Start of childbearing and subsequent childbearing behaviour [*]

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1. Introduction: Rationale of the paper

The rationale of the paper is twofold. The first part are the extremely low fertility rates about all European countries are experiencing since the last decades (some examples are given in figure 1). The decline started in the second half of the nineteen sixties. The pattern of change is not perfectly uniform between all countries or regions (the Southern countries experienced the decline about 5-10 years later) but by the start of the nineteen nineties all countries showed a total fertility rate well below replacement level, the lowest levels (TFR values below 1.5 children) being observed in the Southern region.

The decline came right after the 'baby boom' years that followed the Second World War (cf. the hump in the graphs in figure 1). From the very beginning the decline was recognised, there has been speculation whether the low fertility levels would be a temporary phenomenon or not. Since they are still being observed today (in 2003) and since, according to recent statistics, there are no signs of any serious 'recovery', it seems safe to assume they are not (cf. the 2002 edition of *Recent Demographic Developments in Europe* of the Council of Europe)

As a matter of fact, the observance of (continued) low fertility has given rise to a whole new series of work and publications to explain the origin and characteristics of what has become known as the 'second demographic transition' (Lesthaeghe & Van de Kaa, 1986; Van de Kaa, 1987). The low fertility rates would be just one aspect of profound changes in family formation. The changes in sexual behaviour have been accompanied by —or are possibly rather the result of— emerging new types of household, a trend that in its own right has become the subject of specialised research (for instance, Andersson, 1999; Corijn, Liefbroer and De Jong Gierveld, 1996; Corijn and Klijzing, 2001; De Jong Gierveld, Liefbroer and Dourleijn, 2001; Kiernan, 1999; Leridon and Villeneuve-Gokalp, 1988; De Beer and Deven, 2000).

The declining birth rates and the lowering popularity of marriage in Europe has been described and analysed at length elsewhere (for instance, Coleman, 1998; Lesthaeghe, 2000; Schoenmaeckers and Lodewijckx, 1999; Schoenmaeckers, 2001). There is, as yet, no unanimity about the underlying societal and cultural causes —or merely the *nature*— of

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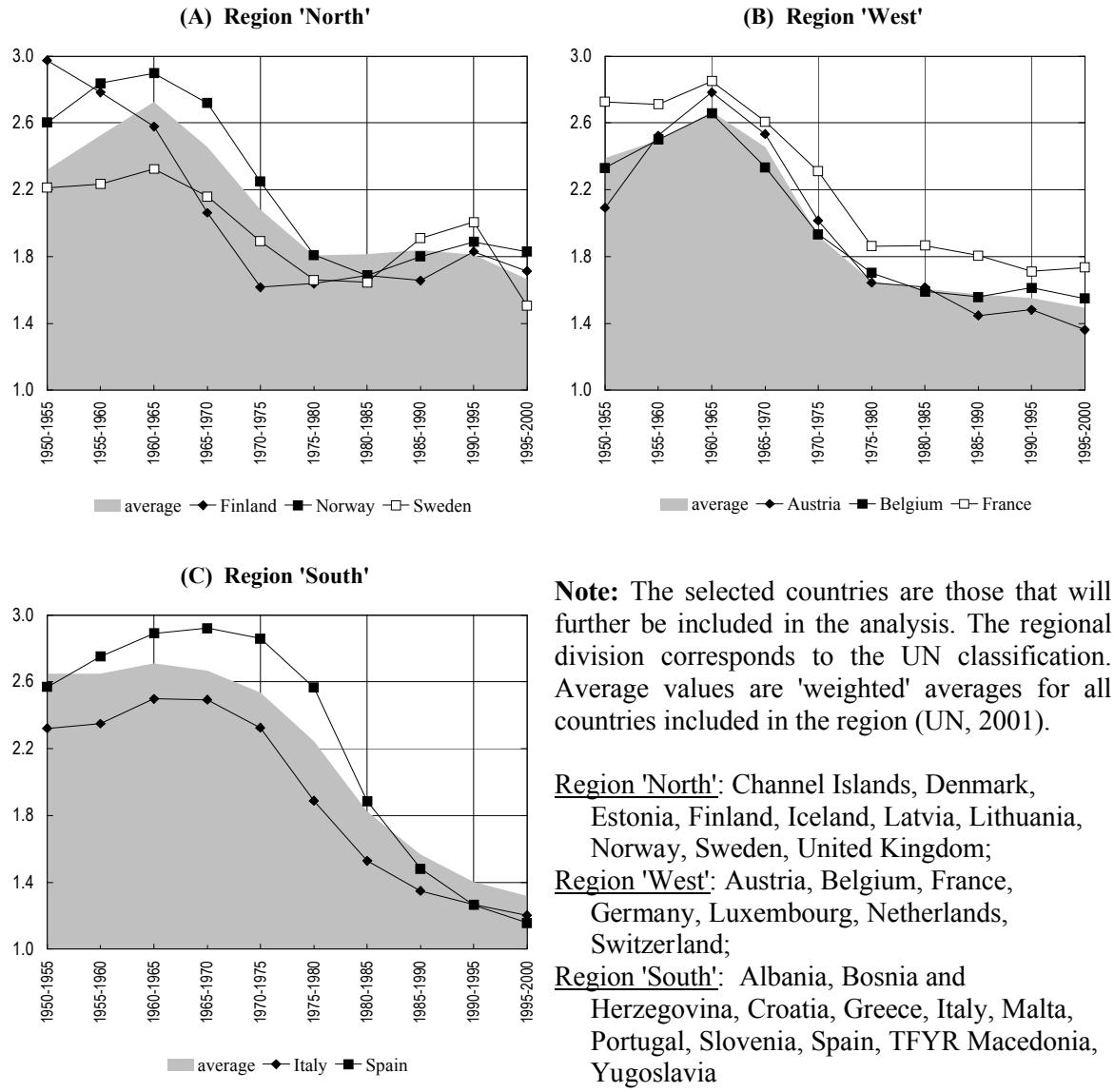
the second demographic transition. However, many would agree that the phenomenon is connected with the changed social position of women after the Second World War, their higher level of education and increased participation in the workforce. In a broad perspective, the observed behavioural changes would be the visible outcome of an 'ideology of self-fulfilment' (Lesthaeghe and Van de Kaa, 1986).

Figure 1. Evolution of fertility levels (measured as TFR-values) in selected European countries and regions

Source: World Population Prospects. The 2000 revision (UN, 2001)



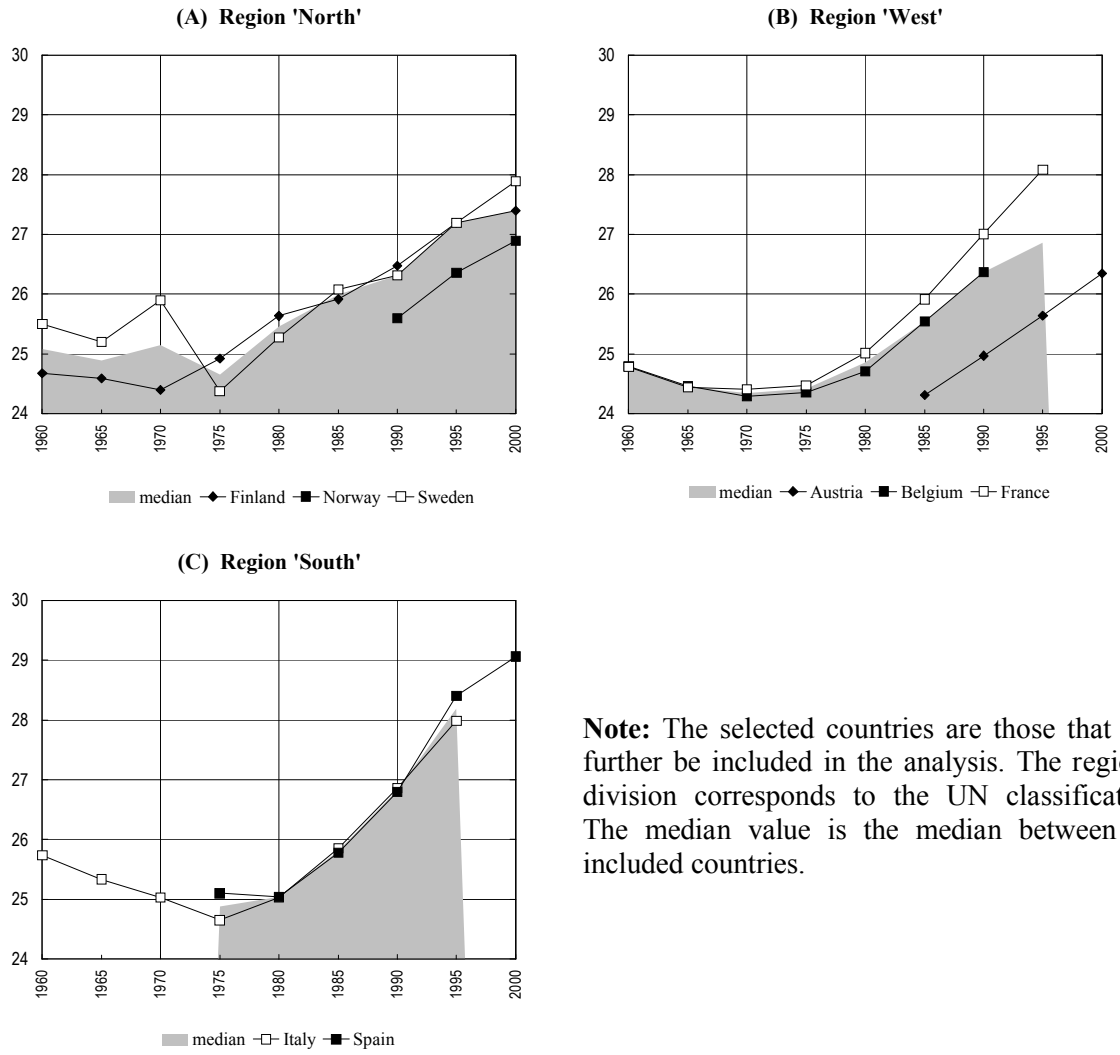
Note: The selected countries are those that will further be included in the analysis. The regional division corresponds to the UN classification. Average values are 'weighted' averages for all countries included in the region (UN, 2001).

Region 'North': Channel Islands, Denmark, Estonia, Finland, Iceland, Latvia, Lithuania, Norway, Sweden, United Kingdom;
Region 'West': Austria, Belgium, France, Germany, Luxembourg, Netherlands, Switzerland;
Region 'South': Albania, Bosnia and Herzegovina, Croatia, Greece, Italy, Malta, Portugal, Slovenia, Spain, TFYR Macedonia, Yugoslavia

A specific characteristic of the changes in fertility behaviour associated with the second demographic transition is that these not only concern a decrease in the number of children but also in the timing of fertility. From the outset fertility decline has been characterised by postponement of the first pregnancy. In all EU countries since the nineteen sixties a substantial increase of women's average age at first birth has been witnessed (figure 2). As was the case with the changes in the TFR, also here the changes have not been uniform, but by and large, during the last 30-40 years, all countries have witnessed an increase of the mean age at first birth by up and above 10 percent. For a long time, in this respect the Netherlands have lead the way with an increase from 25.2 (before 1965) to 28.4 years (in 1995; an increase of nearly 13%. In 2000 however, other countries had equalled or even surpassed the Dutch average (28.6 years): Switzerland (with 28.7 years), and especially the UK and Spain, both indicating 29.1 years (Council of Europe, 2002).

Figure 2. Evolution of the mean age at first birth in selected European countries

Source: Recent Demographic Developments in Europe (Council of Europe, 2002)



Note: The selected countries are those that will further be included in the analysis. The regional division corresponds to the UN classification. The median value is the median between the included countries.

