The highest fertility in Europe – for how long?

The analysis of fertility change in Albania based on Individual Data

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ABSTRACT

Albania's demographic changes have sparked considerable interest in recent years. Much of this attention has arisen due to a general lack of knowledge and unexpected demographic behaviour of the Albanian populations. The country has experienced a high level of life expectancy and relatively high levels of fertility in the recent years. While previous research gives some answers to developing trends and patterns of mortality and fertility change, not much is known about the demographic behaviour of Albanians. Though Falkingham and Gjonca (2001), using census data, provide useful insights into the fertility transition in Albania from 1950 to 1990, very little is known about fertility *behaviour* neither during the communist period nor during the nineties. From being one of the most isolated countries of the world, Albania has embarked on a remarkable transition which involves dramatic political and economic change. The new and emerging situation is bound to have profound impact on society and the behaviour of individuals within it. Using the 2002 Albanian Living Standard and Measurement Survey (ALSMS) we analyse fertility behaviour in terms of the quantum and tempo. Using survival analysis techniques the results suggest that the reduction of fertility was mainly due to the improvements in the social agenda, with particular emphasis on female education, as well as the improvement in child mortality. The results also reveal that 1990s saw some strong period effects which mainly affected the higher parities. The persistence of traditional norms and values continue to affect family formation in Albania, while the changes in the social and economic circumstances determine the outcome of childbearing.

NON-TECHNICAL SUMMARY

The paper uses data from the Albanian Living Standard Measurement Survey conducted in 2002 to analyse fertility behaviour in Albania, with a special focus on recent changes during the 1990s, as the country experienced dramatic economic and social upheavals. We use the standard non-parametric Kaplan-Meier estimator and Cox regression to investigate the role of a range of variables on timing of first, second and third births.

The analysis confirms previous research that the dramatic reduction of fertility in Albania prior to 1990 came as a result of the reduction of fertility from all cohorts. The youngest cohorts while not delaying the entrance into childbearing, having a first birth is still universal, have reduced the fertility of the second and third birth. Most importantly the reduction of fertility in the 1990s came mainly from the reduction in the 2nd and mainly the 3rd birth. When the two periods are compared interesting results come from this analysis. First, during the 1990s there is no change in the timing of first birth, while for the 2nd and 3rd births we find strong period effects. The latter is expected as the reduction in fertility came mainly from the reduction in these two parities. However, the fact that not much is changing with regards to the first birth might have some justifications. First, in 1990 maternity leave was expanded from 6 months to one year. During the early 1990s industrial collapse generated large redundancy programmes severely affecting the population involved in industry, but in particular women. These two factors might have affected women's decision for having a first birth, respectively by continuing to have the first birth early and making it universal even in the 1990s. Most importantly there is evidence that with the introduction of the market economy, women in Albania are moving from full employment to an increased proportion of housewives. The percentage of housewives has increased into 47% for women 15 years and over, from a period of full employment before 1990 (INSTAT 2004). The unemployment among women is also higher compared to men with a rate of 28% compared to 18.8% for men (INSTAT, 2004). All these factors put together with the fact that Albanian

society still remains traditional, where having a first birth is the ‘norm’, can explain why there are no significant period effect for the first birth compared to other parities. The findings also prove that female education has been one of the most important determinants in bringing fertility down in Albania. In this respect Albania is similar to other East European countries where the changes in the social agenda particularly related to the expansion of female education, during the communism had strong effects in bringing fertility down. Again similar to East European countries and in contrast to Southern European countries, the economic and social crises of the 1990s affected the timing of birth, but in Albanian case of 2^{nd} and 3^{rd} birth. However, since Albania remains traditional in family values, the timing of the first birth was not affected. In this respect we cannot yet talk about postponement of childbearing in the Albanian case. The rapid improvements of mortality mainly affecting infant and child mortality, one expects that this improvement would have a strong effect in reducing fertility. The results of these analyses confirm yet again the fact that the survival of the previous child has a significant effect in bringing Albanian fertility down, similar to other countries.

1 Introduction

After the collapse of communism in 1990, Albania emerged as one of the most isolated country of the former Eastern block, which the rest of the World either knew little or nothing about its development. In 1990 the country was rated as the poorest in Europe, but with surprising achievements regarding its social agenda and demographic change. Because of the lack of knowledge, the spectacular improvement of mortality as well as reduction of fertility was questioned by many scholars (Watson, P. 1995). The fifty year period under communism saw radical social and economic change in Albania, which affected the whole society and its individuals. This transformation has also been reflected in the country's demographic change. Mortality decreased significantly with life expectancy at birth increasing from 51.6 years in 1950 to 70.7 years in 1990. Dramatic fertility reductions also occurred during this period with TFR coming down from 6.1 children per woman in 1950 to 3.0 in 1990. We believe that this work and other recent research on Albania has completed the final jigsaw of the demographic transition of the Balkan countries (Gjonca et al, 1997; Gjonça and Bobak, 1997; Gjonça, 2001, Falkingham and Gjonça, 2001).

Most of the previous work has been based on aggregate data and has focused on describing patterns of demographic change. However, very little is known on the demographic behaviour of Albanians. Though Falkingham and Gjonça (2001), using census and vital registration data, provide very useful insights into the fertility transition in Albania from 1950 to 1990, nothing is known about fertility behaviour and the explanatory pattern is more suggestive than conclusive. Adding to that Albania has embarked on a remarkable transition during the 1990s, which involves dramatic political and economic change. The new and emerging situation in Albania is bound to have profound impact on society and the behaviour of individuals within it. This situation has created a new setting for demographic changes, in particular with regards to migration and fertility. The aim of this paper is to analyse fertility change in Albania until 2002 based on individual data. The introduction of the Albanian Living Standard and Measurement Survey (ALSMS) surveyed in 2002 provides unique information about demographic change. Using this information we analyse fertility behaviour in terms of the quantum and tempo during the period following the collapse of the communist era. Fertility histories are constructed and a number of

variables are introduced to explain the change. We use in this paper standard survival analysis and event history models. The analyses of this paper demonstrate strong cohort and period effects, which vary a great deal by birth parity. The results shed light on why fertility continues to come down in Albania, supporting the previous research that emphasises the role of the transformation of the social agenda in Albania as the most important and significant determinant of fertility transition, with education the most important variable.

