Does conflict impact demographic transition? A comparison between two forerunners of fertility decline, Lebanon and Tunisia

By

Hala Naufal Rizkallah and Hassan Zaky

Professor of Demography
Lebanese University

Professor of Statistics/Demography
Cairo University and the American University in Cairo

1. Introduction

The fertility in Lebanon and Tunisia is the lowest among all Arab countries. However, the two countries have gone through opposite scenarios. while Tunisia enjoyed political stability, Lebanon experienced an enduring civil war between 1975 and 1991 which had a devastating effect on the country's infrastructure and its population. In spite of that, both have now a total fertility rate that is lower than 2 live births per woman.

Studies aiming to assess the impact of war on the demographic transition have been confronted by the lack of data in Lebanon, as the only and last population census was conducted in 1932. Incomplete civil registration has been a great impediment to fertility trends studies. Since 1991, after the initiation of a major reconstruction project, the information system on population began to improve, with the launching of many surveys such as the Lebanon Maternal and Child Health Survey (LMCHS 1996) and the Family Health Survey (LFHS 2004) conducted within the Pan Arab Project for Child Development (PAPCHILD) and the Pan Arab Project for Family Health (PAPFAM) respectively .These surveys provided for the first time in Lebanon data on the births history on both national and regional levels. They also provided information on factors that could affect fertility levels. On the other hand, many national surveys conducted in Tunisia allowed the follow up of the factors behind the fertility decline.

The present paper attempts to assess the net impact of conflict on a population's demographic transition through a comparative study between two forerunners of fertility decline in the Arab world: a country in a context of war, Lebanon, and another in a context of peace, Tunisia, by using mainly – but not only data of sample surveys conducted in Lebanon and Tunisia between 1978 and 2004. Accordingly, the paper will assess the general economic, social and cultural conditions prevailing in Lebanon before, during, and after the war, and the economic, social and legislative changes in Tunisia. In particular the paper will assess the impact of female education and labor force participation on fertility in Lebanon, and the impact of the population program on fertility in Tunisia.

2. Impact of female education and labor force participation on fertility in Lebanon: the individual approach

Since the 1950's, Lebanon witnessed many changes on the economical and social levels. Lebanon's geographical location as a node between east and west, its liberal economical regime, and its cultural diversity, led to distinctive capacities of its human resources, especially in the domains of commercial services, banking, hospitalization, education and communication (Naufal, 2003:p.7). Its liberal economic system encourages individual initiatives and investments, and promotes the role of the private sector in national economic development.

2.1 Economic, social and cultural conditions before the war

By virtue of the aforementioned attributes, Lebanon historically attained and retained a comparative advantage in the Arab region for attracting foreign capital, investment and tourism. It has also maintained a cultural driven role in the Middle East (Faour & all, 2000:p.6). It is worth mentioning that Lebanese religious communities insured their protection by providing their near context with education. Throughout history, the first educational attempts in Lebanon came with the religious movements and activities. In Lebanon, there was a particular condition regarding the functioning of religious communities: these were very keen on preserving the religious and cultural identity, education being the tool through which this identity was maintained. Each community was acting as an independent one, having cultural and spiritual

connections situated outside Lebanon. The nineteenth century witnessed a huge educational activity enhanced by the coming of missionaries who brought in European languages in parallel to the religious messages (Bachour, 1978: pp.19-23). The first school for girls in the Arab region opened in 1826 in Beirut and schools for girls multiplied after 1860. The schools opened either by the religious or local communities influenced through the quality of education, the political structure of the country, western values and modern teaching affecting the mentalities and attitudes of the social groups concerned. We notice that throughout the development of the educational system in Lebanon, private teaching was dominant over public teaching (Alhusseyni, 2003).

The general trend in which the country was establishing itself in the region, combined with other factors relating to the overall political and economical status of the region, resulted in a high growth rate of the gross domestic product (GDP), 6 % annually in the fixed rates from 1964-1974 (Ministry of Labor, 1998 :p. 13). In parallel to this growth, the improvement of the living conditions and the expansion of the sector of preventive health and treatment, the signs of the demographic transition in Lebanon could be read in the early decline of the infant mortality rate estimated at 87 per 1000 live births during 1950-1955, at a time where it reached in average 188 per 1000 live births in the other Arab countries (U.N, 2003). We have to note that the economical growth was unequally distributed among Beirut and its neighboring areas on one hand, and the other Lebanese regions on another hand, since all economical activities were focused in the center, giving it a neat privilege over the other areas (Naufal, 2000: p. 8).