This postponement has had the effect that fertility rate before the age of 20 has dropped to nearly zero and that before the age of 30 it has fallen significantly. In general the age of 30 is considered to be a “watershed”. As early as the nineteen nineties, scholars speculated about the extent to which the loss incurred in the number of births before the age of 30 could be compensated for after this age —or, in other worlds "about the extent to which the decline in fertility rate at a young age could be offset by a rise at a more advanced age" (Pressat, 1991; own translation).

The implication is that the postponement of the start of childbearing would in its own be partly responsible for the observed decrease in the number of children. This brings us to the second part of the rationale of this paper.

Pregnancy related problems increase with age; the increase is especially apparent after age 30. With more women having their first birth toward or beyond age 30 there must be an increase of women experiencing any medical problem —increased waiting time to conception, problems during pregnancy and/or delivery. An analysis of Flemish FFS[1] data by Lodewijckx and Schoenmaeckers (1993) shows that many women who have experienced any complication decide against having another pregnancy. Such behaviour could indirectly be responsible for lowering the fertility level by perhaps 12% (*idem*, p.43).

The next research question was whether this pattern would be the same for all women, regardless of educational attainment. It is a widely known fact that the knowledge (and hence the use) of modern contraceptives —at least when they became readily available in the nineteen sixties was much higher among well-educated women than among others (for example, Cliquet and Schoenmaeckers, 1975). It seems reasonable to assume that a similar mechanism exists with regard the medical implications of (late) childbearing and especially the ways on how to deal with them[2].

Resuming the Flemish FFS analysis, this time using educational attainment as a control variable has never appeared reasonable, given the small number of observations that would be implied. Neither could an international comparative analysis be envisaged since the information 'medical complications in pregnancy' has not been included in any other FFS data file besides the Belgian FFS data file. The international analysis that came closest to the original idea was an investigation to detect different patterns in the start of childbearing and the total number of children by socio-economic level. In the end, it turned out that such analysis was feasible for 8 FFS data sets (out of the more than 20 surveys that have been realised: see further, paragraph 2).

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[1] FFS = Fertility and Family Survey. International research on family formation carried out in some 20 European countries. The survey was co-ordinated by the Population activities Unit (PAU) of the United Nations Economic Commission (UN/ECE) based in Geneva. For an overview of the FFS project and its main findings, see Macura and Beets (2002).

[2] The assumption is in line with findings of the Flemish administration on health statistics. With respect to infant and child mortality, it appears that the level of education *codetermines* the potential knowledge of the available health care and health maintaining and health promoting behaviour (Vlaamse Gemeenschap, 2001: pp. 48; own italics). More specifically, mothers with a university degree would be less likely to lose their child when compared with all other categories except mothers with a (higher) technical and secondary vocational education (*idem*: pp. 51). (Conclusions from the results of a logistic regression-analysis based on 62,000 observations on the basis of the Flemish 1999 birth file).

Eventually, the rationale of the paper is based on a third reason.

In the mid-nineties some of the authors were involved in the fertility analysis of the Belgian 1991 census data (Schoenmaeckers et al., 2000). As could be expected, the results indicate that the highest educated women (university and equivalent) postpone childbearing longest and show the highest percentage of (definite) childlessness. Less expected, however, was the finding that women with the highest educational attainment have not necessarily the lowest number of children of all categories. One indeed can observe a negative relationship between educational level and number of children, but the decrease is not monotonous, but rather takes the form of an inverse 'J'.

Moreover, as more FFS Standard Country reports became available, it also became apparent that similar patterns between completed fertility and educational level can be observed in other countries (table 1).

Table 1. Percentage of women having a first birth by age 25 and average number of children already born, by level of education
Source : FFS Standard Country Reports

	(A) Average number of children already born*				(B) Percentage of women with a first birth by age 25*		
	Educational level**				Educational level**		
Country :	ISCED 0-2	ISCED 3-4	ISCED 5-6		ISCED 0-2	ISCED 3-4	ISCED 5-6
Region "North"							
Finland	2.4	1.9	1.6		74.9	58.6	36.4
Norway	2.5	2.2	2.2		76.7	66.9	45.0
Sweden	2.1	2.0	2.0		75.8	70.5	47.1
Region "West"							
Austria	1.7	1.8	1.6		58.9	62.6	51.3
Flanders/Belgium	1.9	1.8	2.3		75.7	58.5	48.2
France	2.4	2.0	1.6		81.7	57.5	47.8
Region "South"							
Italy	2.3	1.8	1.5		71.1	49.4	17.3
Spain	2.6	2.2	1.9		62.6	49.3	15.2

* For women aged 45-49 at time of interview, except Norway, Sweden: aged 43; Austria, Flanders/ Belgium: aged 35-39

** ISCED = International Standard Classification of Education. Levels 0-2 grossly correspond to primary education and first stage of secondary education; 3-4 to higher and post-secondary education; 5-6 to university and postgraduate university degree

As the figures in panel A of table 1 show the situation of Flanders (Belgium) appears exceptional in the sense that it is the only region where the most educated group of women indeed show to have the highest number of children. But more important than that is the observation that also in the other countries the women in the highest educational category (ISCED 5-6) show a relatively high number of children compared to the next-to-highest one (ISCED 3-4). Given that the women with the highest educational level postpone

childbearing much longer (see panel B) one should expect a lower average. This suggests that —paraphrasing the words of Pressat (see above)— the most educated women appear to be able to 'offset the loss in fertility incurred at young age by a rise of fertility at a more advanced age'.

At the same time however, one must realise that there is no firm ground to believe in a strong association between age at start of childbearing and completed fertility. Over the last decades, the number of children wanted has indeed become relatively small. For example, in Belgium and Italy the vast majority (more than 90%) of women do not want to have more than 3 children and in both countries about half would like to have exactly 2 children[3]. Earlier American surveys have indicated that there is indeed a weakening of the age at start of childbearing and completed fertility.

2. Some findings from earlier American surveys

Former American research (Bumpass et al., 1978; Trussell and Menken, 1978) have pointed at a strong negative association between the age at first birth and the final number of children. The reason the researchers advanced was mainly that women starting to have children at a young age (before 20) tended to have a second and a third birth earlier than women beginning to have children later. In this connection it could be significant that few of the women covered by the analysis had already made use of modern contraceptives. But, as Morgan and Rindfuss (1999) put forward in a more recent paper, it is a fact that association need not be attributable to a briefer space of time between the successive births. Early starters might have more children for the simple reason that they have more time to have them. In this respect they refer to the biological argument, namely the greater risk of secondary infertility later in life. They also say that […] later ages at first birth can lead to lower than desired fertility because infecundity can precede the desired number of children" (Morgan and Rindfuss, 1999, pp. 62). Their second argument bears on the fact that there is a real risk of undesired pregnancy if no 100% safe contraceptives are used and that this risk increases if this occurs over a longer period. (They advance a third argument. For girls having difficulties at school, motherhood would be a welcome alternative. However, this argument does not seem relevant for the European context where the fertility rate of adolescents is significantly lower than in the U.S.A.).

For the purpose of this analysis the most relevant point in the study by Morgan and Rindfuss (1999) is their finding that between successive birth cohorts the association between the age at which women have their first child and their total number of children has become increasingly less pronounced. In other words, a woman's completed fertility would be more and more independent of the age at which she first becomes a mother. This finding is based on the American Current Population Surveys of 1980, 1985 and 1990, with data on 40 birth cohorts, covering a long period. The above authors do not give a univocal explanation of their finding. These would be largely attributable to the changed fertility behaviour of adolescents (Morgan and Rindfuss, 1999, pp. 72): "The weaker association […] is consistent with [the] arguments developed earlier […] Early marriage, rapid subsequent fertility, and high fertility are now less closely associated with an early

[3] Cf. FFS Standard Country Reports of Belgium (Lodewijckx, 1999) and Italy (De Sandre et al., 2000). Info not available for the other 6 countries in the analysis.

first birth. These changes suggest a greater flexibility or 'disorder' in the life course of teenagers and young adults. […] Perhaps teen childbearing is considerably less consequential than in the past". The possibility of a compensatory behaviour among women who had their first child later in life —the basic assumption in the present analysis— is only treated in a footnote to the biological argument (Morgan and Rindfuss, 1999: footnote 8, p.62): "Treatment of infertility may have weakened the impact of this factor over the past two decades. But because infertility treatments are *expensive and generally not available to everyone*, we expect any attenuation of this effect to be modest" (own italics). Interestingly, in a very indirect way they point at the possibility that women of different social (and educational) background might cope differently with infertility problems.

3. Variables and data sets

The analysis is based on Standard Recode Files from 8 countries which participated in the international FFS project: Finland, Norway, Sweden, Austria, Belgium (Dutch-speaking part)[4], France, Italy and Spain. Where appropriate, results were re-divided in three groups of regions: North, West and South.

Not the entire data sets are used but only the data of the women aged 40 and over at the time of the survey (i.e., the 'oldest' birth cohorts). One of the 'key' variables in the analysis is 'completed' fertility, more precisely in this case the total number of births *of those women with at least one (live) childbirth* (the other 'key' variable being 'start at childbearing'). 'Completed' fertility is here measured as the parity at age 40. On the basis of exploratory research (Schoenmaeckers and Lodewijckx, 2000) this seemed to be an acceptable proxy measure for the 'true' completed fertility.

The data sets used, the birth cohorts and the respective observations are given in table 2.

Although available, the data sets of the former Warsaw Pact countries (Bulgaria, former East Germany, Estonia, Hungary, Lithuania, Poland, Slovenia, Czech Republic) were not included in the analysis. We thus proceeded because postponement was not or hardly noticeable in the data[5]. We did not use Dutch data because they were not made available for international comparative research. Nor did we use the data sets of West or East Germany because their information only allows parity to be calculated at the age of 37[6]. And finally we did not use the data set of Portugal either because the number of observations was too small in the highest categories of education.

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[4] In fact it relates to the Dutch-speaking part of Belgium. The Belgian FFS and SRF include data of two independent sample surveys: the one carried out in 1991 and 1992 in the Flemish Region, the other conducted in the Brussels-Capital Region (among Dutch-speaking women). For further particulars see Lodewijckx (1999).

[5] This observation corresponds to the information from the 1999 statistical abstract of the Council of Europe. It also corresponds to the analysis by Lesthaeghe (2000), namely that there is a common pattern of change in fertility between the European countries, but that (groups of) countries pass through different phases.

[6] The same restriction holds true for Belgium's FFS and SRF. For the analysis it was possible to complete the SRF data by those of a follow-up study carried out in the period of 1996 and 1997 (Callens and Deven, 2001).

Table 2. National FFS data sets used in the analysis; birth cohorts and number of observations

Country (with parenthesised abbreviation used in the figures) :	Cohorts used in the analysis	Observations*; unweighted/weighted
Region "North"		
Finland (Fin)	1945-48	520/520
Norway (Nor)	1945	511/511
Sweden (Swe)	1949	590/571
Region "West"		
Austria (Aus)	1952-55	461/455
Dutch-speaking part of Belgium (Bel)**	1951-54	359/359
France (Fra)	1950-53	359/375
Region "South"		
Italy (Ita)	1951-54	530/545
Spain (Spa)	1950-53	338/395

* Number of women having had one live birth at least.
** FFS and SRF extended to include the data of the 1996-1997 follow-up survey (see footnote 4).

What follows is a short description of the variables used in the analysis.

- Total number of children: measured as the parity at the age of 40 (for women with at least one child).
- Age at having a first child: divided into 3 categories, namely women aged under 21 (early start), women aged between 21 and 25, and women aged over 25 (late start).
- Level of education: distinguished into levels 1, 2 and 3 which more or less correspond to having obtained the certificate of primary education, lower secondary education, higher secondary education and university or higher non-university education. The "level of education" variable is based on the international ISCED code. However, categories are not identical in all countries as regards content. Per country categories are determined according to the actual division by level of education. This choice seemed justified to us because the relative differences (of the effect upon the number of children) between the categories of education seemed more significant to us than the effect of a specific level of education. Moreover, former research already showed that the use of the international ISCED classification is not problem-free (Beets, 1998; Callens, 1999)[7].