The paper starts with an account of what is known about fertility change in Albania and continues with the description of the data used in this paper (ALSMS). Here we also assess the accuracy of the aggregate data by comparing our results using the Albanian LSMS with those of previous research based on census and vital registration data (Falkingham and Gjonça, 2001). It then presents the results of the non-parametric and semi-parametric methods applied to these data. A detailed discussion of these results follows to conclude with possible future development of Albanian fertility within the European context of delayed or postponed fertility.

2. Fertility change during Communist Albania, 1950 – 1990

The period of communist rule in Albania from 1945 to 1990 was characterised by political and economic stability. During this 45 year period striking changes in the social agenda were accompanied by a dramatic reduction of fertility (Falkingham & Gjonca, 2001). By the end of the Second World War, Albania had the highest fertility in Europe with an average of about six births per woman. High fertility was reinforced by traditional patriarchal norms. Total fertility rate, which was already high by 1950, reached a peak of almost seven children per woman by 1960. After that a steady decline started in the 1970s, with TFR less than four in 1980, and just over three children per woman in 1990 (Figure 1). This rise in period fertility during the 1950s and 1960s mirrors the experience that many European countries experienced at the end of the Second World War. Being one of the countries with the highest per capita losses, it is not surprising that fertility increased in Albania immediately after the War. However, in no other European country was the post-war baby boom from such a high base. An alternative interpretation of this trend is that it represents a pre-decline rise in fertility of the kind studied by Dyson and Murphy (1985) in which they

show to be a widespread characteristic of fertility transition. It is also important to mention here that infant mortality started declining rapidly in the 1950s. By mid 1970s it was almost halved of the very high value of 143 deaths per thousand of the 1950. The effect of infant mortality reduction to fertility change will also be addressed later on in this paper. The 1990s saw a continuous reduction in fertility with both vital statistics data and survey data confirming a TFR of 2.2 children per woman close to the replacement level of 2.1.

Figure 1: Period and cohort fertility rates, Albania 1950-2000 (about here)

The decline in fertility until 1990 came from all ages and all cohorts (Falkingham and Gjonça, 2001). Interestingly, during the decades of communist rule strong forces were in place that ideally should have kept fertility high. Explicit pro-natalist policies were implemented, abortion was illegal, restrictions on availability of contraception imposed, and strong financial incentives were introduced to mothers. Albanian society was also dominated by strong cultural and traditional values common of a patriarchal society, with extended family, universal marriage, childbearing only within the marriage and male dominated society (INSTAT, 2004, Gruber, S and Pichler, R. 2002). Given these pro-natalist forces, it is somewhat surprising that level of fertility decreased from 7 to 3 children per woman. Falkingham and Gjonca (2001) argue that powerful social and economic policies, which include universal education, in particular for women, full female employment and successful policies aimed at reducing infant mortality explain this pattern. While there were no direct population policies, there were other policies in transforming the social agenda of the country that had an implicit effect on fertility in Albania. The investment in education, with particular focus on the improvement of female education was unprecedented in Albania. Female literacy improved from 8 percent in 1945 to 92 percent in 1989, and by 2002 it was under 5 percent, similar to most developed European societies. While interested in a full female employment, government invested in the pre-school education system, creating a system of day-care nursing and kindergartens all across the country. This had a double effect. On one side it increased female employment (which comprised 47 percent of the labour force by 1990) as it released them from childcare, and on the other side in conjunction to other measurements, it created a significant externality favouring large families.

3 The analyses of fertility change in Albania during the social and economic transition of 1990s

Socio-economic changes in the 1990s

After a long and sustained period of economic and political stability, profound changes took place during the nineties following the collapse of communism. By 1992 democracy was installed, and after a dramatic drop in economic activity, the country embarked on a period of relatively high economic growth. Between 1993 and 1996, GDP grew by about 9 percent annually in real terms (World Bank 2004). The country experienced a dramatic setback in 1997 with the collapse of the pyramid scheme – implying huge losses in terms of households' savings. This also had an effect in the rise of crime, insecurity, lack of governance, and increased unemployment, all of which are expected to have an effect in the level of childbearing. During 1997 Albania experienced negative growth of 7 percent, but over the following next three years the economy bounced back to register an average growth rate of 7 percent. In 1999 Albania faced another crisis from the Balkan wars. However, the country was able to weather the storm of Kosovo refugees and by the end of the year Albania had regained its economic momentum. Economic growth continued in the following years, reaching a 7.3 percent GDP growth in 2000 and started to decline only in the second half of 2001, reaching 4.7 percent in 2002 (World Bank 2004).

Several structural reforms were introduced after the collapse of communism, including banking, land reforms, and privatization of strategic sectors like telecommunications but also of small and medium enterprises. The reforms also implied important changes to the labour market, first and foremost through higher unemployment rates, especially among women.

Despite the improved performance of the economy in recent years Albania remains one of the poorest countries in Europe and is ranked only 73rd of 177 countries by the human development indicator of 200 (Human Development Report 2006). There are features in common with both developing and developed countries. For instance, its total fertility rate of 2.2 and infant mortality rate of 17 per 1,000 live births are comparable with many medium developed countries (Human Development

Report 2006 on data of 2004), whereas the high life expectancy at birth (currently 73.7 years) is comparable with much more developed European countries.