2.2 Economic, social and cultural conditions during and after the war

Lebanon's course of development was halted in 1975 with the outbreak of the war that paralyzed the country's vital sectors until 1990 when the Taef agreement was enunciated. This war led to serious damages in the economy and to a social crisis caused by the large gap between wages and living costs, inflation being very high. The average of the annual inflation rate rose from 19 % from 1975-1979 to 138 % from 1985-1990, to attain its highest value in 1987 with 400 % (UNDP, 1997:p.34). After 1990, Lebanon underwent rehabilitation of both its human and physical capital.

At the end of the war in 1990, the human development situation represented by the Human Development Index (HDI) clearly showed the effects of the deterioration of the economy, the index registering its lowest level (0.561) in 1989. Though GDP had collapsed, the three HDI components that reflect the social dimension were still comparatively high at the end of the war. Economic growth, particularly in the first half of the 1990s resulted in the HDI recapturing much ground. Subsequent deceleration of the growth rate of GDP (from 4 % in each of 1996 and 1997, to 3 % in 1998, 1 % in 1999, and zero in 2000) slowed the improvement in the value of the HDI (UNDP, 2002: pp.29-30). In 2001, the HDI was in the upper middle of the medium human development group (0.752). The Gender Development Index (GDI) roughly follows the pattern of the HDI level (0.737) (UNDP, 2003: p.238). In 2005, the latest year for which data is available, the HDI and the GDI rose to 0.772 and 0.759 respectively (UNDP, 2007/2008, p. 230 & 327). Combined Gross Enrolment Ratio for primary, secondary and tertiary education reached 86 % for females and 83 % for males (UNDP, 2007/2008, p. 327)). In 2004, the ratio of girls to boys reached 96 % in primary, 104 % in intermediate, and 103 % in secondary education. The economic activity rate was estimated at 44 % of the total population and 47.1% of the total economically active population (aged 15-64). Female economic activity was estimated at 20.4%, compared to 68.9% for males, and females constituted 24.2 % of the labor force (MOSA & all, 2004).

2.3 Impact of education and female economic activity on fertility

Education and economic activity are two of the main determinants of women's status (Martin & Juarez, 1995; Mehryar et al, 2002). They have long been recognized as crucial factors influencing women's childbearing patterns and are considered in the literature direct causes to the delay in the age at marriage. The accumulated evidence provides a compelling rationale for focusing on increased investment in education and the elimination of institutional and cultural barriers to women's schooling in policies aimed at promoting development and reducing fertility.

Although the association between female education and fertility was a constant theme in the early literature, the availability of recent data in Lebanon considerably improved our understanding of the relationship between the two and of the reason

why fertility declined in Lebanon before many other Arab countries. Results indicate remarkable improvement in the level of education of women and a clearly negative correlation between women's education and fertility. Table 1 gives the educational status of Lebanese ever-married women by age cohorts. From this data, it would appear that female illiteracy started low and has gone lower over time. Among those born in the early 1940s (1941-1945) only one third of women were illiterate, percentage some Arab countries have not yet reached. In Tunisia, among ever-married women born in early 1940s (1940-1945), percent illiterate was 81.8 according to 1994 TMCHS. In Egypt among ever-married women born in 1950s, percent illiterate was almost 62 according to 2000 Egypt DHS. In Morocco, the percentage was almost 75 during 1945-1954 according to 1995 Morocco DHS. In Yemen, the same percentage was above 90 in late 1940s according to 1997 Yemen DHS.

On the other hand, it is clear that educational status in Lebanon is progressing. Percent illiterate among those born during the period 1976-1980 is only 2 as shown in Table 1. At the same time, more than two thirds of the younger women (born 1976-1980) completed either their primary or preparatory levels. In Tunisia, percent illiterate among those born during 1976-1978 is 5 and 45 % completed either the primary or preparatory levels.

The 1996 LMCHS provides some interesting information on fertility differentials as measured by cumulative fertility or the number of children ever born. The mean number of children ever born (CEB) for the whole sample is 3.63 children. Looking at the relationship between women's age cohort and cumulative fertility in Table 1, ever-married women who were born in 1940s had a mean number of children ever born of almost only 5 children**,** value both Tunisia and Egypt reached only in 1950s according to 1994 TMCHS and 2000 Egypt DHS respectively**.**

Adjusting by education clearly supports the idea of the negative relationship between education and fertility. Illiterate women had CEB of almost 6 compared to just above 2 for secondary education. Adjusting further by both education and age cohort of females confirms the thought that of the relatively low level of fertility among older cohorts of females as compared to other Arab countries at any given educational

status. Those born in 1940s in Lebanon with primary-secondary education had mean number of children ever born of almost 4 children. In Egypt, those with the same education but born later in 1950s had 4.5 as a mean number of children ever born. Moroccan females born during the period 1945-1954 with same level of education had mean CEB of 4.4 children, almost equivalent to that of Egypt.

