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**Interrelations between partnership and fertility
behaviours**

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1-Introduction

Over the last 30 years there has been a tendency in developed countries towards a differentiation of family forms and their greater instability, a general delaying of the beginning of the reproductive life and a reduction of the quantum of fertility, already confirmed in the reduction of completed fertility of cohorts, despite the stability of fertility expectations, which remain around replacement level, even in countries with a lower current fertility.

Europe can be divided into four main groups which are fairly homogeneous internally, according to the levels and trends of fertility and the main characteristics of family behaviour: Northern European (Scandinavian) countries, Western European countries, Southern European countries (including Ireland), Eastern European countries (including ex-USSR countries). For a synthesis of the main characteristics of these groups, let us remember that the Northern European countries are those which have had the highest fertility in recent years, even though it has been delayed, and the highest level of transformation of types of union. The Southern European countries have had the lowest fertility, despite the fact that family models have remained stable. The Western European countries have experienced a situation midway between those of the North and those of the South. The Eastern European countries and those of the former USSR, with started off with high, early nuptiality and early fertility, higher than in the other countries, have, since the beginning of the nineties, been showing a large and rapid transformation both in family behaviour and in patterns of fertility: a sharp decline and postponing of nuptiality, very low and much later fertility and an increase in births outside marriage and divorces¹. Of the non-European countries, the English-speaking countries outside of Europe may be regarded as a fifth group: the transformation of family behaviour is very advanced and fertility is at medium-high levels (in the USA and New Zealand, the total fertility rate is around replacement level). Finally,

¹ Other researchers arrive at similar groups and give names to them: Mellens (1999) for instance call maternalistic the Scandinavian countries, pragmatic the western countries, paternalistic the southern countries and divide the former communist countries in intermediate and post-totalitarian according the degree of transition to capitalism.

the developed countries also include Japan and Israel, which because of their still very traditional patterns of family behaviour come closer to the countries of southern Europe (Japan has also a low rate of fertility).

While, at a macro level, a strong transformation of family behaviour is not associated with a pre-established level of fertility, the latter varying from 1.5 to two children per woman, we may however posit that the new models of partnership and the dissolution of unions have an influence on fertility at a micro level, and that - vice versa - the arrival of a child and the presence of children alters the probability of marrying or separating.

It is the aim of this study to ascertain the existence of these relations in developed countries.

We cannot be certain of the consequences of the new patterns of family behaviour on fertility. Indeed, it could be that the delaying of marriage which is being registered everywhere is only influencing the timing of births, but not their number. The fact that births outside marriage are on the increase in all places may suggest that cohabitation is substituting marriage without this having any influence on fertility: the additional unmarried women may all be cohabiting, and have the same fertility as their married counterparts, and cohabitation may therefore simply be another way of forming a union and not entail a different pattern of reproductive behaviour. The increase in divorces might also have no influence on fertility, if divorce were taking place once fertility was complete or it did not prevent the formation of a new union with the subsequent birth of children. On the other hand, each of these changes in patterns of family behaviour might indeed entail a reduction in fertility.

The analysis of the literature concerning the studies conducted at a micro level on the influence of the new patterns of family behaviour on fertility in developed countries has highlighted that the various types of family behaviour which have spread rapidly over the last thirty years tend to depress fertility. In the first place, the effect of the postponing of reproductive life has been shown to be negative: the effect of the postponement of births on final childlessness is demonstrated by Beets (1995) and Martinelle (1993). Later means fewer. This result has been confirmed by other studies, including that coordinated by Blossfeld (1995) on 9 developed countries.

The progressive substitution of marriage with living together has led some authors to think that these are two interchangeable forms of union. On the contrary, it would seem that cohabitation is not the same thing as marriage: for the United States, Clarkberg et al. (1995) have shown that

marriage and cohabitation are associated with important differences in work patterns, earnings, treatment of money, use of leisure time, social relations with the extended family, the division of household labor and fertility. De Rose et al. (1999) showed that expected fertility is lower for cohabitants in many European countries. The negative influence on fertility of cohabitation is demonstrated in many studies (Balakrishnam 1989; Bracher et al. 1990; Carlson 1990; Elzer 1987; Graaf 1990; Haskey et al. 1989). For example, Leridon (1990) has shown, for France, that cohabitation not followed by marriage reduces fertility a great deal. This study was on the 1941-55 cohorts, for which cohabitation was a rare form of behaviour and in some senses pioneering. When it becomes a more widespread form of behaviour we might expect a reduced difference in fertility, but in reality other, more recent studies have shown the persistence of this result. Lesthaeghe et al. (1994) have shown that cohabitants are much more likely to remain childless than married couples, for both women and men aged 30-50 in Germany, Belgium, France and the Netherlands. The fertility of female cohabitants (and of women not in a union, though this is a more obvious result which few studies go to the trouble of establishing) is lower than that of married women in the Netherlands (Manning et al. 1995). Entry into motherhood occurs more often and sooner in marriage than in cohabitation in the USA according to the results of 1987-88 NFSH (Manning 1995). In Finland the couples who have lived longer without marriage tend to have fewer children than the directly married (Lindgren et al. 1993). The negative effect of cohabitation would therefore appear to have been demonstrated, even though there may, however, be differences in the socio-cultural significance of cohabitation in different groups, and its consequences on fertility may therefore vary in their extent: for example, in the USA the fertility rate within cohabitation more closely approximates the fertility rate within legal marriage among black women than white women (Loomis et al. 1994). The influence of past cohabitation on entry into motherhood could be limited and the differences in fertility between direct marriage and indirect marriage modest, as found by Hoem et al. (1984), or more substantial, as found by Leridon (1990) for France: the fact of having lived together prior to marriage reduces fertility at the age of 35 compared to women who have not cohabited. Indeed, the lower fertility of cohabitants may depend on the fact that when they decide to have - or are expecting - a baby, they get married: Toulemon (1996) finds that, for France, news that a baby is on the way greatly increases the probability of marriage (by 11 times) for French women aged under 35 and born between 1944 and 1968, observed in 1994. Other studies confirm that the

decision to convert cohabitation into marriage is often linked to the decision to have children (Elzer 1987; Leridon et al. 1989, Manting 1991). Moreover childbearing preferences of young women affect their choice between cohabitation and marriage, so that wanting many children increases the likelihood of choosing marriage (Barber et al. 1998).

We may suppose that separation and divorce have negative effects on fertility and research confirm this. Di Giulio et al. (1999) have shown that the disruption of one's own union reduces overall fertility in Belgium, Germany, Italy and Hungary (FFS data). Lesthaeghe et al. (1994) have shown that separated or divorced persons have a much greater probability than married persons of ending up childless, for both women and men aged 30-50 in Germany, Belgium, France and the Netherlands.

The influence of separation and divorce depends very much on the frequency of remating: indeed, divorce reduces fertility by very little if a new union is formed, and by more if this does not happen (Leridon 1990). It would seem that the advantage of remating differs according to gender in Sweden: it increases the number of offspring for males, but not for females (Forsberg et al. 1995).

Having a child favours the stabilization of unions, whether they are cohabitations or marriages, especially in the case of the arrival of the first child, which determines a strong contraction of the risk of dissolution (Hoem 1990; Zheng 1995). The arrival of the second child usually also contributes to the stabilization of the union, while births of a subsequent order, on the other hand, have a diminished protective capacity (White 1990). Moreover, some studies have shown that it is the presence of children of school age, even more than their number, which has a slight influence in limiting the risk of separation (De Rose 1992; Fergusson et al 1990; Trussell et al. 1992).

2-Hypotheses and data

Given these results, we can assume that delay in starting union or birth of a first (second) child, cohabitation, and union instability, reduce individual fertility, while indirect marriage and remating might have a very limited influence, or even increase fertility. On the other hand, we may posit

that the arrival of a child favours the transformation of an informal union into marriage and the stabilization of the union, reducing the probability of dissolution.

To verify these hypotheses, we will use FFS data of Italy, France, Hungary, Sweden and the USA, representing the five groups in which developed countries can be divided, and different methods of event history analysis. The group analysed is that of women who have had at least one union (marriage or cohabitation) or at least one child or at least two children, belonging to the cohorts 1952-70. Their biographies have all been censored at October 1992 in order to render the samples of the five countries homogeneous.

Fertility increased in Sweden between 1970 and 1990, decreased and then increased in the USA in the same period, while it had a small- medium- large- decline, respectively, in Hungary, France and Italy. The transformation of family behaviour is at maximum levels in Sweden, levels which are just a little more moderate in France (a high frequency of cohabitation, a high divorce rate and a very high frequency of births outside marriage) and the timing of fertility is delayed. In the USA cohabitation is less frequent than in Sweden and France, but having children out of union and divorce are more frequent. In Italy and Hungary, there has been little change in family behaviour, marriage has only slightly been substituted by cohabitation, as witnessed by the low percentage of births outside marriage and the timing of fertility has been less delayed than in the other two countries. The divorce rate is very low in Italy, but higher - almost as high as in France - in Hungary. The five countries therefore represent a good sample of situations.

3 - Fertility in Italy, France, Hungary, Sweden and the Usa

In order to ensure the proper treatment of the retrospective data collected, which were right censored, given that the interviewees are all still of reproductive age, the technique of life tables was adopted: the transitions from zero to one child, one to two and two to three will therefore be observed (Maller et al. 1994) according to the duration of the period of exposure (the beginning of the union-birth of the first child, birth of the first-birth of the second child, birth of the second-birth of the third child).

Tab. 1 includes the number of women exposed in each interval according to type and number of unions. Tab. 2 contains some synthetic measure: the probability of not having had the first,

second or third child at 18, 36 and 60 months from the beginning of exposure (given that the women are still of reproductive age, there is no point in going beyond 60 months).

The differences between the five countries are already evident at the birth of the first child, the arrival of which is widespread and early for Italy and Hungary, where about half of women have already had their first child at 18 months from the beginning of the union, and only 17% in Italy and 13% in Hungary have not yet had one after five years. In France, Sweden and the USA the arrival of the first child is less widespread and delayed for longer, and five years on from the beginning of the first union 32% in France, 34% in the USA and 48% in Sweden still have not had one.

The majority of women who have had a first child pass on to the second: this transition is more frequent and more rapid for Sweden (only 26% has not yet had one after 5 years), and then the USA (31%), Hungary (34%), France (39%) and Italy (41%). Once the second child has been had, transition to the third regards almost half of the women in Sweden, the USA and France, and a much smaller percentage in Italy, where a good 78% still has not had one after 5 years and in Hungary, where the corresponding figure is 81%. The difference in the process of the family building in the five countries is evident. In Italy and Hungary, the birth of a first child a little after the beginning of the union is normal, but it is rare for the offspring to go beyond the second child. In France, Sweden and the USA, union and fertility are much less related, and not everyone begins procreation, but once they have begun they proceed more easily with the third child too.

4- The arrival of the first, second and third child according to the type and number of unions

In order to observe how the arrival of children of different orders varies in the five countries considered according to the various family forms, we constructed Kaplan-Meier survival curves that show the fraction of women remaining without the first, second and third child, stratified according to type of union and number of unions at the moment of the beginning of each interval (tab. 3). We employed log-rank tests to determine whether the observed differences are statistically significant at the .05 level or less. The modalities are direct marriage and cohabitation for the first interval, to which are added, in the subsequent intervals, indirect marriage, not being in a union at the moment of the birth of a child, experience of one union only and experience of

more than one union, never experience of a union. For the countries in which forms other than marriage are rare, these modalities are grouped into a single category: other. The life tables make it possible to observe the elimination of women, respectively, from the groups of women in union without children, women with one child and women with two children, due to the birth of the first, second and third child, according to the length of time, in months, from the moment of the beginning of exposure to hazard in each interval (tab. 3 and fig. 1).

The survival probabilities show that it is women who cohabit who end up most often and longest without children.

The arrival of the second child is also more frequent and more rapid for married women than for cohabiting women, both in the three countries in which this form of union is quite or very frequent (ie in France, Sweden and the USA) and in Hungary and Italy, where it is rarer, but the differences between cohabitation and marriage are much less for the arrival of the second child than for the arrival of the first, and in Italy, where forms of union other than marriage have been grouped into a single modality, are not statistically significant. As far as the type of marriage is concerned, women marrying "indirectly" in Sweden, where this situation is very common at the moment of the birth of the first child, have the second child more quickly and a bit more often than married women, because the new of the arrival of the second child probably slightly accelerates the transformation of other cohabitations into marriage; in the other three countries (France, Hungary and the USA), on the other hand, where indirect marriage is less common, indirect marriages have fewer second children and later, but the differences are not great.

The fact of having had more than one union at the moment of the birth of the first child does not make a significant difference in Italy, France and Hungary, where the phenomenon is rare, while in Sweden and in the USA, where it is more frequent, it renders the arrival of the second child a little less frequent and a little more delayed.

Having had the first child without being in a union decreases the probability of having a second child within 5 years of the birth of the first, but only in Sweden and the USA are the differences significant and only in the USA is the phenomenon frequent.

As far as the third child is concerned, in Italy, Hungary and the USA the differences among strata are statistically significant and living together without being married (the few cases of women not in union at the beginning of exposure are grouped with cohabitants) for the three

countries, and indirect marriage for Hungary, increases the probability of having another child and anticipate its arrival.

Having had more than one union (and here are grouped the extremely rare cases of women who never had a union when their second child was born) is not a condition which creates a statistically significant difference compared with having had only one union in France and the USA, but increases the probability of having another child and anticipate its arrival in Sweden and Hungary (we did not construct life tables for Italy for the third child due to the very limited number of cases different from 'only one union' at the birth of the second child in this country).

In conclusion, living together without being married is a condition which perceptibly lowers the probability of the birth of a first child and, at a lesser extent, of a second child and postpones their arrival. Women not in a union at the birth of the first child have a much lower likelihood of having other children, indirect marriage reduces the probability of having a second and third child and delays its arrival in all but a few exceptions, while having had more than one union reduces the frequency of the second child and delays its arrival and gives mixed results for the arrival of the third child, but the differences are often not significant. What is clear is that any form of union other than marriage tends to reduce fertility.