Table 1: Vital statistics for Albania

	1980	1990	2000	2004
Total Fertility Rate	3.6	3.0	2.4	2.2
Life expectancy at birth (years)	69.3	72.3	74.0	74.01
Population growth (% annual)	2.0	1.2	0.4	0.58
Total population (mill.)	2.7	3.3	3.1	3.13
Rural population (% of total)	66.3	63.9	58.1	56.2
GDP per capita ($US 1995 prices)	910.0	841.9	1008.0	1190.4

Note: Data refer to 2004, last year available
Source: World Development Indicators database

The economic and social volatility of the Albanian society from 1990 to 1998 was expected to bring fertility further down, due to the insecure economic and social environment created. During the 1990s there was a sharp increase in unemployment, affecting more than 28% of women and about 20% of men, and an increased income inequality and poverty, with one out of four Albanians living below the poverty line (World Bank 2003). With regards to the social agenda, the only positive note was that education level was kept high, with an increasing proportion of women obtaining university level education. In the period of economic transition there was also a move from a “traditional” to a more “modern” value orientation with a slight increase in cohabitation, a move from extended to nuclear families and a new openness of the society weakening old taboos such as use of contraception, divorce, cohabitation and childbearing outside marriage (INSTAT 2005). The rapid economic change lead to a massive emigration, and since 1990 about one forth of the total population has left the country and is living abroad mainly in Italy or Greece. However, the majority of this migration is seasonal and temporal, and remittances are estimated to account for about 13 percent of total income among Albanian households with a higher share for urban households-16 percent against 11 of urban areas (INSTAT, 2002). Despite the economic benefits of remittances, migration also implies high social costs. According to INSTAT 2002 emigration was particularly evident among males, whose population

dropped over 20 percent between 1989 and 2001 and as such has deprived the country of the most active labour force.

Data Description and Quality

The Albanian Living Standard Measurement Survey (ALSMS) was implemented in 2002 and surveyed 3544 households providing information on 16634 individuals. It follows the standard format of the LSMS surveys and contains therefore rich information on income and consumption expenditure, but also information on education, employment, and important for this analysis, full information on retrospective fertility histories for all women in the household. The 2002 ALSMS forms the basis for a longitudinal survey, with a sub-sample of households and individuals re-interviewed in 2003 and 2004 (see Table 2 for details).

Table 2: Overview of the Albanian Living Standard Measurement Survey

	ALSMS (Albanian Living Standards Measurement Survey)
Target population and sample frame	Private households
Dates of fieldwork	Three waves: Apr-Sep 2002, May-July 2003, May 2004
Panel entry, exit and tracking policy	Unique cross-wave person identifier. New entrants included in sample. All exiting individuals tracked into new households.
Welfare measures available	Income and subjective indicators (all waves); expenditure (wave 1 only);
Sample Size (Panel)	1682 panel households
Sample Size 2002 survey	3544 households

The Republic of Albania is geographically divided into 12 Prefectures, which in turn are divided into Districts. These districts are divided into Cities and Communes. The Communes contain all the rural villages and the very small cities, divided into Enumeration Areas (EAs), which formed the basis for the LSMS sampling frame. The sample is drawn from 450 EA, and in each of them eight households was selected. Household membership is defined as not having been away from the household for more than six months prior to interview date. Table 2 gives an overview of the Albanian Survey. It is important to mention that during the 1990s there were drastic administrative changes, which were accompanied with large internal migration (INSTAT, 2004). However, since the latest census was carried out

in 2001, these changes were well evidenced, and the sample survey was based on census results.

One of the most important issues about the demography of Albania has always been the quality of statistics coming from the communist administration. While the mortality statistics were found to be accurate (Gjonca, 2001), not much work has been done on the childbearing data. In order to check the accuracy of the fertility information of the LSMS and vital statistics, we compare Cohort Total Fertility rates and age specific cohort rates from Vital Registration Data and LSMS respectively. Table 3 shows that the survey data produce somewhat higher estimates of total fertility for recent cohorts. This might be due to the effect of large emigration of the 1990s. Emigration affected the young ages and in particular the single population, initially men, and in the late 1990s females too. For the younger cohorts of the 1950-54, 55-59 and 60-64, the LSMS results might be an artefact of the data, since the enumerator has been affected due to emigration of single population. However, Figure 3, which plots the age specific rates for the old cohorts, not affected from the emigration, shows very similar shapes for age specific cohorts rates (cohorts born during 1930s and 1940s) from the two data sets.

Table 3: *Cohort* fertility rates from both vital registration and LSMS

Cohorts	**1930-34**	**1935-39**	**1940-44**	**1945-49**	**1950-54**	**1955-59**	**1960-64**
CFR-VS	5.03	5.03	4.46	4.43	3.60	3.17	2.92
CFR-LSMS	5.28	5.01	4.61	4.71	4.09	3.64	3.27

Figure 2: Age specific cohort rates from vital registration data and LSMS (about here)

A strong reduction of cohort fertility is evident from both data sources. It decreased from about 5 children per woman born during 1930s to about 3 for those born in the early 1960s. Period fertility measures, estimated for 1980, 1990 and 2000 from LSMS data (Table 4) shows that reduction of fertility continued and it continues to be sharp in most recent period, during the 1990s.

Table 4: Period fertility rates 1980, 1990, and 2000.