Another likely cause of why fertility declined in Lebanon faster than other Arab countries and the age at marriage was delayed is the relatively high female labor force participation before marriage. About one third of ever-married females in Lebanon worked for cash before marriage as indicated by the 1996 LMCHS (table 2)**.** The same percentage is 23.7 for Tunisia and does not exceed 15 and 2 in Egypt and Yemen respectively for all age cohorts. Female economic participation before marriage in Lebanon has been always at the level of one third even among older cohorts of women as shown in Table 2. Almost 27 % of those born in 1940s worked before marriage in Lebanon and only 12 % in Tunisia. Participation significantly increases among educated women. Almost one half the ever-married women with at least secondary education worked for cash before marriage. The same percentage is observed for Tunisia (49.8 %). Adjusting by women's labor force participation before marriage provides some interesting evidence for the association with fertility. The mean number of children ever born for the economically active women before marriage was almost 3 children which is one child less than those who were not working before marriage. Adjusting further by age cohort clearly indicates that the influence of work before marriage on fertility had been present, especially among older cohorts of women.

As a result of the economic, social and cultural changes in general and the impact of education and female economic activity on fertility in particular, Lebanon is currently engaged in an advanced stage of its demographic transition from high to low birth and death rates. The infant mortality rate (per 1000 live births) decreased from 87 during 1950-1955 (UN, 2003), to 65.1 around 1970 (Courbage and Fargues, 1974: p. 36), to 28.9 during 1991-1995 (LMCHS 1996), to 18.6 during 1999-2003 (LFHS 2004). The crude birth rate (per 1000 population) decreased from 40.9 during 1959-1962, to 34.6 in 1970-1971 (Courbage and Fargues, 1974: p.28), to 25 around 1996 (Faour et al, 2000: p.39), to 14.7 en 2007 (Figure 2). The crude death rate (per 1000 population)

decreased from 9 in 1970 (Courbage and Fargues, 1973: p.29) to 7 in 1996 (Faour & all, 2000: p.39) and 2000-2005 (UN, 2008).

The signs of the premature decline of fertility level in comparison with Arab countries were observed since the beginning of the sixties. "….Comparing the early fifties TFR levels for most Arab countries with the averages for other regions in the world indicates that TFR for most Arab countries are closer (slightly higher) to those in other regions in Africa (except Middle Africa) and to Central America. These levels of TFR are markedly higher than those in regions that have already been through their fertility descent (Europe and North America). They are also higher by nearly one birth per woman than almost all the averages for the remaining regions that do not appear to have started their fertility transition (Asia, The Caribbean and South America). The obvious exception to this statement is Lebanon, with a level of TFR (5.7) comparable to most regions of Asia, the Caribbean and South America" (Rashad, 2001:p.194). The TFR declined from 5.74 during 1950-1954 to 5.69 in 1960-1964 then to 5.34 in 1965-1969 (UN, 2009), the lowest among the Arab region and the earliest in the fertility transition

Drawing on the births statistics registered by the Civil Registration, the estimated number of children born per marriage has decreased from 5.7 during the period 1958-1963 to 4.7 in 1973 (Courbage et Fargues, 1974: p.29).

The results of the LMCHS and the LFHS presented in tables 4 and 5 show the significant decline of the fertility during the periods preceding the two surveys: the TFR declined by 60 %, from 4.2 during the period 1976-1980 to 1.7 during 2001-2003. The pace of the decline has accelerated over time. As a result, fertility changes are heavily concentrated in the most recent periods.

Cohort fertility measures allow an examination of changes over time in the fertility behavior: for each successive cohort, fertility is generally lower at any given age (Figure 1). The substantial reduction in fertility at ages 15-19 and ages 20-24 observed for the youngest cohorts (born between 1961- 1965 and 1976-1980) is a result of an increasing trend toward later marriage which delayed the start of childbearing and hence reduced fertility for these women. Figure 1 also shows steady

decrease in the fertility in the late twenties and early thirties for all cohorts. This suggests that successive cohorts are practicing fertility control earlier. The changes are particularly notable for the cohorts 1951 - 1956, 1961 - 1965 and 1966 – 1970. The women in these cohorts would have reached their peak childbearing ages in the 1970s, 1980s and the 1990s when rates of family planning use were increasing rapidly.

At the regional level, one can see the changes that occurred by examining the trends in age-specific and total fertility rates. Table 6 shows that the total fertility rate fell in all the Mohafazas of Lebanon during the 15 years period. The decline is particularly notable in the Bekaa (from 4.85 to 2.5 births), and the North (from 5.4 to 3.3 births), followed by the South (from 4.51 to 2.74).

