1 – Introduction: Muslim prolificacy and demographic transition

Current fertility in the Islamic Mediterranean countries is approximately half what it was in the 1970s. The changes, revealed by survey data and estimates of varying degrees of reliability, are such that each year the United Nations lowers both its fertility estimates (now generally speaking moderate and probably destined to decline rapidly) and the consequent population forecasts (Fargues 2000). The representation of the patriarchal family, which is characterized by a dual hierarchy – a vertical (the elderly over the young) and a horizontal one (men over women) –, inevitably includes the notion of high fertility, which is highly “rational” in such a context. Yet although the representation seems to persist, recent surveys reveal that fertility has plunged, to the extent that it is now similar to that of non-Islamic countries of the same socio-economic level.

The main countries (or perhaps only the forerunners) affected by this demographic revolution are the countries facing onto the Southern (Algeria, Libya, Egypt, Morocco, Tunisia) and Eastern (Turkey) Mediterranean. In these countries the period total fertility rate among women with secondary education is often less than two children per woman;

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Libya is an example of this. Included until 1998 among the high fertility countries (in 1998 the TFR was estimated as 5.92), the following year, because of the results of the 1996 Survey, the first since the 1973 Census, it was included among moderate fertility countries, with a TFR of 3.5. Another example is Morocco. Forecasts made in 1982 estimated the population would be about 59 million in 2025, but the projections were corrected after the 1994 census to a figure of about 40 million; the latest projections (1998) now estimate the population will be about 38 million in 2025. These corrections are due to the
consequently, these recent developments undermine the reputation of this area (apart from Turkey) as a bastion of family conservatism and as having a high fertility rate. But are these groups of educated women forerunners of a broader and more generalized spread of fertility decline or only of a plurality of behaviours in the increasing heterogeneity of such societies, which are still very traditional but at the same time are undergoing modernization?

On the northern shores of the Mediterranean, the countries of southern Europe are in turn undergoing a highly singular demographic evolution towards lowest-low fertility (Sardon 2002). Family and social evolution is increasingly distinctive and differs greatly from that of central and northern Europe, due to cultural reasons relating to what seems to be a typically Mediterranean view of family ties and gender balances. Are the southern Mediterranean countries undergoing a demographic transition along the lines of those experienced by countries on the northern shores, with which there have always been close ties and cultural mixing? Can we affirm that a South-North convergence is taking place in Mediterranean fertility?

The aim of our study is to investigate the extent and the value of the recent demographic changes. The question is whether they fit into a peculiar Mediterranean fertility pattern, with South-East women therefore moving along the path taken by Mediterranean Europe towards an exceptional low fertility (a sort of “convergence assumption”),— or whether this “developmental” theory might be too simplistic and Eurocentric.

The concept of convergence lies at the heart of demographic transition theory (Wilson 2001). Adopting quite a schematic approach, the theory of demographic transition assumes that sooner or later countries must pass through different stages, in the path from high to low levels of mortality and fertility. In fact, apart from some countries in sub-Saharan Africa, fertility decline has now begun all over the world, and this process is substantial (albeit with a significant tail of high-fertility). Wilson’s (2001) recent review reconfirms that in order to understand this phenomenon it is necessary to look beyond either economic development or special policy inputs. Well aware of the state of pervasive poverty, high levels of illiteracy and gender inequities in many regions, he states: “.. it is clear that social and demographic change has progressed far more rapidly than economic development”. However, in terms of what particular rapidity of demographic changes in the South–East shore countries, and also to the persistence, “until proven otherwise”, of the stereotype of high Muslim fertility.
kinds of social change are relevant for the process, we may only have reached the understanding that “there are many demographic transitions, each driven by a combination of forces that are (...) institutionally, culturally and temporally specific” (Greenhalgh 1990).