[7] The categorisation into three levels on the basis of a division per country by level of education gave the following result: for Austria, Belgium, Finland, France, Italy and Sweden: level 1 (low, Isced = 0, 1, 2), level 2 (middle, Isced = 3), level 3 (high, Isced = 4, 5, 6); for Norway: level 1 (Isced = 0, 1, 2), level 2 (Isced = 3, 4), level 3 (Isced = 5, 6); and for Spain: level 1 (Isced = 0, 1), level 2 (Isced = 2, 3), level 3 (Isced = 5).

Finally, note that as such we deviate from the categorisation applied in the Standard Country Reports (see tabel 1).

- Employment history: This is not concerned with the respondent's whole employment history. The information relates to the employment after having had her first child and ends with the situation at the age of 40. This variable is not directly available in the FFS and was drawn from data present in career histories. However, the problem is that this information is not recorded with the same precision in every country. The consequence is that the number of categories for each country was not constant. In essence the variable indicates whether a woman worked or continued to work after having her first child. The two extreme categories are "have always worked" and "have never worked".
- Relationship history. The remarks made under employment history more or less apply to this background variable. This variable too corresponds to events occurred between first birth and the year in which the respondent reached the age of 40. The extreme categories are those where a woman, after having a first birth, had only one uninterrupted relationship and where, after having a first birth, a woman's relationship was broken off and followed by, at least, one other.
- Religious belief. This variable comprises the classic question about the religious community to which one belongs and the question concerning the frequency of church attendance. This variable is conceived as a continuum, ranging from deep religious belief to confirmed unbelief. Those who clearly identify with a confession of faith (catholic, protestant, etc.) and who would be very practising (deducible from the item "regular church attendance") belong to the first category. Those who consider themselves as freethinkers belong to the last category. Owing to the differences in the existing categorisations, here too it was not possible to use a constant number of categories. There is no information available on France.

Comments on the method

We would like to point out that, although the data used derive from a survey, the analysis as such should not be confounded with a cross-sectional analysis. All the information used in the analysis —both dependent and independent variables— refers to events relating to one generation of women (except for Norway and Sweden, a four-year birth cohort, see table 1). Moreover, the dimension of time in the construction of independent variables was respected. Both the variable "employment history" and "relationship history" refer to events occurred in the period ranging from the year where a woman had her first child to the year in which she reached the age of 40. The same is not true of the "level of education" and "religious belief" variables. But both are proxy variables for "social status", "knowledge" and "attitude to life", and are as such —apart from certain individual exceptions— more or less stable throughout the course of life.

The biggest methodology problem is that "age at having a first child" is used as an explanatory variable for "total number of children", whereas it itself is largely dependent on "level of education and most likely on "religious belief". We think that we have solved this issue by adopting, in the last resort, independent MCAs with respect to the start of having children.

4. Analysis

As started before, the first step in the analysis consisted in inquiring into the existence of a possible general European fertility pattern by level of education.

4.1. A general European fertility pattern

Figure 3 represents, per country and level of education, the total number of children by average age at first birth.

The result corroborates the conclusion of Morgan and Rindfuss (1999), namely that a strong relationship between the average age at first birth and the total number of children is no longer acceptable. Out of the 24 observations represented in figure 3, 21 (88%) correspond to an average total number of children between 1.8 and 2.2; but for the same observations the average age at first birth varies between 21.0 (Sweden) and 28.2 (Italy).

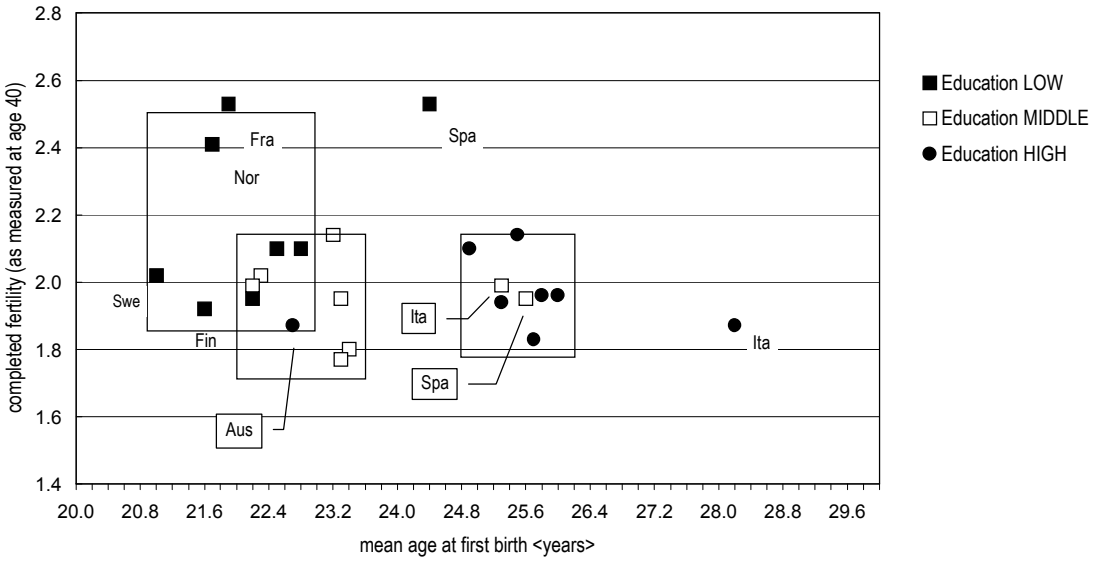
Figure 3 about here

However, figure 3 indicates more. As appears from the scatter plot in figure 3, the level of education is not so much determinative of fertility as of the point of having a first child. This may reasonably be deduced from the position of the three rectangles indicating the degree of concentration at each level of education. Women having a secondary education certificate (level of education: middle) have 2 to 3 years earlier their first child than women having a university degree (level of education: high), but they have on average the same number of children. The Italian and Spanish women occupy an exceptional position. Although their number of children does not exceed that of women having a secondary education certificate in the other countries, they wait with having children just as women having a university degree.

The lowest concentration can be found in the group of women having a primary or lower secondary education certificate. But this concentration cannot be attributed to a wider scatter at the start of having children —the average age in all countries ranges between 21.0 and 22.8— but to a larger variation in the total number of children. In France and Norway less educated women have a markedly higher number of children —respectively 2.5 and 2.4 on average— than in other countries — 2.1 or less on average.

The manifest outliers are the category of less educated women in Spain (characterised by an extra-late start pattern), the category of women having a higher secondary education certificate in Italy and Spain (also with an extra-late start pattern as compared with the other countries) and the category of highly educated women in Austria (with an uncommonly early start pattern) and Italy (with an extra-late start pattern). What is striking here is that two countries from the southern region, Italy and Spain, are most often found in the group of outliers.

Figure 3. Pattern between timing of first birth and completed fertility, by level of education



It all goes to prove that, apart from a few exceptions, a European fertility pattern by level of education actually exists. Its features are that, between the groups of education, differences in fertility have become small. The biggest differences are those between levels of education and are connected with the point of having a first child? It follows that it is quite clear that better educated women wait longest for having children.

4.2. Results of the first MCA application (including all variables)

The results of the first MCA use are shown in figure 4. An MCA enables us to measure the effects of individual features on an average —thus in this case the total number of children, measured at the age of forty. These effects are translated into adjusted deviations (from the mean) and into beta-values. The adjusted deviations correspond to net effects of the categories of the explanatory variables after checking for the effects of the other explanatory variables (or the deviations from the general mean), shown in dark grey in the figure. The beta-values provide an estimation of the general explanatory effect of each explanatory variable, shown in light grey.

Figure 4 gives the results of 8 MCAs, one per country.

The variables with the strongest effects are identifiable on the basis of the beta-values. In nearly all countries the age at having a first child would be the most significant factor for the final number of children. In several countries (Norway, Austria, Spain) this "starting age" is the variable that has by far the biggest effect. In other countries (Finland, Sweden, France and Italy) its relative value is rather restricted. Belgium presents a different pattern, in the sense that its most important explanatory variable is "level of education".

Figure 4. about here

Apart from the question which variable best explains the issue of the total number of children, the items "age at the start of having children" and "level of education" have similar effects in all countries. After all, women who start early in giving birth have more children, whereas women who start later have fewer children (the only country with a deviating pattern is Belgium once again, where it is the women having their first child between the ages of 21 and 25, who have most children). But at the same time the best-educated women have the highest number of children in nearly all countries. Exceptions are Austria, where virtually no effects by level of education have been witnessed, and France, where it is the least educated women who have the largest number of children. But the best-educated women have a markedly higher number of children than those from the middle category.

In many countries (Norway, Sweden, Belgium, France, Italy and Spain) "employment history" is the second most important explanatory variable. In two countries (Finland and Austria) it is "religious belief". In all countries, including those where the effects of "religious belief" are rather limited, women for whom religion is less important, or who

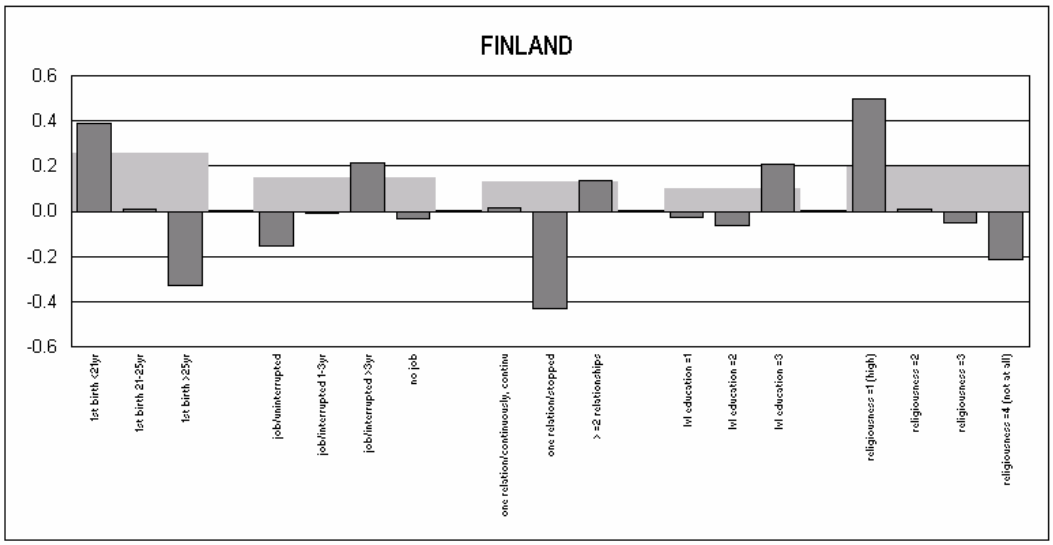
call themselves freethinkers, have a smaller number of children than those whose religious beliefs are deeper.

