trajectories? Figure 3 shows how the probability of following certain occupational trajectories varies according to the number of children present in 1990. The effects here appear even greater than when examining the impact of past career on fertility.

**Figure 3. Women’s relative likelihood of following selected occupational trajectories (odds ratio) in 1990-1999 according to number of children in 1990, for comparable age, qualifications and marital status in 1990.**



*Source and population of reference: see Table 1.*

Upward occupational mobility for women in middle-level, employee and manual worker OC is less frequent for those women who already had children in 1990. Furthermore, the probability regularly diminishes with the number of children; among employees and manual workers, there is no difference between those who had one child or two. Controlling for the

level of education and marital status barely affects these contrasts; the only difference is the relative advantage for the childless employees or manual workers, which diminishes slightly, controlling for education, compared with those who are already mothers. It shows that the presence of children is an obstacle to upward occupational mobility.

Another striking effect is that withdrawing from activity between 1990 and 1999 is more frequent for women, who already had three, and especially four or more, children in 1990; similarly entering the work market is less frequent for mothers than for childless women. But the presence of children does not lead to more frequent downward mobility, except for the mothers of three children (an almost significant result,  $p=8.5\%$ , but increased to significance at the 5% level if one includes the probability of employees becoming manual workers after the birth of their third child).

Taking the last three types of trajectory together, the following contrasts may be described for women with three children in 1990: they more often stop work and are more likely to undergo downwards moves; but those who were economically inactive more often return to work than mothers of one or two children. With four children, stopping work becomes much more frequent.

Becoming self-employed is less frequent for women who had no children in 1990 than for mothers, and the number of children does diminish mothers' entry into self-employment (variations not significant). Moving from self-employment to salaried work varies little with the number of children, although cohabiting women less often cease self-employment (perhaps because the couple works together). These results are not significant.

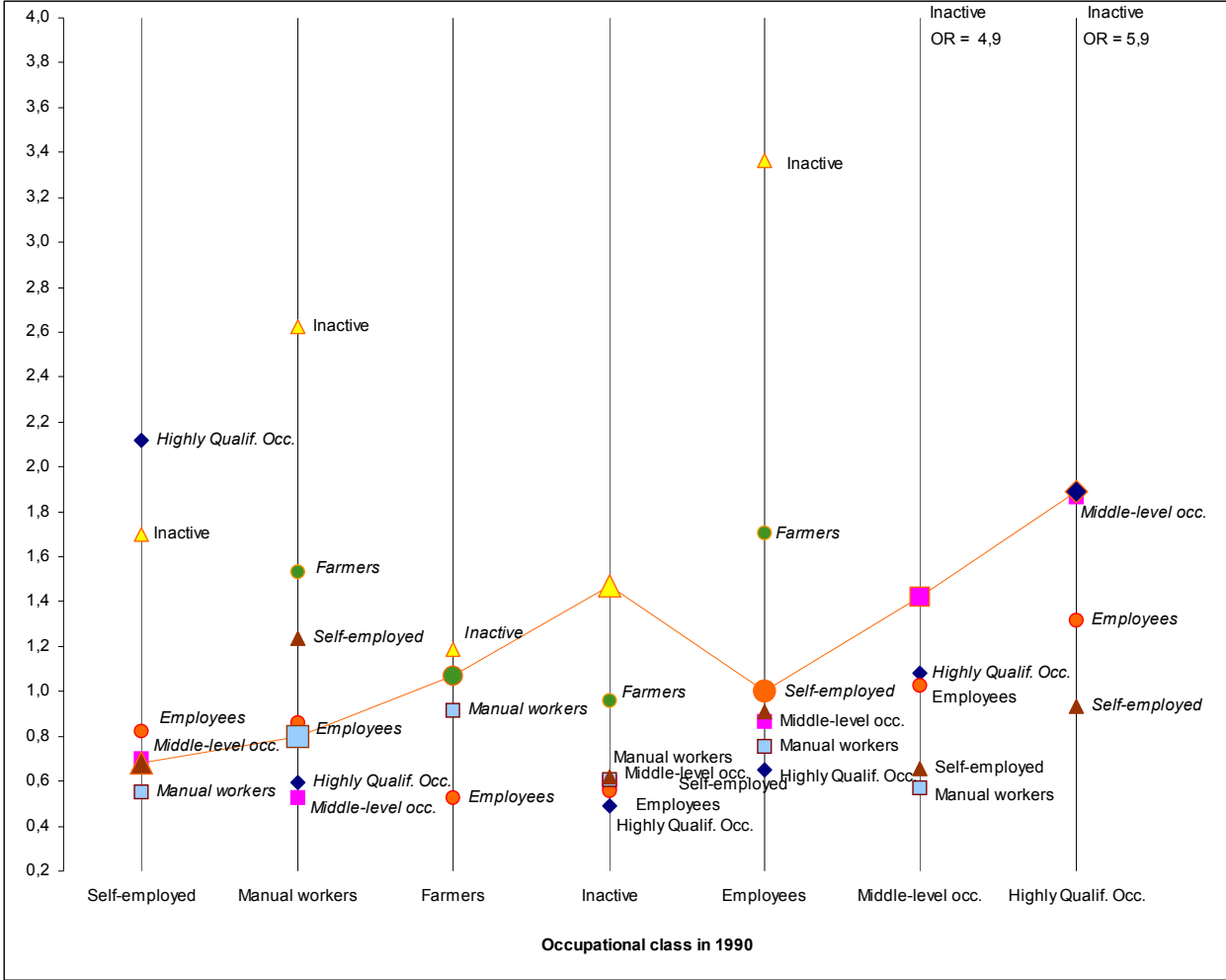
#### *Women's occupational mobility and fertility in 1990-1999*