5 - The characteristics of the women

Having verified the existence of the relation between type and number of unions and fertility, we proceeded considering type and number of unions as possible determinants, controlling the characteristics of the women. Covariates include:

- type of union (direct marriage or cohabitation for the first birth, and also indirect marriage or out of union for the other births);
- number of unions (only for the intervals between children: never in union, only one or more than one, in order to take account of separation and remating);
- women's education;
- women's employment at the beginning of each interval (data available for comparative analyses did not allow to include other more refined indicators of women's work commitment) ;

- urbanization of place of residence at the moment of the survey (as contextual indicator of modernization) ;
- religiousness (not available for France);
- age at beginning of exposure;
- cohort, in order to monitor the temporal trend (in Sweden only some cohorts were included in the survey, at 5-year distances from each other);

The women in the five countries observed in the analysis have very different situations (tab. 4): 70-80% of women begin their first union before the age of 23, with the exception of Italian women, for whom it is less frequent (56%); for Italian women, and to a slightly lesser extent for Hungarian women, the first union is almost always a marriage (91.7% and 82.7% respectively). The situation of the other countries is very different: in the USA, France and Sweden many women beginning with cohabitation (57.4%, 33.9% and 7.5% respectively began with a marriage). At the moment of the start of the union (marriage or cohabitation), almost all women have already had an experience of employment (76-85%), though this is less common in Italy than in other countries (63.5%). The level of education varies greatly between the five countries: half the Italian and Hungarian women have a low level of education, nearly 40% of French women and only 16.4% of the USA women and 12.5% of Swedish women. Over a third of Swedish women have a high level of education, compared to only 9.5% of Italian women . The countries do not differ greatly as regards the distribution of women by level of urbanization and by cohort, while a very variable characteristic is religiousness: half of Italian and the USA women are very religious, compared to 13.6 and 8.5% for Hungarian and Swedish women (there is no information about French women).

The same characteristics were observed at the birth of the first and the second child. Women have allowed a few years to pass between the beginning of the union and the birth of the first child, and only in Hungary and the USA were around 60% aged under 23 at the moment of the birth of the first child. In the other countries, the percentage of women having their first child before the age of 23 is lower (ranging from 41.1% in Italy to 37.3% in Sweden). Various models of behaviour thus emerge: in Italy women have married late and waited before having their first child, in Hungary they have married early and had their first child early, in the USA about half have married and the others have either cohabited or had a child without being in a union and

they have had their first child early, and in France they have begun early with cohabitation, but have postponed the arrival of the first child, and this pattern of behaviour is even more accentuated in Sweden. The percentage of direct marriages is higher at the moment of the birth of the first child in all the countries (which means that those beginning the union with marriage more often have a child) except Italy and a proportion of cohabitations are converted into marriage (indirect marriage). The percentage of women who have been employed between the beginning of the union and the birth of the first child increases compared to the previous interval, apart from in Italy and in the USA where it actually decreases a little. The percentage of women with a low level of education increases in all countries, and of those living in smaller towns increases in France, Hungary and Sweden, and this informs us indirectly that women in these conditions are more likely to have a child.

The arrival of the second child takes place later in Italy, and especially in Sweden, and sooner in France, and especially in Hungary and the USA, where only one third of second children are born to women aged over 26. The percentage of direct marriages increases further and the percentage of women cohabiting is reduced: the maximum percentages of cohabitants are 36.4% in Sweden and 18.7% in France, while the minimum percentages (under 3%) are in Italy and Hungary, where the percentage of unions other than marriage is already negligible at the moment of the birth of the first child. The percentage of women who have had only one union decreases a little, except in Italy and the USA. The percentage of women who have not been employed between the birth of the first and the second child increases (except in France), as does that of women living in small towns and that of very religious women (except in Hungary, where it drops a little).

In general we have a classic differential fertility picture, in which the transition to the first and subsequent children is more frequent in more traditional contexts.

6- Determinants of quantum and timing of fertility

Through the application of mixture models (Farewell 1982), we can measure the effect of each co-variate measured at the beginning of the period of exposure, controlling the influence of all the others, on the quantum, that is on the final frequency of the events "birth of the first, second, third

child" (parameter a) and on the timing, that is on the time it takes for them to arrive (parameter b). A positive value for "a" represents an increase in the likelihood of having a child of a given order, while a positive value for "b" represents a decrease in the time it takes, while the opposite is true for negative values (see appendix for details on method). Results are presented in tables 5. We added to the explanatory variables religiousness and (for models concerning the arrival of the third child) the length of the interval between first and second child : results are presented in table 6.

Being in a *type of union* other than marriage usually has a negative effect on fertility, both on its quantum and, even more so, on its timing (tab. 5). But this depends both on the type of union and on the order of birth. If the first union has been a cohabitation rather than a marriage, the effects are always all negative and significant, both on the quantum and on the timing of the birth of the first child (only in France is its effect on quantum not significant), and beginning life as a couple with cohabitation rather than marriage is thus confirmed as a choice which encourages infertility and postpones the birth of the first child, even when the other variables which might possibly be of influence are controlled.

For women who have already had a first child, the type of union is more varied: at the moment of the birth of the first child the situation may have changed compared to the beginning of the first union, cohabitations may have been converted into marriages and this group may also include women who have had their first child without being in a union at that moment. Moreover, there may have been various unions (serial monogamy) and another variable is therefore provided in order to indicate whether there has been one union only or more than one. If the couple has had a first child during cohabitation without getting married, in most cases it is less likely than a married couple to have a second child, and in all cases (one significantly) it will have it later. If it has had two children without getting married, the probability of having a third is always actually higher than that of married couples (but only in two cases is the effect significant), even if its arrival is postponed. It is clear that this is a case of special, long-consolidated cohabitations, different from those without children.

If the woman has had a first or second child without being in a union, the probability of her having another one is always lower compared to married women and the timing of its arrival is later. In the case of women marrying "indirectly", on the other hand, the positive effects balance the negative ones and are significant in few cases. Having had more than one union has effects

which are both positive and negative on the quantum and/or timing of the arrival of the second child (4 out of 8 effects are positive), but two positive effects are significant (in particular on quantum in France and on timing in Sweden), while the effects on the arrival of the third child are positive on the quantum in half of the cases and on the timing in all cases, which is coherent with the hypothesis of a positive action of remating.

The effects of *age* are, in most cases, negative (43 out of 60 effects), but they differ according to the interval being considered (the number of negative effects grows with the increase of the order of birth), and according to the countries: in Italy the probability of deciding not to have a child or putting it off increases with age for all the orders of birth. The same thing happens in Hungary and the USA, always for quantum and almost always for timing. In France, on the other hand, the situation is completely different for the first child: the probability of having one is greater and the timing is shorter if the union begins after the age of 23. In Sweden, this positive effect is also extended to the second child, and the negative effect remains only for the third. We could explain this difference in results by thinking that in Italy, Hungary and partially in the USA it is more common to enter into a union to have children, and the postponement of a union or of the first birth are the result of an attitude which is different from the norm, less favourable to procreation. In France and Sweden, on the other hand, young people enter into a union without any immediate reproductive plan, so if the union is put off, this leads to an acceleration of the timing of the formation of a family with the first birth and also with the second for Sweden.

The effect of the *cohort* should indicate the presence of a temporal trend. This does not appear clearly from cohort born in 1952 to cohort born in 1970. We must remember that the analysis is based on reproductive histories, and therefore measures past fertility, the surveys were conducted at the beginning of the nineties, and therefore cannot mark recent trends such as the fall of fertility in Hungary and Sweden in the nineties. As far as quantum is concerned, 5/13 effects are negative for the first child, 1/13 only for the second, and 2/9 for the third; as far as timing is concerned, 9/13 for the first, 9/13 for the second, and all for the third are negative.

In conclusion, the trends of the most recent cohorts indicate that the passage from couple to couple with children is more often thought twice about or put off compared to in the past, while once a first child has been born, having another or even a third is more frequent than before, even if these births are postponed for longer in time. Postponement is certainly the most evident trait for all the orders of birth: a good nine out of ten significant effects go in this direction.

The possession of a medium or high *level of education* favours the decision not to have a child or to postpone it in most cases: 50 out of 66 effects are negative. Only in Sweden are there fewer negative effects than in other countries. The effects are almost all negative as regards the first child, a little less as regards the second and less still for the third. Finally, it is more a medium level of education which has negative effects than a high level, and it has negative effects above all on quantum, thus leading more often to the decision not to have children, while a high level of education has negative effects above all on timing, due to the longer duration of studies, but it is less often an impediment to maternity¹.

The fact that the woman was employed at the beginning of the interval generally has a negative effect on the quantum and timing of fertility (21 effects are negative out of a total of 30 effects, and 11 of them are significant, divided equally between quantum and timing). The situations are very different in Italy, France and the USA, where the significant effects are all negative, compared to the other two countries, where they are only negative (significant only on timing in Sweden) concerning the third child. This result is very interesting: in Hungary and Sweden women's employment is more frequent and has more support from the institutions in terms of services and working conditions or informal networks (Pinnelli 1999): this makes it possible for the woman to work without giving up maternity. On the contrary, it makes it possible for her to have a first child and in many cases also a second even more often than housewives. In Italy, France and USA, on the other hand, employment is less frequent because the greater rigidity of the labor market, and/or the scarcity of institutional and informal support, this means that the woman has to choose more often than in the other two countries between employment and maternity, so not only do fewer women work, but those who do work also have lower fertility.

The *level of urbanization* almost always has a negative effect on the quantum and timing of arrival of both the first child and on those of the next two orders, even if the significant effects are not very numerous.

Religiousness is available for all countries except France, and it has been inserted as an extra variable in the previous models (tab. 6). Not being very religious generally has a negative effect on quantum and timing, but the effects are only significant on quantum in Italy, Hungary and the

¹ Some of these differences could depend on the diversity of the education systems in the various countries, which the ISCED classification utilized was unable to render comparable.

USA and on timing in Italy. The significant negative effects are limited to the birth of the first child in Hungary.

For the models concerning the arrival of the third child the *length of the interval between the first and the second child* was added as a co-variate (tab. 6): a long interval has a negative effect both on quantum (always, and significantly), and on timing (6 out of 10 effects are negative, but significantly so only in the USA).

In the models which include these two last variables the effects of the other variables do not change substantially compared to the previous models, neither in the direction of the effect nor in its significance, but the value of the coefficients changes slightly.

7- Changes in the union as determinants of births timing

Finally, we applied hazard models (Cox et al. 1984) to the same dependent variables, in order to observe the influence of the change in family status (methodological details are supplied in the appendix).

The use of hazard models makes it possible to add to the co-variables some time-dependent variables concerning the history of unions, and thus to observe how the passage from cohabitation to marriage or the dissolving of a union or the formation of a new union during the period of exposure influences the construction of a family. Comparison of the results of mixture models and hazard models as far as the variables common to the two types of models are concerned does not substantially modify the picture which has already emerged, so we shall limit comment just to the results concerning the time-varying variables. For all three intervals, the time-varying variables clearly show that while the transformation of cohabitation to marriage has a positive effect, separation, on the other hand, always has a significant negative effect on the arrival of children of any order (tab. 7). A second change, which might be a new union or a separation, depending on the previous state, also has a negative effect in the case of separation and a positive one in the case of a new union. The only exception to this result is for the third interval in Hungary, where separation has a significant positive effect on the arrival of the third child.

8-Fertility as determinant of family behaviour

In order to analyse the influence of the birth of a child on the formation of unions, we have applied hazard models to the probability of transformation of cohabitation into marriage, taking the arrival of the first child as a time-dependent explanatory variable, starting from two months after conception, ie in practice from the moment at which pregnancy is noticed. The control variables used are the same ones included in the previous models. The results (tab. 8) clearly show that the arrival of a child is by far the factor most favouring the transformation of cohabitation into marriage. The effect is greatest in the USA and France and least in Sweden. The effects of the covariates show that having embarked upon cohabitation at a later age only increases the possibility that cohabitation will be transformed into marriage in Italy, from the age of thirty on, and also in Sweden from the age of twenty on, while in France and Hungary the effect is negative and increasing and in the USA it is negligible. The negative and increasing effects of the cohorts show that the more recent generations are less interested in transforming cohabitation into marriage, as are women with a higher level of formal education, except in Sweden and Hungary, where the effects are negligible. The fact that the woman has a job has a limited effect, which is negative in Italy, France and the USA, and positive in Hungary and Sweden. In countries where women's employment is more widespread and supported, this therefore becomes a stabilizing factor, while in the others it accentuates the woman's autonomy, also characterized by a greater resistance to marriage. Finally, the probability of transforming cohabitations into marriages falls with the level of urbanization and secularity, but only in Sweden and the USA are the effects significant, while in Hungary they are negligible.

The dissolution of unions, whether they are cohabitations or marriages, is strongly hindered by the presence of children, by far the most important factor, with significant negative effects of growing intensity as their number grows. Other factors stabilizing unions are: a higher age at the beginning of the union, a more recent cohort, a higher level of formal education (with the exception of Italy where education has the opposite effect) and the woman's employment (but with significant effects only in Italy and the USA), while the factors favouring separation are:

urban residence and no religious practice. The probability of dissolution is, moreover, always greater for cohabitations than for marriages.

9- Conclusions

The micro analyses which we have illustrated have used different models in order to correctly evaluate the influence of the new patterns of family behaviour on fertility.

Not being in a union at the moment of the birth of a child always has a negative effect on subsequent fertility.

Life tables have clearly shown that cohabitation favours infertility and postpones the arrival of the first child, and makes the arrival of subsequent children a little less probable and also a little later. Mixture models and hazard models have confirmed this result very clearly as regards the first and second child, while they have further attenuated the differences regarding the arrival of the third child: cohabitation which has already given life to two children, other circumstances being controlled, certainly has different characteristics from cohabitation without children.

Many cohabitations are transformed into marriage (indirect marriage) and this transformation favours fertility: this clearly appears from hazard models, which always show a positive effect for the transformation of cohabitation into marriage. This reinforces the view that in many cases cohabitation is a transitional condition, the transformation of which into marriage is provoked or accelerated by the plan to have a child, while cohabitations which remain so after the birth of children concern people with different attitudes, as Clarkberg et al. (1995) have demonstrated.