The 2000 World Population Prospects (WPP) demonstrates the current state of the “mobility of countries” down the scale towards low fertility: 21 less developed countries have a fertility at or below replacement level, while the majority of the remaining 122 less developed countries have levels below 5 children per woman but well above replacement level. However, Wilson interprets the trend as one of the growing demographic convergence in the world. He summarizes: “A large majority of the world’s population is (or soon will be) demographically modern by any definition”.

The WPP prefers to emphasize the opposite, namely growing signs of polarization in the world: “particularly rapid growth is expected to nearly triple between 2000 and 2050 (...)”;

16 countries “exhibit sustained high fertility for which there is either no recent evidence about fertility trends or the available evidence does not indicate the onset of a fertility reduction”. With respect to the latter group of countries, the 1998 WPP was too optimistic about incipient fertility declines, and population estimates have been adjusted upwards in the 2000 WPP (Egerö 2001). Given the extent to which fertility has been declining in almost all countries, Wilson (2001) concluded that the overwhelming trend is for low fertility to become a general feature of poor and rich countries alike and that the distinction between developed and developing countries will therefore be of greatly diminished relevance to fertility. In the convergence theory approach, the timing of the “narrowing process” is very important because, as it influences the achievement of generation replacement, it affects population increase and consequently the social development of countries as well (Wilson 2001).

In this study we will outline current fertility against the broad background of family formation patterns in the Mediterranean countries, trying to evaluate the “demographic” distance between the two shores. Moving from the macro to the micro level and focusing on education differentials, we will ask whether the characteristics of educated southern Mediterranean women are similar to those that were notably at the basis of the determinants of the onset of fertility decline in northern Mediterranean countries².

² Here we analyze the most recent survey data (micro data) available for Italy, Spain and France in Mediterranean Europe (and Portugal as well, because of cultural and demographic similarities), and Egypt, Morocco, Tunisia and Turkey on the south Mediterranean shore. At the macro level we also considered Greece, Algeria and Libya.
2. Fertility in the Mediterranean context: differences and factors of convergence between the two shores

2.1 Differences between the two shores and heterogeneity among South-East Mediterranean countries

Changes in fertility patterns are very marked in South-East Mediterranean countries (Figure 1). Fertility levels still appear to be over replacement level in all countries in North Africa and the Near East, but fertility rates have declined sharply in recent decades. The fall in fertility has not been equal across countries, however, and the current fertility levels of Algeria, Egypt, Libya, Morocco, Tunisia and Turkey range on average from two to three children per woman\(^3\).

Notwithstanding the large decline, from the comparison between current levels of fertility, we can observe that countries facing onto the two Mediterranean shores still show very different behaviours in terms of timing and quantum of fertility. Looking at Figure 2, which shows the paths taken by countries in the post-war period, it can be said on the basis of analysis of current TFRs, that three southern shore countries – Morocco, Tunisia and Turkey, though with different timing – are “following” the same course as the northern shore, with a temporal gap of 20 years compared to Spain and Portugal and 30 years compared to France, Greece and Italy.

In describing the changes in North Africa - though the same holds true for Turkey as well - from 1970 to 2000, Tabutin \textit{et al.} (2001) point out that these recent changes are such that the demographic transition of this part of the world can be qualified as:

a) \textit{late}: fertility decline has occurred at a later date than, for example, Latin America and Eastern Asia;

b) \textit{rapid}: the pace of decline more than compensates for this delay (Rashad 2000); it has evolved from a classic model of high fertility (with 7/8 children per woman) and precocious and universal nuptiality to a controlled reproduction model (less than 3 children, with a contraceptive prevalence of over 50%, see note 3), with a trend towards late marriage and the emergence of a certain percentage of definitively never married women;

\(^3\) The fertility rate remains moderate (greater than three children per woman) in Jordan, Libya and Syria and high (greater than five children per woman) in the WBGS, where demography forms part of the broader political struggle with Israel. Indeed, the total fertility rate in Gaza – an average of more than seven children per woman – is one of the highest in the world.
c) **convergent**: the pace of change and the trend may be considered non-homogenous, but the whole region seems to be converging towards a comparable demographic model (with the exception of southern Egypt).

