COMPLETING THE FERTILITY TRANSITION:
JORDAN, LEBANON AND SYRIA

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A.   THE DEMOGRAPHIC TRANSITION

The demographic transition in the Arab countries of Western Asia in general has been somewhat peculiar. Total fertility rose substantially before it began its historical decline. Life expectancy rose at a very fast pace. The very high fertility rates, resulted in an extremely youthful populations which, combined with low mortality schedules, resulted in crude death rates (CDRs) of 3 to 4 per thousand population, that is, lower than rates ever achieved in developed and most developing countries. The maximum range between crude birth rates (CBRs) and crude death rates, therefore, reached, in some countries, particularly in the Gulf, the unprecedented levels of 4.5 to 5 per cent a year. Looking to the near future, as the ageing process advances with the expected fall in fertility, the further gains in life expectancy will be accompanied by an *increase* in crude death rates.

During the 100 years between 1950 and 2050, the relationship between CBRs and CDRs, therefore, is characterized by four distinct phases. This may be illustrated with data from Jordan. The first phase, from 1950 to 1970, rates of natural increase rose rapidly because of both a rise in CBRs and a fall in CDRs. The second phase, from 1970 to the present, rates of natural increase fell because the fall in CBRs was more substantial than the fall in CDRs. The third phase, which extends from 2000 to 2030, rates of natural increase will continue to fall due solely to the fall in CBRs as CDRs remained constant throughout the period. Finally, the fourth phase, from 2030-2050, rates of natural increase are expected to fall rapidly because of both a fall in CBRs and a steady and relatively sharp *rise* in CDRs. During this latter period (and beyond), CDRs will rise in spite of an improvement in mortality levels as indicated by a rise in life expectancy (see table 1)[1].

How will this demographic transition be completed? In other words, how will fertility and mortality behave in the foreseeable (and not so foreseeable) future?

B.   MORTALITY

All indications are that mortality in the three countries under review will continue to fall in the sense that expectation of life at birth will continue to increase. At the same time, however, because of continued ageing process, Crude Death Rates are expected to begin to rise in the near future. According to United Nations medium projections, this will begin to happen in the next 15 to 25 years starting with Lebanon and ending with Syria. The process of rising CDRs is expected to continue for some time following the path of presently low fertility countries. In Syria, for example, the expected CDR in 2040-50, according to medium United Nations projections, is around 6 per thousand as compared with a still rising present level of 12-14 per thousand in presently low fertility countries. Furthermore, soon after the beginning of the rise in CDRs, the decline in the rate of natural increase in all three countries will come increasingly more from rising CDRs than from declining CBRs.

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C. FERTILITY

The most important speculation for the present purpose, however, is that relating to the future of fertility. Here one must differentiate between short-term and long-term factors. Obviously, long-term factors are of greater relevance to this paper than short-term factors but both will be discussed below.

1. Short-term factors

One of the most important short-term factors affecting fertility in the three countries in question is the sex imbalance being created by intensive emigration in association with increased female education and some prevailing customs relating to marriage. This is most obvious in the case of Lebanon. Female education has spread considerably to the point where there is now a slightly higher enrollment ratio of females than of males at practically all levels of education. This has delayed the age at which girls become ready for marriage to the age group 25 to 29 years. Since the prevailing custom is that girls marry boys who are at least 5 years older, the relevant age group of males in this case becomes that between 30 and 34 years. Because of heavy emigration of males particularly in this and the earlier 5-year age groups, the ratio of single males 30 to 34 years of age to single females 25 to 29 years of age was found to be, in a national survey undertaken in 1996, 7 to 10 (UNDP, 1998). This ratio must have fallen further in view of the more intense emigration that has taken place since then. Add to this the fact that Arab women in general do not marry men who are less educated than they are and the sex balance (the availability of mate ratio) becomes even more lopsided. As a result, celibacy rates among women in Lebanon have virtually doubled between 1970 and 1996 for practically all age groups (table 2). Obviously, total fertility rates were negatively affected by increasing female celibacy and a large gap was created between marital fertility (6.1) and total fertility (3.0). Economic development will, therefore, tend to raise fertility in the short-run by increasing work opportunities for young persons and thus reducing emigration. Indeed, some new habits are already forming that would tend to move total fertility in that direction, particularly, the new phenomenon of emigration of educated females and the reduction in the sex gap in the age at first marriage.