The instability of unions has a clear negative effect on the arrival of children of all three orders, while the formation of a new union favours fertility. This can be seen clearly from the effect of time-varying variables: the passage from living together to marriage or a new union favours fertility at all intervals, while separation discourages it. This does not mean that women with more than one union have more children than women who have only been in one (the results of the life tables and mixture models concerning the second interval indicate this), but that the fact of beginning a new union, other circumstances remaining equal, places her in more favourable conditions for resuming a reproductive plan.

The postponement of unions and of the birth of children, as we have seen, does not have the same consequences in all countries, but has a negative effect on the quantum and timing of the birth of the first child and of the next children in Italy, Hungary and the USA, while the negative effect is limited to the second and third child for France and only to the third child for Sweden. Beginning later means losing the opportunity or desire to reproduce in the first three countries, while it encourages the making up of lost time in the other two, but this recuperation is limited to the first, or at the very maximum to the second birth. We have already explained this result by linking it to the different meaning of union in the two countries with more traditional family models, Italy and Hungary, in which children are a natural consequence of union, and in the USA, where half the unions are still direct marriages, compared to the other two, in which the goal of the first union is certainly not that of having children straightaway. A long interval between the first and second child reduces the probability of going on to have a third, and delays its arrival, confirming the negative effect on fertility of any type of postponement.

The results concerning the co-variables inform us about the influence of the characteristics of women and their environment on fertility. The effects of the cohorts are not strong compared to those of the other co-variables, but they nevertheless demonstrate important trends: a tendency to postpone births, increasingly strong as the order of birth increases, and also, in some cases, a tendency not to have a first child. Once the first child has been had, the more recent cohorts go on to have a second child, and also a third, more frequently than the older cohorts. This confirms the trend towards the polarization of the population into two sectors: family and non-family, already highlighted by Hoffmann-Nowotny and Fux (1998).

The improvement of women's condition has negative effects on fertility: an average level of education discourages fertility and delays it, a high level mainly just delays it. Women's employment, as we have seen, has different influences according to the countries: negative in Italy, France and the USA (where employment does however have positive, albeit non-significant effects on the quantum and timing of the arrival of the third child), positive in Hungary and Sweden on the arrival of the first and second child. Employment also has a negative effect for Hungary and Sweden for the arrival of the third child. This shows the limits to the compatibility of employment and family, also in countries in which women's employment has been widespread for longer and is certainly better supported by the characteristics of the labour market and by the services or by informal networks.

Living in bigger towns and not being very religious, finally, has a negative influence on the probability of having children and on the timing of their arrival.

The five countries which we have taken as representative of the areas into which developed countries may be divided do not all behave in the same way when it comes to family and reproductive behaviour: we have seen the different influence of employment in Hungary and Sweden compared to Italy, France and the USA, the lesser influence of women's education on fertility in Sweden, and the negative influence of the postponement of union in Italy, Hungary and the USA, while this is positive, on the other hand, in France and Sweden. We have found reasonable explanations for each of these differences. In order to have an overall view of the different influence of the co-variates which we have taken into consideration on the frequency and timing of fertility, we may look at the total number of negative effects for each country in the mixture models: in this case we see that in Italy 81% of the effects were negative, in the USA 72%, in France 68%, in Hungary 62% and in Sweden 59%. This result confirms what we have seen in other studies, ie that the strength and sometimes the valence of the relations can change in different contexts. In our case, Hungary has fewer negative effects than Italy, the USA and France due to the positive influence of women's employment and of indirect marriage, while Sweden has fewer negative effects due to the positive influence of indirect marriage and to the different influence of women's condition, not only employment, but also education.

The hypothesis that changes in family behaviour only influence the timing and not also the intensity of fertility is decidedly undermined by our results. The weakening of the norms upholding marriage is not without its negative effects on fertility: the alternative forms of union are more fragile than marriages, and they often take the form of temporary living arrangements which are either dissolved or transformed into marriage, favouring the delaying of procreation. However, the preference for cohabitation or marriage does not seem so deep-rooted in couples' minds. Two examples have shown how easy it is for them to change their minds if this is desirable from an economic point of view: Sweden and Austria experienced an exceptional rise in nuptiality in correspondence with changes in the law favouring married persons over cohabitants. These two episodes, which were temporary, showed how cohabiting couples are not very aware that they are at an economic disadvantage, and they only become so as a result of some exceptional event. Nor do they have a very strong ideological attachment to their condition. This shows, on the one hand, the uselessness of extemporaneous political measures if

they do not form part of a general framework of family support and, on the other, that there is a margin for political manoeuvre to favour greater stability of unions. On the other hand, the arrival of a child favours the transformation of cohabitations into marriages, and the presence of children favours the stability of unions in all the countries we have examined.

The strength of the negative influences on individual behaviour is greater where social and cultural transformations are more recent, especially in Italy, where all the factors of possible reduction of fertility, from postponement of the start of a union to higher education and scarcity of religious sentiment, have a stronger negative influence. The countries of Southern Europe, represented in the analysis by Italy, have an overall situation of less development, a less advanced women's condition and less institutional support compared to other countries in western Europe and in northern Europe in particular. In these conditions, "modern" patterns of behaviour have higher individual costs. And modern patterns of behaviour may include not only patterns of family behaviour but also studying, working and not being religious. In the USA and France the same constraints are seen to have a negative influence, at a slightly lower rate. In countries of more advanced development and women's condition and greater institutional support, as in the countries of Scandinavia, represented in this analysis by Sweden, the "modern" patterns of behaviour are more compatible with fertility, but the third child and sometimes also the second represents a limit to this compatibility.

A particular situation is that of Hungary, representing in our analysis the countries of Eastern Europe and the former USSR: there has been a very strong demographic crisis in these countries from 1990 onwards, which obviously cannot be reflected in the micro analysis, which works on a retrospective survey undertaken in 1992-93, and there are, on the other hand, conditions of lesser development compared to the rest of Europe, together with a strong participation of women in the labour market. In order for this high rate of participation to be possible, there must necessarily be support from the institutions or from the informal network (otherwise fertility would be incompatible with work, while the mixture models show that it is not in this country). Moreover, the Communist regimes must have ensured greater social equality compared to the other countries of Europe. This explains why, at a micro level, the situation of Hungary is closer to that of Sweden, as the influence of individual characteristics is concerned, than to that of the other three countries, despite the greater difference in development, and therefore shows a smaller percentage of negative effects of the co-variables in the mixture models. A new survey will

be needed on fertility in the countries of Eastern Europe and the former USSR to observe precisely whether fertility differentials are broadening as a reflection of the diversification of social conditions.

The economic crisis and the crisis of the welfare state are two great threats for the future of fertility. Anything that may favour an earlier passage to adult life and the compatibility of employment and the family must be encouraged in order to support fertility and reduce the non-family sector and the effects of postponement. As affirmed by Hall (1993), future changes in Europe's population will arise from changes in the structure and organisation of the family and particularly how the tensions between women's various roles and the family can be resolved .

References

Barber J. and Axinn W.G.(1998), The impact of parental pressure for grand children on young people's entry into cohabitation and marriage, *Population Studies*, 52 (2)

Balakrishnan T. (1989), Changing nuptiality patterns and its fertility implications in Canada. In Legare J., Balakrishnan T. and Beaujot R. (eds), *The family in crisis: a population crisis?*, Royal Society of Canada, Ottawa

Beets G. (1995), Does the increasing age at first birth lead to increases in involuntary childlessness? *European Population Conference*, Milan

Blossfeld H.P.(ed)(1995), *The new role of women: family formation in modern societies*, Westview Press, Boulder

Blossfeld H.P., Hamerle A. and Mayer K.U. (1989), *Event History Analysis*, Erlbaum, Hillsdale (N.J.)

Blossfeld H.P., Klijzing E., Pohl K., Rohwer G. (1995), Modeling Parallel Processes in Demography. An Application Example of the Causal Approach to Interdependent Systems, paper presented at the *3rd European Population Conference*, Milan 4-8 September 1995

Bracher M. and Santow G. (1990), The family histories of Australian women, *European Journal of Population*, 6

Carlson E.(1986), Couples without children: premarital cohabitation in France. In Davis K.(ed), *Contemporary marriage: contemporary perspectives on a changing institution*. Sage Foundation, New York

Clarkberg M., Stolzenberg R.M. and Waite L.J. (1995), Attitudes, values, and entrance into cohabitational versus marital unions, *Social Forces*, 74 (2)

Cox D.R. and Oakes D., (1984), *Analysis of survival data*, Chapman and Hall, London

De Rose A. (1992), Socio economic factors and family size as determinants of marital dissolution in Italy, *European Sociological Review*, vol.8, n.1, p.71-91

De Rose A. and Racioppi F. (1999), Describing and explaining differences in fertility among the European countries: a multilevel approach. Paper presented at the *European Population Conference*, The Hague

Di Giulio P., Lesthaeghe R., Moors G. and Pinnelli A. (1999), Fertility tempo and quantum: an empirical test of major theories with data from four FFS countries, *Proceedings of the Seminar Démographie, analyse et synthèse*, Rome and Pozzuoli, 26-29 May

Etlzer C.(1987), Education, cohabitation and the first child: some empirical findings from Sweden, *Stockholm Research Report in Demography*, 34, University of Stockholm

Farewell V.T. (1982), The use of mixture models for the analysis of survival data with long-term survivors, *Biometrics*, 38

Fergusson D.M., Horwood L.J., Lloyd M. (1990), The effect of preschool children on family stability, *Journal of Marriage and the Family*, 52, pp. 531-538

Forsberg A.J.L. and Tullberg B.S. (1995) The relationship between cumulative number of cohabiting partners and number of children for men and women in modern Sweden, *Ethology and Sociobiology*, 16 (3)

Gnanadesikan R. (1977), *Methods for statistical data analysis of multivariate observations*. John Wiley & Sons, New York

Graaf A. (1990), Why most cohabiters marry?, Maandstatistiek van de Bevolking, *The Netherlands Central Bureau voor de Statistiek*

Hall D.R.(1993), Reproductive individualism: exploring the relationship between religion, cohabitation and divorce, *Population Studies Centre Discussion Paper*, 93-9

Hoem J. and Selmer R. (1984), The negligible influence of premarital cohabitation on marital fertility in current Danish cohorts, 1975, *Demography*, 21

Haskey J. and Kiernan K. (1989), Cohabitation in Great Britain, *Population trends*, 58

Hoffmann-Nowotny H. and Fux B. (1998), *Fertility, new types of household and family formation in Europe: a theoretical analysis*. Council of Europe, draft

Leridon H. (1990), Extra-marital cohabitation and fertility, *Population Studies*, 44 (3)

- Leridon H. and Villeneuve- Gokalp C. (1989), The new couples, *Population*, 44
- Lesthaeghe R. and Moors G. (1994), Expliquer la diversité des formes familiales et domestiques: théories économiques et dimensions culturelles, *Population*, 49 (6)
- Lindgren J., Ritamies M. and Miettinen A. (1993), Consensual unions and fertility, *Yearbook of population research in Finland*, 31
- Loomis L.S. and Landale N.S. (1994), Non marital cohabitation and childbearing among black and with American women, *Journal of Marriage and Family* , 56 (4)
- Maller R.A., Zhou S. (1994), *Survival analysis with long-term survivors*, John Wiley & Sons, New York.
- Manning W.D. (1995), Cohabitation, marriage, and entry into motherhood, *Journal of Marriage and Family*, 57 (1)
- Manting D. (1991), The timing of marriage of cohabitating women in the Netherlands. *PDOD Paper n. 7*, University of Amsterdam
- Manting D. and Post W.J. (1995), The increase in cohabitation: changes in related demographic behaviour, *Maandstatistiek van de Bevolking*, 43 (9)
- Martinelle S. (1993), The timing of first birth: analysis and prediction of Swedish birth rates, *European Journal of Population*, 9 (3)
- McDonald J., Rosina A. (1998), Mixture Modelling of Survival Data with Long-Term Survivors: Analysis of Hutterite Birth Intervals Using Gibbs Sampling, *Annual Meeting of the Population Association of America*, session 120 paper 20727, 2-4 April, Chicago.
- McDonald J. and Rosina A. (1998), Mixture modelling of survival data with long term survivors: analysis of Hutterite birth interval using Gibbs Sampling, *Annual Meeting of the Population Association of America*, April 2-4, Chicago
- Mellens M. (1999), Uniformity and diversity defined, in European populations: unity in diversity, *European Population Conference*, The Hague
- Pinnelli A. (1995), Women's condition, low fertility and emerging union patterns in Europe, in Mason et al. quoted
- Pinnelli A. (1999), Gender and the family in developed countries, *IUSSP series on Gender in Population Studies*, Liege
- Rohwer G. (1994), *TDA ver. 5.2 - User Manual*

Spiegelhalter D., Thomas A. Best N. and Gilks W. (1995), BUGS. Bayesian inference Using Gibbs Sampling. Version 0.50, *MRC Biostatistics Unit, Institute of Public Health, Cambridge*

Smith H.L. (1986), Integrating theory and research on the institutional determinants of fertility. *Demography*, 2

The World Bank (1985), *World development report 1985*, Oxford University Press, Oxford

Toulemon L. (1996), La cohabitation hors mariage s'installe dans la durée, *Population*, 51 (3)

Trussell J., Hankinson R., Tilton J. (eds) (1992), *Demographic Applications of Event History Analysis*, Oxford University Press

White L.K. (1990), Determinants of divorce: a review of research in the eighties, *Journal of Marriage and the Family*, 52, pp. 904-912

Yamaguchi K. (1992), Accelerated Failure-Time Regression Models with a Regression Model of Surviving Fraction: An Application to the Analysis of Permanent Employment in Japan, *Journal of the American Statistical Association*, 87, 284-92.

Yamaguchi K., Ferguson L. (1995), The Stopping and Spacing of Childbirths and Their Birth-History Predictors: Rational-Choice Theory and Event-History Analysis, *American Sociological Review*, 60, 272-298.