Transition has not been an uninterrupted process (Fargues 1988). In Morocco, for example, fertility did not decline in a linear way in the period 1962–1972, but actually increased and then declined, while Egypt’s first fertility transition between 1965 and 1970 was followed by a bi-decennial stagnation with annual fluctuations. Between 1970 and 1980 fertility increased significantly from 5.30 to 6.15, fell and then rose again to 6.31 in 1987. Even in Tunisia, which is regarded as a textbook case, fertility decline stalled briefly in the early 1990s, suggesting that three children was the basic irreducible minimum (Courbage 1999), but recently it fell sharply to about two. Given the pre-transitional uniformity, during the process the differences exceed the similarities, whereas recent data suggest that the region is converging towards a comparable fertility model.

The proximate determinants are relatively clear: later marriage and, to a lesser extent, increased access to family planning services, have given women a greater degree of control over their fertility (Salvini 1990). Consequently, a delay in entry into marital union has been the first step towards the process of convergence of the Islamic Mediterranean shore countries towards the Catholic ones.

The transition in Morocco offers a good illustration of how the two factors (delayed marriage and increased use of contraceptives) have gone hand in hand, except at the beginning. Between 1960 and 1971, the singulate mean age at marriage of only 17.3 years increased, but there was no decline in the general fertility rate. Between 1971 and 1982, the rising singulate mean age at marriage caused a fall in the total fertility rate from over 7 children to 5.5. Of the average annual reduction of 2.40%, nuptiality accounted for 1.45% and contraception for 0.95%. From 1982 to 1987, fertility decline accelerated and most of the decline was attributed to the rising age at marriage. Finally, in the years 1987–1994, the role of contraception increased (Courbage 2002).

Union patterns can explain the heterogeneity in fertility between Egypt and Morocco as well; among the older generations the difference used to be negligible (age at marriage was around 17 years); today, Egyptian women born in 1965–70 marry, on average, at the age of 20, while Moroccan women marry at 23.8 years.
The major differences in the process of transition between the southern- and northern shore countries (apart from the persistent imbalance) can be summed up as follows.

Firstly *the spectacular nature of the process*: in just thirty years the southern shore countries have experienced a transition in fertility which often took the European countries about a century (Vallin and Locoh 2001); they also started with much higher pre-transitional levels of fertility (6/7 children per woman).

Secondly *the role of modern contraception*: while the transition in the North took place without safe contraceptive methods, in almost all the southern shore countries there have been programmes explicitly aimed at limiting births\(^4\). However, it is worth underlining that various different approaches have been adopted by family planning services in the region. In Tunisia, for instance, the state took the initiative in family planning in the 1960s, reinforcing its efforts with policies aimed at improving women’s status and explicitly recognizing the links between declining population growth and socio-economic development; Morocco only started giving strong support to family planning in the 1970s. After the 1994 ICPD, emphasis was given to services only for health reasons and for social benefits (UNICEF 2001).

Finally *women’s role in society*: in Muslim societies women’s empowerment is still a burning issue. The concept is a multidimensional one that encompasses areas such as the practice of arranged marriages, the gender gap in educational enrolment, the low proportion of working women (in particular in the tertiary sector) and the incompatibility in these countries between working and fulfilling the role of wife (more than that of being a mother, as is usually the case). However, significant changes are also taking place in the Arab world as regards views of male and female identity, family roles, relations between the sexes and the position that women occupy in public life (Lapidus 1995). There are also marked differences between countries, because gender roles are an ideological and political issue that are closely linked with religious considerations (Obermeyer 1992).

However, in the area considered, the drop in arranged marriages, the increase in the level of education, the increase in age at marriage and the fall in the age difference

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\(^4\) Data deriving from surveys carried out in the 1990s show the following level of contraceptive prevalence among women between 15 and 49: 51% in Algeria, 48% in Egypt, 45% in Libya, 50% in Morocco, 60% in Tunisia, 64% in Turkey. Source: World Bank, World Development Indicators 1998.
between spouses can all favour the trend towards the weakening of female inequality in the family, a cardinal factor in women’s empowerment in society\textsuperscript{5}.