We also analysed fertility from 1990 to 1999 according to the occupational trajectory followed during the same period. Figure 4, like Figure 1, shows disparity in fertility within the various 1990 OCs: for each 1990 OC on the  $x$ -axis, the odds ratios for 1990-1999 fertility, associated with 1999 OCs are plotted on vertical lines. Although the relative timing of births and occupational changes is not documented, this figure completes the previous results by looking at short term interaction between careers and fertility. The figure 2 first indicates that the relative fertility is less dispersed among the stable groups ( $OR=[0.7-1.8]$ ).



Women being in highly qualified occupations both in 1990 and 1999 are less distinguished by high fertility as they were when fertility was measured after mobility; moreover, fertility for those who entered this OC by 1999 is even lower than for those who stayed in their class, meanwhile it was much higher when fertility was measured after mobility. Women who became inactive by 1999 have higher fertility between 1990 and 1999, which is consistent with more frequent exit from work and a lower probability of entering the work market among those who had children before 1990. However, Figure 3 shows that women who started work between 1990 and 1999 have a lower probability of having children during this period than those who remained inactive, unlike those who started work between 1982 and 1990.

**Figure 4. Women’s relative fertility (odds ratio of likelihood of having at least one child) in 1990-1999 according to occupational trajectory in 1990-1999, for comparable age and number of children in 1990**



Source and population of reference: see Table 1.

**For men, having children favours upward occupational mobility**

Among men, the relationship between fertility and occupational status is less marked than among women. Note first that men do not work in the same occupations as women: more men than women are manual workers, self-employed or in highly qualified occupations, and fewer are employees.

Upwards occupational mobility is more frequent for men than for women (Table 7, compare with Table 5, above): from 1990 to 1999, 17% of the men in our sample moved from middle-level occupations to highly qualified occupations (vs 10% for women). On the other hand, downward occupational mobility is almost as frequent for men as for women (15% vs 17%). Inactivity and stopping work is rare for men (2% of men in became inactive between 1990

and 1999 vs 10% of women), and becoming active is more for men than for women (71% of inactive men in 1990 vs 60% of women became active 1999). Similarly, self-employed status is more frequent, attractive and stable for men. Details of men's occupational changes are given in Appendix Tables 3 and 4, comparable to tables 3 and 4. Despite these differences in structure and occupational change, item-by-item comparisons between men and women are possible.

**Table 7. Proportion of men likely to experience each type of occupational mobility and proportion experiencing this mobility in 1982-1990 and 1990-1999.**

Occupational trajectories	Between 1982 and 1990		Between 1990 and 1999	
	Proportion at risk	Career mobility	Proportion at risk	Career mobility
Upward from middle level occupations	8.8	23.0	16.6	16.9
Upward from manual work or employee occupations	42.4	14.9	53.5	15.5
Downward from middle- or highly qualif. occupations	11.7	11.9	25.6	14.9
From salaried occ. to self-employed occupations	54.1	6.6	79.1	5.9
From self-employed to salaried occupations	4.2	25.1	8.3	24.1
Entry into one occupational class	43.9	68.0	15.7	72.1
Exit from activity	58.3	1.3	87.4	2.1
No move	100.0	19.9	100.0	65.1