Zheng Wu (1995), The stability of cohabitation relationship: the role of children, *Journal of Marriage and the Family*, 57, pp. 231-236

Appendix

Mixture models for the analysis of birth histories

Most event history models (such as discrete-time logit and log-rate, continuous parametric hazard rate, accelerated failure, etc.) implicitly assume that the event of interest would eventually occur to everyone. This assumption is true for death, but it is unrealistic for many other events, such as the birth of a child. Some other traditional event history models (such as Cox's proportional hazards model) are compatible with the possibility that the event of interest would not occur, but they have some difficulty in interpreting the results, because they do not distinguish between the probability to experience the event and the waiting time to the event (Farewell 1982; Yamaguchi 1992). Mixture models permit this distinction, allowing the simultaneous estimation of the separate effects of covariates on the probability and the timing of the event. For the analysis of birth histories this means the possibility to distinguish the determinants of birth stopping from those of birth spacing (Yamaguchi et al. 1995). To do this mixture models combine a logistic regression of the probability of occurrence of the event with a survival model for duration (given that the event occurs).

Various survival models have been proposed to estimate the (separate) effects of the explanatory variables on the timing of the event. Following McDonald and Rosina (1998), for our analysis we have chosen a logistic-geometric piecewise discrete-time model. We have used a Bayesian approach based on Gibbs sampling (a Monte Carlo Markov Chain method) to estimate our model. The priors for the regression effect parameters were independent $N(0, 0.0001)$ distributions, where the second parameter of the normal distribution is the precision (i.e. the reciprocal of the variance). Estimation of the model was carried out using BUGS (Spiegelhalter et al. 1995). A burn-in of 1000 iteration was used and inference was based on a sample of 5,000 observation from the posterior distribution.

We consider "significant" (even though this term is not appropriate in the Bayesian approach) only the parameters with the posterior distribution not containing 0 between 2,5° and 97,5° percentage points. In the tables we present the mean of the posterior distribution of the parameters estimates.

Hazards model with time dependent covariates

To model the effect of the partnership history on the reproductive behavior in a very simplified manner, we applied, separately for each of the first three birth intervals, an extension of the widely used proportional hazards model, which takes into account changes in time of some explanatory variables (Cox et al. 1984)

$$h(t; z, z'(t)) = h_0(t) * w(z, z'(t); \beta, \beta')$$

where $h_0(t)$ is the baseline hazard function left completely unspecified, z is the vector of the explanatory variables that does not change over time for any individuals and $z'(t)$ is the vector of the time varying covariates. The parametrization chosen of $w(z, z'(t); \beta, \beta')$ is the log linear form

$$w(z, z'(t); \beta, \beta') = \exp(\beta z + \beta' z')$$

It is immediate to note that when $z=0$ and $z'(t)=0$ $h(t; z, z'(t))=h_0(t)$.

Following a causal approach (Blossfeld et al. 1995), time-dependent covariate have been chosen in order to represent any relevant change in time of the partnership status, that makes the unit under study to be exposed to another causal condition since the change occurred. These changes were included as a series of time dependent dummy variables. Number and definition of these covariates vary according to the country observed and birth order. In practice, only the first two changes in union condition proved to have some influence on the birth intervals length.

As our time dependent covariates change their values only at some discrete points of time, to include them into hazard rates we used a method called “episode splitting” (Blossfeld et al. 1989). At each time where the covariate changes its value, the original episode is split into two parts. The first split has the value of the covariate before the change, the second after. The last split has the same ending time and the same exit status as the original episode. All other splits are regarded as right censored.

Model estimation can then be done with these splitted episodes, if in the calculation of the partial likelihood the different starting and ending times of the splits are explicitly taken into account. This method proved to be much efficient and very little time consuming.

Calculation and estimates have been done with the computer program TDA ver.5.2 (Rohwer 1994).

Table 1 - Number of women according to type and number of unions at the beginning of each interval

	union's start					birth 1 st child					birth 2 nd child				
	Italy	France	Hungary	Sweden	USA	Italy	France	Hungary	Sweden	USA	Italy	France	Hungary	Sweden	USA
Direct marriage	1882	565	2206	171	3129	1209	442	1516	95	2348	666	296	985	80	1782
Cohabitation	170	1101	461	2114	2319	25	220	49	536	328	8	114	29	307	287
Indirect marriage						54	278	160	375	965	28	175	107	434	767
Out of union						42	92	90	77	1071	5	24	21	22	419
Never in union						39	61	65	41	790	1	1	2		142
One union						1279	913	1681	849	3454	697	529	1042	655	2592
More than one union						12	58	69	193	468	9	79	98	188	518
<i>total</i>	<i>2052</i>	<i>1666</i>	<i>2667</i>	<i>2285</i>	<i>5448</i>	<i>1330</i>	<i>1032</i>	<i>1815</i>	<i>1083</i>	<i>4712</i>	<i>707</i>	<i>609</i>	<i>1142</i>	<i>843</i>	<i>3252</i>

Source: our elaboration on FFS data

Table 2 - Survival probabilities at the event birth of a first, second, third child at the duration 18, 36, 60 months

	1 st child					2 nd child					3 rd child				
	Italy	France	Hungary	Sweden	USA	Italy	France	Hungary	Sweden	USA	Italy	France	Hungary	Sweden	USA
18 months	0.511	0.635	0.452	0.832	0.700	0.815	0.809	0.761	0.724	0.727	0.946	0.870	0.933	0.904	0.828
36 months	0.282	0.492	0.226	0.662	0.489	0.610	0.559	0.505	0.421	0.475	0.874	0.729	0.864	0.747	0.678
60 months	0.167	0.315	0.131	0.475	0.341	0.405	0.391	0.337	0.261	0.305	0.781	0.575	0.806	0.597	0.549

Source: our elaboration on FFS data

Table 3 - Survival probabilities at the event birth of a first, second, third child, according to type and number of unions at the duration 36 and 60 months

	1 st child					2 nd child					3 rd child				
	Italy	France	Hungary	Sweden	USA	Italy	France	Hungary	Sweden	USA	Italy	France	Hungary	Sweden	USA
<i>Type of union</i>	+	+	+	+	+	ns	+	+	+	+	+	ns	+	ns	+
Direct marriage															
36 months	0.258	0.280	0.184	0.333	0.412	0.605	0.507	0.497	0.346	0.419	0.877	0.719	0.891	0.706	0.686
60 months	0.146	0.154	0.100	0.202	0.257	0.400	0.318	0.322	0.237	0.254	0.787	0.556	0.836	0.534	0.551
Indirect marriage															
36 months							0.517	0.538	0.314	0.430		0.736	0.689	0.731	0.679
60 months							0.345	0.431	0.176	0.276		0.608	0.639	0.568	0.584
Cohabitation															
36 months	0.550	0.606	0.433	0.689	0.594		0.633	0.492	0.450	0.514					
60 months	0.401	0.403	0.287	0.497	0.456		0.467	0.371	0.270	0.385					
Out of union															
36 months							0.713	0.594	0.749	0.619					
60 months							0.647	0.414	0.561	0.414					
Other															
36 months						0.654					0.834	0.734	0.737	0.776	0.680
60 months						0.445					0.692	0.564	0.622	0.648	0.510
<i>Number of unions</i>						ns	ns	ns	+	+		ns	+	+	ns
Never in union															
36 months							0.650	0.526	0.673	0.577					
60 months							0.572	0.339	0.479	0.373					
One union															
36 months						0.610	0.546	0.503	0.408	0.451		0.729	0.870	0.766	0.675
60 months						0.402	0.375	0.333	0.250	0.284		0.568	0.813	0.613	0.540
More than one union															
36 months							0.683	0.539	0.430	0.469					
60 months							0.417	0.472	0.264	0.347					
Other															
36 months						0.612						0.734	0.787	0.670	0.634
60 months						0.473						0.639	0.722	0.530	0.586

Source: our elaboration on FFS data

+ statistically significant ($p < 0.05$)

ns not statistically significant

Table 4– Women’s characteristics at the beginning of each interval: 1st: union’ start; 2nd:birth 1st child; 3rd: birth 2nd child (percentages)

	union’s start					birth 1 st child					birth 2 nd child				
	Italy	France	Hungary	Sweden	USA	Italy	France	Hungary	Sweden	USA	Italy	France	Hungary	Sweden	USA
Age															
<23	56.0	79.6	83.2	81.5	73.5	41.1	48.1	63.2	37.3	58.2	16.7	19.2	29.9	10.0	33.4
23-26	35.5	17.6	14.1	14.8	19.1	32.9	31.5	26.0	27.8	23.9	32.8	34.8	37.5	31.2	35.1
>26	8.5	2.8	2.7	3.7	7.4	26.1	20.4	10.8	34.9	17.9	50.5	46.0	32.6	58.8	31.5
Number of unions															
Never in union						2.9	5.9	3.6	3.8	16.8	0.1	0.2	0.2		4.4
One union						96.2	88.5	92.6	78.4	73.3	98.6	86.9	91.2	77.7	79.7
More than one union						0.9	5.6	3.8	17.8	9.9	1.3	13.0	8.6	22.3	15.9
Type of union															
Direct marriage	91.7	33.9	82.7	7.5	57.4	90.9	42.8	83.5	8.8	49.8	94.2	48.6	86.3	9.5	54.8
Indirect marriage						4.1	26.9	8.8	34.6	20.5	4.0	28.7	9.4	51.5	23.6
Cohabitation	8.3	66.1	17.3	92.5	42.6	1.9	21.3	2.7	49.5	7.0	1.1	18.7	2.5	36.4	8.7
Out of union						3.2	8.9	5.0	7.1	22.7	0.7	3.9	1.8	2.6	12.9
Work															
No	36.5	19.4	14.7	23.6	24.0	48.3	16.6	8.8	12.7	27.3	56.9	12.3	10.8	20.3	33.0
Yes	63.5	80.6	85.3	76.4	76.0	51.7	83.4	91.2	87.3	72.7	43.1	87.7	89.2	79.7	67.0
Education															
Low	51.3	39.2	48.2	12.5	16.4	54.9	47.4	49.6	14.3	22.1	62.0	52.1	52.7	15.2	25.1
Medium	39.2	41.3	37.9	52.9	34.9	36.1	38.5	36.5	47.2	37.6	29.7	34.6	35.1	47.9	37.9
Medium -High					25.8					24.6					23.0
High	9.5	19.5	13.9	34.6	22.9	9.0	14.1	13.9	38.5	15.8	8.3	13.3	12.2	36.9	14.0
Urbanization															
Low	33.4	35.2	40.1	43.2	14.6	33.4	39.1	41.1	47.7	14.5	33.9	42.2	42.8	50.2	15.5
Medium	44.4	20.1	30.7	33.4		44.5	19.5	31.3	33.1		45.3	20.2	32.7	32.5	
High	22.1	44.7	29.2	23.5	85.4	22.1	41.4	27.5	19.1	85.5	20.8	37.6	24.5	17.3	84.5
Religiousness															
Very much	49.5		13.6	8.5	55.0	52.7		15.0	10.0	59.8	55.9		14.7	10.4	62.9
Not very much	34.3		34.6	25.6	23.0	32.3		35.0	29.4	21.3	32.0		35.4	30.2	19.7
Not at all	16.2		51.7	65.8	22.0	15.0		50.0	60.7	18.8	12.2		49.9	59.3	17.4
Cohort of birth¹															
1952-1954	19.1	15.2	21.0	25.8	17.3	22.4	19.4	22.6	35.3	19.7	29.0	23.6	26.2	42.1	22.9

¹ 1954,1959,1964,1969 for Sweden

1955-1957	18.8	18.2	19.3		18.8	21.7	22.6	20.9		20.7	24.3	27.8	24.3		23.0
1958-1960	18.4	18.4	15.9	27.2	18.4	20.0	21.7	16.9	33.9	19.5	19.6	24.2	19.0	36.6	20.1
1961-1963	17.8	15.5	14.0	25.2	18.0	17.3	15.7	14.8	22.9	17.9	16.5	12.9	15.3	18.6	16.8
1963-1970	26.0	32.7	29.8	21.8	27.5	18.6	20.7	24.7	7.9	22.2	10.6	11.4	15.2	2.7	17.2
<i>Total</i>	<i>100.0</i>														

Source: our elaboration on FFS data

Table 5 - Results of the mixture models: effects of the variables on quantum (a) and timing (b) of the first, second and third birth

Italy

1 st interval			2 nd interval			3 rd interval		
<i>Variables</i>	<i>a</i>	<i>b</i>	<i>Variables</i>	<i>a</i>	<i>b</i>	<i>Variables</i>	<i>a</i>	<i>b</i>
Age <22	0	0	Age <22	0	0	Age <22	0	0
Age 23-26	-0.479	-0.111	Age 23-26	-0.191	-0.172	Age 23-26	-0.504	-0.250
Age >26	-0.274	-0.110	Age >26	-0.002	-0.304	Age >26	-0.851	-0.070
Cohort 1952-1954	0	0	Cohort 1952-1954	0	0	Cohort 1952-1954		
Cohort 1955-1957	-0.242	-0.093	Cohort 1955-1957	-0.191	-0.033	Cohort 1955-1957	0.347	-0.352
Cohort 1958-1960	-0.049	-0.206	Cohort 1958-1960	0.304	-0.224	Cohort 1958-1960	0.335	-0.588
Cohort 1961-1963	0.722	-0.315	Cohort 1961-1963	0.507	-0.141			
Education Low	0	0	Education Low	0	0	Education Low	0	0
Education Medium	-0.412	-0.315	Education Medium	-0.283	-0.153	Education Medium	-0.241	0.097
Education High	-0.837	-0.534	Education High	0.199	-0.155	Education High	0.149	-0.102
Employed	-0.504	-0.292	Employed	-0.706	-0.329	Employed	-0.422	-0.157
Direct marriage	0	0	Direct marriage	0	0	Direct marriage	0	0
Other type of union	-1.183	-0.546	Other type of union	0.107	0.031	Other type of union	1.894	-0.451
			One union	0	0			
			Other	-0.605	0.062			
Urbanization high	0.221	-0.043	Urbanization high	0.076	-0.036	Urbanization high	-0.362	-0.042
Intercept	3.463	-2.77	Intercept	1.755	-4.038	Intercept	0.573	-4.524
b2		0.296	b2		0.782	b2		0.964
b3		-0.073	b3		1.008	b3		1.384
b4		0.484	b4		1.9	b4		1.702