The gender gap in education enrolment is narrowing, but the rates of female labour are still low and have grown little since the 1980s\textsuperscript{6}. Work activity varies in inverse proportion to fertility, but with strong differentials between married and single women, more so than between women with or without children (Fargues 2000). In fact, women tend to abandon work when they marry, effectively making it a prerogative of single people. (In southern Europe, although the percentage of working women is much lower than in northern Europe, the “competition” is between the role of worker and that of mother).

The Muslim countries have also seen the emergence of a not insignificant proportion of economically independent women who do not marry (in countries where until recently non-married women were socially almost ignored and had no status of their own whatsoever); there are also a certain number of working mothers, a figure that has grown to the extent that various means of support, including the setting up of nurseries and the provision of small-scale loans, are beginning to be a subject for political debate (Rashad 2000).

\textsuperscript{5} See the positive relations that emerge from DHS surveys between dialogue between spouses and the characteristics of female “autonomy”, generically correlated with the use of instruments of family planning and a lower number of desired children (for example, see El-Zanaty \textit{et al.}, 1996).

\textsuperscript{6} Participation of women in the labour force in 1980 and 1996 were respectively the following: 21\% and 25\% in Algeria, 26\% and 29\% in Egypt, 19\% and 21\% in Libya, 34\% and 35\% in Morocco, 29\% and 31\% in Tunisia, 35\% and 36\% in Turkey. Source: World Bank, 1998.
2.2. Historically strong family ties and marriage in the Mediterranean area: some similarities between the two shores

Possible convergence factors between the northern and southern shores should be sought in cultural and social similarities. There are considerable, historically deep-rooted similarities in family structure between the Mediterranean countries. Demographic and family behaviours in southern Mediterranean Europe, in terms of couple formation, fertility and living in the parental household, are currently quite different from those of central and northern Europe. The explanation of these behaviours (whether it is a delayed second demographic transition or whether they are
completely different models) may also lie in the socio-cultural specificity of Mediterranean Europe. The “familism” of southern Europe, where the family in fact takes on many roles that are largely foreign to its tasks in northern countries, contrasts with a “civic culture” where the organization of solidarity for the needy and vulnerable in society is largely accomplished through public and private institutions (Reher 1998).

Family ties may represent the keystone of socio-demographic evolution. The patterns of family relationships (between spouses, between parents and children, between older and younger generations) that largely characterized, at least until a few years ago, southern European families may be considered quite close to the intra-household relationships in North Africa. The concept of “Asabiyyah” (i.e., “esprit du corps”, group solidarity based upon blood ties and reciprocal aid) has the extended meaning of an “alliance among kin” and resembles the concept of the close-knit network of the Mediterranean area (Micheli 2000).

According to Reher (1998), we can observe strong family ties in the whole Mediterranean region. In other words, the role of family in southern Europe and on the southern Mediterranean shore is undoubtedly important in determining social networks that, in turn, condition some socio-demographic behaviours.

The evolution of marriage patterns also reveal some similarities in the two contexts: during the eighteenth century, female age at marriage continued to be noticeably earlier in much of southern Europe than in the northern part of the continent. It is also noteworthy here that in the southern parts of Spain, Italy and Portugal, age at marriage throughout the pre-industrial period was always lower than in northern parts of the same countries. Moreover, even if age at marriage was never as low as in North Africa, in general southern European women married younger than in northern Europe.

Given that fertility takes place essentially within marriage in all the Mediterranean countries (unlike in central and northern Europe), age at marriage (Figure 3) greatly conditions mean age at first birth (in turn a key factor determining trends in higher birth orders).