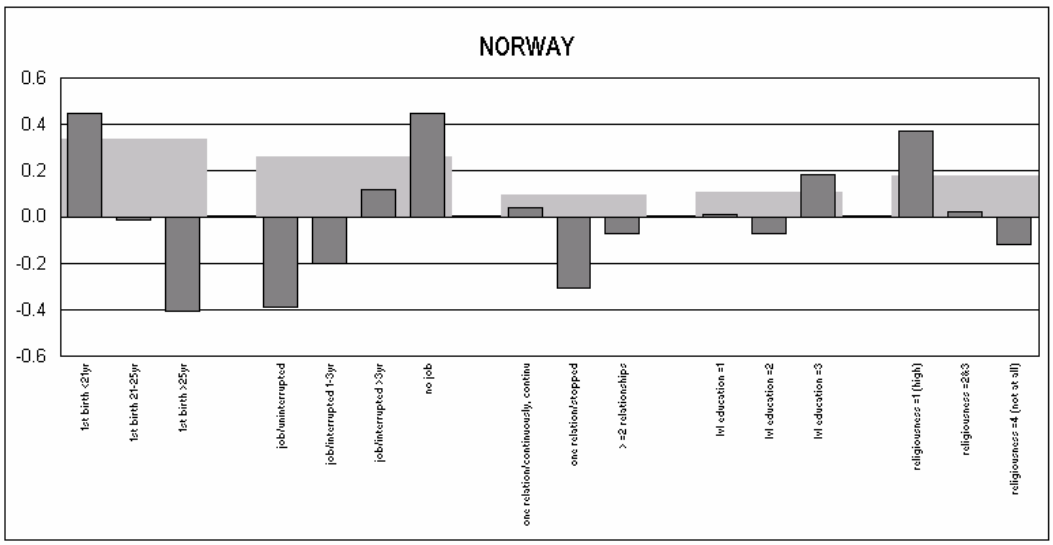
As far the effects of "employment history" more national differences have been observed. In general women who have always been gainfully employed after having their first child have fewer children than women who have never worked after having their first child. Norway and France present a manifest gradient. This is not or certainly less the case in other countries. It is therefore likely that the effect of "employment history" on having children is largely dependent on social security systems (unemployment benefits, child allowances, etc.) or a more concrete government measures like parental leave.

We admit that this first MCA provides a global picture of the effects of individual features on the final number of children, but we would like to point to a methodological impurity, namely that the start of having children cannot be a pure explanatory variable because it must, in turn, have been influenced by "level of education"[8]. To skirt this methodological issue, we carried out a second series of MCAs, per country once again, but this time also irrespective of age at first birth.

[8] And also by the other variables in the sense that it is most likely that the influence of e.g., "employment history" after first birth is not totally unconnected with the employment situation before having a first child.

Figure 4. Results first MCA-analysis. 'Adjusted deviations' (dark grey) and 'beta'-values (light grey)





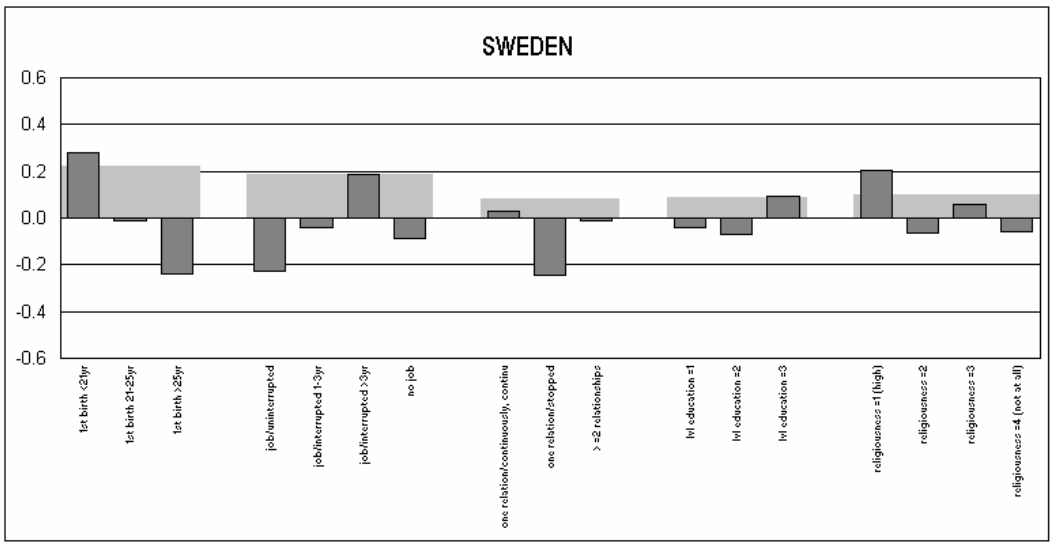
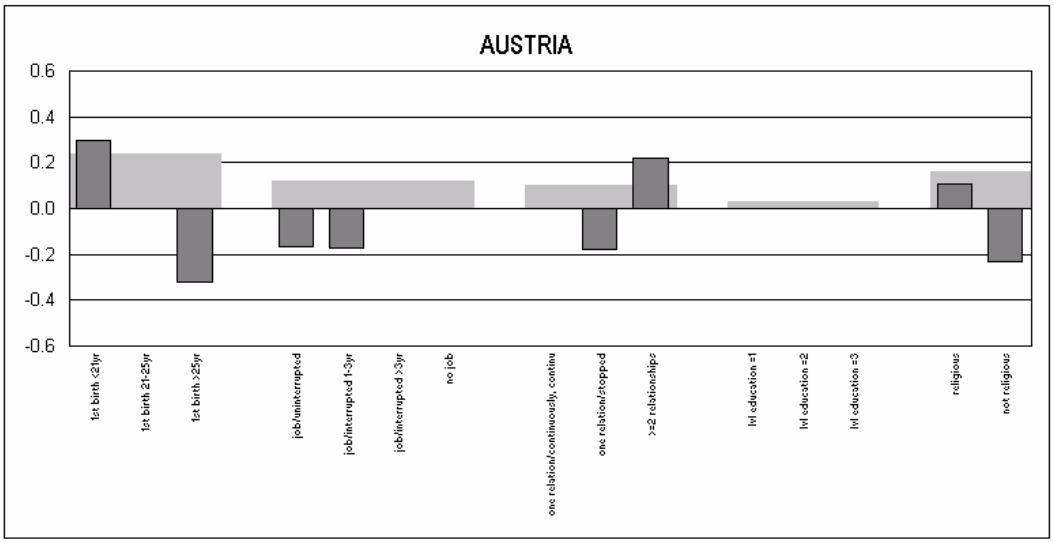
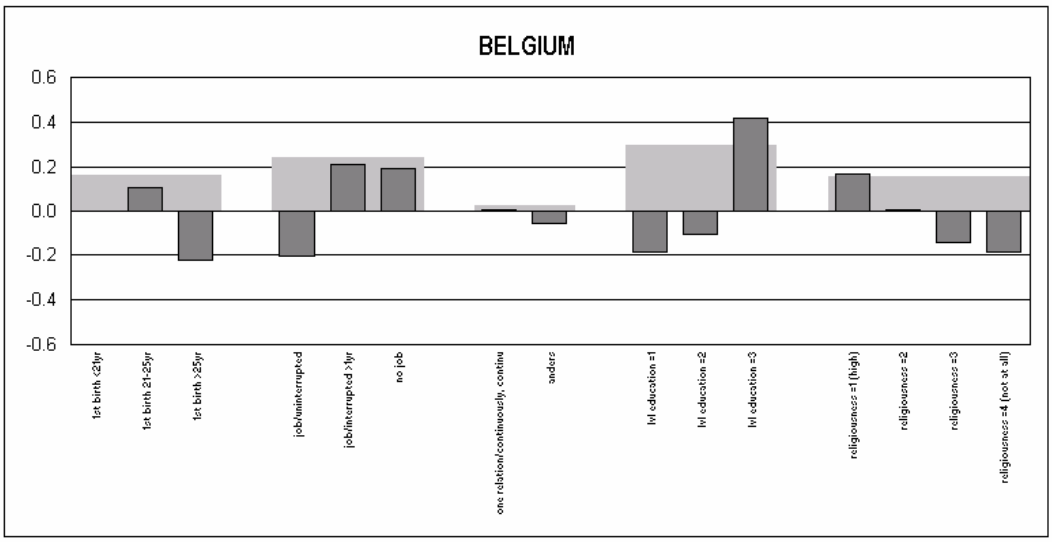


Figure 4. Results first MCA-analysis (cont'd)





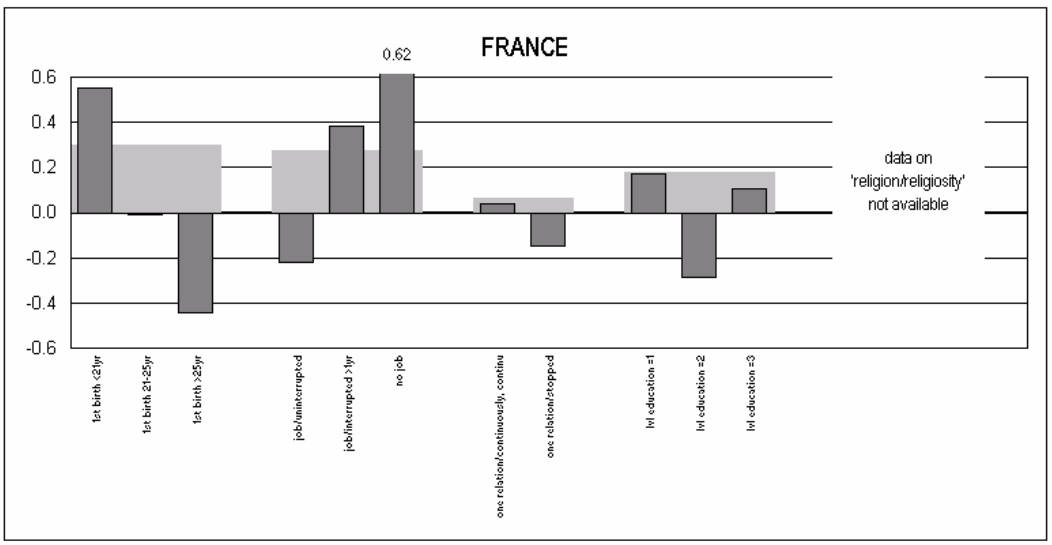
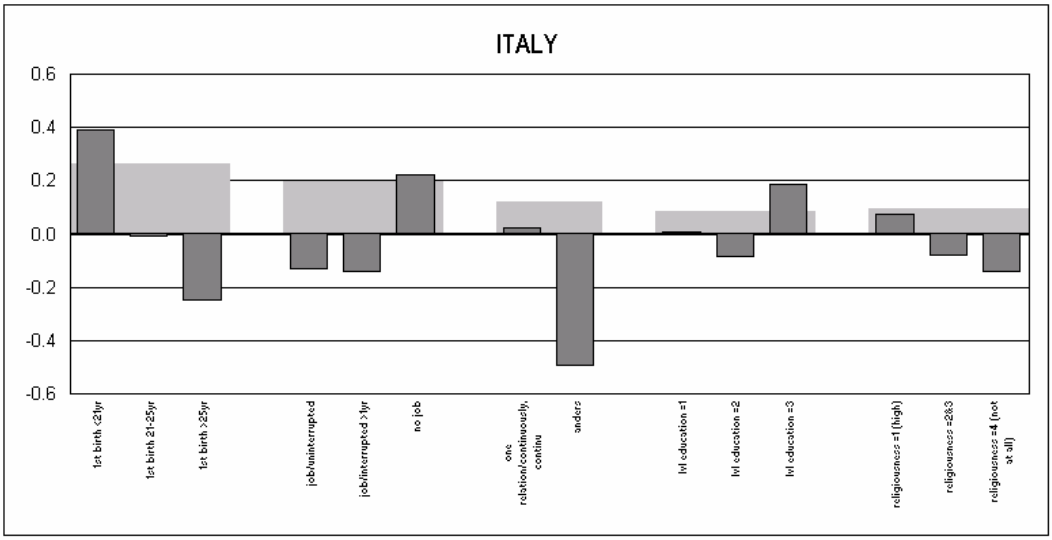
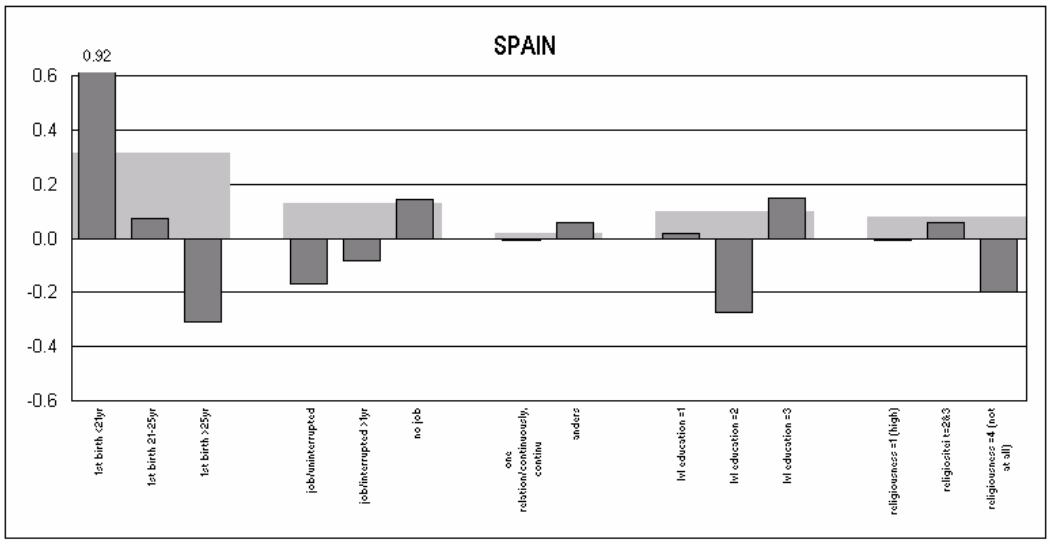