Age groups	1980	1990	2000
15-19	21.9	15.4	16.5
20-24	188.7	167.1	130.7
25-29	223.2	213.6	158.6
30-34	158.5	133.3	91.1
35-39	93.6	55.7	32.9
40-44	32.8	17.4	6.9
45-49	4.7	2.7	0.6
TFR	3.62	3.03	2.19

Methodology

The nature of recent fertility reduction is better understood using appropriate survival analysis techniques such as non-parametric Kaplan-Meier (KM) estimation and semi-parametric Cox regression[1]. In our estimation we include control for cohorts, period effects, child mortality ratio, urban – rural dummy variable, four regions, religion, and education. In addition we control for the age of first birth in the regression for second birth, and the age of second birth in the regression for the third birth. The period effect is specific to the nineties, and intends to capture any further fertility decline as a result of the economic and social upheavals during this period.

Results of the Kaplan-Meier estimates

The Kaplan Meier estimates provided for first, second, and third births are estimated for six cohorts. The first one includes women born between 1930 and 1939, the second women born between 1940 and 1949, the third women between 1950-1959, the forth women between 1960-69, the fifth women between 1970-1979 and the last one includes women born between 1980 and 1986. The last three cohorts have not completed their reproductive life at the time of the survey. For the first birth women are defined as becoming at risk of childbearing at age 15. Thus, the time scale on the X-axis for first birth starts at age 15, whereas for subsequent births the starting point is defined at the time when the previous birth took place. Figure 3a and 3b present the Kaplan Meier survival estimates for the first birth, whereas Figures 4 and 5 contains

[1] The Cox regression assumes that the impact of covariates on the hazard is proportional. We test for the proportionality assumption throughout (See Appendix for details).

the Kaplan Meier survival curve estimates for second and third birth respectively. Of interest here is to consider to what extent the two youngest cohorts differ from the older ones. Overall the estimates show that there is little difference between cohorts for first birth, very little difference for the second and there is a distinct difference between the youngest and the two older cohorts for the third birth. This indicates the fact that having a first birth is universal in a still traditional Albanian society. As for the higher parities we see strong differences, showing that the decline in fertility (as seen in Figure 1 and 2) is mainly driven by a decline in higher order births.

Figure 3a: Kaplan-Meier survival estimates of 1st birth by cohorts (about here)
Figure 3b: Kaplan-Meier hazard estimates of 1st birth by cohorts (about here)
Figure 4: Kaplan-Meier survival estimates of 2nd birth by cohorts (about here)
Figure 5: Kaplan-Meier survival estimates of 3rd birth by cohorts (about here)

Estimates for the first birth in particular and the other two to a lesser extend, for early cohorts go almost close to zero. This suggests a very high proportion of women having a first birth. This can be expected to a certain extend if one remembers that the overall level of fertility for these cohorts was very high (Table 3). However, this could also be a result of other explanations. First of all data collected in these type of surveys where fertility histories are asked, tend to under-represent groups of women that are either not married, divorced, or even childlessness. This in particular might be true in the case of Albania, which has been, and to certain extent still remains, a traditional and patriarchal society. However, these results might also be affected by the fact that the marriage was universal in Albania for the period under consideration and in particular the early cohorts, and childbearing outside marriage was almost zero (Falkingham and Gjonça, 2001, INSTAT 2005).

Results from the Semi-Parametric Analysis

In this section we present the semi-parametric analysis (Cox regression) based on the fertility histories derived from the Albanian LSMS survey. We have run two sets of analyses. The first includes control for cohort effects and uses the full sample of women. The cohorts are defined over the periods of 1930 – 39, 1940 – 49, 1950 – 59, 1960 – 1969, and 1970 – 86, the latter being the reference group. Whereas this analysis provides a good picture of fertility decline across cohorts, it does not inform

us about the possible period effect during the nineties. As a result the second analysis is based on a sub-sample of women born after 1959 where a period effect for the nineties is included. In a separate set of analyses we included the period effect and cohort variables in the same model using the whole sample. Though the estimates are qualitatively consistent, this approach is problematic since very few of the oldest cohorts have births during the nineties, for which we include the period effect (these estimates are not presented here). The estimates are presented in Table 5 and 6.

Table 5: Cox regression analysis' results controlling for cohorts (Hazard Ratios)

	1st Birth	2nd Birth	3rd Birth
Reference: Cohort 1970 - 1986			
Cohort 1930 – 39	1.244**	1.278*	2.159***
Cohort 1940 – 49	1.278***	1.407**	2.200***
Cohort 1950 – 59	1.254**	1.442**	1.936***
Cohort 1960 – 69	1.179*	1.382**	1.391***
Child mortality ratio	2.534***	2.473***	5.374***
Reference: Urban			
Rural	1.060	1.078	1.389***
Reference: Tirana			
Coastal	1.139*	1.328***	1.426***
Central	1.220***	1.163*	1.209*
Mountain	1.172**	1.515***	1.981***
Reference: Muslim			
Orthodox	0.941	0.891	0.683***
Catholic	0.914	1.049	1.349***
Other religions	1.042	1.074	1.014
Reference: Less than 5 yrs			
Education (yrs) 5 – 8	1.141	1.018	0.846
Education (yrs) 9 – 11	0.996	0.952	0.742***
Education (yrs) 12 – 15	0.651***	0.781***	0.457***
Education (yrs) 16 plus	0.418***	0.654***	0.289***
Age of first and second births	N/A	0.972***	0.910***

Note: *:10%, ** 5%, ***: 1%

Not unexpectedly we find the oldest cohorts to have higher hazard ratios for first, second and third births. The highest hazard ratios are for the 1940-1949 cohort, which had its peak of childbearing in the 1960-1969, the period for which the level of period fertility was the highest in Albania. This is consistent with the overall fertility decline of Albania (Figure 1 and 2). It is quite understandable for the oldest cohorts to

have much higher hazard ratios for the 2nd and 3rd births. This is also shown from the Kaplan-Maier estimates which show that these cohorts have higher risk of having a 2nd and 3rd birth compared to other cohorts.