*See table A1 in Appendix for precise definition of occupational trajectories*

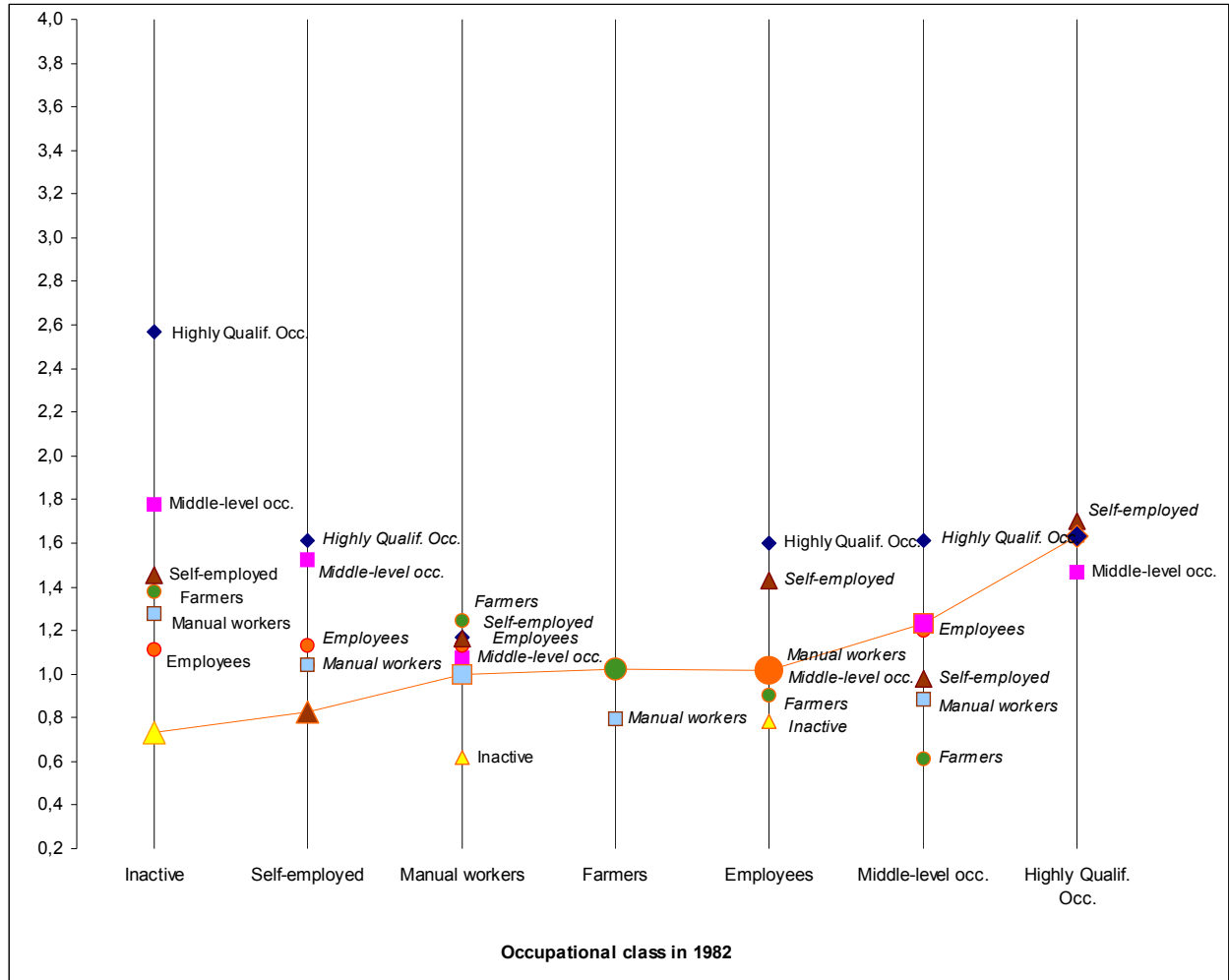
*Source and population of reference: see Table 1.*

*Men's fertility depends only slightly on their occupational status and mobility*

Examination of men's fertility from 1990 to 1999, according to their occupational class in 1982 and 1990, reveals smaller contrasts than for women (Figure 5, compare with Figure 1): only highly qualified occupations stand out from the other classes, with higher fertility in the following period compared to the other groups, and men who stop work (particularly former manual workers) are less fertile than the others.

Finally inactive men and employees becoming highly qualified OC have higher fertility than stable groups. Except these results, there no significant interaction between occupational mobility and fertility in following years.