Note: significant effects (with the posterior distribution not containing 0 between 2,5° and 97,5° percentage points) in bold

follows

France (follows Table 5)

1 st interval			2 nd interval			3 rd interval		
<i>Variables</i>	<i>a</i>	<i>b</i>	<i>Variables</i>	<i>a</i>	<i>b</i>	<i>Variables</i>	<i>a</i>	<i>b</i>
Age <22	0	0	Age <22	0	0	Age <22	0	0
Age 23-26	0.035	0.011	Age 23-26	-0.680	-0.001	Age 23-26	-0.930	-0.359
Age >26	0.260	0.055	Age >26	-0.746	-0.003	Age >26	-1.231	-0.717
Cohort 1952-1954	0	0	Cohort 1952-1954	0	0	Cohort 1952-1954	0	0
Cohort 1955-1957	0.220	0.119	Cohort 1955-1957	0.046	0.113	Cohort 1955-1957	-0.059	-0.405
Cohort 1958-1960	-0.581	0.049	Cohort 1958-1960	0.263	-0.050	Cohort 1958-1960	0.398	-0.187
Cohort 1961-1963	0.154	-0.078	Cohort 1961-1963	0.360	-0.386			
Education Low	0	0	Education Low	0	0	Education Low	0	0
Education Medium	-0.267	-0.288	Education Medium	-0.405	-0.208	Education Medium	-0.403	-0.255
Education High	-1.145	-0.665	Education High	0.230	-0.132	Education High	0.117	0.385
Employed	-1.479	-0.074	Employed	-0.987	-0.255	Employed	-1.305	-0.205
Direct marriage	0	0	Direct marriage	0	0	Direct marriage	0	0
			Indirect marriage	-0.210	0.034	Indirect marriage	-0.055	-0.116
Cohabitation	-0.547	-0.523	Cohabitation	-0.472	-0.247	Other type	0.648	-0.319
			Out of union	-0.700	-0.997			
			One union	0	0	One union	0	0
			Never in union	0.476	0.548			
			More than one union	1.783	-0.152	More than one union	-0.260	0.110
Urbanization high	-0.164	-0.064	Urbanization high	-0.407	-0.043	Urbanization high	0.242	-0.099
Intercept	5.458	-3.193	Intercept	3.690	-3.889	Intercept	1.827	-3.424
b2		0.246	b2		0.759	b2		0.658
b3		0.092	b3		0.881	b3		0.757
b4		0.540	b4		1.417	b4		1.218

Note: significant effects (with the posterior distribution not containing 0 between 2,5° and 97,5° percentage points) in bold

follows

Hungary (follows Table 5)

1 st interval			2 nd interval			3 rd interval		
<i>Variables</i>	<i>a</i>	<i>b</i>	<i>Variables</i>	<i>a</i>	<i>b</i>	<i>Variables</i>	<i>a</i>	<i>b</i>
Age <22	0	0	Age <22	0	0	Age <22	0	0
Age 23-26	-0.666	-0.088	Age 23-26	-0.588	-0.126	Age 23-26	-0.827	0.096
Age >26	-1.742	0.371	Age >26	-0.892	0.035	Age >26	-1.056	-0.277
Cohort 1952-1954	0	0	Cohort 1952-1954	0	0	Cohort 1952-1954	0	0
Cohort 1955-1957	0.391	-0.007	Cohort 1955-1957	0.107	-0.003	Cohort 1955-1957	-0.289	-0.029
Cohort 1958-1960	-0.164	0.042	Cohort 1958-1960	0.185	-0.048	Cohort 1958-1960	0.331	-0.029
Cohort 1961-1963	0.117	0.056	Cohort 1961-1963	0.290	-0.063			
Education Low	0	0	Education Low	0	0	Education Low	0	0
Education Medium	-0.123	-0.364	Education Medium	-0.341	-0.130	Education Medium	-0.452	-0.113
Education High	0.491	-0.589	Education High	0.184	-0.074	Education High	0.452	-0.491
Employed	0.318	0.063	Employed	0.074	0.014	Employed	-0.425	-0.360
Direct marriage	0	0	Direct marriage	0	0	Direct marriage	0	0
			Indirect marriage	-0.724	0.282	Indirect marriage	1.120	0.284
Cohabitation	-0.660	-0.579	Cohabitation	0.434	-0.210	Other type	2.158	-0.276
			Out of union	-0.526	-0.647			
			One union	0	0	One union	0	0
			Never in union	0.414	0.389			
			More than one union	-0.285	0.102	More than one union	0.062	0.176
Urbanization high	-0.101	-0.093	Urbanization high	-0.208	-0.048	Urbanization high	-0.059	0.059
Intercept	3.264	-2.848	Intercept	2.114	-3.947	Intercept	0.020	-4.194
b2		0.278	b2		0.701	b2		0.274
b3		0.084	b3		0.806	b3		0.694
b4		0.997	b4		1.341	b4		1.416

Note: significant effects (with the posterior distribution not containing 0 between 2,5° and 97,5° percentage points) in bold

follows

Sweden (follows Table 5)

1 st interval			2 nd interval			3 rd interval		
<i>Variables</i>	<i>a</i>	<i>b</i>	<i>Variables</i>	<i>a</i>	<i>b</i>	<i>Variables</i>	<i>a</i>	<i>b</i>
Age <22	0	0	Age <22	0	0	Age <22	0	0
Age 23-26	0.281	0.155	Age 23-26	0.191	0.221	Age 23-26	-0.002	-0.396
Age >26	0.740	0.734	Age >26	2.283	0.250	Age >26	-0.054	-0.370
Cohort 1954	0	0	Cohort 1954	0	0	Cohort 1954	0	0
Cohort 1959	-0.256	-0.200	Cohort 1959	0.301	0.221	Cohort 1959	1.542	-0.372
Education Low	0	0	Education Low	0	0	Education Low	0	0
Education Medium	0.079	-0.149	Education Medium	-0.416	0.116	Education Medium	-0.678	0.127
Education High	-0.094	-0.472	Education High	-0.522	0.180	Education High	0.111	-0.016
Employed	0.212	0.091	Employed	-0.017	0.301	Employed	-0.180	-0.297
Direct marriage	0	0	Direct marriage	0	0	Direct marriage	0	0
			Indirect marriage	0.286	-0.191	Indirect marriage	0.059	0.036
Cohabitation	-1.173	-0.864	Cohabitation	-0.124	-0.495	Other type	0.280	-0.287
			Out of union	-1.033	-1.402			
			One union	0	0	One union	0	0
			Never in union	0.339	0.522			
			More than one union	-0.609	0.242	More than one union	0.279	0.273
Urbanization high	-0.506	-0.054	Urbanization high	-0.178	-0.077	Urbanization high	-0.263	-0.156
Intercept	3.900	-3.407	Intercept	2.623	-4.755	Intercept	0.990	-4.115
b2		0.535	b2		1.280	b2		0.948
b3		0.958	b3		1.142	b3		1.115
b4		1.854	b4		1.439	b4		2.061

Note: significant effects (with the posterior distribution not containing 0 between 2,5° and 97,5° percentage points) in bold

USA (follows Table 5)

1 st interval			2 nd interval			3 rd interval		
Variables	a	b	Variables	a	b	Variables	a	b
Age <22	0	0	Age <22	0	0	Age <22	0	0
Age 23-26	-0.276	-0.023	Age 23-26	-0.212	0.026	Age 23-26	-0.353	-0.142
Age >26	-0.486	0.071	Age >26	-0.602	-0.023	Age >26	-0.837	-0.303
Cohort 1952-1954	0	0	Cohort 1952-1954	0	0	Cohort 1952-1954	0	0
Cohort 1955-1957	0.141	-0.050	Cohort 1955-1957	0.052	0.024	Cohort 1955-1957	0.261	-0.151
Cohort 1958-1960	0.205	-0.002	Cohort 1958-1960	0.027	0.002	Cohort 1958-1960	0.479	-0.153
Cohort 1961-1963	0.416	-0.091	Cohort 1961-1963	0.331	-0.040			
Education Low	0	0	Education Low	0	0	Education Low	0	0
Education Medium	-0.529	-0.267	Education Medium	-0.324	-0.058	Education Medium	-0.546	0.086
Educ. Medium-High	-0.632	-0.326	Educ. Medium-High	-0.176	-0.142	Educ. Medium-High	-0.452	-0.156
Education High	-0.785	-0.662	Education High	-0.019	-0.090	Education High	-0.574	0.230
Employed	-0.043	-0.392	Employed	-0.131	-0.101	Employed	0.006	0.004
Direct marriage	0	0	Direct marriage	0	0	Direct marriage	0	0
			Indirect marriage	-0.173	0.061	Indirect marriage	-0.074	-0.010
Cohabitation	-1.037	-0.399	Cohabitation	-1.046	-0.102	Cohabitation	0.370	0.160
			Out of union	-1.053	-0.786	Out of union	-0.064	-0.244
			One union	0	0	One union	0	0
			Never in union	0.383	0.328	Never in union	-0.096	-0.004
			More than one union	-0.105	0.039	More than one union	-0.480	0.265
Urbanization high	0.033	-0.148	Urbanization high	-0.073	-0.032	Urbanization high	0.208	-0.132
Intercept	2.637	-2.779	Intercept	2.390	-3.855	Intercept	0.514	-3.901
b2		0.250	b2		0.767	b2		0.696
b3		0.349	b3		0.773	b3		0.716
b4		1.073	b4		1.525	b4		1.385

Source: our elaboration on FFS data

Note: significant effects (with the posterior distribution not containing 0 between 2,5° and 97,5° percentage points) in bold

Table 6 - Results of the mixture models: effects of the variables on quantum (a) and tempo (b) of the first, second and third birth. Models with additional variables

Italy

1 st interval			2 nd interval			3 rd interval		
<i>Variables</i>	<i>a</i>	<i>b</i>	<i>Variables</i>	<i>a</i>	<i>b</i>	<i>Variables</i>	<i>a</i>	<i>b</i>
Age <22	0	0	Age <22	0	0	Age <22	0	0
Age 23-26	-0.488	-0.119	Age 23-26	-0.241	-0.184	Age 23-26	-0.242	-0.076
Age >26	0.119	-0.117	Age >26	-0.066	-0.308	Age >26	-0.286	0.364
Cohort 1952-1954	0	0	Cohort 1952-1954	0	0	Cohort 1952-1954	0	0
Cohort 1955-1957	-0.228	-0.103	Cohort 1955-1957	-0.207	-0.041	Cohort 1955-1957	0.378	-0.402
Cohort 1958-1960	-0.037	-0.219	Cohort 1958-1960	0.261	-0.230	Cohort 1958-1960	0.307	-0.650
Cohort 1961-1963	0.631	-0.322	Cohort 1961-1963	0.488	-0.161			
Education Low	0	0	Education Low	0	0	Education Low	0	0
Education Medium	-0.414	-0.294	Education Medium	-0.260	-0.152	Education Medium	-0.150	-0.048
Education High	-0.838	-0.476	Education High	0.192	-0.156	Education High	-0.093	-0.052
Employed	-0.527	-0.278	Employed	-0.698	-0.310	Employed	-0.507	0.066
Direct marriage	0	0	Direct marriage	0	0	Direct marriage	0	0
Other type of union	-1.079	-0.453	Other type of union	0.243	0.085	Other type of union	2.228	-0.509
			One union	0	0			
			Other	-0.621	0.017			
Urbanization high	0.244	-0.043	Urbanization high	0.103	-0.028	Urbanization high	-0.314	-0.033
Very religious	0	0	Very religious	0	0	Very religious	0	0
Not very religious	-0.299	-0.026	Not very religious	-0.394	-0.145	Not very religious	-0.866	-0.058
Not religious at all	-0.593	-0.283	Not religious at all	-0.882	-0.215	Not religious at all	-1.050	-0.892
						Interval 1 st -2 nd child (months)		
						<25	0	0
						25-40	-0.119	0.120
						>40	-0.933	0.285
Intercept	3.659	-2.736	Intercept	2.012	-3.978	Intercept	0.856	-4.643
b2		0.306	b2		0.781	b2		1.024
b3		-0.052	b3		1.005	b3		1.513
b4		0.512	b4		1.907	b4		1.868

Note: significant effects (with the posterior distribution not containing 0 between 2,5° and 97,5° percentage points) in bold

follows

France (follows Table 6)

	3 rd interval	
<i>Variables</i>	<i>a</i>	<i>b</i>
Age <22	0	0
Age 23-26	-0.613	-0.299
Age >26	-0.773	-0.682
Cohort 1952-1954	0	0
Cohort 1955-1957	-0.117	-0.369
Cohort 1958-1960	0.450	-0.184
Education Low	0	0
Education Medium	-0.472	-0.190
Education High	-0.203	0.520
Employed	-1.224	-0.202
Direct marriage	0	0
Indirect marriage	-0.175	-0.120
Other type	0.785	-0.364
One union	0	0
More than one union	-0.113	0.162
Urbanization high	0.237	-0.077
Interval 1 st -2 nd child (months)		
<25	0	0
25-40	-1.078	0.196
>40	-0.735	-0.314
Intercept	2.066	-3.503
b2		0.683
b3		0.812
b4		1.384

Note: significant effects (with the posterior distribution not containing 0 between 2,5° and 97,5° percentage points)
in bold

follows

Hungary (follows Table 6)