Comparing the two periods, fertility is also generally lower at any age. The decline is particularly noted for the youngest and oldest age groups. In all Mohafazas except Beirut, the age - specific fertility rates peak in the 25 - 29 age group, an indicator of the effect of the rising age at marriage. Concerning Beirut, the changing of the peak from 20 - 24 to 30 -34 age group indicates that the mean age at first marriage is higher than in the other Mohafazas.

2.4 A neglected source for the appraisal of fertility decline: the Civil Registration

Before the war, births tend to be reported promptly, mainly because birth certificates are required to obtain official identification cards. Birth statistics were then published periodically by the Ministry of health. During the war, the registration process became slower and birth statistics were no longer published. Since the end of the war in 1990, the Statistics Department of the Directorate of Civil Status, the agency entrusted with the vital registration, has been introducing technical and administrative changes which are likely to result in improvement in the vital registration system and publishing process.

Drawing on the estimation of the crude birth rates from the births statistics registered by the Civil Registration during 1999 -2008, the crude birth rate fell from 17.7 in

1999 to 13.3 per 1000 in 2006, then increased slightly in 2007-2008 (see Appendix and Figure 2).

3. Explanations for the fertility decline in Tunisia: the State approach

Since the instauration of the protectorate system in 1881, Tunisia has been witnessing economic and social changes and a western cultural influence on the evolution of mentalities. Through the progress of modern schools, these changes helped the blossoming of modern institutions and the familiarization of the population with modern organization mode and administration. The economic development was channeled in the agricultural, industrial, technical and commercial sectors, leading to an increase of the population (Vallin et Locoh, 2001:p. 44-45).

After the Second World War, Tunisia gathered the ultimate conditions for a demographic transition. The colonial period reinforced the economic and socio-cultural foundations of the Tunisian society towards a modernization of the infrastructure, the production processes and the social behavior. The claim for independence was very soon associated with a political will to reinforce the necessary conditions for a socio-economic development (Vallin et Locoh, 2001:p. 53).

In Tunisia, the factors that triggered the fertility decline are different in nature. The state alarmed the people of the consequences of the population problem and paved the way for the individuals to walk the path of fertility decline and changed their attitudes and behavior in that respect. The two factors which explain the decline are the political, social and legal framework of the population program and the development of the family status.

3.1- Political, social and legal framework of the population program

Since the early 1960s, President Bourguiba highlighted the population problem and its links with poverty and women's health. Family planning program was adopted by all institutions and mass organizations in the early sixties. In its very first motion on the issue, the National Women's Union recommended the creation of regional

committees for disseminating information on contraceptive methods. The Tunisian Family Planning Association, established in 1968, has played an important role in the introduction of family planning in 1968. It set up the first FP clinic and continued to provide services in remote areas. The National Board for the Family and Population (ONEP) was established in 1973. The ONEP is accountable to the Ministry of Public Health and is managed by a board of directors representing nine ministries and three national organizations. In 1974, the government also set up the High Council for the Family and Population as a guiding and supervisory body. The purpose of the High Council is to define government policy as well as to determine ONEP's major strategies, programs and action plans. It is chaired by the Prime Minister. The Ministry of Education picked up this program in 1979 by integrating population education into primary, secondary and higher education curricula as well as in training programs for teachers and school inspectors. Religion was not associated with contraceptive methods concerns. According to 1988 DHS, only 3 percent of ever married women associated religion with contraceptive use. The Government's family planning policy was constantly voiced and disseminated by the national media. According to Daly (1969), there were six legal foundations to the family planning program:

- The woman's legal status as a complete citizen.
- The freedom of information about contraception and distribution of contraceptive products.
- The limitation of family allowances to the first four children after that of three children, to put an end to the pro-natalist policy.
- Prohibition of polygamy.
- The raise of the age at marriage.
- The legalization of abortion, for social reasons, in the first three months of pregnancy after the fifth child.

3.2 The Development of the Family Status

A movement of family status change was undertaken after the independence. It started in 1957 with the establishment of the personal status that regulated marriage and divorce, allowed abortion and gave rights for women. The government motivated the

family to limit their births and realize their well-being. Even in 1993, the Family Judge System was enacted and proved to be extremely effective in settling marital disputes. A family fund was created to ensure prompt payment of alimony and child support in case of divorce. The social and cultural changes were by largely in favor to woman. Reforms brought to the personal status gave woman freedom and equality with men. The establishment of the family planning services gave women the opportunity to regulate their fertility. According to Cochrane and Guilkey (1995), the rapid decrease in fertility rates corresponded precisely to the period of feminist ideas diffusion and changes in the woman's status. These changes have been reflected in many findings from the 2001 PAPFAM. Almost 3 out of four families were living independently from the larger families of parents, especially in rural areas. Almost 60 % of marriages were not related. Women became more empowered than before in determining the affairs of their children. Women in half of the families were solely responsible in taking the decisions related to their children such as health and education. Currently, females enjoy a prestigious position within the family and are regarded as full partners to men. A development of a new kind of family was found in Tunisia. Tunisian families moved away from big extended families with a preference for boys and inequalities in the male-female relationships which are still typical of many Arab families towards smaller nuclear families where women status is consistent with the country's population policy.