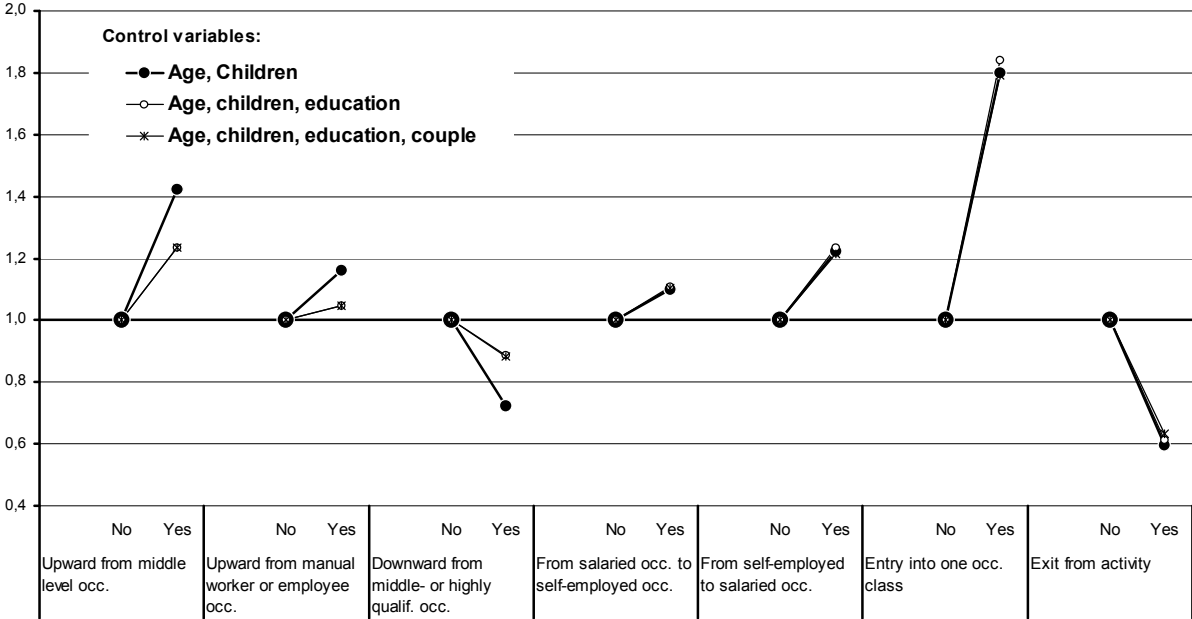
**Figure 5. Men's relative fertility in 1990-1999 according to occupational trajectory in 1982-1990, for comparable age and number of children in 1990**



Source and population of reference: see Table 1.

Figure 6 shows the results of the analysis of the fertility probability associated with specific careers. This figure revealed differences compared to the patterns for women. For men, self-employed who move to salaried work is not followed by higher fertility than those who remained self-employed, while women do in large numbers. Upward mobility from middle- to highly qualified occupations is followed by higher fertility when controlling number of children and education, which is not true for women. Becoming inactive is associated with lower fertility than those who remained active. In all, high and rising status in the labour market between 1982 and 1990 are associated for men more than women with high fertility from 1990 to 1999.

**Figure 6. Men’s relative fertility in 1990-1999 for particular sets of occupational trajectory in 1982-1990, for comparable age, number of children, qualifications and marital status in 1990.**



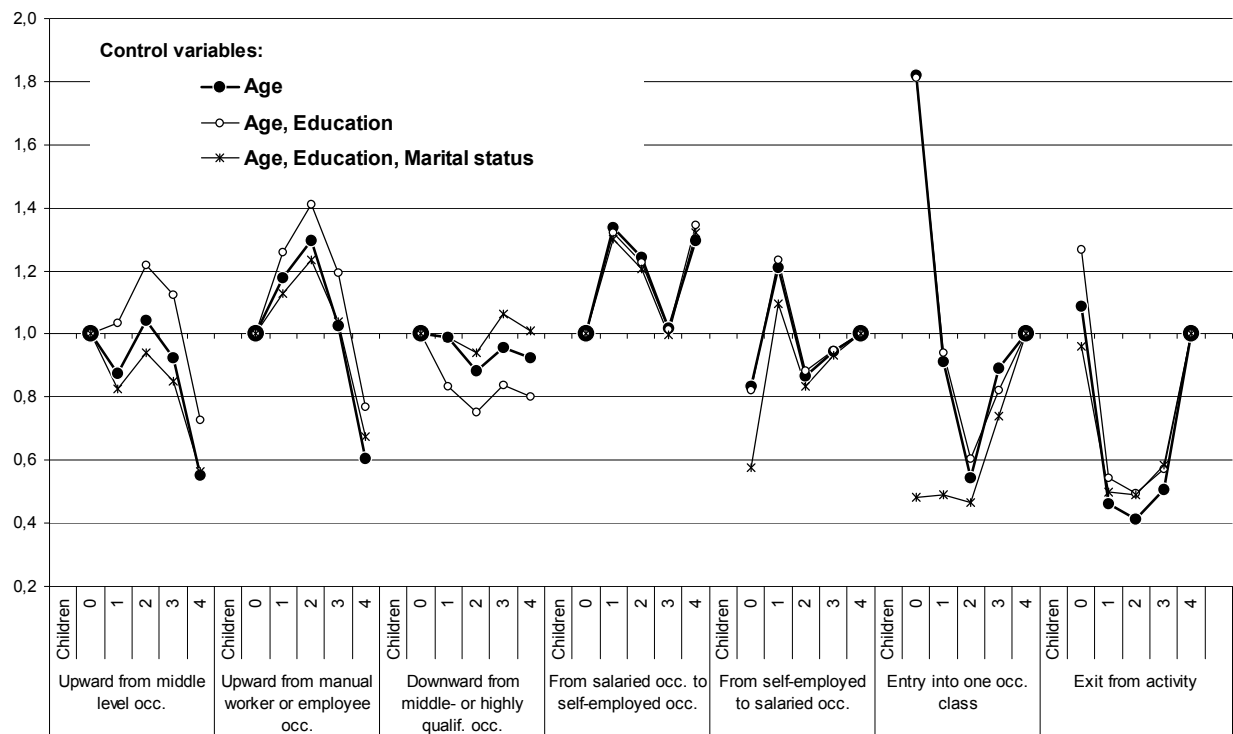
Source and population of reference: see Table 1.