1 st interval			2 nd interval			3 rd interval		
<i>Variables</i>	<i>a</i>	<i>b</i>	<i>Variables</i>	<i>a</i>	<i>b</i>	<i>Variables</i>	<i>a</i>	<i>b</i>
Age <22	0	0	Age <22	0	0	Age <22	0	0
Age 23-26	-0.666	-0.087	Age 23-26	-0.590	-0.132	Age 23-26	-0.472	0.139
Age >26	-1.840	0.400	Age >26	-0.888	0.034	Age >26	-0.503	-0.262
Cohort 1952-1954	0	0	Cohort 1952-1954	0	0	Cohort 1952-1954	0	0
Cohort 1955-1957	0.397	-0.003	Cohort 1955-1957	0.113	0.003	Cohort 1955-1957	-0.246	-0.013
Cohort 1958-1960	-0.155	0.045	Cohort 1958-1960	0.196	-0.050	Cohort 1958-1960	0.419	0.019
Cohort 1961-1963	0.093	0.062	Cohort 1961-1963	0.297	-0.060			
Education Low	0	0	Education Low	0	0	Education Low	0	0
Education Medium	-0.138	-0.359	Education Medium	-0.336	-0.135	Education Medium	-0.531	-0.096
Education High	0.433	-0.581	Education High	0.186	-0.081	Education High	0.245	-0.460
Employed	0.293	0.069	Employed	0.117	-0.003	Employed	-0.403	-0.389
Direct marriage	0	0	Direct marriage	0	0	Direct marriage	0	0
			Indirect marriage	-0.7278	0.2841	Indirect marriage	1.063	0.3259
Cohabitation	-0.654	-0.575	Cohabitation	0.473	-0.212	Other type	2.416	-0.283
			Out of union	-0.629	-0.629			
			One union	0	0	One union	0	0
			Never in union	0.540	0.369			
			More than one union	-0.293	0.094	More than one union	0.219	0.138
Urbanization high	-0.064	-0.098	Urbanization high	-0.201	-0.041	Urbanization high	-0.098	0.066
Very religious	0	0	Very religious	0	0	Very religious	0	0
Not very religious	-1.023	0.016	Not very religious	-0.060	-0.102	Not very religious	0.205	-0.204
Not religious at all	-1.129	0.037	Not religious at all	-0.077	-0.114	Not religious at all	0.498	-0.263
						Interval 1 st -2 nd child (months)		
						<25	0	0
						25-40	-0.760	-0.311
						>40	-0.874	-0.193
Intercept	4.219	-2.876	Intercept	2.118	-3.855	Intercept	-0.152	-3.953
b2		0.279	b2		0.704	b2		0.293
b3		0.090	b3		0.808	b3		0.708
b4		0.999	b4		1.346	b4		1.421

Note: significant effects (with the posterior distribution not containing 0 between 2,5° and 97,5° percentage points) in bold

follows

Sweden (follows Table 6)

1 st interval			2 nd interval			3 rd interval		
<i>Variables</i>	<i>a</i>	<i>b</i>	<i>Variables</i>	<i>a</i>	<i>b</i>	<i>Variables</i>	<i>a</i>	<i>b</i>
Age <22	0	0	Age <22	0	0	Age <22	0	0
Age 23-26	0.263	0.154	Age 23-26	0.188	0.220	Age 23-26	0.026	-0.372
Age >26	-0.365	0.752	Age >26	0.790	0.250	Age >26	0.012	-0.387
Cohort 1954	0	0	Cohort 1954	0	0	Cohort 1954	0	0
Cohort 1959	-0.231	-0.213	Cohort 1959	0.322	0.214	Cohort 1959	1.231	-0.295
Education Low	0	0	Education Low	0	0	Education Low	0	0
Education Medium	0.075	-0.165	Education Medium	-0.397	0.117	Education Medium	-0.730	0.230
Education High	-0.094	-0.496	Education High	-0.499	0.185	Education High	0.122	-0.014
Employed	0.214	0.098	Employed	0.008	0.297	Employed	0.026	-0.308
Direct marriage	0	0	Direct marriage	0	0	Direct marriage	0	0
			Indirect marriage	0.585	-0.178	Indirect marriage	0.446	0.018
Cohabitation	-1.066	-0.822	Cohabitation	0.203	-0.480	Other type	0.797	-0.321
			Out of union	-0.689	-1.403			
			One union	0	0	One union	0	0
			Never in union	0.316	0.535	More than one union	0.411	0.233
			More than one union	-0.649	0.259			
Urbanization high	-0.486	-0.054	Urbanization high	-0.153	-0.079	Urbanization high	-0.273	-0.104
Very religious	0	0	Very religious	0	0	Very religious	0	0
Not very religious	0.241	-0.175	Not very religious	-0.571	-0.116	Not very religious	-0.723	-0.063
Not religious at all	-0.005	-0.165	Not religious at all	-0.857	-0.081	Not religious at all	-0.846	-0.089
						Interval 1 st -2 nd child (months)		
						<25	0	0
						25-40	-0.463	-0.285
						>40	-0.892	0.260
Intercept	3.699	-3.278	Intercept	2.977	-4.680	Intercept	1.554	-4.179
b2		0.537	b2		1.278	b2		0.982
b3		0.959	b3		1.145	b3		1.180
b4		1.856	b4		1.449	b4		2.121

Note: significant effects (with the posterior distribution not containing 0 between 2,5° and 97,5° percentage points) in bold

USA (follows Table 6)

1 st interval			2 nd interval			3 rd interval		
<i>Variables</i>	<i>a</i>	<i>b</i>	<i>Variables</i>	<i>a</i>	<i>b</i>	<i>Variables</i>	<i>a</i>	<i>b</i>
Age <22	0	0	Age <22	0	0	Age <22	0	0
Age 23-26	-0.329	-0.023	Age 23-26	-0.242	0.024	Age 23-26	-0.264	-0.067
Age >26	-0.610	0.079	Age >26	-0.652	-0.026	Age >26	-0.741	-0.209
Cohort 1952-1954	0	0	Cohort 1952-1954	0	0	Cohort 1952-1954	0	0
Cohort 1955-1957	0.095	-0.052	Cohort 1955-1957	0.028	0.028	Cohort 1955-1957	0.225	-0.143
Cohort 1958-1960	0.186	-0.004	Cohort 1958-1960	0.014	0.007	Cohort 1958-1960	0.463	-0.163
Cohort 1961-1963	0.364	-0.072	Cohort 1961-1963	0.294	-0.029	Cohort 1961-1963		
Education Low	0	0	Education Low	0	0	Education Low	0	0
Education Medium	-0.575	-0.263	Education Medium	-0.362	-0.057	Education Medium	-0.591	0.080
Educ. Medium -High	-0.741	-0.318	Educ. Medium -High	-0.245	-0.150	Educ. Medium -High	-0.532	-0.179
Education High	-0.915	-0.650	Education High	-0.114	-0.088	Education High	-0.708	0.190
Employed	-0.082	-0.397	Employed	-0.155	-0.107	Employed	0.095	0.074
Direct marriage	0	0	Direct marriage	0	0	Direct marriage	0	0
			Indirect marriage	-0.065	0.071	Indirect marriage	0.036	-0.036
Cohabitation	-0.861	-0.386	Cohabitation	-0.981	-0.103	Cohabitation	0.441	0.206
			Out of union	-0.997	-0.779	Out of union	0.058	-0.188
			One union	0	0	One union	0	0
			Never in union	0.316	0.313	Never in union	-0.204	-0.025
			More than one union	-0.059	0.046	More than one union	-0.439	0.310
Urbanization high	0.011	-0.139	Urbanization high	-0.101	-0.025	Urbanization high	0.254	-0.150
Very religious	0	0	Very religious	0	0	Very religious	0	0
Not very religious	-0.797	0.015	Not very religious	-0.582	0.014	Not very religious	-0.353	0.004
Not religious at all	-1.127	-0.077	Not religious at all	-0.586	-0.094	Not religious at all	-0.470	0.057
						Interval 1 st -2 nd child (months)		
						<25	0	0
						25-40	-0.392	-0.247
						>40	-0.350	-0.310
Intercept	3.251	-2.794	Intercept	2.758	-3.861	Intercept	0.743	-3.850
b2		0.255	b2		0.774	b2		0.701
b3		0.358	b3		0.776	b3		0.735
b4		1.077	b4		1.535	b4		1.374

Source: our elaboration on FFS data

Note: significant effects (with the posterior distribution not containing 0 between 2,5° and 97,5° percentage points)
in bold

Table 7 - Results of the hazard models: effects of the variables on timing of the first, second and third birth. Models including time dependent variables

First interval: union-birth first child

	Italy	France	Hungary	Sweden	USA
<i>Variables</i>					
Age <19					0
Age <22 ¹	0	0	0	0	-0.17
Age 23-26	-0.19	0.07	-0.15	0.06	-0.36
Age >26	-0.18	0.28	-0.12	0.38	-0.34
Cohort 1952-1954	0	0	0	(1954) 0	0
Cohort 1955-1957	0.02	0.14	0.10	(1959) -0.04	-0.01
Cohort 1958-1960	-0.03	-0.08	0.01	(1964) -0.07	0.05
Cohort 1961-1963	-0.09	0.02	0.11	(1969) -0.13	0.08
Cohort 1964-1970					0.08
Education Low	0	0	0	0	0
Education Medium	-0.35	-0.27	-0.32	-0.12	-0.31
Education Medium - High					-0.37
Education High	-0.43	-0.76	-0.39	-0.42	-0.67
Employed	-0.35	-0.21	0.13	0.16	-0.20
Marriage	0	0	0	0	0
Cohabitation	-1.25	-0.95	-0.88	-1.07	-0.86
<i>Change in the union:</i>					
No change	0	0	0	0	0
Marriage	1.57	1.09	0.81	1.06	0.87
Separation / divorce	-0.49	-0.66	-1.43	-1.47	-1.10
<i>Second change in the union:</i>					
No change		0	0	0	0
New union			1.66	1.87	1.14
Separation / divorce			-0.53	-0.97	-0.76
Any change (France)		0.06			
Urbanization Low	0	0	0	0	0
Urbanization Medium	0.08	0.06	0.03	-0.03	
Urbanization High	0.04	-0.06	-0.19	-0.36	0.02

Note: significant estimates at the p-value ≥ 90% in bold

follows

¹ 19-22 for the USA.

Second interval : birth first child-birth second child (*follows Table 7*)

	Italy	France	Hungary	Sweden	USA
<i>Variables</i>					
Age <19					0
Age <21	0	0	0	0	0.07
Age 22-24	-0.16	-0.17	-0.18	0.07	0.03
Age 25-27	-0.24	-0.21	-0.34	0.06	-0.10
Age >27	-0.43	-0.41	-0.34	0.22	-0.33
Cohort 1952-1954	0	0	0	(1954) 0	0
Cohort 1955-1957	-0.09	0.08	0.03	(1959) 0.26	0.04
Cohort 1958-1960	-0.04	0.07	0.06	(1964) 0.51	0.00
Cohort 1961-1963	0.03	0.06	0.07	(1969) 0.34	0.03
Cohort 1964-1970					0.09
Education Low	0	0	0	0	0
Education Medium	-0.18	-0.29	-0.17	-0.07	-0.18
Education Medium-High					-0.22
Education High	0.02	-0.09	0.00	0.06	-0.09
Employed	-0.44	-0.40	0.05	0.11	-0.09
One union	0	0	0	0	0
Never in union		0.46	0.06	-0.03	0.02
More than one union		0.46	0.33	0.23	0.00
Other (Italy)	0.73				
Direct marriage	0	0	0	0	0
Indirect marriage		-0.03	-0.16	-0.00	-0.08
Cohabitation		-0.40	0.09	-0.25	-0.39
Out of union	-0.77	-1.19	-0.99	-1.12	-0.72
<i>Change in the union:</i>					
No change	0	0	0	0	0
Marriage		-0.09	0.30	0.29	0.29
Separation / divorce	-0.37	-1.36	-1.09	-1.10	-0.94
Second change in the union		1.01	1.03	0.50	0.26
Urbanization Low	0	0	0	0	0
Urbanization Medium	-0.00	-0.18	-0.06	-0.19	
Urbanization High	-0.01	-0.21	-0.19	-0.26	0.02

Note: significant estimates at the p-value $\geq 90\%$ in bold

follows

Third interval: birth second child-birth third child (*follows Table 7*)

	Italy	France	Hungary	Sweden	USA
<i>Variables</i>					
Age <23	0	0	0	0	0
Age 24-25	-0.39	-0.63	-0.74	-0.26	-0.20
Age 26-28	-0.71	-0.91	-0.73	-0.44	-0.44
Age >28	-0.72	-0.95	-1.15	-0.36	-0.68
Cohort 1952-1954	0	0	0	(1954) 0	0
Cohort 1955-1957	0.13	-0.08	-0.32	(1959) 0.25	0.11
Cohort 1958-1960	-0.00	0.19	0.04	(1964) 0.33	0.17
Cohort 1961-1963	0.13	0.22	0.20	(1969) -0.06	0.28
Cohort 1964-1970					0.37
Education Low	0	0	0	0	0
Education Medium	-0.03	-0.32	-0.39	-0.16	-0.28
Education Medium-High					-0.34
Education High	0.03	0.25	0.29	0.02	-0.21
Employed	-0.36	-0.65	-0.55	-0.16	-0.10
One union		0	0	0	0
More than one union		-0.16	0.59	0.50	-0.17
Direct marriage		0	0	0	0
Indirect marriage		-0.03		0.08	-0.03
Cohabitation		0.19		-0.19	0.06
Other (Italy, U.S.A.)	0.51		0.80		-0.27
Change in the union:					
No change		0	0	0	0
New union				0.35	0.37
Separation / divorce		-0.19	0.42	-0.01	-0.06
Urbanization Low	0	0	0	0	0
Urbanization Medium	-0.20	0.09	-0.15	-0.14	
Urbanization High	-0.50	0.21	0.01	-0.35	0.09

Note: significant estimates at the p-value $\geq 90\%$ in bold

Table 8 - Results of the hazard models: transformation of cohabitation into marriage

	Italy	France	Hungary	Sweden	USA
<i>Variables</i>					
Arrival 1 st child	1.37	2.05	1.73	1.13	1.98
Age <20	0	0	0	0	0
Age 20-25	-0.08	-0.27	-0.30	0.19	-0.07
Age 25-29	-0.31	-0.61	-0.52	0.55	0.16
Age 30+	0.63	-1.68	-0.87	0.52	-0.11
Cohort 1951-1955	0	0	0	(1954) 0	0
Cohort 1956-1960	-0.69	-0.24	-0.06	(1959) -0.38	-0.06
Cohort 1961-1965	-0.45	-0.81	-0.32	(1964) -0.43	-0.23
Cohort 1966-1970	-0.84	-1.41	-0.53	(1969) -1.10	-0.34
Education Low	0	0	0	0	0
Education Medium	-0.66	-0.14	-0.10	0.06	-0.12
Education Medium - High					-0.38
Education High	-1.79	-0.76	-0.12	-0.09	-0.49
Employed	-0.12	-0.23	0.29	0.08	-0.26
Urbanization Low	0	0	0	0	0
Urbanization Medium	0.61	-0.18	-0.11	-0.25	
Urbanization High	-0.10	-0.30	-0.27	-0.66	-0.06
Very religious	0	0	0	0	0
Not very religious	0.29		0.08	-0.35	-0.32
Not religious at all	-0.18		0.03	-0.60	-0.47