As a result of this State effect, Tunisia is now in an advanced stage of its demographic transition from high to low birth and death rates. The infant mortality rate (per 1000 live births) decreased from 158 in 1968-69 to 34 in 1995 (Vallin et Locoh, 2001: p. 66) to 18.5 in 2007 (INS, Tunisia). The crude birth rate (per 1000 population) decreased from 50.96 in 1956 to 17.60 in 1998 (Vallin et Locoh, 2001: p.57) and 17.4 in 2007 (INS, Tunisia). The crude death rate (per 1000 population) decreased from 24.82 to 5.4 in 1998 (Vallin et Locoh, 2001: p.57) and 2007 (INS, Tunisia). Consequently, birth rate got closer to death rate, leading to a new balance in population, where barely more than two children per women were sufficient in insuring population's replacement.

The results of the different surveys carried out in Tunisia and captured in table 7 show the spectacular decline of the fertility during the three past decades: the total fertility

rate declined by 64 percent, from 5.8 in 1978 to 2.1 in 2001. Furthermore, the more recent estimates from Tunisia show that TFR declined to around 2 in 2005 from 7.9 in 1964 and 5.9 in 1973. For each year, fertility is lower at any given age. The decline is particularly notable for the youngest age groups (15-19 and 20-24) and the oldest ones (40-44 and 45-49).

The fertility decline affected all regions in Tunisia. Table 8 shows that the decline is particularly notable in the South West (from 3.8 to 2.0) and the North West (from 3.2 to 1.8). Comparing the two periods, fertility is lower at any age and the decline is noted for the youngest and oldest age groups. In Tunisia, the age - specific fertility rates peak in the 30-34 age group, an indicator of the effect of the rising age at marriage. In all the other regions except the North East, the changing of the peak from 25-29 to 30-34 age group indicates the rising of the mean age at first marriage.

4. Concluding remarks

Lebanon and Tunisia are considered the forerunners of fertility decline in the Arab World. The paper explored the factors related to the decline in fertility in Lebanon and Tunisia. The fertility determinants were different between the two countries, in Lebanon it was mainly due to the effect of female's educational level and participation in the labor force. Historically, both female educational levels and employment rates in Lebanon were in favor of lower levels of fertility compared to other Arab countries. When fertility was declining in Lebanon, female education was at levels reached by other Arab countries only a decade later. Similarly, female employment rates have been and still are higher in Lebanon than all other Arab countries. Education has always been valued in Lebanon by all the religious communities and was used as an effective tool to preserve and maintain their religious and cultural identity. This may explain why war did not have a downward impact on female education and consequently on the demographic transition in Lebanon .

In Tunisia, however, the decline started with the political commitment of President Bourguiba and the establishment of the personal status code that regulated marriage and divorce and legitimated abortion. The forces triggering the fertility decline started as a national collective process and translated into a new development of the

family status where females were more empowered, desired fewer numbers of children, used contraception more extensively, and lived in nuclear families.

Moreover, the lower levels of the crude birth rates and the TFR in Lebanon compared to Tunisia can be attributed to the war inhibiting effect of nuptiality through the emigration of a high number of young active Lebanese males leading to the disruption of the marriage market. The persisting political instability and precarious socio-economic situation could continue to reinforce these tendencies in Lebanon.

Table1: Educational status of ever-married women by year of birth and mean number of children ever born. LMCHS 1996

Year of birth	Illiterate	Read &/or write	Primary	Preparatory	Secondary	University	Total	Mean Numb of Children ev born
1941-45	38	14	25	16	4	3	100	5.56
1946-50	29	16	24	17	8	7	100	4.99
1951-55	21	13	26	18	12	9	100	4.45
1956-60	16	10	28	21	15	11	100	4.04
1961-65	11	11	29	22	15	13	100	3.20
1966-70	7	7	28	26	20	11	100	2.36
1971-75	7	8	34	31	17	3	100	1.53
1976-80	2	18	39	35	6	0	100	0.82
Total	17	11	28	22	14	9	100	3.63
Mean Number of Children Ever Born	6.10	4.25	3.63	2.81	2.35	2.12	3.63	

Table 2: Labor force participation among ever-married women by age cohort and educational status, LMCHS 1996.