Figure 4. Results first MCA-analysis (cont'd)





4.3 Results of the second MCA application (independent analyses by 'level of education'), with a 'median polish display'

The results of the second MCA series are shown in figure 5. The representation is deduced from an "explorative data analysis" approach (Tukey, 1977), more specifically from the median polish and from the relevant display for the results. This might look somewhat awkward. However, it should be realised that there is no substantial difference between Tukey's median polish and an MCA. The only difference is that the latter starts from a general mean, whereas a median polish starts from a series of means per subgroup, generally the cell values of a two-dimensional table. The median value of this is determined and the deviation per variable is calculated in relation to the median value for each category. The median value plays the role of the general mean in an MCA and the deviations calculated are, de facto, nothing else than the "adjusted deviations". Finally the results are represented in the shape of a rectangle, the size of which depends on the global effect of both explanatory variables.

For each level of education three rectangles are drawn, one per age of having a first child. Thus, figure 5 makes it possible to identify promptly the shifts in the total number of children by level of education as well as the shifts in the effect of a woman's start of having children by level of education; and at the same time controlling for the degree of religious belief, participation in the workforce and relationship history[9]. Further information on the interpretation of the median polish display is given in the technical annex (Annex 3).

What can we learn now from the displays of figure 5?

The results show, as expected, that better educated women wait longer for having children than less educated women. In four out of the eighth countries (Finland, Norway, France, Italy) the rectangle for women having had their first child before the age of 25 is missing because the number of observations was too small in the panel "level of education : high". Besides, for three other countries (Sweden, Austria and Belgium) the relevant rectangle is shown by a dotted line, as an indication for not over 25 observations (cf. technical annex). Nevertheless there is no definite association between level of education and total number of children, as could already be expected on the basis of the conclusions drawn from figure 1. But the fact that better educated women generally have their children later does not mean that they always have fewer children. In Finland, Austria and Belgium it is the best-educated women who have the highest average number of children[10]. We also observe that in Norway and France they have a larger number of children than women belonging to the "middle" educational group. Only in Italy and Spain the best-educated women have a markedly smaller number of children. However, in both countries it does not apply to

[9] Except for France the 'extra' independent variables are "employment history" and "religious belief" (for France the latter information was not available and replaced by "relationship history"). This choice was made on the basis of the MCA results. This means that the "relationship history" variable was really used in the MCA, but that, as the results show, this variable has the smallest effect upon the total number of children, smaller than the effects of "employment history" or "religious belief" (see results in annex).

[10] Let us remind that in the case of Belgium this is by no means the result of a statistical artefact. These survey results correspond to the findings from the 1991 census data referred to earlier (Schoenmaeckers et al. 2000).

women who have completed higher secondary or post-secondary education but to women who have finished secondary or post-secondary education, since for want of a sufficient number of observations the two highest categories had been combined. In Sweden there is a minor difference in the total number of children between the educational categories.

Figure 5 about here.

But what seems more important is the observation that the variation in the total number of children owing to the effect of the starting age diminishes as the level of education raises. This may be deduced from the fact that the overlap between the rectangles is smaller for the group of the less educated than for the group of the better educated. This does not mean at all that better educated women would show no variation in their completed fertility. This variation, however, is primarily attributable to their work situation and religious belief, and not to the age at having their first child, as distinct from the least educated women. This pattern is clearly perceptible in Finland, Norway and Spain, as well as in Sweden and France.

It may further be observed that the effects of "employment history" and "religious belief" vary both per country and … per level of education. In Finland, Norway, Sweden and Belgium the total number of children largely depends on religious belief, and this mainly among the best-educated women. In Austria and Italy as well religious belief appears to play a significant role in determining the final number of children, but among the least educated women, not among the best educated. By contrast, in most countries it is "employment history" that, among the less educated, plays the principal role in determining the number of children. This is certainly true of Norway, Sweden and Spain. The greatest effect of being gainfully employed or not on the total number of children is witnessed in France. It is France where women, with a primary education certificate or a certificate of lower secondary education, having always been gainfully employed after the birth of their first child, have, on average, markedly over one child fewer than women having had a career interruption[11] (but far the two other educational categories "relationship history" definitely predominates when determining the total number of children).

[11] The difference amounts to nearly two children if women who are not gainfully employed are allowed for. But this effect has not been included in the display since it is based on barely 21 observations (see tables under Annex 1).

Figure 5. Results of the 2nd MCA series. Median polish display of the combined effects on completed fertility, employment history (diagonal bottom left to top right) and religious belief (diagonal top left to bottom right), after controlling for age at first birth (see legend)

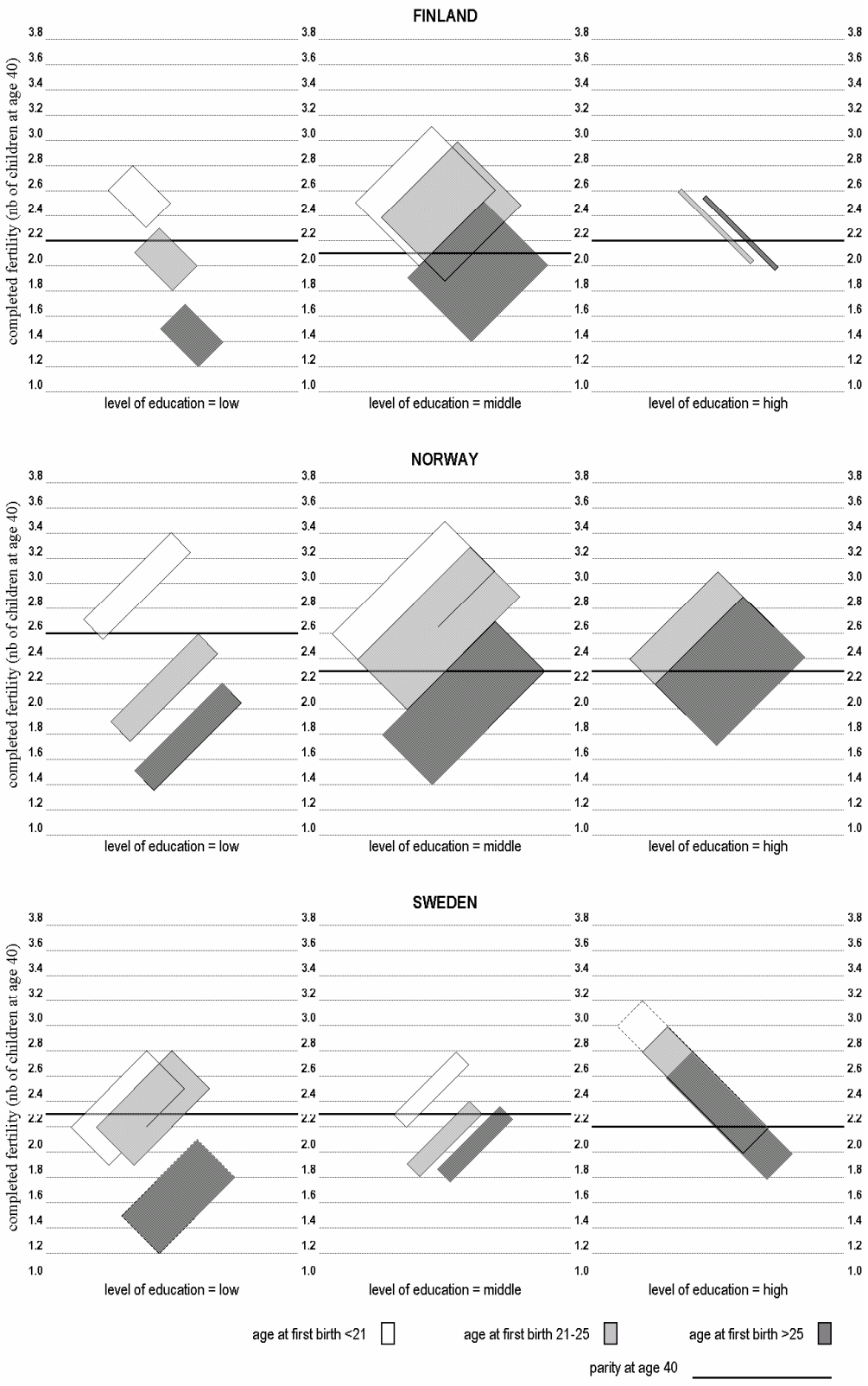


Figure 5. (cont'd)