Recent changes in the marriage pattern in Muslim countries are also considerable, and regard both the quantum and the timing. In many countries, between 7 and 21 per cent of women remain never married in the age group 30–39. While the proportion never married at age 40–49 is currently quite small, the situation of the cohorts now aged 30–39 suggests that it may increase. It is expected that Muslim societies with near universal marriage will soon become the exception rather than the norm (Rashad 2000).
If we look at the data in Figure 4, we can see that a profound modification has also occurred in the timing of marriage. Almost all the countries examined reveal significant changes (Algeria, Libya, Morocco, Tunisia) and the singulate mean age at marriage (SMAM) in some cases is similar to that of women living on the northern shore of the Mediterranean (who nowadays marry much later than some decades ago, probably due to the completion of education at a later age and greater participation in the labour market).

The Arab family is thus evolving towards that of Mediterranean Europe as a result of women’s later age at marriage, but also due to a reduction in polygamy and the stabilization of the family unit caused by a drop in repudiation, the institution that for a long time substituted divorce in northern Africa (despite the persistence of a not negligible proportion of arranged marriages; Fargues 2000).

Figure 3 - Trend in the mean age at marriage for Northern Mediterranean countries
3. The relationships between education and fertility: evidence in the Mediterranean countries

If the drop in fertility is now significant throughout the Islamic world (Courbage 2002), it has certainly been much faster in the North African countries than in those of the Middle East, probably in part due to the former’s greater exposure to Western models⁷. The control of fertility in the French-speaking Maghreb countries seems to have been closely related not only to a growth in living standards but also in education, which is increasingly egalitarian between the sexes.

In the countries considered, both in the North and in the South-East, the effect of education on fertility is always inversely proportional (Figure 5 and 6)⁸, but there is in any case a very strong variability in the elasticity of fertility in relation to education level (Courbage 2002). In Portugal and Greece (Symeonidou 2002), for example, women aged 45-49 with a higher level of education have a slightly higher average number of children than women with an average level of education (Figure 6).

⁷ See Courbage (2002) for a discussion of the influence of the French language mass media on the educated urban minorities of the Maghreb countries and of the diaspora towards Europe. We can assume that a key role in the westernisation is played by migration, and in particular by returning migrants.

⁸ Note that the comparisons have been made on different quantities: on one side, on the southern shore, we have period TFRs, aggregating experiences of contemporary women cohorts, while on the northern shore, we have the cumulated children ever born for women aged 45-49, a cohort of women who lived through the most intensive period of fertility on average 15-20 years before. This bizarre comparison is due both to the different nature of the data and to the aim of highlighting the temporal lag that divides the two shores in terms of the evolution of fertility.
In the South-East Mediterranean countries, the impact of girls’ greater access to education and the increasing availability of educational opportunities (although still greater in urban areas) is significant. Girls who reach secondary school are more likely to delay marriage and childbearing, their children tend to be healthier and their participation in the labour force relatively greater. Female education appears to be a determinant factor in the course of fertility whatever the socio-economic level (see, among others, UN 1995; Castro Martin 1995). Education seems to remove the differences in fertility between the different countries; such differences continue to be high only for illiterate women, are still perceptible for women with a low to medium level of education, and are negligible for the more well-educated. From the first half of the 1990s, the average fertility of women with a high school certificate settled in all the Arab countries at generational replacement levels. Even in Libya, for example, the average number of children of women with a high level of education is 2.1, while illiterate women have on average almost 6 children (Fargues 2000).

However, some specific cases among Islamic countries suggest that education is not by itself sufficient to explain the different “transitions”. For example, the birth rate began to decline in Morocco before it did in Jordan, despite the fact that the former is more rural and has a higher rate of illiteracy.

Another contradictory aspect is the link between education and female employment, and between female employment and the drop in fertility. Countries like Tunisia and Morocco, where the percentages of working women are still low (although they have increased), are those where a decline in fertility took place first (Fargues 2000).

However, one might readily hypothesize that the process of convergence in fertility behaviour in the South–East shore countries towards a Western-type “model”, in particular towards the typicity of the countries facing onto the northern shore of the Mediterranean, is led by precursory groups of women who have a higher level of education (or in any case that educational level, in the absence of other variables regarding income or socio-economic status, is a proxy for them).