One of the main assumptions of the Cox hazard model is the proportionality restriction. It is clear that the 1960-69 cohort does violate it and so does education as a variable. In order to overcome violation of the proportionality assumption, the analyses were also run including interactions. As expected the results do not change qualitatively. The detailed results of these interactions are given in the appendix.

The other explanatory effects are as expected. The most important one for the reduction of fertility is the survival of the previous child. We introduced here a variable that measures the ratio of deceased children to the total number of children for each woman, a variable that was included for all parities. The results show a strong effect of child survival to the level of fertility for each parity and indicates that the rapid improvement of child mortality in Albania from 1950-2000 (Gjonça, A. 2001) has played an important role in reducing the level of fertility. As expected this effect is much stronger for the higher parities. Rural areas, together with the geographical areas outside Tirana, the capital, all have higher childbearing. Understandably the mountainous area of the country which is also the least developed region of Albania has the highest hazard ratios for the higher parities, which confirm the previous analyses that the high levels of fertility in the country are to be found in the less developed region of the north east. Education has a strong negative impact on all birth parities, but especially on the third birth. This might be due to the fact that no matter which level of education, most Albanian women are having at least one child, as this still remains universal in a relatively traditional society. In contrast the effect of other factors, in particular education, becomes stronger at higher parities. Given that there is a continued expansion of education, with more women gaining higher education, suggests that education is an important factor in determining future fertility levels in Albania. The effects of religion on first and second births are statistically insignificant. This is mainly due to the fact that the country abolished religion for almost 30 years from 1963 to 1991. Thus, the main conclusion here is that religion is not important, which is perhaps not unexpected. The only significant results are the ones for the 3rd birth. The data show that the catholic population, mainly based on the north has much higher hazard ratios than the Christian orthodox and Muslims, based in the more developed south and centre of the country.

Table 6 shows the results of the second analysis where we only include women born in 1959 and after. Instead of controlling for cohorts we include a binary variable that captures the time period from 1990 to 2002. The great majority of the estimates remain highly similar to previous ones. The estimated period effects is however interesting. Whereas we would expect further fertility decline during the nineties, the period effect shows that there is *no* delay in the *onset* of childbearing. Taking into account the fact that first birth remains universal in Albania, the decline only materialises through second and especially third births. Albanian society clearly remains a traditional one, despite the changes happening in the social and economic circumstances during the 1990s, there is no postponement of the onset of childbearing (the first birth in our case). As a result strong norms surrounding the timing of marriage and onset of childbearing remain, whereas the economic hardship associated with the economic and social upheavals reduces fertility through higher parities.

Table 6: Cox regression analysis' results controlling for periods (Hazard Ratios)

	1st Birth	2nd Birth	3rd Birth
Reference: Before 1990			
Period effect 1990 - 2002	1.018	0.840**	0.639***
Child mortality ratio	2.371***	2.579***	20.388***
Reference: Urban			
Rural	1.09	1.127*	1.651***
Reference: Tirana			
Coastal	1.057	1.388***	0.953
Central	1.181*	1.238*	0.914
Mountains	1.049	1.610***	1.744***
Reference: Muslim			
Orthodox	1.021	0.791*	0.467***
Catholic	0.941	1	2.009***
Other religion	1.121	0.92	1.44
Reference: Less than 8 yrs			
Education (yrs) 9 - 11	1.613**	1.427	0.71
Education (yrs) 12 - 15	1.002	1.135	0.469***
Education (yrs) 16 plus	0.593**	0.827	0.379**
Age at risk of first and second births	N/A	1.018*	0.940***

Note: *:10%, ** 5%, ***: 1%

4 Discussion

The results in this paper reveal highly interesting findings. First of all they confirm previous research that the dramatic reduction of fertility in Albania came as a result of the reduction of fertility from all cohorts. The youngest cohorts while not delaying the entrance into childbearing, having a first birth is still universal, have reduced the fertility of the second and third birth. Most importantly the reduction of fertility in the 1990s came mainly from the reduction in the 2nd and mainly the 3rd birth. When the two periods are compared interesting results come from this analysis. First, during the 1990s the results for the first birth are not significant, while for the 2nd and 3rd births the period effects are stronger. The latter is expected as the reduction in fertility came mainly from the reduction in these two parities. However, the fact that not much is changing with regards to the first birth might have some justifications. First, in 1990 maternity leave was expanded from 6 months to one year. During the early 1990s industrial collapse generated large redundancy programmes severely affecting the population involved in industry, but in particular women. These two factors might have affected women's decision for having a first birth, respectively by continuing to have the first birth early and making it universal even in the 1990s. Most importantly there is evidence that with the introduction of the market economy, women in Albania are moving from full employment to an increased proportion of housewives. The percentage of housewives has increased into 47% for women 15 years and over, from a period of full employment before 1990 (INSTAT 2004). The unemployment among women is also higher compared to men with a rate of 28% compared to 18.8% for men (INSTAT, 2004). All these factors put together with the fact that Albanian society still remains traditional, where having a first birth is the 'norm', can explain why there are no significant period effect for the first birth compared to other parities. The findings also prove that female education has been one of the most important determinants in bringing fertility down in Albania. In this respect Albania is similar to other East European countries where the changes in the social agenda particularly related to the expansion of female education, during the communism had strong effects in bringing fertility down. Again similar to East European countries and in contrast to Southern European countries, the economic and social crises of the 1990s affected the timing of birth, but in Albanian case of 2nd and

3rd birth. However, since Albania remains traditional in family values, the timing of the first birth was not affected. In this respect we cannot yet talk about postponement of childbearing in the Albanian case (Kohler, Billari, and Ortega, 2002). The rapid improvements of mortality mainly affecting infant and child mortality, one expects that this improvement would have a strong effect in reducing fertility. The results of these analyses confirm yet again the fact that the survival of the previous child has a significant effect in bringing Albanian fertility down, similar to other countries (Palloni, A and Rafalimanana, H. 1999; van de Walle, F. 1986).