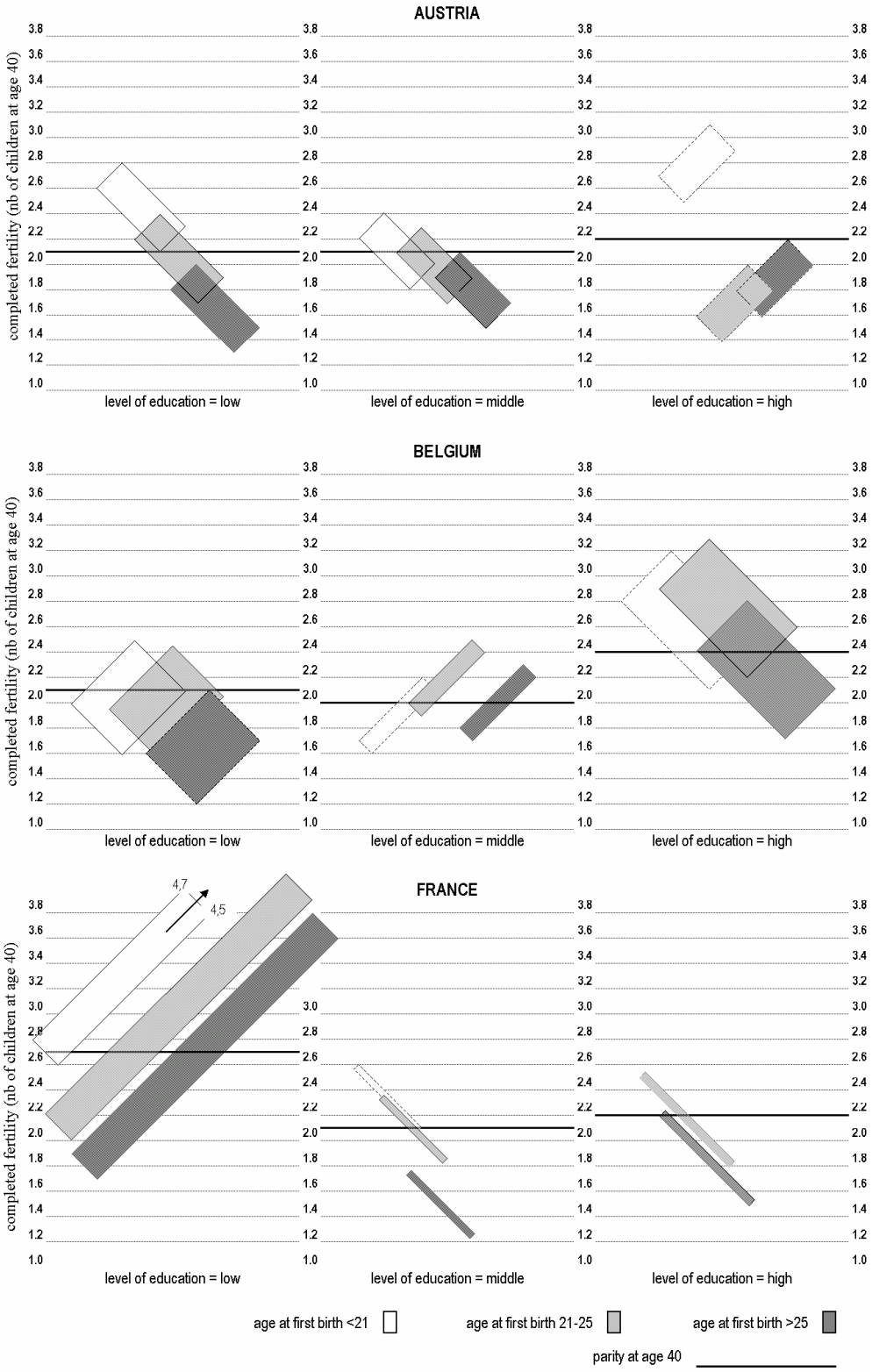
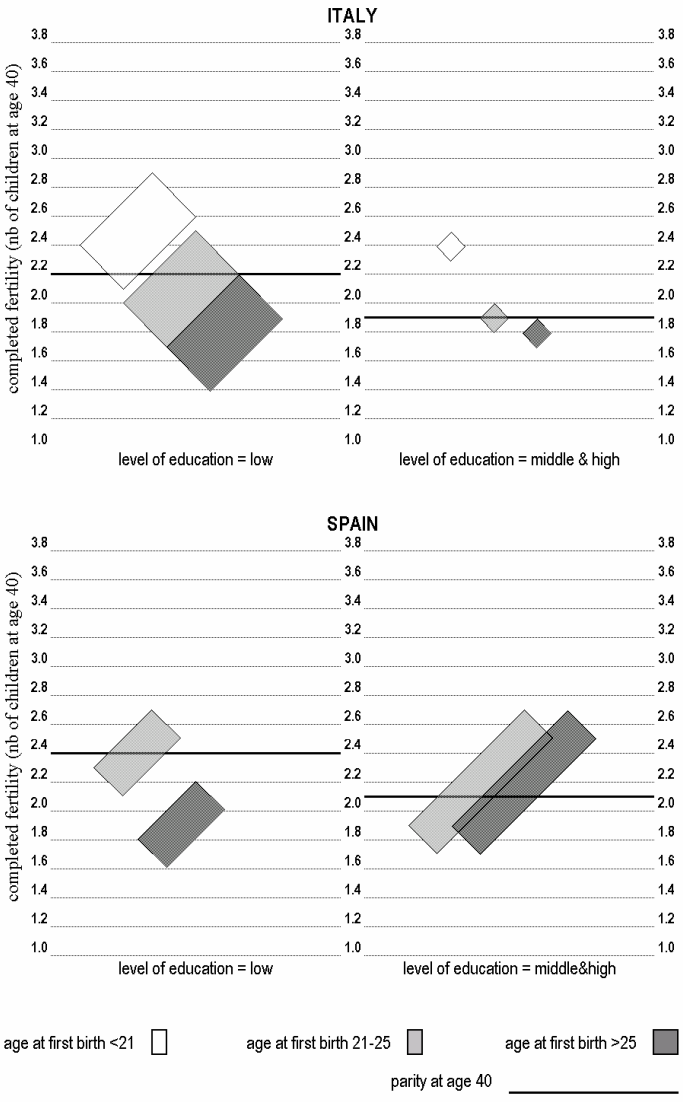


Figure 5. (cont'd)



5. Discussion

Starting from the observation that completed fertility of better educated women is often higher than that of less educated women and this, despite the fact that the former have their children later, the question arose whether the number of children of better educated women comes closer to the desired number of children than among less educated women. Or, to be more precise: would less educated women have fewer children than they wanted?

We tried to answer this question by means of a logistic regression analysis of the discrepancy between completed fertility and the number of children wanted[12]. The control variables used were "age at first birth" and "level of education"; both were defined in the same way as in the MCAs.

However, the results show (see $\exp\beta$ values in the table of annex 2) that there is no difference in the discrepancy between completed fertility and the number of children wanted by level of education. In nearly all countries there is no statistically significant effect. Furthermore, in both countries where a significant effect was found (Italy and Spain) it was contrary to expectation. In Italy better-educated women are three times as likely as women who have only a basic education to have fewer children than they want. In Spain they are twice as likely to have fewer children than they want. It is also Italy and Spain where the better-educated women have a markedly lower total number of children than the less educated women (see figure 3). In other words, this extra regression analysis corroborates what we already deduced from the MCAs. In addition, for 5 out of 8 countries (Sweden, Austria, Belgium, Italy and Spain) we found confirmation of the fact that a late starting age in having children often leads to a number of children which is lower than the number wanted. For women giving birth to their first child after the age of 25, this likelihood is two or three times higher than for women who start having children before the age of 21.

Since we know that the starting age is higher among better-educated women, the results of the extra logistic regression analysis also lend support to the supposition that these women, despite this 'handicap', do have the number of children that they want.

In a separate analysis, on the basis of FFS data as well, Van Peer examined in greater depth the discrepancy between the number of children wanted and the final number of children (Van Peer, 2002). She concludes (pp. 117-118, translation) that "in countries with a well structured system of support for families, like the Scandinavian countries, the discrepancy between the number of children wanted and completed fertility is smallest, whereas in societies where family support is minimal, like Italy and Spain, the discrepancy between wish and reality is greatest". She also concluded that parental leave and child benefit are two policy measures which are important to influence completed fertility. She identified three fields of action for the purposes of public policy (Van Peer, 2002: p. 119, translation): "the incompatibility between work and family […]; the sequence of important events in the course of life (combination of the career as a parent/care provider and employee); the still prevailing pattern of values in the matter of gender relations.

[12] This analysis only includes women for whom the discrepancy was negative, i.e., for whom the number of children wanted was greater than the live births produced. Only a small number of women had to be excluded from the analysis.

On the basis of the results of our analysis we would like to identify a fourth field of action, namely the fact that the effect of having children later differs by level of education. The idea is not quite new to the extent that former research paid attention to the effect of age on fertility. It is beyond question that secondary sterility increases with age. In this respect, Morgan and Rindfuss (1999) speak of the "biological argument" (see paragraph 2 above). Voluminous reference books have been published about this topic. See, *inter alia*, the publication "Biomedical and Demographic Determinants of Reproduction" by Gray, Leridon and Spira (1993), more particularly the contributions included by Bongaarts (1993) and by Rahman and Menken (1993). It is no surprise that the progressive phenomenon of postponement has resulted in the subject remaining of current interest. In a recent publication Billari and Rosina (2001) try, on the basis of a statistical model, to explain the increase in secondary sterility through the effect of age on the length of the menstrual cycle. In a more prosaic manner, with the help of the "life table method", and in the light of recent Dutch data, Steenhof and de Jong (2001) point out that pregnancy in older woman is not always possible without medical treatment (Steenhof and De Jong, 2001: pp. 18): "In conclusion, the risks of postponement of motherhood are certainly not to be ignored. It may be wise for women not to wait until their thirties before trying to become pregnant (for the first or second time). Although medical treatment has a significant effect it is not enough to compensate the natural decline of fecundity at higher ages".

As early as a few years ago, in an investigation into the societal consequences of having a first child later in life, made by order of the then "Nederlandse Emancipatieraad" (Netherlands Emancipation Council) (Bouwens, 1996), close attention was paid to the medical effects[13]. These effects do not only relate to fertility problems but also to a bigger risk of complications during pregnancy, etc. The report expressly refers to the increasing resultant medical costs.

But nowhere in the above studies attention was paid to the possibility that the medical complications attendant on late pregnancy and the consequences for the final number of children, may be unequally divided between the various social groups in society. The reason might be oversight by the research community. The reason might also be the simple lack of available data. We have already pointed at the fact that the vast majority of FFS data sets (all in fact, except the Flemish data set) does not include information on medical complications related to childbearing. And as said, the Flemish analysis (Lodewijckx and Schoenmaeckers, 1993) was not resumed using 'educational attainment' as a control variable because of the small number of observations that would be implied.

The findings of the Flemish analysis clearly show that women who experience complications decide against having a further pregnancy. If we place these former results in the light of the present findings we venture to say that it is rather the less educated women who do not opt for having a further pregnancy. The reason behind it is that better educated women may rely on better medical guidance or help and advice, — first of all because they are better informed about possible medical complications in pregnancy and/or delivery. It is most likely that better educated women, especially those who wait longest

[13] Already in the early nineties consideration was given to it at a workshop. See the report by Beets and Verloove-Vanhorick, eds. (1992)

for having children, are best aware of medical complications owing to postponement. They are prepared for it. This means not only that they take the precautions needed (like having antenatal check-ups), but also that they are better able to deal with the psychological burden attendant on possible complications, so this has not to lead to deciding against a further, planned, pregnancy.

These are all hypotheses, which cannot be tested on the basis of the available FFS material. However, they are in line with the findings of other sources such as the afore-mentioned publication of the Health Care Administration of the Flemish Community (Vlaamse Gemeenschap, 2001); in both instances there are reasons to believe that more educated women are in a better position to cope with health issues related to childbearing. The next question therefore is: "Why?"

A likely general explanation could be the existence of an unequal distribution in society of the information about and the access to health facilities. We feel confident that this phenomenon more or less appears in all the countries included in the analysis (in the light of the results we tend to state that it is less marked in the Scandinavian countries). It thus points to a socially unfair situation.

One could react to this by taking the view that our societies are characterised by an unequal distribution. It obviously means that inequality in information about and access to health facilities have to do with differences in levels of knowledge and income. Highly educated people even have a healthier lifestyle and, accordingly, a higher expectancy of life (see, for instance, pp. 61 in Esveldt et al., 2001, referring to Kunst, 1997).

This is, however, a defeatist view we would not like to share. People have the right to have the number of children they want, —no fewer, no more. So far, the attention has mainly gone to the latter part. To avoid people to have more children than they actually would like —or 'excess fertility'— there is now the generally accepted principle of the right to the access and use of modern and affordable contraception. But as far as postponed parenthood, which can be regarded as a corollary to modern society, relates to having less children than the number wanted, also more attention needs to go to the former. Not simply because it contributes to the present excessively low fertility, but also because of individual well-being. As such, we share the opinion of, for example, Eckert (1986), stating that policy should focus on enhanced social equalisation of all levels of society.

The attention given to low fertility is at national (see, e.g., Van Dongen *et al*., 1995) or at international level (see, e.g., United Nations Population Division, 2000), largely limited to the reconciliation of labour force participation and family life. Another aspect of postponed parenthood relates to adverse effects of medical complications —including a long wait/too long a wait for conception— on the level of fertility. These are problems which all women, irrespective of social category, may be confronted with. But it seems unfair to us that less educated women would be most affected. This would have its roots in lack of knowledge (related to education) as well as a (more) difficult access to health services. Lack of knowledge might be a problem which cannot easily be solved (although the implications of postponed parenthood must definitely form part of sexual education at school), but might certainly not be the main problem.