Another short-term constraint on fertility arises from the depressed economic situation prevailing in the three countries in question. Many factors are behind this situation but the most important, perhaps, is the political insecurity arising from the Arab-Israeli conflict. A resolution of this conflict, therefore, will probably lead to rapid economic recovery and growth that, in turn, will increase income and reduce the income constraint on fertility resulting in a temporary baby boom in the region.

2. Long-term factors

Discussion of long-term factors is infinitely more complicated than that of short-term factors and requires at least a minimum of conceptual background. Three factors are believed to be most relevant to this long-term analysis of the future of fertility: the ideal family size, the cost of children and the adequacy of income. Some oversimplification is necessary for this paper.

a) The ideal family size

The ideal number of children is determined by the marginal utility and disutility functions of children for a given socio-economic group (Tabbarah, 1992). There is obviously a certain socio-psychological pleasure, or utility, that is generally derived by couples from acquiring a new child[2]. Whether the desire for children is due to prestige, religious fulfillment or even instinct, it is logical to assume that the part of this desire satisfied by the first or second child is likely to be greater than that satisfied by, say, the fourth or fifth child, that is, that there is decreasing marginal utility. But children are also a source of disutility to their parents in that they compete with the parents' extra-familial activities

such as reading, going to the movies and theatre, traveling, or just pursuing other desirable activities than raising children[3]. Children may also impose some activities on parents which themselves generate disutility. As the number of children increases, more opportunities need to be foregone. The fewer of these opportunities left for the parents, the greater is the disutility arising from foregoing additional opportunities. Thus, as marginal utility of children is a decreasing function, the marginal disutility of children is an increasing function (figure 2). The net marginal utility function is, therefore, a declining function reaching zero at the level indicated by the point of intersection of the utility and disutility curves (figure 3). This point gives the ideal number of children. Parents will not go beyond this point (without compensation) since any additional child will entail a net marginal disutility[4].

The process of development involves a series of social and economic changes that affect both the utility and disutility of children. With regard to utility, the prestige and advantage associated with large families seems to wane with increased geographic mobility and the advent of nuclear families. Economic and political security is gradually taken over by government and myths regarding the relationship between virility and procreation become increasingly clarified. Even the hold of religion on the individual as a determinant of reproductive behavior tends to be weakened. As a result, a slow but continuous downward shift in the marginal utility function would tend to take place with development.

Much more important perhaps is the upward shift in the marginal disutility function. By definition, the process of development brings with it increasing opportunities to individuals thus gradually expanding their horizons beyond the strict family-building endeavors. More education, better communication and greater mobility extend interests beyond the traditional confines of family and kin and higher income increasingly permits the satisfaction of the new demands. In this process, a conflict is created between the familial and the increasing extra-familial opportunities.

Decreasing utility and increasing disutility results, of course, in shifting the net marginal utility of children curve to the left thus reducing the ideal number of children.

b) The cost of children

The changing cost associated with children that accompanies development may be analyzed at two levels: the *cost of a child* and the *cost of children*, both in relation to household income (Tabbarah, 1992). With regard to the *cost of the child* two factors seem to be of particular importance. First, in the less developed setting, a child, particularly a male child, may be considered a net economic asset in the sense that, over his lifetime, he may be a net contributor to household income. In this case, there will be no income constraint associated with the child. With development and modernization, this "net wealth flow" to use Caldwell's expression, is reduced, halted and then reversed.

Beyond this phenomenon, the cost of the child in relation to income may reasonably be viewed as fairly constant over time at the early stages of development and, particularly, before extended child education. Thus, as the income of the family rises, expenditure on all its members, in terms of food, housing, clothing, etc. is likely to rise in tandem. This is not true, however, when a new item, such as education of the child, is introduced in the family budget. Such a new item tends to increase the cost of the child in relation to household income.