Ii is clear that Albania still remains a traditional society with regards to family formation and childbearing. Thus, marriage is still universal and cohabitation almost non-existent. Childbearing outside marriage is insignificant at 0.5% compared to Greece at 4.8% (one of the lowest in Europe) and to neighbouring Macedonia of about 11.2% in 2003 (INSTAT 2005). About 88.1% of 25-29 year olds who are single still live with their parents and about 37.5% of the married people of this age group. The knowledge of contraception has started to change but at a slow pace. 90% of Albanian women are aware of at least one modern method of contraception, however, only 8% of married women use modern methods of contraception (Morris et al, 2005). The traditional methods that brought fertility down during the communist period remain the main ones even today, with 67% of females and 74% of males reporting withdrawal as the main means of contraception. This is in contrast to the fast changes with regards to education, which continues to be high in the agenda of Albanian family. The number of registered students in university has increased by a third since 1990. The number of females at the university level has increased from 51% in 1990 to 60% in 1999 (Social Research centre, INSTAT, 2003).

In such circumstances Albania is facing a contrasting experience, something which one side reflects similar patterns, but much more emphasised of family formation of the south European countries, but on the other it is also reflecting the social and economic effects of change happening in most of the east European countries. Interesting patterns of fertility behaviour are happening in a time where Albania faced huge political and economic changes. It seems that “traditionalism” or “norms” persist for the onset of family formation, whereas perhaps “modernity” and economic constraints impacts the number of children.

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APPENDIX:

Cox regression estimates with interactions for variables violating the proportionality assumption.

Table A: Cox regression controlling for cohorts

	1st Birth	2nd Birth	3rd Birth
Reference: Cohort 1970 - 1986			
Cohort 1930 - 39	1.225	1.291**	2.168***
Cohort 1940 - 49	1.590**	1.405***	2.212***
Cohort 1950 - 59	1.379*	1.435***	1.951***
Cohort 1960 - 69	0.78	1.379***	1.395***
Cohort 1930 - 39 - interaction	1.024	-	-
Cohort 1940 - 49 - interaction	0.916	-	-
Cohort 1950 - 59 - interaction	0.898	-	-
Cohort 1960 - 69 - interaction	1.566**	-	-
Child mortality ratio	2.486***	5.121***	5.401***
Child mortality ratio - interaction	-	0.193***	-
Reference: Urban			
Rural	1.061	1.074	1.390***
Reference: Tirana			
Coastal	1.136*	1.339***	1.426***
Central	1.217***	1.168**	1.210*
Mountain	1.172**	1.535***	1.980***
Reference: Muslim			
Orthodox	0.941	0.887*	0.682***
Catholic	0.917	1.049	1.347***
Other religion	1.038	1.07	1.015
Reference: Less than 5 years			
Education (yrs) 5 - 8	1.166	0.934	0.841
Education (yrs) 9 - 11	0.776	0.889	0.739***
Education (yrs) 12 - 15	0.292***	0.629***	0.457***
Education (yrs) 16 plus	0.050***	0.429***	0.291***
Education 5 - 8 - interaction	0.963	1.179	-
Education 9 - 11 - interaction	1.360*	1.161	-
Education 12 - 15 - interaction	2.468***	1.488***	-
Education 16 plus - interaction	9.391**	2.055***	-
Age at risk of second and third births	-	0.998	0.925***
Age at risk of births - interaction	-	0.956***	0.972*

*Note: * 10%, ** 5%, ***1%. Interactions are created by splitting the duration variable at 4 for the first birth, and 2.5 years for second and third births. More detailed interactions can be constructed by splitting the duration interval into several segments, but did not seem necessary for the variables concerned here.*

Table B: Cox regression controlling for period effect

	1st Birth	2nd Birth
Reference: Before 1990		
Oeriod effect 1990 - 2002	1.234*	0.837**
Period effect - interaction	0.779*	-
Child mortality ratio	2.464***	7.343***
Child mortality ratio - interaction		0.081***
Reference: Urban		
rural	1.083	1.134*
Reference: Tirana		
coastal	1.061	1.384***
central	1.187*	1.231*
mountain	1.06	1.625***
Reference: Muslim		
orth	1.022	0.796*
cath	0.948	1.032
othrel	1.116	0.913
Reference: Less than 8 years		
ed811	0.66	1.291
ed1215	0.243***	1.026
ed16p	0.079***	0.765
ed2int	3.823***	-
ed3int	7.061***	-
ed4int	13.034***	-
Age at risk of Second birth	-	1.021
Age at risk - interaction	-	0.995

*Note: * 10%, ** 5%, ***1%. Interactions are created by splitting the duration variable at 4 for the first birth, and 2.5 years for second and third births. More detailed interactions can be constructed by splitting the duration interval into several segments, but did not seem necessary for the variables concerned here.*

The proportionality Assumption and its violation

The Cox proportional hazard model assumes that covariates shift the baseline hazard in a proportional manner. This implies that the effect of the covariates does not change from short durations to long durations, for instance. Testing for the proportionality assumption is straight forward and its remedy (if violated) is also simple. The proportionality assumption is tested for all our estimates, and some violations are found. For the first birth reported in Table 5, we find the Cohorts, especially the one of 1960 – 1969, to violate the assumption, as does education and to

a lesser extent the child mortality ratio. To correct for the proportionality assumption we split the duration (i.e. time until birth) into segments which are interacted with the variables causing the violation. The violation of Cohort variables in the first birth regression can be traced back to Figure 3b. Here we can see that the hazard rates for the youngest cohorts are lower than those of the older cohorts, which is reflected in the estimates in Table 5. But we can also see that the hazard function of the two youngest cohorts (the reference group in Table 5), peaks and declines much more rapidly than the other older cohorts and this causes the violation of the proportionality assumption.