The relation between fertility and education may change in time and in the course of the transition\(^9\). Caution must therefore be exercised in making comparisons in time and space. It is nevertheless interesting to focus on older women in northern shore countries

\(^9\) At a macro level, in comparing countries and placing side by side data relating to education levels and those of fertility, one notes in general a reversed U-effect of education. The effect is weak in poor
and to see the differences by educational level, where fertility levels are approximately equal. The comparison is between current differential levels for the southern shore and the differential fertility of the northern shore some years ago, when the reproductive levels and models were, so to speak, less “regulated” and total fertility levels were similar. The process of convergence realized by the countries of the southern shore and the characteristics of the “forerunners” can be better evaluated if we look at fertility differences according to the level of education that existed some years ago, for example in European Mediterranean countries (see Figure 6, where we show data for older women).

Was the distance between the fertility of educated and non-educated women more accentuated in the past transition of the northern shore countries? Have active family planning policies in the South reduced these “normal” differences?

For the time being we limit the comparison to Italy. Women born in the years 1897-1901 and 1912-1916 show very large differences in the number of children ever born (Figure 7); women without education born at the turn of the century showed a fertility more than double that of women with a diploma or university degree (very few, in those years). Southern Italian regions – see here the values for Campania – had higher fertility and larger differences by education level (the TFR of illiterate women is more than double that of the more educated). The similarity with what is happening now in Tunisia or Morocco, with a temporal lag of some decades, is highly pronounced.

The previous points can guide us in subsequent research. It is reasonable to suppose that in the future there will be both a continuing spread of education and a narrowing of the gender gap, and the acceptance and adoption on the part of less privileged groups of the family planning behaviours that have characterized the recent behaviours of more well-educated (and modern) women. One might quite well assume that the analysis of current data will confirm that amongst all the age classes there are “pioneer” subgroups with low fertility, for instance among more educated women.

However, precisely because the group of more educated urbanized women may not be numerically very substantial, the aggregate effect may not be particularly visible. It is thus important to change the focus of the study, and consequently the level of analysis.
of the data, and to shift from a macro analysis to an analysis of individual data. In the next section of this work, the comparison between the fertility of the South-East and the North Mediterranean is carried out using survival models from one parity to another for groups of women rendered homogenous according to age and educational level. More specifically, due to sample number problems, the level of education is simply dichotomized into the categories of “illiterate or low level education” and “with average or high education”; women are grouped by cohort (born since 1970, from 1960 to 1969, from 1950 to 1959 and before 1950).

Figure 5 – Total fertility rate according to level of education: southern shore countries (mid-90s)

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10 The “optimum” level of analysis concerning the convergence in demographic behaviours is still subject to debate. Following a so-called classic process and basing our study on the available data, it seemed natural to us to shift from a descriptive study of the differences between states carried out with average measures to one based on individual data, in the search for differential “propensities”, understood in a probabilistic sense (Billari and Wilson, 2001).
Figure 6 – Children ever born to women 45-49 according to level of education: northern shore countries (mid-90s)

<table>
<thead>
<tr>
<th>Country</th>
<th>No-primary</th>
<th>Medium</th>
<th>Secondary and more</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portugal</td>
<td>2.2</td>
<td>2.6</td>
<td>1.5</td>
</tr>
<tr>
<td>Spain</td>
<td>2.1</td>
<td>2.4</td>
<td>2.0</td>
</tr>
<tr>
<td>France</td>
<td>2.4</td>
<td>2.1</td>
<td>1.9</td>
</tr>
<tr>
<td>Greece</td>
<td>2.0</td>
<td>2.1</td>
<td>1.6</td>
</tr>
<tr>
<td>Italy</td>
<td>2.3</td>
<td>2.8</td>
<td>1.5</td>
</tr>
</tbody>
</table>