We venture to suggest that less educated women as well, are aware of possible implications of pregnancy later in life. The real problem might be rather: "What can I do about it?" In other words, how do I obtain access to health facilities and make use of them. And as far as these facilities have definitely to do with financial costs, it seems to us that this is an area to which policymakers can and must pay attention.

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Annex 1: Results of second series of MCA applications

Table A1. Results of 2nd series of MCA-analyses on completed fertility (3 separate analyses per level of education)

FINLAND

	Application 1: lvl of ed=low			*Application 2: lvl of ed=middle*			*Application 3: lvl of ed=high*		
	unadjusted deviation	adjusted deviation	N of cases	unadjusted deviation	adjusted deviation	N of cases	unadjusted deviation	adjusted deviation	N of cases
	grand mean =	2.22	144	grand mean =	2.08	265	grand mean =	2.21	100
age at first birth		p<0.001			p<0.001			p<0.05	
<21	0.418	0.444	56	0.353	0.251	66	0.933	1.033	7
21-25	-0.148	-0.132	63	0.101	0.114	117	-0.091	-0.068	42
>25	-0.563	-0.662	25	-0.428	-0.365	82	-0.053	-0.086	51
	eta=.338	beta=.373		eta=.283	beta=..233		eta=.297	beta=.328	
job history (1st birth - age 40)		n.s.			p<0.001			n.s.	
uninterrupted	-0.225	-0.095	56	-0.236	-0.221	107	-0.043	-0.016	42
interruption 1-3 yrs	0.016	0.154	27	-0.142	-0.059	73	-0.067	-0.008	35
interruption > 3 yrs	0.212	0.027	55	0.532	0.398	76	0.154	0.003	22
no job	0.090	-0.059	6	-0.531	-0.259	9	0.790	0.854	1
	eta=.179	beta=.085		eta=.321	beta=.244		eta=.136	beta=.100	
relation history (1st birth -- age 40)		n.s.			n.s.			n.s.	
one/continuously	-0.065	-0.029	107	0.005	0.024	197	0.037	0.046	81
one/stopped	-0.143	-0.261	10	-0.561	-0.496	19	-0.483	-0.316	11
>= 2 relations	0.313	0.210	27	0.199	0.095	49	0.290	-0.324	8
	eta=.141	beta=.109		eta=.161	beta=.131		eta=.212	beta=.131	
religiousness		p<0.01			p<0.05			n.s	
1 = very	0.535	0.839	18	0.430	0.375	29	0.415	0.457	16
2	-0.080	-0.101	43	0.082	0.096	101	-0.075	-0.139	37
3	0.105	0.025	46	-0.073	-0.146	70	-0.003	-0.024	29
4 = not at all	-0.297	-0.322	37	-0.241	-0.159	65	-0.210	-0.081	18
	eta=.235	beta=.319		eta=.183	beta=.163		eta=.242	beta=.237	
explained variance		22.2 %			19.0 %			18.0 %	

Table A1. Cont'd

NORWAY

	Application 1: lvl of ed=low			*Application 2: lvl of ed=middle*			*Application 3: lvl of ed=high*		
	unadjusted deviation	adjusted deviation	N of cases	unadjusted deviation	adjusted deviation	N of cases	unadjusted deviation	adjusted deviation	N of cases
	grand mean =	2.56	107	grand mean =	2.29	280	grand mean =	2.29	109
age at first birth		p<0.001			p<0.001			n.s.	
<21	0.525	0.530	48	0.326	0.341	76	0.322	0.130	8
21-25	-0.311	-0.320	41	0.083	0.041	133	0.120	0.104	52
>25	-0.691	-0.684	18	-0.504	-0.441	71	-0.180	-0.131	49
	eta=.442	beta=.445		eta=.343	beta=.315		eta=.221	beta=.154	
job history (1st birth - age 40)		n.s.			p<0.001			p<0.001	
uninterrupted	-0.246	-0.216	6	-0.567	-0.357	51	-0.450	-0.424	34
interruption 1-3 yrs	-0.663	-0.639	12	-0.468	-0.374	40	0.297	0.283	30
interruption > 3 yrs	0.105	0.073	76	0.216	0.120	165	0.147	0.129	40
no job	0.113	0.266	13	0.499	0.555	24	0.097	0.154	5
	eta=.224	beta=.222		eta=.411	beta=.308		eta=.401	beta=.378	
relation history (1st birth -- age 40)		n.s.			n.s.			n.s.	
one/continuously	0.068	0.007	87	0.025	0.053	214	0.005	0.019	91
one/stopped	-0.779	-0.612	5	-0.126	-0.221	24	-0.303	-0.447	4
>= 2 relations	0.221	0.162	15	-0.055	-0.142	42	0.054	0.002	14
	eta=.169	beta=.131		eta=.053	beta=.107		eta=.079	beta=.113	
religiousness		n.s.			p<0.05			p<0.01	
1 = very	0.087	0.267	15	0.404	0.323	33	0.507	0.459	21
2	0.013	0.068	27	0.012	0.063	105	-0.084	-0.086	32
3	-0.026	-0.090	65	-0.103	-0.122	142	-0.142	-0.123	56
4 = not at all	eta=.035	beta=.114		eta=.173	beta=.161		eta=.322	beta=.291	
explained variance		27.1 %			26.2 %			28.6 %	

Table A1. (cont'd)

SWEDEN

	Application 1: lvl of ed=low			*Application 2: lvl of ed=middle*			*Application 3: lvl of ed=high*		
	unadjusted deviation	adjusted deviation	N of cases	unadjusted deviation	adjusted deviation	number of cases	unadjusted deviation	adjusted deviation	N of cases
	grand mean =	2.29	100	grand mean =	2.26	241	grand mean =	2.22	216
age at first birth		p<0.05			p<0.01			n.s.	
<21	0.189	0.121	46	0.328	0.253	79	0.271	0.310	23
21-25	0.023	0.081	41	-0.092	-0.098	111	0.108	0.079	92
>25	-0.772	-0.708	13	-0.315	-0.181	50	-0.161	-0.144	101
	eta=.321	beta=.285		eta=.284	beta=.208		eta=.182	beta=.173	
job history (1st birth - age 40)		p<0.001			p<0.05			p<0.05	
uninterrupted	-0.391	-0.283	24	-0.357	-0.277	48	-0.181	-0.113	61
interruption 1-3 yrs	-0.311	-0.365	25	-0.112	-0.097	73	0.081	0.085	94
interruption > 3 yrs	0.276	0.248	44	0.243	0.193	114	0.160	0.103	52
no job	0.856	0.859	6	-0.457	-0.296	5	-0.562	-0.737	9
	eta=.393	beta=.371		eta=.288	beta=.225		eta=.401	beta=.378	
relation history (1st birth -- age 40)		n.s.			n.s.			n.s.	
one/continuously	-0.068	-0.060	68	-0.054	-0.003	166	0.047	0.085	151
one/stopped	-0.436	-0.369	8	0.172	0.087	14	-0.387	-0.343	18
>= 2 relations	0.329	0.286	24	0.108	-0.010	61	0.000	-0.140	46
	eta=.222	beta=.192		eta=.094	beta=.025		eta=.137	beta=.159	
religiousness		n.s.			n.s.			p<0.001	
1 = very	-0.200	0.144	9	-0.072	-0.051	26	0.521	0.574	31
2	-0.111	-0.346	5	-0.035	-0.027	26	-0.135	-0.179	31
3	0.235	0.173	21	0.114	0.089	60	-0.040	-0.027	51
4 = not at all	-0.042	-0.050	65	-0.031	-0.025	129	-0.097	-0.106	103
	eta=.138	beta=.132		eta=.077	beta=.060		eta=.322	beta=.291	
explained variance		28.7 %			12.8 %			15.6 %	

Table A1. (cont'd)

AUSTRIA

	Application 1: lvl of ed=low			*Application 2: lvl of ed=middle*			*Application 3: lvl of ed=high*		
	unadjusted deviation	adjusted deviation	N of cases	unadjusted deviation	adjusted deviation	number of cases	unadjusted deviation	adjusted deviation	N of cases
	grand mean =	2.15	128	grand mean =	2.10	246	grand mean =	2.16	52
age at first birth		p<0.01			n.s.			p<0.01	
<21	0.494	0.362	45	0.185	0.150	83	0.552	0.639	20
21-25	-0.079	-0.008	44	-0.024	-0.016	112	-0.393	-0.477	18
>25	-0.487	-0.412	39	-0.247	-0.207	51	-0.252	-0.264	14
	eta=.354	beta=.276		eta=.170	beta=..140		eta=.432	beta=.504	
job history (1st birth - age 40)		n.s.			n.s.			n.s.	
uninterrupted	-0.265	-0.004	17	-0.257	-0.194	46	-0.219	-0.091	14
interruption 1-3 yrs	-0.519	-0.520	13	-0.023	-0.064	38	-0.166	-0.475	8
interruption > 3 yrs	0.210	0.104	73	0.109	0.070	111	0.240	0.279	18
no job	-0.161	-0.036	25	0.011	0.073	51	0.018	0.015	11
	eta=.227	beta=.161		eta=.144	beta=.113		eta=.194	beta=.255	
relation history (1st birth -- age 40)		p<0.01			n.s.			n.s.	
one/continuously	-0.030	-0.002	92	-0.034	-0.033	182	-0.016	0.083	37
one/stopped	-0.837	-0.825	14	0.081	0.052	35	0.105	-0.070	10
>= 2 relations	0.645	0.519	22	0.116	0.140	29	-0.084	-0.493	5
	eta=.341	beta=.307		eta=.053	beta=.107		eta=.054	beta=.171	
religiousness		p<0.05			p<0.01			n.s.	
1 = yes	0.122	0.163	83	0.127	0.117	170	0.051	0.068	38
2 = no	-0.226	-0.301	45	-0.285	-0.262	76	-0.138	-0.184	14
	eta=.147	beta=.196		eta=.206	beta=.189		eta=.084	beta=.112	
explained variance		26.1 %			8.2 %			27.0 %	

Table A1. (cont'd)

BELGIUM

	Application 1: lvl of ed=low			*Application 2: lvl of ed=middle*			*Application 3: lvl of ed=high*		
	unadjusted deviation	adjusted deviation	N of cases	unadjusted deviation	adjusted deviation	N of cases	unadjusted deviation	adjusted deviation	N of cases
	grand mean =	2.06	131	grand mean =	2.04	122	grand mean =	2.40	89
age at first birth		n.s.			n.s.			p<0.01	
<21	0.047	0.069	40	-0.208	-0.226	15	-0.094	0.130	3
21-25	0.058	0.039	72	0.133	0.097	71	0.226	0.231	49
>25	-0.317	-0.294	19	-0.175	-0.096	36	-0.292	-0.316	37
	eta=.162	beta=.151		eta=.186	beta=..142		eta=.290	beta=.306	
job history (1st birth - age 40)		p<0.01			p<0.01			p<0.05	
uninterrupted	-0.363	-0.295	42	-0.229	-0.209	68	-0.099	-0.081	61
interruption 1-3 yrs	0.144	0.110	71	0.317	0.276	43	0.304	0.277	26
no job	0.280	0.256	18	0.174	0.211	11	-0.927	-1.143	2
	eta=.315	beta=.259		eta=.307	beta=.278		eta=.264	beta=.272	
relation history (1st birth -- age 40)		n.s.			n.s.			n.s.	
one/continuously	0.004	0.001	122	0.001	0.008	109	0.008	0.023	85
one/stopped	-0.053	-0.015	9	-0.008	-0.069	14	-0.177	-0.494	4
	eta=.018	beta=.005		eta=.003	beta=.028		eta=.044	beta=.123	
religiousness		n.s.			n.s.			p<0.01	
1 = very	0.169	0.127	45	0.135	0.117	42	0.406	0.393	24
2	0.022	0.037	40	-0.033	-0.048	40	0.037	0.079	28
3	-0.276	-0.268	36	0.066	0.049	27	-0.216	-0.292	19
4 = not at all	0.147	0.245	10	-0.470	-0.334	13	-0.371	-0.338	18
	eta=.224	beta=.217		eta=.209	beta=.158		eta=.330	beta=.334	
explained variance		15.4 %			14.4 %			27.2 %	