*For men, cohabiting and having one or two children favour upward occupational mobility*

For men, having children is not an obstacle to upward mobility as was found for women. For men having one or two children in 1990 favours upward mobility for manual workers and employees, and has no impact on upward mobility for men in middle-level occupations. Furthermore, men’s marital status changes the relationship between number of children and upward occupational mobility: cohabitation is positively associated with higher probability of upward mobility and negatively associated with downward mobility for fathers compared to childless men. For women this beneficial effect of cohabitation on mothers’ careers is not observed. We notice that for fathers of four and more children, upward mobility is rarer, but downward mobility is not more frequent.

Finally, childless men more often interrupt their work than the fathers of one to three children, unlike childless women who remain as often economically active as mothers. Since exit from the labour market is extremely rare for men, this corresponds to specific situations for instance, poor level of education and qualification or deteriorated health. Any comparison between men and women reaches its limits.

**Figure 7. Men’s relative likelihood of following selected occupational trajectories (odds ratio) in 1990-1999 according to number of children in 1990, for comparable age, qualifications and marital status in 1990.**



Source and population of reference: see Table 1.

## Discussion

The EDP sample makes it possible to describe long-term relationships between fertility and occupational mobility. Women’s upward careers may be impeded by births, but the women who are upwardly mobile have as many children as the others in the following years. Salaried work favours fertility: women who start work or leave self-employment to become salaried have higher fertility in the following years. To the work-life balance issues, which are acute when children are born is added a reduced likelihood of long-term upward mobility. For men, it is quite different: cohabitation and fatherhood favour their careers. Our findings are consistent with those of a study showing the career “sacrifices” that women make to bear children: whether by stopping work or working shorter hours (Lelièvre, 1987; Pailhé and Solaz, 2006). Although our research is less precise concerning the nature of changes in occupation, it does show that this effect, visible just after a birth, remains in the long term, including in terms of occupational ability among economically active women. It could also be

concluded, however, that although births impede women's upward mobility, upward mobility does not impede births in the long term.

Our analysis shows a high fertility risk between 1990 and 1999 for the women who joined or were in the highly qualified OC, whereas women in this OC in 1990 have a relatively low number of children in 1990 compared to employees. One may deduce that they caught up with the other groups of women by having the children after 1990 that they had not had before; the results also suggest that the catching up in fertility does not occur immediately after upward mobility or the achievement of highly qualified occupations status, but rather some years later. Indeed, when fertility is measured in the same period than mobility into highly qualified occupations, women lose their fertility advantage and they even gave birth less frequently than their counterparts who remained in their class.

Except for women in highly qualified occupations, and to a lesser extent for manual workers, the cessation of activities is not associated with a higher fertility in the following years compared to those who remained in their OC. In France, maternity leave is only granted to women who work, and to have a child after stopping work is not financially advantageous. It confirmed previous findings showing that, in the case of younger women, having a job is a major factor in the birth of the first child (Toulemon and Testa, 2005).

From our results it seems that the relationship between inactivity and fertility is rather explained by less frequent entry to work and more frequent stopping work after a birth (Pailhé and Solaz, 2006) than by above-average fertility among women who remain or become economically inactive. The fact that women entering activity between 1990 and 1999 have a lower fertility than those remaining inactive confirms that the catch-up fertility of women who entered work occurs in the long term, while in the short term, fertility is associated with stopping work.

This opportunity effect associated with being active on fertility also appears with careers in and out self-employment. Joining salaried occupations for the self-employed is strongly associated with fertility in the following years. The criteria for obtaining maternity leave and working conditions probably explain this large difference, perhaps increased by forward planning, as women choose to be salaried in order to have children most conveniently. Since many self-employed people work as a couple, comparison of the occupation of both spouses in 1982 and 1990 could be used to clarify this point.

### *Limitations of the EDP sample*

There are limitations to these findings. One weakness in the EDP is that the data are hard to match with birth and marriage records (Ekert *et al.*, 2002; Robert-Bobée, 2006). The quality of the EDP data may, however, be verified by the family history survey (*Étude de l'histoire familiale*, EHF), which contains questions on the fertility history of men and women (Toulemon, 2005). In our sample, 36% gave birth between 1990 and 1999. According to the EHF survey, 40% of men and women aged 20 to 40 in 1990, who were living in France in 1982, had at least one child between 1990 and 1999. This reveals the birth deficit in the EDP, some 10%, already demonstrated elsewhere (Robert-Bobée, 2006). This imperfection in the EDP data consequently requires that the results be interpreted with particular caution. With that reservation, we may consider the EDP to be reliable.