The pattern for the education variables is somewhat different. Here the hazard function is highest for those with lowest education, as is reported in Table 5. Those with higher education have a lower hazard rate, a natural result of delaying childbearing due to time spent in education. However, as women leave full time education, their rate of childbearing is accelerated compared to those with lower education, and again this tends to violate the proportionality assumption. This pattern is clear from Appendix Table A, where the interactions with duration show a hazard ratio much higher than unity, reflecting the acceleration in childbearing. The effect of education is of course as expected: those undertaking higher education delay childbearing, but start a recuperation process as they complete their studies. A similar pattern is found for second birth, whereas the education variables do not violate the proportionality assumption in the estimates for the third birth. It is also worth noting that the cohorts do not violate the proportionality assumption in second and third births.

Table B in the Appendix shows some interesting results with respect to the period effect for first birth. Whereas Table 6 showed no period effect for the first birth, we see that this changes in Table B when controlling for duration effects. Compared to women having their first birth before 1990, the hazard rate is slightly higher in the first duration segment, but declines significantly after four years.

FIGURES

Figure 1: Period and cohort fertility rates, Albania 1950-2000 (about here)

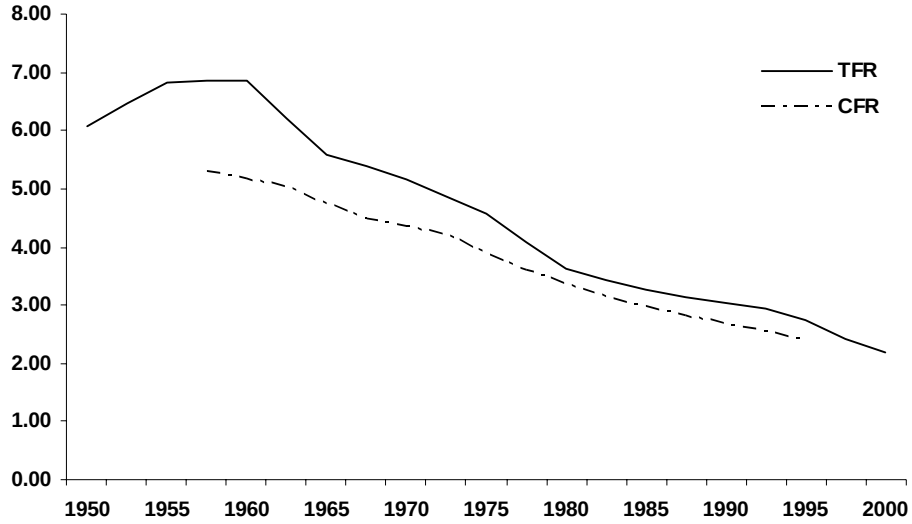
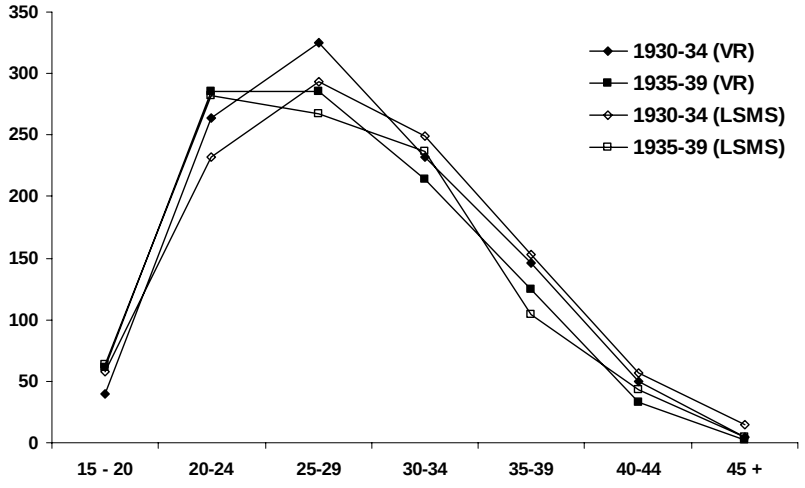


Figure 2: Age specific cohort rates from vital registration data and LSMS (about here)



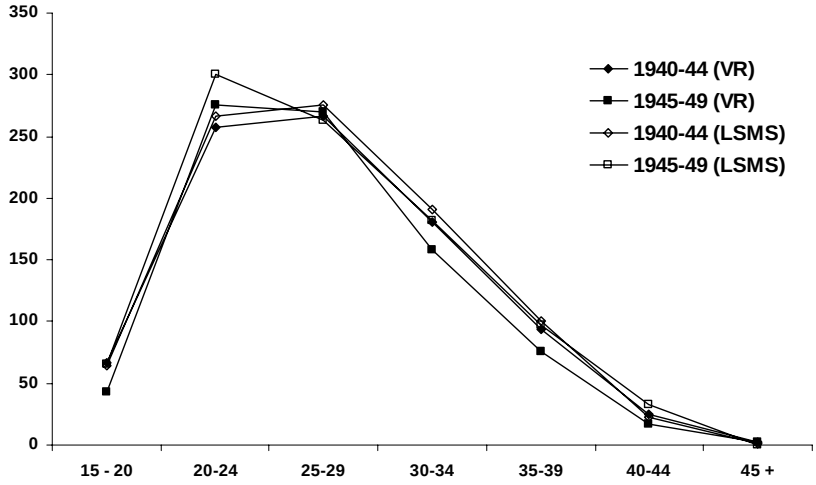


Figure 3a: Kaplan-Meier survival estimates of 1st birth by cohorts (about here)