Figure 7 – Italy: mean number of children per woman according to births cohorts and level of education (Italian Fertility Survey, 1961 Census)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Diploma, degree</th>
<th>Primary school</th>
<th>Elementary school</th>
<th>Read and write</th>
<th>Cannot read and write</th>
</tr>
</thead>
<tbody>
<tr>
<td>1897-1901</td>
<td>4.9</td>
<td>2.7</td>
<td>2.7</td>
<td>1.8</td>
<td>1.1</td>
<td>1.5</td>
</tr>
<tr>
<td>1912-1916</td>
<td>5.4</td>
<td>4.9</td>
<td>2.7</td>
<td>2.4</td>
<td>2.7</td>
<td>1.5</td>
</tr>
</tbody>
</table>

4. An analysis of childbearing patterns using individual data

The analysis is based on the most recent retrospective survey data available for Egypt, France, Italy, Morocco, Portugal, Spain, Tunisia and Turkey, deriving from Fertility and Family Surveys (Carrilho and Magalhaes 2000; Delgado and Castro Martin 1999; De Sandre et al. 2000; Toulemon and de Guibert-Lantoine 1998), Demographic and Health Surveys and Arab Maternal and Child Health Surveys carried out in the 1990s\(^{11}\). The surveys used detailed birth-history data and information on the demographic and socio-economic background of the respondent women. The survey designs are quite similar but the southern shore data are collected only for ever married women; so, in order to compare findings, we took into consideration in the North only ever cohabiting women. As we will see later, this represents a limit for our analysis of age at marriage and fertility of younger generations.

In order to understand the contribution of some socio-economic independent variable (covariates), we carry out comparative analyses applying hazard models. We build two models: the first one including only the main effects - a proportional hazard Cox model\(^{12}\); the second one including the interactions of the first order between time (duration of the intervals) and the covariates - in this case it is no longer a proportional hazard model, but simply a hazards model - .

In some cases, which we will highlight during the discussion of the results, it has not been possible to consider all the covariates or the same modalities for the variables\(^2\). The covariates, chosen according to the availability of information and following the results of previous analyses and literature on this issue\(^3\), can be divided into “control variables” (birth cohort, previous birth interval, age at first union, age at previous birth) and “explanatory variables” (place of residence, level of education, professional status of the woman and of the partner).

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\(^{11}\) Ideally, to better highlight the similarities or differences in fertility patterns and timing during different phases of demographic transition between South-East Mediterranean countries and northern ones, we should have compared individual data of current southern women to those of northern women, when the aggregate level of fertility was similar. The non-availability of individual data is of course the main obstacle to such a comparison.

\(^{2}\) As concerns women’s jobs, only data for countries belonging to the northern shore countries distinguish current working women from those who are retired or students and from housewives. In the case of the Morocco data, it has not been possible to include the variable regarding the husband’s job, whereas for the Tunisian data we have only information on agricultural and non-agricultural workers.

\(^{3}\) See among others, Ongaro’s study (1990) on the first Italian fertility survey data.
The dependent variable of the model is represented by the length of interval (measured in months) between union and first birth, between first and second birth and between second and third birth.

The results of the first model with the main effects are shown in figure 8.

The duration of intervals between births currently seems to be significantly influenced by education and by female working status both in the southern European countries, and in the Islamic ones. More educated women show longer intervals, and a lower hazard, than less or not-educated women, in the transition from one parity to the next. But the effects are generally different in different contexts. In Spain and in Portugal the risk of passing from one parity to the next is lower by about 20% for educated women compared with the reference category, while in Morocco, Tunisia and Turkey this risk is halved. An exception is represented by Italy, where the differences between more educated and reference groups of women are larger and quite similar to the developing countries.

Among the South-East countries, an important effect of education emerges in particular in the higher intervals (especially in Tunisia, where the hazards are much lower for more educated women). For the first interval, education effects are less evident, probably because all women who marry have at least one child (with the exception of those with fecundity problems).