Long intercensal periods make it possible to examine long-term phenomena but not to monitor mobility between two censuses in detail, such as movement in and out of work. So the groups we have defined are most probably more diverse and less distinct than may appear from two snapshots taken eight or nine years apart. Fertility behaviour could also be described more closely as an independent variable (controlling for age of latest child) or a dependent variable (explaining the number of children born in an intercensal period, and not only the occurrence of a birth).

More detailed data do indeed support the trends we have described. One study, for example, shows that highly qualified occupations recruit more at present from young economically inactive graduates than by upward mobility from other occupational classes (Baraton, 2006). This effect can also be seen in our findings. Although the direction of causality cannot be proven, our research also reveals the effect of fertility on mobility: working conditions appear to be less favourable than they used to be for reconciling upward mobility with having children. This hypothesis could be confirmed by a repetition of our research with earlier data.

These findings may be extended in a number of ways. First, as suggested above, by repeating these analyses for various periods. The changes or stability in the contrasts described could be tested using other intercensal periods. Comparison could involve identical age intervals for the intercensal periods: examining, for example, the mobility and fertility of women aged 20 to 40 in the 1975 census using information about them from the 1968 and 1982 censuses.



An occupational variable could also be used that is more relevant than the broad 1-digit occupational class in order to describe careers more accurately. The manual worker, employees and self-employed groups are highly diverse, and a distinction between public- and private-sector work can be made from the 2-digit classification of occupations recorded in censuses (Chenu, 1998). A distinction between high and low level manual workers and among employees could also be made (Chenu, Burnod 2001; Chardon 2002). The self-employed in craft and trade business is also diverse. Women who are self-employed at the age of fifty had more children before becoming self-employed than after. Women in craft and trade have a relatively high number of children at the age of fifty, although their fertility is low after becoming self-employed. Unlike women in highly qualified occupations, they already had a large number of children when they entered their final occupation, and had few more afterwards. This result is not found for women in trade or self-employed professionals (Toulemon, 1998). The relationship between fertility and change of occupation consequently merits more detailed study.

Many more variables could also be included in the analysis: information about spouse, if any, distinction between periods of employment and unemployment, characteristics of place of residence and residential mobility (Brutel, 2000).

#### *Causality or divergent preferences?*

Describing the influence of fertility on long-term occupational mobility only partially avoids the problem of proving causality. One might suppose that mothers are less often upwardly mobile than the others because some women have chosen to have children rather than pursue careers, while others do not want to have children and prefer to focus on their careers. However, the contrasts are so great that a direct effect is more likely: the presence of children makes upward mobility more difficult. Furthermore, if this sort of divergence did exist, the women who had been upwardly mobile in their careers would have lower total fertility than the others, which is not true for France. Finally, controlling for qualifications and marital status in the regressions can allow for some of this divergence, since focus on work increases with qualifications, unlike focus on children. In this respect, level of education and marital status reveal rather a greater divergence in the other direction among men: higher qualifications and cohabitation are associated with upward occupational mobility, which partly explains the favourable effect on men's careers of one or two children. The choice

women are faced with appears to be the following: either have children first, at the risk of seriously reducing the possibility of upward mobility, or “have a career” first and then children. The question for men is not the same, since career, cohabitation and fatherhood go together.

Regressions that seek to allow for divergence in the population (some women preferring children and others preferring to focus on their careers) in order to measure the “pure” causal relationship avoid examining the origin of this divergence. So the “polarisation” observed in some European countries, where more economically active women remain childless, may be explained more by the difficulty of achieving a work-life balance than by divergent preferences in the population. In France, paid work is relatively easy to reconcile with motherhood, but at the cost of fewer chances of upward mobility and less stable occupational status for mothers, compared with childless women and, even more so, compared to men.

## **Conclusion**

Because the EDP is based on an ongoing system of observation, it can be used for a wide variety of research (Héran, 1998). Although the census data do not include the dates of occupational change but only occupations at certain dates, they can be used to compare occupational changes and bearing children in the long term, a comparison it is impossible to make using administrative data, which generally do not include individuals’ fertility history.

The main finding in our research is the strong negative effect of the presence of children on women’s upward occupational mobility. While women’s salaries do have a negative effect on fertility (Mougin, 2004), the reverse effect, whereby children impede occupational mobility and have a negative effect on women’s salaries, appears to be much stronger.

In addition to the relationship between the birth of children and stopping work, sharply differentiated by gender (de Singly, 2004; Pailhé and Solaz, 2006), examination of occupational trajectories in relation to marital and fertility history can be used to measure the long-term effects of the presence of children on careers, effects that add to the “opportunity cost” of stopping work (Barnet-Verzat, 1994).