Note: significant estimates at the p-value $\geq 90\%$ in bold

follows

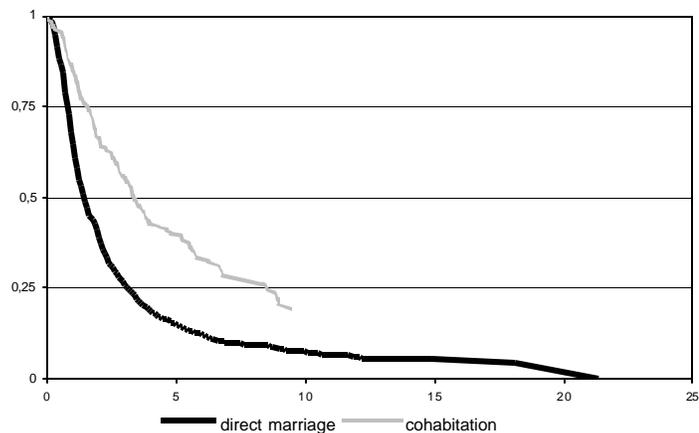
Table 9 - Results of the hazard models: union's dissolution

	Italy	France	Hungary	Sweden	USA
<i>Variables</i>					
marriage	0	0	0	0	0
cohabitation	0.77	0.06	0.43	0.67	0.56
0 children	0	0	0	0	0
1 child	-1.68	-1.08	-1.46	-1.27	-0.92
2 children	-3.24	-1.89	-2.76	-2.87	-1.98
3 children	-4.47	-2.59	-3.33	-3.34	-2.54
Age <20	0	0	0	0	0
Age 20-25	-0.79	-0.30	-0.54	-0.39	-0.52
Age 25-29	-1.30	-0.18	-0.90	-0.60	-1.23
Age 30+		-1.28	-0.81	-0.34	-1.23
Cohort 1951-1955	0	0	0	(1954) 0	0
Cohort 1956-1960	-0.27	0.16	-0.10	(1959) 0.07	-0.05
Cohort 1961-1965	-0.27	0.16	0.01	(1964) -0.15	-0.01
Cohort 1966-1970	-0.99	0.08	-0.41	(1969) -0.14	-0.19
Education Low	0	0	0	0	0
Education Medium	0.27	-0.03	-0.30	-0.09	-0.10
Education Medium - High					-0.07
Education High	0.02	-0.11	-0.35	-0.14	-0.18
Employed	-0.40	-0.04	0.03	-0.06	-0.22
Urbanization Low	0	0	0	0	0
Urbanization Medium	0.50	0.35	0.46	0.38	
Urbanization High	0.74	0.36	0.70	0.36	0.16
Very religious	0		0	0	0
Not very religious	0.37		-0.05	-0.03	0.12
Not religious at all	0.43		0.19	0.04	0.13

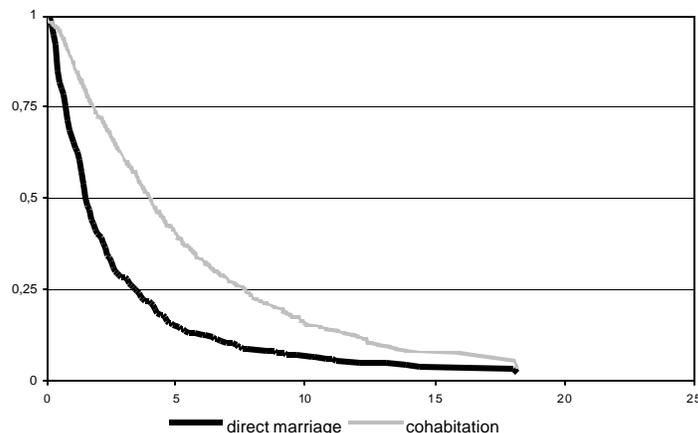
Note: significant estimates at the p-value $\geq 90\%$ in bold

Fig. 1 – Probabilities of survival at the risk of having a first, second, third child, according to type and number of unions, by years

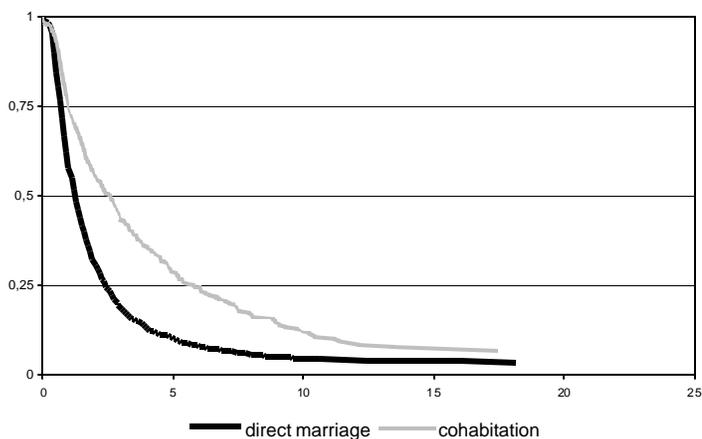
First interval: union-birth first child, according to type of union



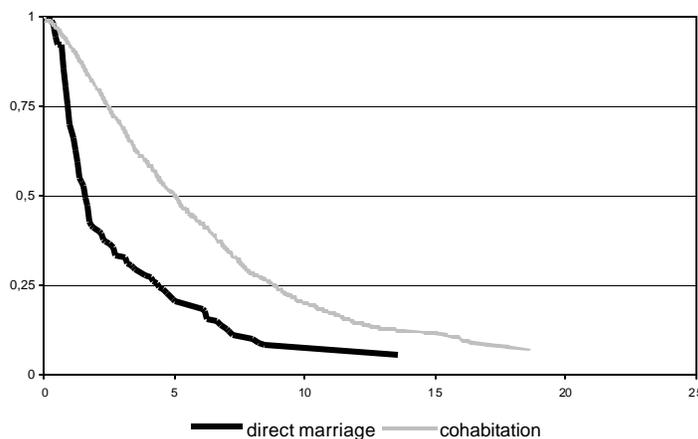
Italy



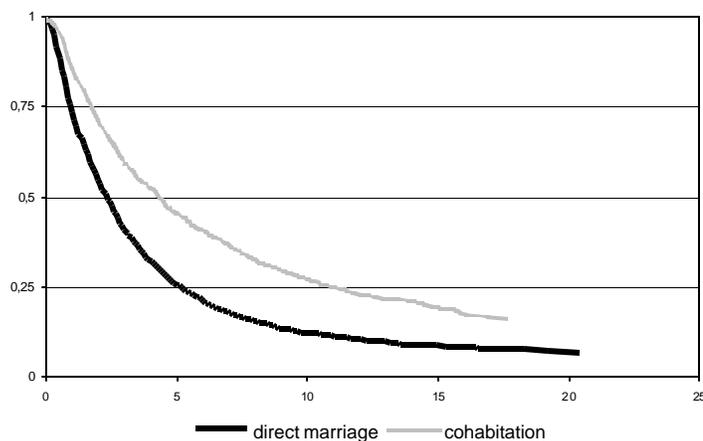
France



Hungary



Sweden

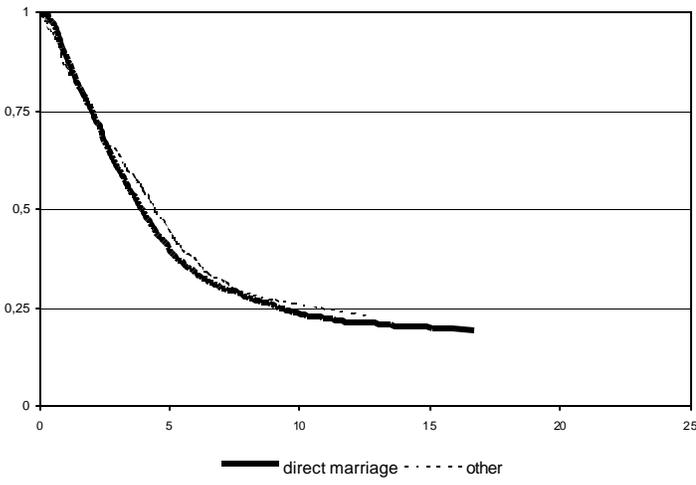


USA

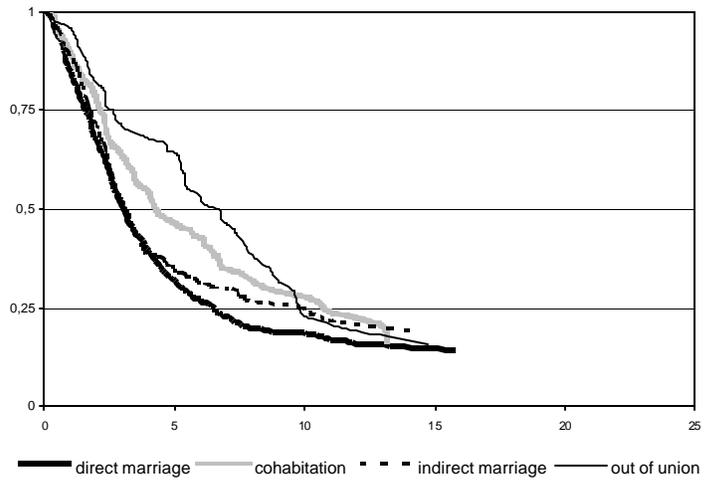
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(follows fig. 1)

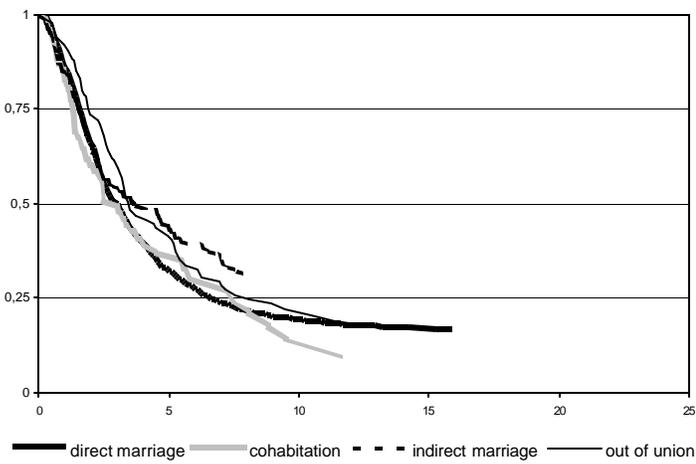
Second interval: birth first child-birth second child, according to type of union, by years



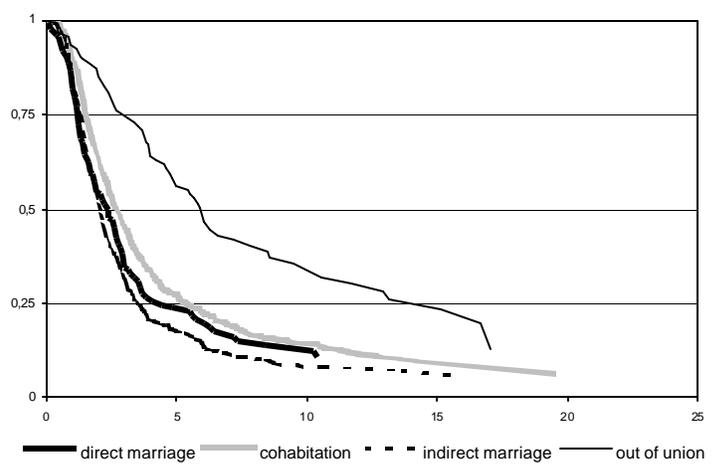
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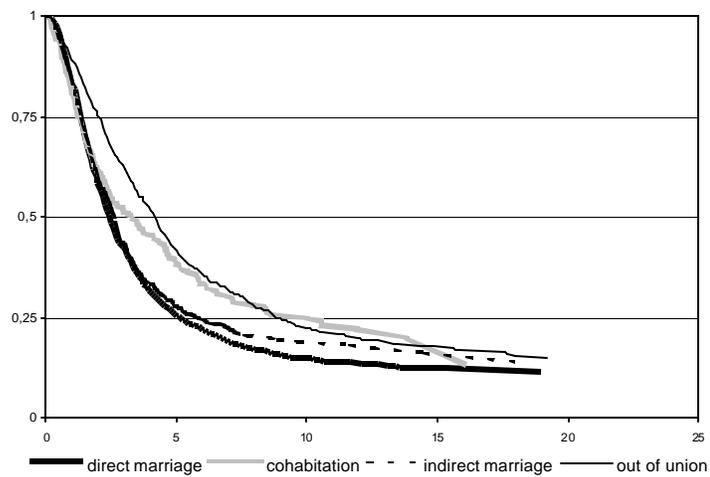
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Hungary