Background characteristics	**Percentage worked for cash before marriage**
-Age cohort	
1941-45	27
1946-50	28
1951-55	33
1956-60	33
1961-65	35
1966-70	32
- Education	
Illiterate	18
Read &/or write	24
Primary	22
Preparatory	31
Secondary	48
University	66
Total	31

Table 3: Mean number of children ever born by female economic participation before marriage and age cohort, LMCHS 1996.

Age cohort	Worked for cash	Did not work for cash
1941-45	5.02	5.75
1946-50	3.93	5.40
1951-55	3.48	4.92
1956-60	3.29	4.41
1961-65	2.43	3.61
1966-70	1.83	2.60
1971-75	1.13	1.65
1976-80	0.63	0.85
Total	2.92	3.95

Table 4: Fertility rates (per 1000 Women) during the 20 year period preceding the survey (LMCHS 1996)

	Periods			
Age Group	**0-4**	**5-9**	**10-14**	**15-19**
15-19	30	47	62	73
20-24	123	150	179	210
25-29	147	175	199	235
30-34	112	126	156	175
35-39	67	86	89	154
40-44	22	25	67	-
45-49	5	8	-	-
TFR	2.5	3.1	3.8	4.2

Table 5**:** Fertility rates (per 1000 Women) during the 15 year period preceding the survey (LFHS 2004)**.**

Age Group	0 – 3 years	5 – 9 years	10 –14 years
15 – 19	17	27	47
20 – 24	69	110	162
25 – 29	106	138	161
30 – 34	93	104	137
35 – 39	45	59	91
40 – 44	13	27	-
45 – 49	5	-	-
TFR	1.7	2.3	3.0

Figure 1: Fertility rates (per 1000 women) by cohort and age at childbirth (1946-1980), LMCHS 1996.

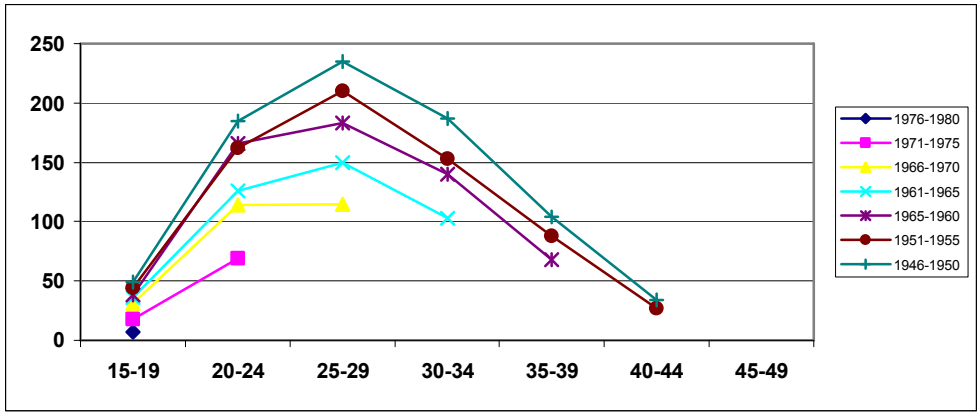


Table 6: Age-specific and total fertility rates for two periods preceding the survey by mohafaza, LMCHS 1996.

Mohafaza	Period preceding survey	Age group						
		15-19	20-24	25-29	30-34	35-39	40-44	TFR
Beirut	0-3	17	81	101	108	38	4	1.74
	10-14	34	117	115	103	42	34	2.22
Mount Lebanon	0-3	30	95	122	90	55	9	2.01
	10-14	48	146	174	129	77	50	3.12
North	0-3	28	148	191	146	109	41	3.31
	10-14	100	260	268	216	127	115	5.40
South	0-3	28	169	161	89	83	18	2.74
	10-14	59	222	227	169	66	159	4.51
Bekaa	0-3	30	127	148	94	59	41	2.50
	10-14	63	193	279	188	135	113	4.85

Table 7: Tunisia, Fertility rates (per 1000 Women) during the five years preceding the surveys