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## Annex

**Annex Table A1. List of occupational classes**

Occupational classes	Example of occupations	Comments
Highly qualified occupations	Intellectual occupations, upper managerial staff and administrators, medical doctors, independent professionals, engineers	Salaried occupations, above-average income, higher qualifications through education or by career experience.
Middle-level occupations	Primary teachers, skilled technicians, foremen, medical and social workers, intermediary managerial and administrators, clergy	
Clerical, services and sales employees	Civil servants, police and army, company administrative staff, sales and direct personal services	Salaried occupations, low income, low qualifications, hard working conditions above-average risk of unemployment.
Manual workers	Skilled, unskilled and farm workers	
Farmers	Farm managers for various size farm	Self-employed occupations, gathering diverse social situations (size of business...) but with common features (managing own business, past salaried job experience...)
Self-employed in trade and craft business	Shop owners, firm managers, craft industry, independent workers (plumbers, electrician...).	
Retired	Retired from highly qualified, intermediary, clerical and sales, manual workers and self-employment occupations.	Can be considered as a separate class or classified into the class of their previous occupation.
Economic inactivity	Students, conscripts, disability pensioners, currently not working for other reason than employment or retirement.	Currently not employed (except retired and unemployed who are classified in the class of previous occupation).

## Annex Table A2. Occupational trajectories and related career indicators

Career trajectory between two censuses		Sample size				Career indicators							
		Women		Men		UpW Med level	UpW Man. Empl	Down	To self empl.	To sal. occ.	Entry into OC	exit from activ.	
Category of origin	Category of destination	1982- 1990	1990- 1999	1982- 1990	1990- 1999								
11	Farmer	Farmer	191	288	677	1 000	-	-	-	-	0	-	0
12	Farmer	Craft and trade bus.	6	10	11	35	-	-	-	-	0	-	0
13	Farmer	Highly qualif. occ.	2	2	4	6	-	-	-	-	1	-	0
14	Farmer	Middle-level occ.	6	16	16	25	-	-	-	-	1	-	0
15	Farmer	Employee occ.	22	52	5	11	-	-	-	-	1	-	0
16	Farmer	Manual worker	12	30	88	67	-	-	-	-	1	-	0
17	Craft and trade bus.	Eco. inactivity	55	58	11	17	-	-	-	-	0	-	1
21	Craft and trade bus.	Farmer	5	5	18	26	-	-	-	-	0	-	0
22	Craft and trade bus.	Craft and trade bus.	162	364	454	1 237	-	-	-	-	0	-	0
23	Craft and trade bus.	Highly qualif. occ.	9	27	34	77	-	-	-	-	1	-	0
24	Craft and trade bus.	Middle-level occ.	29	60	95	165	-	-	-	-	1	-	0
25	Craft and trade bus.	Employee occ.	84	263	28	85	-	-	-	-	1	-	0
26	Craft and trade bus.	Manual worker	25	60	128	312	-	-	-	-	1	-	0
27	Craft and trade bus.	Eco. inactivity	64	95	15	46	-	-	-	-	0	-	1
31	Highly qualif. occ.	Farmer	1		2	11	-	-	0	1	-	-	0
32	Highly qualif. occ.	Craft and trade bus.	12	51	65	238	-	-	0	1	-	-	0
33	Highly qualif. occ.	Highly qualif. occ.	436	1350	900	2 569	-	-	0	0	-	-	0
34	Highly qualif. occ.	Middle-level occ.	71	293	98	392	-	-	1	0	-	-	0
35	Highly qualif. occ.	Employee occ.	27	104	11	61	-	-	1	0	-	-	0
36	Highly qualif. occ.	Manual worker	1	8	16	58	-	-	1	0	-	-	0
37	Highly qualif. occ.	Eco. inactivity	40	114	7	37	-	-	0	0	-	-	1
41	Middle-level occ.	Farmer	10	10	24	29	0	-	0	1	-	-	0
42	Middle-level occ.	Craft and trade bus.	45	104	209	335	0	-	0	1	-	-	0
43	Middle-level occ.	Highly qualif. occ.	313	553	752	1 044	1	-	0	0	-	-	0
44	Middle-level occ.	Middle-level occ.	1 931	3863	1871	3 779	0	-	0	0	-	-	0
45	Middle-level occ.	Employee occ.	350	793	155	386	0	-	1	0	-	-	0
46	Middle-level occ.	Manual worker	41	103	238	521	0	-	1	0	-	-	0
47	Middle-level occ.	Eco. inactivity	214	335	19	82	0	-	0	0	-	-	1
51	Employee occ.	Farmer	40	43	21	10	-	0	-	1	-	-	0
52	Employee occ.	Craft and trade bus.	277	361	169	166	-	0	-	1	-	-	0
53	Employee occ.	Highly qualif. occ.	212	276	266	235	-	1	-	0	-	-	0
54	Employee occ.	Middle-level occ.	1 150	1905	797	836	-	1	-	0	-	-	0
55	Employee occ.	Employee occ.	7 101	10624	1703	2 196	-	0	-	0	-	-	0
56	Employee occ.	Manual worker	607	739	857	644	-	0	-	0	-	-	0
57	Employee occ.	Eco. inactivity	1 545	1644	52	103	-	0	-	0	-	-	1
61	Manual worker	Farmer	20	29	131	182	-	0	-	1	-	-	0
62	Manual worker	Craft and trade bus.	61	55	719	758	-	0	-	1	-	-	0
63	Manual worker	Highly qualif. occ.	9	22	131	218	-	1	-	0	-	-	0
64	Manual worker	Middle-level occ.	107	226	1159	1 793	-	1	-	0	-	-	0
65	Manual worker	Employee occ.	632	1227	635	1 093	-	0	-	0	-	-	0
66	Manual worker	Manual worker	1 836	2284	8992	11 303	-	0	-	0	-	-	0
67	Manual worker	Eco. inactivity	569	538	172	408	-	0	-	0	-	-	1
71	Eco. inactivity	Farmer	189	109	288	84	-	-	-	-	-	1	-
72	Eco. inactivity	Craft and trade bus.	311	200	321	152	-	-	-	-	-	1	-
73	Eco. inactivity	Highly qualif. occ.	939	735	1279	1 052	-	-	-	-	-	1	-
74	Eco. inactivity	Middle-level occ.	2 467	1520	2140	1 225	-	-	-	-	-	1	-
75	Eco. inactivity	Employee occ.	7 376	3222	1653	605	-	-	-	-	-	1	-
76	Eco. inactivity	Manual worker	1 859	674	5436	1 112	-	-	-	-	-	1	-
77	Eco. inactivity	Eco. inactivity	7 724	3751	4428	474	-	-	-	-	-	0	-
Ensemble			39 195	39195	37300	37 300							