Sweden

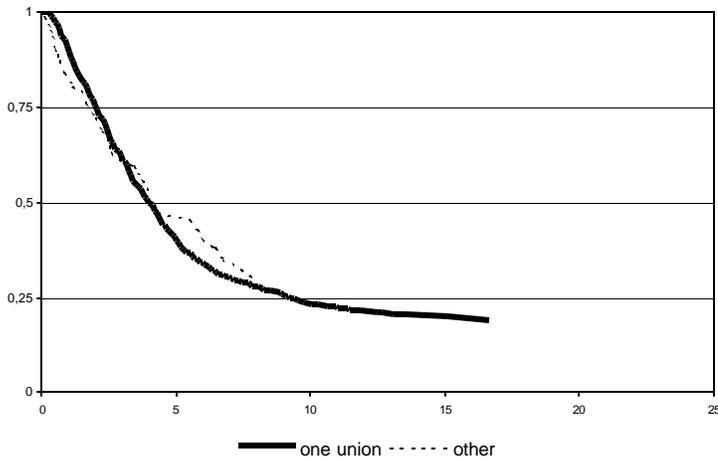


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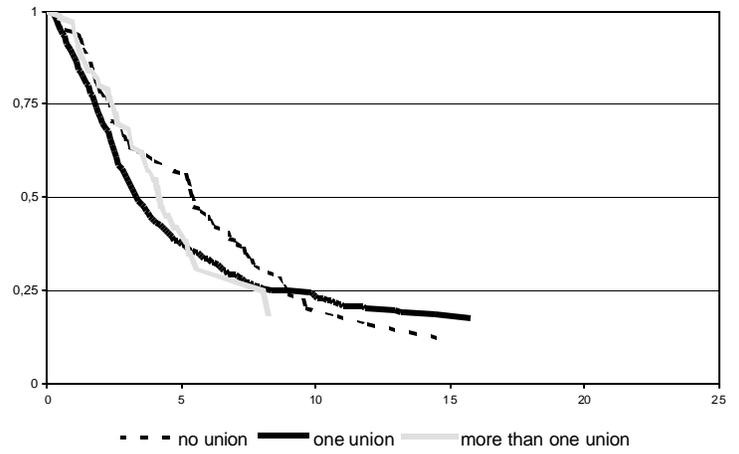
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(follows fig. 1)

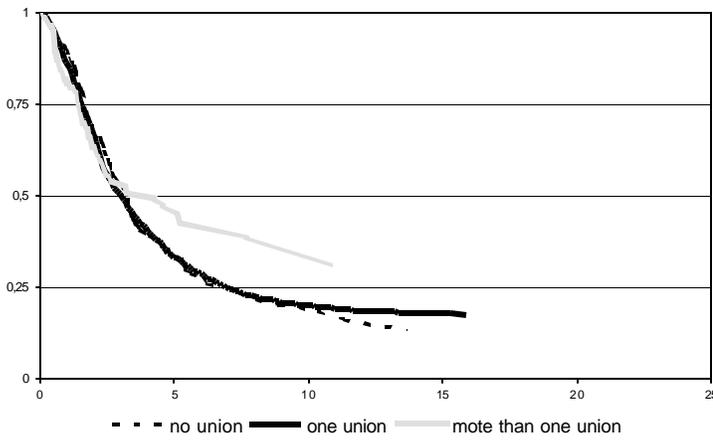
Second interval: birth first child-birth second child, according to number of unions, by years



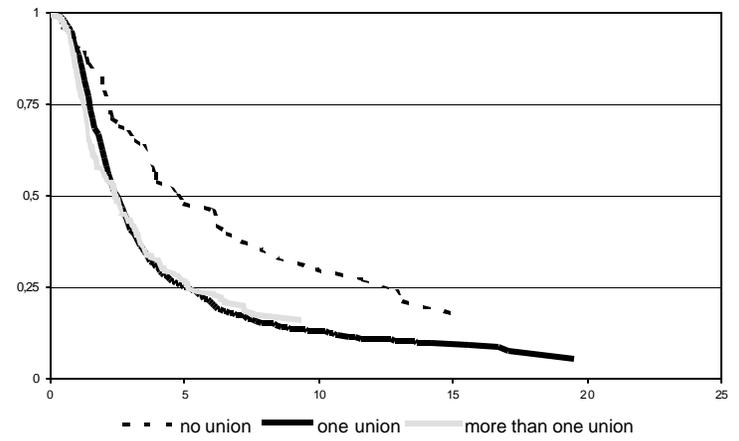
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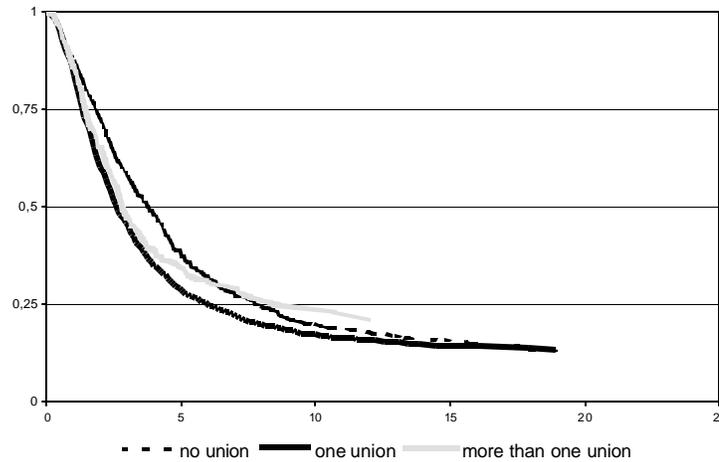
France



Hungary



Sweden

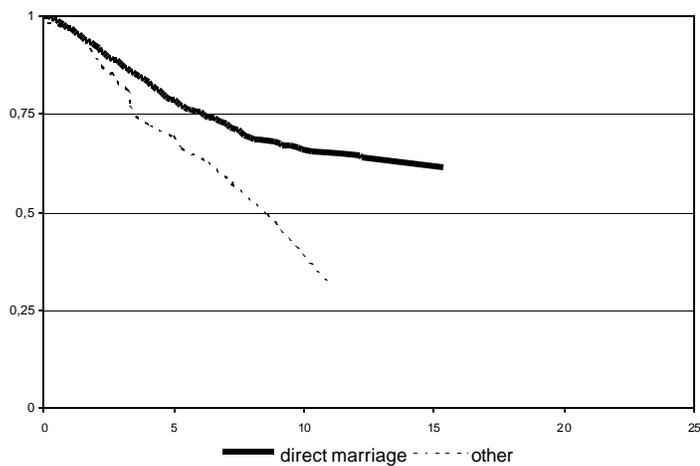


USA

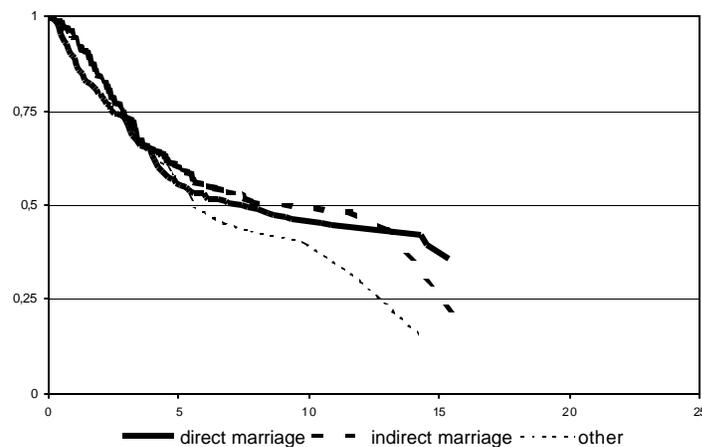
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(follows fig. 1)

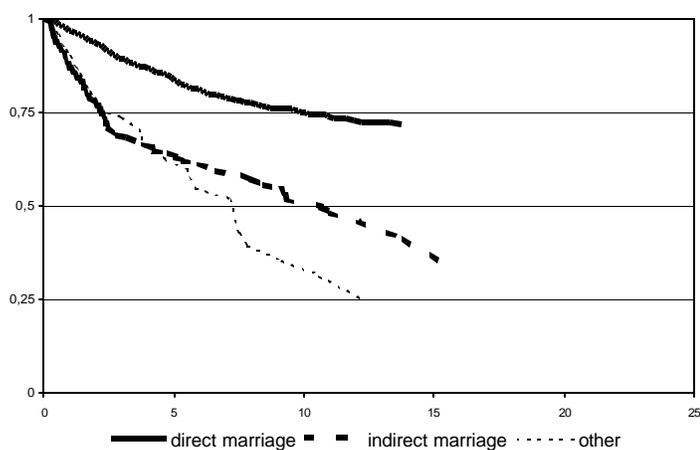
Third interval: birth second child-birth third child, according to type of union, by years



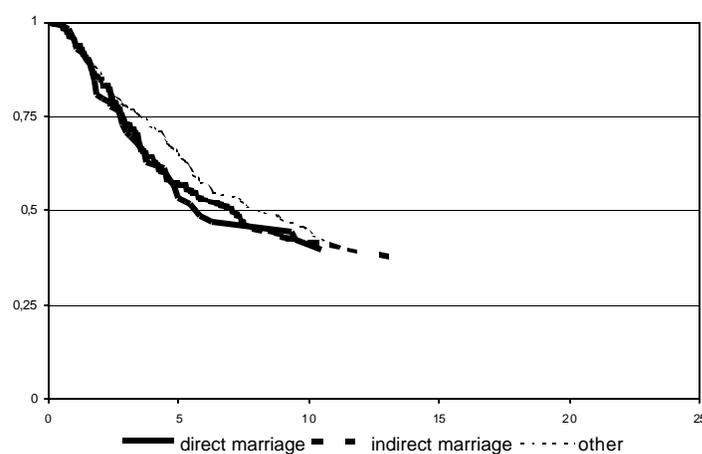
Italy



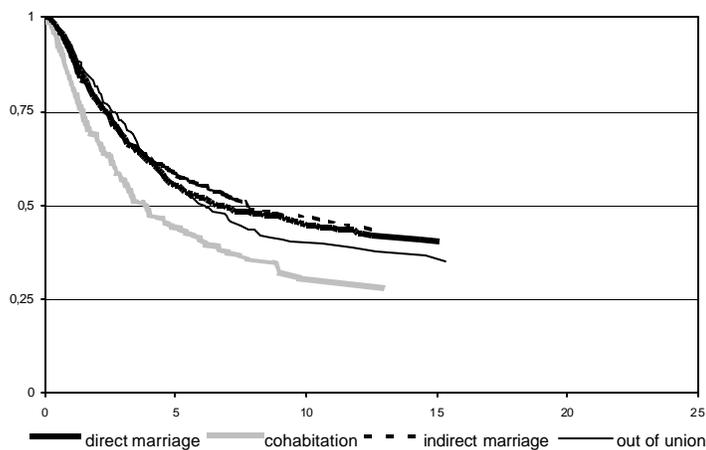
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Hungary



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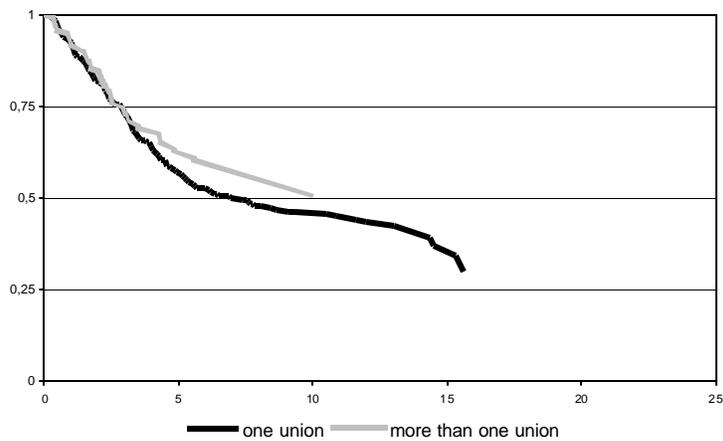


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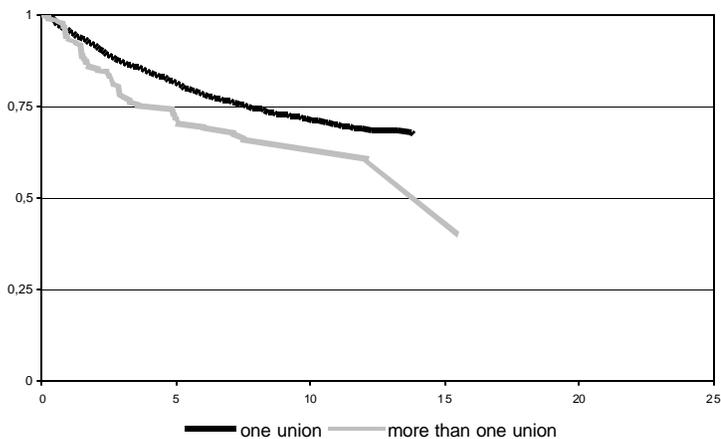
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(follows fig. 1)

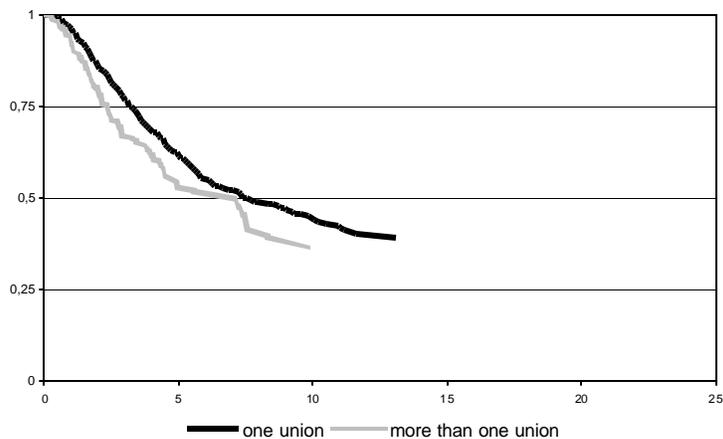
Third interval: birth second child-birth third child, according to number of unions, by years



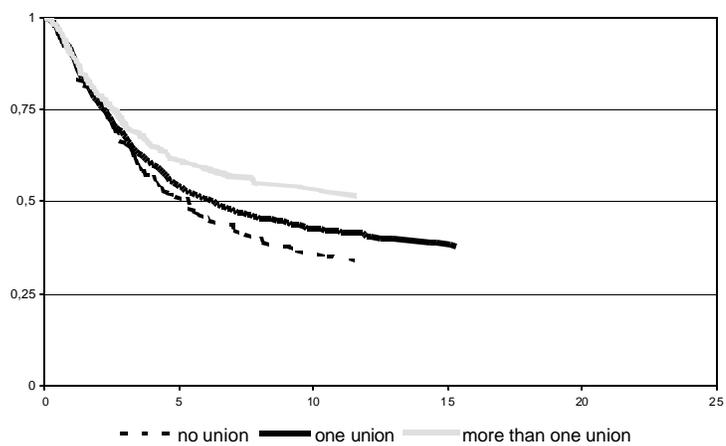
France



Hungary



Sweden



USA