In the second model we have considered also interaction terms.\textsuperscript{15} Interaction terms relative to education, often significant, are generally positive (with the exception of Tunisia for the third and fourth parities and Egypt for the first interval). This might mean that the greater the duration of the intervals, the more the negative effect, measured by the main effect coefficient, is reduced.

In the northern shore countries working status also generally tends to reduce the hazard for all parities. The high values of coefficients seem to confirm the negative relationships between work and fertility in contexts where the organization of society, work arrangements and gender roles are not “mother-friendly”. In the southern shore countries the results are less evident. Only Turkey shows a pattern similar to the European countries also at low parities, while the other countries sometimes have significant negative coefficients only for the higher birth orders.

\textsuperscript{15} Results are not reported, but are available on request.
Residence, as it was reasonable to assume, does not in general have a significant impact on timing of fertility in the lowest-low fertility countries, while the effect is often significant in South-East countries. Living in an urban context decreases the hazard of passing from one parity to the next, apart from in Tunisia, where the coefficients are never significant.

The duration of the previous interval and often the age at the beginning of the interval considered are the most significant of what we have called the “control variables”. In particular, in the northern shore countries only age at union (marriage or cohabitation) shows an important effect – the higher the age at union, the longer the first interval. As regards this, it is important to emphasize that the results concerning the interval marriage-first birth for the southern Mediterranean countries are difficult to interpret. One possible explanation may lie in the composition of the group of respondents in the first years of marriage, when first births occur. These groups include women who have married very young and who are therefore selected from many points of view. The variables taken into account in our study may not entirely explain this complex situation.
Figure 8 – A comparison of the "main effects" for the transition from the 1st and the 2nd child (results of the hazard models)
4. Discussion and open issues

The fertility transition is now underway in almost all the countries of the South-East Mediterranean, and the prospect of convergence in the long run with the demographic course of the northern shore countries is no longer improbable.

Widely available education (particular female) and urbanization have influenced reproductive behaviour. Despite the limited presence of women in the labour market, the irreversible drop in fertility seems to prefigure considerable social transformations - erosion of patriarchy and modification of the status of women in society - (Fargues 2000).

Trends in period fertility are the net result of modifications in timing – that is the distribution of births in the course of cohorts’life - and in intensity – that is the final descendency -. For South-East Mediterranean countries, contemporary TFR is depressed by the rise in the mean age at childbearing.

The question is: how will this postponement effect continue in the future? We believe that the trend will continue, if only as a result of the ongoing trend towards greater education amongst women. Education is related to a later entry into both married life and fertility life. What the level of fertility will be when the rise of age at marriage and age at birth by order ends in the long run and that particular fertility-depressing effect stops, is of course impossible to say.

In the short run, the trend of convergence of period TFRs between the two Mediterranean shores (although fertility levels are still quite different) should also continue not only because of the postponement of fertility in the South, but also because of the current mechanism in the North. In fact, from 1999 there has been a small increase in the level of period TFRs in France, Spain, Greece, Italy and Portugal, although it is unlikely that South Mediterranean fertility will rebound to replacement level (Bongaarts 2001); this is partly due to a recuperation effect by the cohorts, and also to the contribution of immigrant women with a higher fertility.

In South-East countries the role of women may represent one of the key factors in the process. Even if at the present moment women have a low participation in the labour market, we can hypothesize that in the future, with the increasing enrolment in higher levels of education, this commitment will increase. Courbage (2002), for example, states that only university and professional education ensure active participation in the labour market, and that fertility seems more sensitive in the transition from inactive to
active women (even if they belong to the blue-collar sector) than between uneducated women and primary educated ones.

On the other hand, Reher (2001) observes, from empirical studies, that once fertility has decreased dramatically, the opportunity cost of children for working females increases but the reproductive process occupies a shorter period of women’s active lives, thereby allowing them to increase their labour force participation. Whether this is the description of the future of the Islamic countries that we have considered in this study we cannot say, also because the evolution may be influenced both by underemployment and unemployment, which is very high and increasing in the southern Mediterranean region, and by the unpredictable relationship between women’s role and Islamic traditional culture.

References