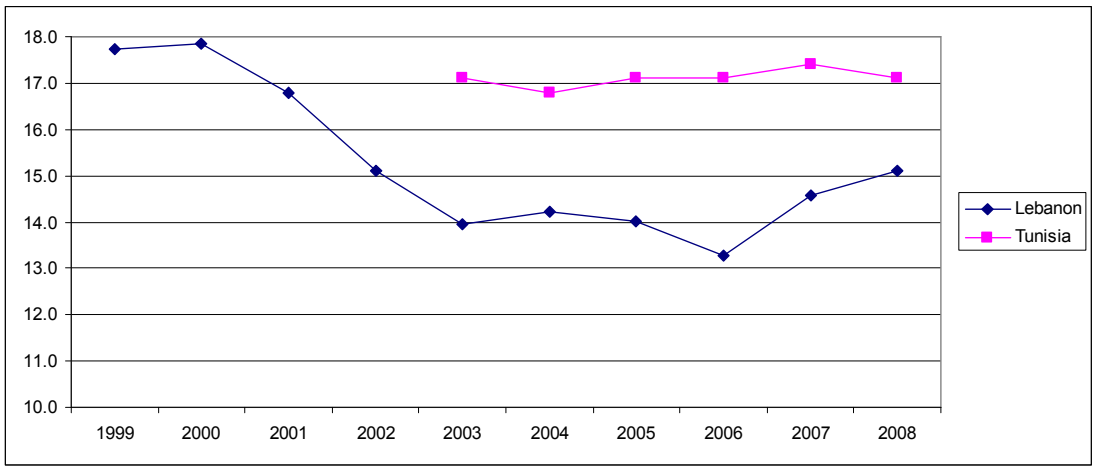
Age Group	Surveys			
	TFHS2001	TMCHS1994	DHS1988	TFS1978
15-19	7	17	30	34
20-24	66	121	167	224
25-29	126	187	249	303
30-34	126	164	225	260
35-39	79	99	134	199
40-44	23	45	62	112
45-49	2	10	13	36
TFR	2.1	3.22	4.4	5.84

Table 8: Age-specific and total fertility rates by region, TMCHS 1994, TFHS 2001.

Region	Survey year	Age group							
		15-19	20-24	25-29	30-34	35-39	40-44	45-49	TFR
Tunisia	1994	6	89	121	134	82	17	7	2.3
	2001	12	58	108	109	80	12	0.4	1.9
North East	1994	29	106	209	150	75	45	16	3.2
	2001	16	78	154	99	47	20	0.4	2.1
North West	1994	27	121	199	127	102	50	6	3.2
	2001	10	59	94	115	73	18	0	1.8
Central East	1994	21	112	186	150	72	23	5	2.8
	2001	10	73	123	149	58	14	2	2.1
Central West	1994	22	143	213	207	148	86	15	4.2
	2001	10	52	157	191	99	62	0	2.9
South East	1994	26	140	201	143	109	51	6	3.4
	2001	5	73	102	133	83	41	0	2.2
South West	1994	26	111	179	181	160	91	21	3.8
	2001	14	43	96	125	98	30	0	2.0

1994: 0-3 years preceding the survey
2001: 0-4 years preceding the survey

Figure 2: Evolution of the crude birth rate in Lebanon and Tunisia (1999-2008)



Source: Lebanon; see Appendix
Tunisia: Institut National de la Statistique (http://www.ins.nat.tn/indexfr0.php)

Appendix

Estimation of the crude birth rate in Lebanon from the Civil Registration

Table A-1: Synthesis table

1	2	3	4	5	6	7	8	9
Year	**Registered Births**	**Adjustment coefficient**	**Births in Lebanon**	**Population (thousands)**	**% Lebanese**	**Lebanese Population (thousands**	**CBR**	**Moving Average**
1999	85955	0.68	58449	3531	0.934	3298	17.7	
2000	87795	0.68	59701	3581	0.934	3345	17.8	17.5
2001	83693	0.68	56911	3631	0.934	3391	16.8	16.6
2002	76405	0.68	51955	3681	0.934	3438	15.1	15.3
2003	71465	0.68	48596	3731	0.934	3485	13.9	14.4
2004	73900	0.68	50252	3781	0.934	3531	14.2	14.1
2005	73770	0.68	50164	3829	0.934	3576	14.0	14.0
2006	72790	0.68	49497	3878	0.962	3731	13.3	14.2
2007	80986	0.68	55070	3926	0.962	3777	14.6	14.7
2008	84823	0.68	57680	3972	0.962	3821	15.1	
		50262/73900						