- : Not at risk

0 : No

1 : Yes

UpW. Med. Level: Upward moves from middle level occupation to highly qualified occupations

UpW Man Empl.: Upwards moves from manual worker or employee occupation to middle-level or highly qualif.occupation

Down: downward mobility from middle-level or highly qualif. occupation to manual worker or employee occupation

To self empl.: From salaried occupations to farmer or self-employed in trade and craft business occupation classes

To sal. Occ.: from self-employed or farmers to salaried occupation classes

Entry into occupational classes. From economic inactivity to occupation

Exit from activity: from activity to economic inactivity

**Annex table A3. Men's occupational trajectories from 1982 to 1990**

	OC in 1990							All
	Farmers	Trade and craft business	Highly qualified occ.	Middle-level occ.	Employees	Manual workers	Inactivity	
<b>OC in 1982:</b>								
Farmers	<b>1.8</b>	0.0	0.0	0.0	0.0	0.2	0.0	2.2
Trade and craft bus.	0.0	<b>1.2</b>	0.1	0.3	0.1	0.3	0.0	2.1
Highly qualif. occ.	0.0	0.2	<b>2.4</b>	0.3	0.0	0.0	0.0	2.9
Middle-level occ.	0.1	0.6	<b>2.0</b>	<b>5.0</b>	0.4	0.6	0.1	8.8
Employees.	0.1	0.5	0.7	<b>2.1</b>	<b>4.6</b>	<b>2.3</b>	0.1	10.4
Manual workers	0.4	<b>1.9</b>	0.4	<b>3.1</b>	<b>1.7</b>	<b>24.1</b>	0.5	32.0
Inactivity	0.8	0.9	<b>3.4</b>	<b>5.7</b>	<b>4.4</b>	<b>14.6</b>	<b>11.9</b>	41.7
All	3.1	5.2	9.0	16.6	11.2	42.2	12.6	100.0

**Annex table A4. Men's occupational trajectories from 1990 to 1999**

	OC in 1999							All
	Farmers	Trade and craft business	Highly qualified occ.	Middle-level occ.	Employees	Manual workers	Inactivity	
<b>OC in 1990:</b>								
Farmers	<b>2.7</b>	0.1	0.0	0.1	0.0	0.2	0.0	3.1
Trade and craft bus.	0.1	<b>3.3</b>	0.2	0.4	0.2	0.8	0.1	5.2
Highly qualif. occ.	0.0	0.6	<b>6.9</b>	<b>1.1</b>	0.2	0.2	0.1	9.0
Middle-level occ.	0.1	0.9	<b>2.8</b>	<b>10.1</b>	<b>1.0</b>	<b>1.4</b>	0.2	16.6
Employees.	0.0	0.4	0.6	<b>2.2</b>	<b>5.9</b>	<b>1.7</b>	<b>0.3</b>	11.2
Manual workers	0.5	<b>2.0</b>	0.6	4.8	<b>2.9</b>	<b>30.3</b>	<b>1.1</b>	42.2
Inactivity	0.2	0.4	<b>2.8</b>	<b>3.3</b>	<b>1.6</b>	<b>3.0</b>	<b>1.3</b>	12.6
All	3.6	7.8	13.9	22.0	11.9	37.6	3.1	100.0