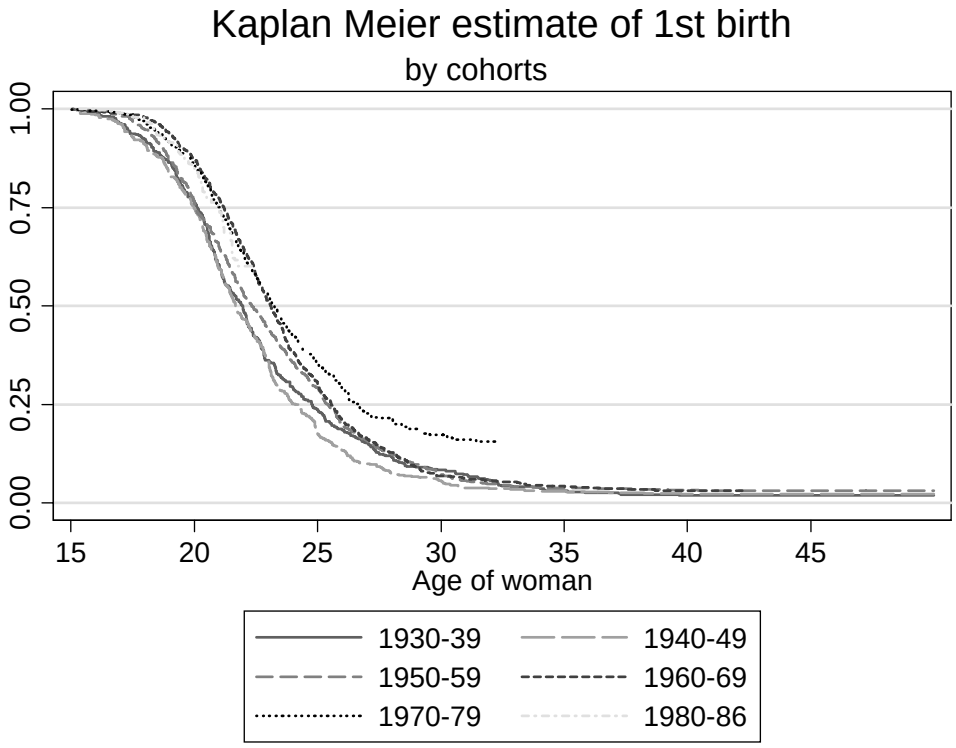


Figure 3b: Kaplan-Meier hazard estimates of 1st birth by cohorts (about here)

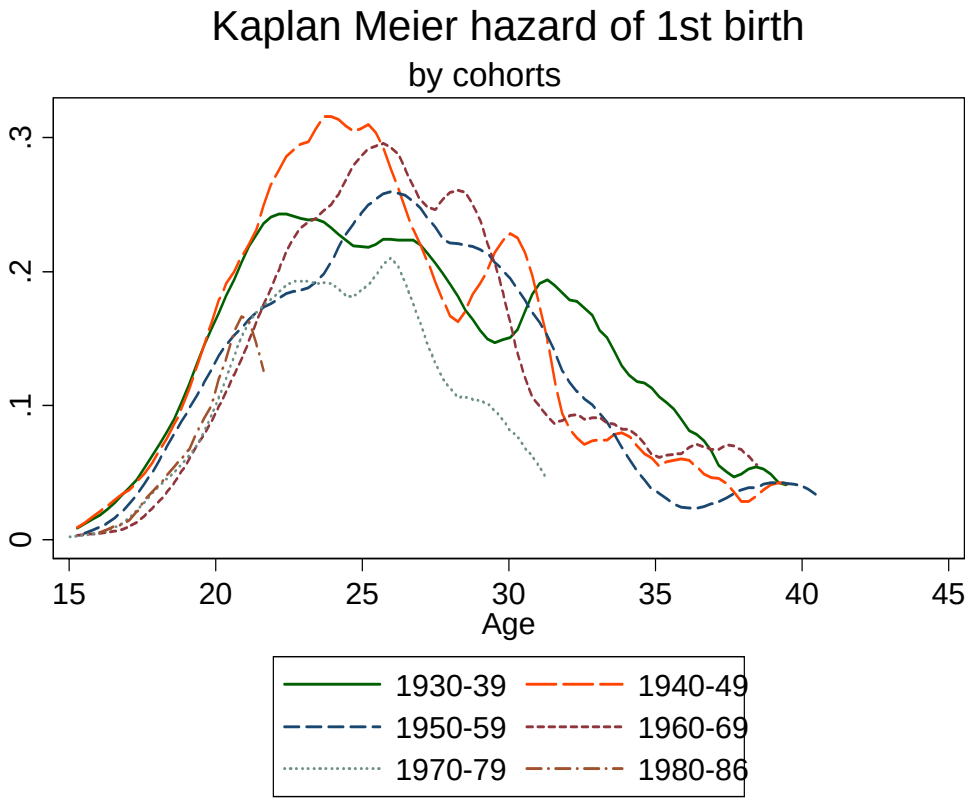


Figure 4: Kaplan-Meier survival estimates of 2nd birth by cohorts (about here)

Figure 5: Kaplan-Meier survival estimates of 3rd birth by cohorts (about here)