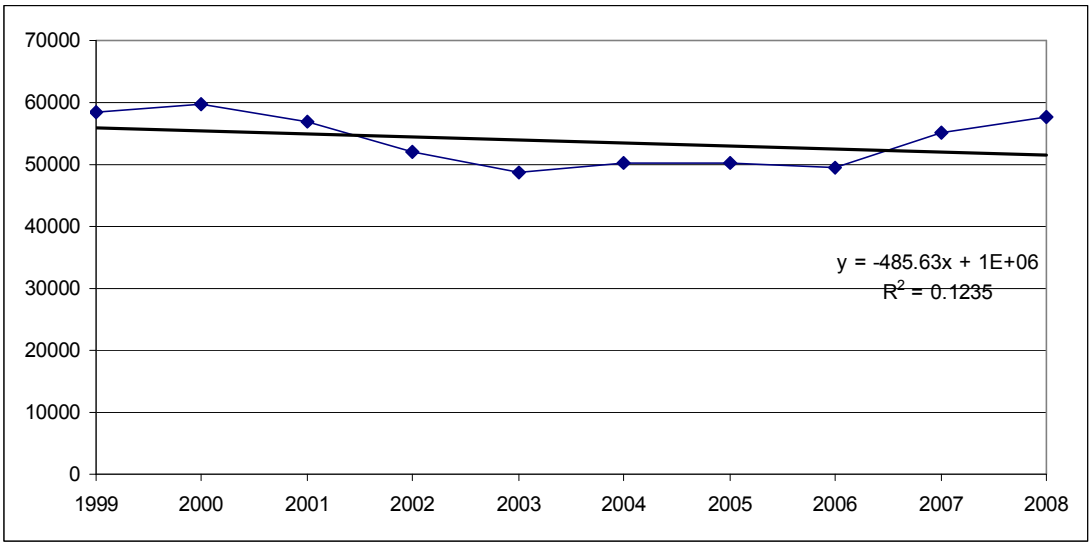
1) The registered births (column 2) include the Lebanese residents' births in Lebanon as well as those of the Lebanese living abroad.
2) To determine the part of the residents' births in Lebanon from the total number of births, we need to estimate the number of births occurring in Lebanon.
3) For that, and using the age- specific fertility rates from the LFHS 2004 (PAPFAM) and the Lebanese female population in Lebanon in 2004 (Household Living Conditions Survey), we calculated the expected number of births occurring in Lebanon in 2004 which is 50262 (Table A-2).

Table A-2 : Expected births in Lebanon in 2004

Age	Fertility Rates Per 1000	Female Population 2004	Female Lebanese Population 2004	Expected births in 2004
15 19	17	180233	168338	2862
20 24	69	182320	170287	11750
25 29	106	155137	144898	15359
30 34	93	141590	132245	12299
35 39	45	138675	129522	5828
40 44	13	138778	129619	1685
45 49	5	102463	95700	479
Total	**1.74**			**50262**

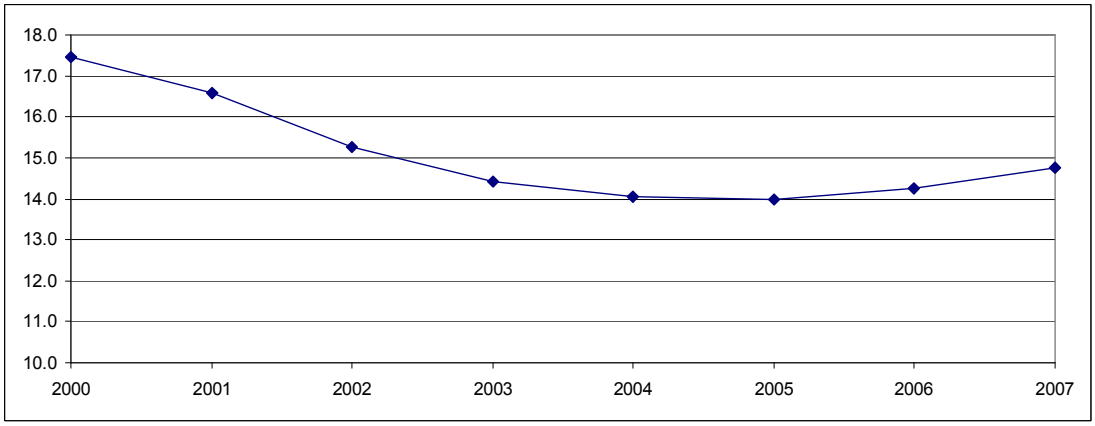
4) The ratio of the births occurring in Lebanon to the total number of births is 50262/ 73900 =0,68 (column 3).
5) We applied this proportion to the entire period and we calculated the number of births occurring in Lebanon from 1999 to 2008. Figure A-1 shows the tendency of the births to decline, therefore that of the crude birth rate.

Figure A-1 : Evolution of the births in Lebanon (1999-2008)



6) To calculate the crude birth rate, we applied the proportion of the Lebanese population in Lebanon estimated by the Household Living conditions surveys (93.4% for the period 1999-2005 and 96.2% for the period 2006-2008) (column 6) to the resident population in Lebanon estimated by the US Census Bureau (column 5) .The estimations of the US Census Bureau are more consistent with the results of the Household Living Conditions Surveys (2004 and 2007) than those established by the United-Nations.
7) The crude birth rate (column 8) was then calculated by dividing the births in Lebanon (column 4) by the Lebanese population in Lebanon (column 7).

Figure A-2: Recent evolution of the crude birth rate in Lebanon (moving average) (2000-2007)



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