Table A1. (cont'd)

FRANCE

	Application 1: lvl of ed=low			*Application 2: lvl of ed=middle*			*Application 3: lvl of ed=high*		
	unadjusted deviation	adjusted deviation	N of cases	unadjusted deviation	adjusted deviation	N of cases	unadjusted deviation	adjusted deviation	N of cases
	grand mean =	2.73	168	grand mean =	2.08	126	grand mean =	2.24	70
age at first birth		p<0.001			p<0.001			n.s.	
<21	0.506	0.470	59	0.302	0.383	23	0.684	0.695	4
21-25	-0.102	-0.192	80	0.110	0.110	67	0.127	0.141	27
>25	-0.770	-0.438	28	-0.397	-0.450	36	-0.153	-0.164	39
	eta=.309	beta=.250		eta=.292	beta=..338		eta=.261	beta=.274	
job history (1st birth - age 40)		p<0.001			n.s.			n.s.	
uninterrupted	-0.548	-0.539	103	0.032	0.012	91	-0.082	-0.004	55
interruption 1-3 yrs	0.638	0.627	44	0.000	-0.072	12	0.326	0.030	14
no job	1.386	1.361	21	-0.132	-0.012	22	-0.087	-0.156	1
	eta=.508	beta=.499		eta=.307	beta=.278		eta=.205	beta=.032	
relation history (1st birth -- age 40)		n.s.			p<0.05			p<0.05	
one/continuously	-0.006	-0.047	127	0.067	0.102	100	0.084	0.091	60
one/stopped	0.019	0.147	40	-0.258	-0.395	26	-0.508	-0.552	10
	eta=.007	beta=.058		eta=.147	beta=.224		eta=.258	beta=.281	
religiousness									
1 = very									
2									
3									
4 = not at all									
explained variance		32.7 %			13.2 %			14.8 %	

info 'religiousness' not available

Table A1. (cont'd)

ITALY

	Application 1: lvl of ed=low			*Application 2: lvl of ed=middle&high*		
	unadjusted deviation	adjusted deviation	number of cases	unadjusted deviation	adjusted deviation	number of cases
	grand mean =	2.21	335	grand mean =	1.86	197
age at first birth		p<0.001			p<0.01	
<21	0.348	0.341	93	0.390	0.428	21
21-25	-0.058	-0.067	178	0.045	0.034	68
>25	-0.348	-0.313	63	-0.103	-0.104	108
	eta=.254	beta=.243		eta=.226	beta=.241	
job history (1st birth - age 40)		p<0.001			N.s.	
uninterrupted	-0.268	-0.179	67	-0.106	-0.054	94
interruption 1-3 yrs	-0.239	-0.253	104	0.119	0.069	66
no job	0.261	0.234	164	0.061	0.014	37
	eta=.269	beta=.242		eta=.156	beta=.083	
relation history (1st birth -- age 40)		n.s.			p<0.05	
one/continuously	0.027	0.018	323	0.016	0.026	186
one/stopped	-0.725	-0.480	12	-0.291	-0.469	10
	eta=.147	beta=.097		eta=.058	beta=.166	
religiousness		n.s.			n.s.	
1 = very	0.087	0.091	190	0.037	0.045	100
2&3	-0.103	-0.104	126	-0.044	-0.059	77
4 = not at all	-0.192	-0.227	19	-0.015	0.003	20
	eta=.107	beta=.113		eta=.058	beta=.074	
explained variance		15.2 %			8.9 %	

Table A1. (cont'd)

SPAIN

	Application 1: lvl of ed=low			*Application 2: lvl of ed=middle&high*		
	unadjusted deviation	adjusted deviation	N of cases	unadjusted deviation	adjusted deviation	N of cases
	grand mean =	2.40	319	grand mean =	2.10	74
age at first birth		p<0.001			n.s.	
<21	1.104	1.146	24	-0.330	-0.753	5
21-25	0.094	0.089	189	0.036	0.048	35
>25	-0.420	-0.419	106	0.009	0.056	34
	eta=.383	beta=.390		eta=.105	beta=..238	
job history (1st birth - age 40)		p<0.01			p<0.05	
uninterrupted	-0.245	-0.194	42	-0.111	-0.185	37
interruption 1-3 yrs	-0.916	-0.156	116	0.297	0.446	25
no job	0.130	0.164	160	-0.287	-0.375	12
	eta=.135	beta=.161		eta=.268	beta=.395	
relation history (1st birth -- age 40)		n.s.			n.s.	
one/continuously	0.001	-0.005	291	-0.022	-0.058	66
one/stopped	-0.008	0.057	28	0.194	0.515	7
	eta=.003	beta=.017		eta=.078	beta=.208	
religiousness		n.s.			n.s.	
1 = very	-0.045	-0.034	145	0.105	0.151	35
2&3	0.092	0.065	148	-0.084	-0.059	20
4 = not at all	-0.278	-0.181	25	-0.108	-0.222	18
	eta=.102	beta=.069		eta=.121	beta=.187	
explained variance		17.7 %			16.8 %	

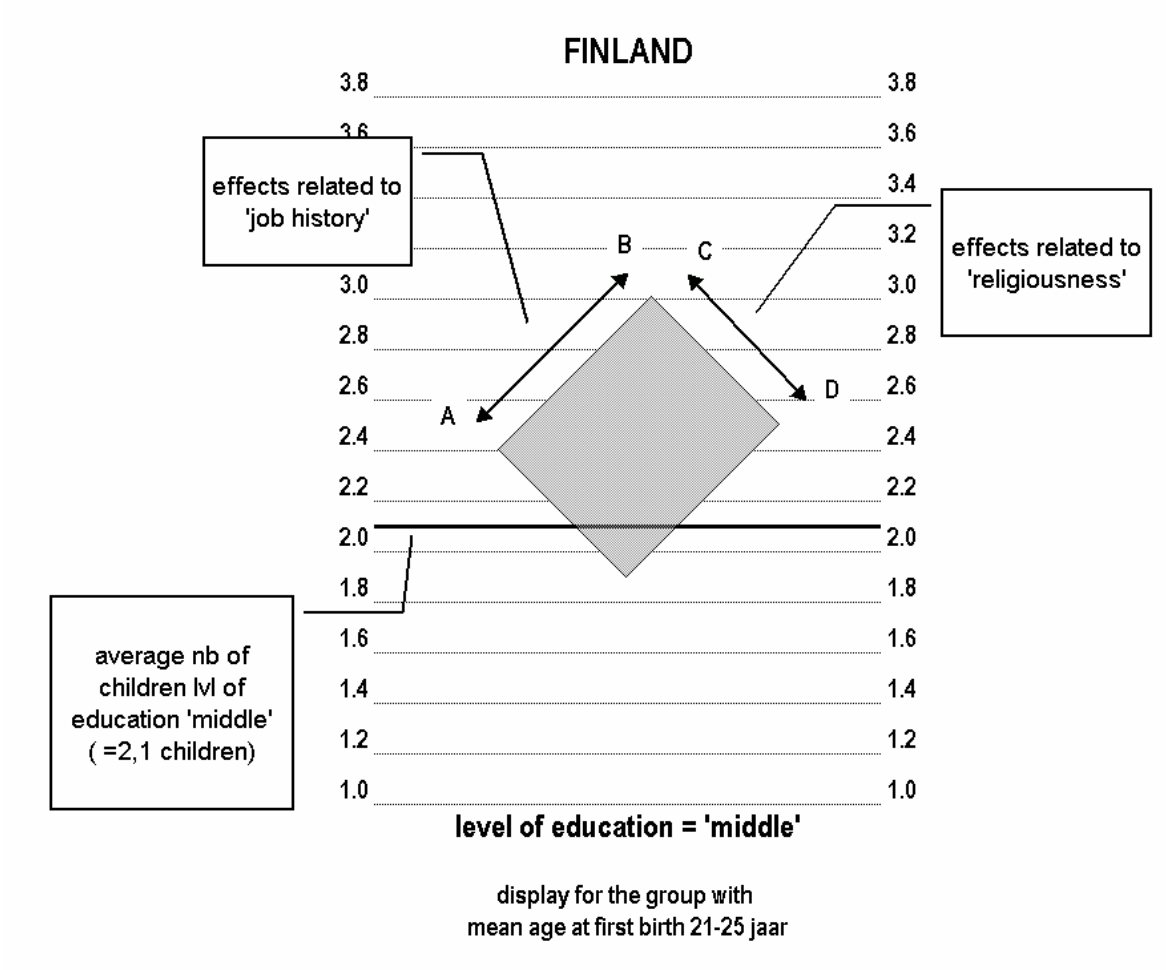
Annex 2: Results of a logistic regression analysis on the difference between 'realised' and 'wanted' number of children. Relative risico factors (exβ-values) related to 'age at first birth' and 'level of education'

	Age at first birth			level of education		
Country	< 21*	21-25	> 25	'low'*	'middle'	'high'
Regio 'North':						
Finland	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Norway	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Sweden	1.00	0.89	2.47	n.s.	n.s.	n.s.
Regio 'West':						
Austria	1.00	1.32	3.60	n.s.	n.s.	n.s.
Belgium	1.00	0.71	3.27	n.s.	n.s.	n.s.
Francek	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Regio 'South':						
Italy	1.00	1.05	3.48	1.00	1.75	3.29
Spain	1.00	0.77	1.63	1.00	0.95	2.06

* reference category

Annex 3: Interpretation of the median polish display

The interpretation of the median polish display is illustrated here by the results for Finland, also included in figure 3. As stated in the text, the results of a median polish display are represented by a rectangle. The size of the rectangle is a function of the magnitude of the global effects of the explanatory variables. By "global" we mean that the length of the side corresponds to the difference between the two extreme values, i.e. that no allowance is made for "intermediate" effects which exist in 3 or more categories.



By turning the rectangle through 90 degrees, the corresponding values for the estimated number of children can be read from a vertical axis. In the above example, the side AB —which runs parallel to the diagonal, going from bottom left to top right— shifts between the values of 2.4 and 3.0 children. In other words, for a given category of "religious belief" (in this case: a strong belief) the effect of "employment history" changes the total number of children by ± 0.6 children[14]. This also means that the four angles of the rectangle indicate cell values from the two-dimensional table. In the Finnish example it refers to the cells (see tables in Annex 1):

[14] We use here round values, which are immediately readable from the display. The precise values are given in the tables in Annex 1.

- Religious belief = 1 (strong) & out of work > 3yrs, being 3.0 children;
- Religious belief = 1 (strong) & always worked, being 2.4 children;
- Religious belief = 4 (unbelief) & out of work > 3yrs, being 2.5 children;
- Religious belief = 4 (unbelief) & always worked, being 1.9 children[15].

From this it may also be deduced that the global effect of "employment history" (0.6 children) is slightly bigger than that of "religious belief" (0.5 children).

Figure 3 displays, per level of education, not only one but three rectangles, one per age at having a first child. These three rectangles are identical. This is a direct consequence of the fact that the MCAs did not include effects of interaction[16]. The vertical position of each rectangle is a function of the average number of children conditional upon the age at first birth.

To conclude another two remarks:
- In the cases where the group by "age at first birth" comprises only 15 to 25 observations, the rectangle is indicated by dotted lines (groups with fewer than 15 observations are not shown in the display);
- When calculating the global effect, allowance is only made for effects (adjusted deviations) based on 22 observations or more (see tables in Annex 1).

[15] See the preceding footnote

[16] Preparatory research showed that they are negligible. In Norway and Spain only, there are an appreciable number of significant effects of interaction (Schoenmaeckers and Lodewijckx, 2000: table of Annex 2).