A much more powerful pressure on household income arises from the extended period of family support due primarily to extended education because of its effect on the *cost of children*. Even when education is free and thus does not affect the *cost of the child*, the fact that it extends the period of support makes it affect the *cost of children*. In the less developed societies where education is minimal or non-existent, the child becomes economically independent at an early age, say, 9 years. In these circumstances, if a woman has a surviving child every 3 years, the total number of children being

supported at the same time is three. If education were extended to secondary school, that is, to the age of 18, the number of children to be supported simultaneously would rise to six. If, as expected with development, the natural interval between surviving children were reduced because of improved health of mother and child to, say, 2 years, then this total number would rise to 9. In other word, even if the cost of a child remains constant with development (e.g. free education), the cost of children rises with the extended period of support of children due mainly to increasingly longer period of child education. This places a very powerful constraint on large families and reduces the desired number of children.

c) The adequacy of income

The adequacy of income is a measurable concept (Tabbarah, 1972). Simply stated, it is the ratio of an individual's income over his/her conventional standard. The fact that income adequacy is positively correlated with demand for children has been observed. Income and conventional standards don't always move together, especially in developing countries. Incomes grow with economic growth but conventional standards may be affected by an international demonstration effect. This demonstration effect increases with globalization through the movies, television, the internet and other communication means that characterize the globalization process. As openness to higher standards increases, conventional standards increase and income adequacy tends to decrease.

D.   IMPLICATIONS FOR THE FUTURE OF FERTILITY:

If the above is true, a number of implications for the future trends in fertility follow:

First, education seems to be a most powerful factor in the reduction of fertility. This is so be cause education seems to affect all long-term factors in a significant manner. It reduces the utility of children, increase their disutility, it increases the cost of the child when it is not completely free, it increases significantly the *cost of children* and it tends to facilitate social globalization thus exerting pressure on the adequacy of income. In the three Arab countries in question, Jordan, Lebanon and Syria, the spread of education has been spectacular in the past few decades but there is still some way to go to eliminate illiteracy completely and raise the average number of school years achieved by the adult population. Women's education has also risen spectacularly but, except for Lebanon, gender differences still exist in enrollment levels. Women's participation in the labor force has improved but gender differences at all ages are still quite significant. What all this means probably is that the fall in fertility that has taken place in the past few decades has still some way to go.

Second, globalization is increasing and is expected to continue to do so in future. It is progressively reaching more remote areas within the three countries through the modern means of communication. The economic benefits of globalization, in terms of increase in incomes, have certainly lagged behind the social and cultural penetration in the sense that expectations are rising faster than incomes and this will create additional pressures on the adequacy of income in the foreseeable future.

Third, not only female celibacy is increasing, divorce rates are also rising although they are still at very low levels compared to western standards. With "modernization" and globalization, these rates are expected to rise in future. As a result, total fertility will decline even if marital fertility remains constant.

Fourth, policies to increase fertility are generally ineffective. It is difficult to increase the utility or decrease the disutility of children given the nature of development and modernization. Education, particularly the education of women is irreversible. The cost of a policy aimed at couples to increase their number of children beyond the "ideal" level is prohibitive since it will need to compensate the couples not only for the entire cost of the additional child but also for the negative net utility associated with the additional child. A "patriotic" reaction initiated by the threat imposed by very low fertility may also be

ruled out. In Germany, where the "native" population is declining rapidly and the "non-native" (Turks, Kurds, etc.) is rising, no such reaction has been detected so far nor is it expected by local demographers.

The fact that fertility in the three countries in question will continue to fall in the near future is fairly certain. The question is what level will this fall reach. United Nations projections assume that the minimum to which total fertility will arrive is replacement. But there is no logical reason for this assumption. There is no magic attached to that number. Couples will not jointly act to achieve it. To determine this minimum level one must determine at least two major parameters: the minimum ideal family size for married couples and the lowering effect that celibacy, divorce (and sterility) will have on marital fertility. Among the more educated in the three societies in question, the two child ideal seems to be predominant so this may be assumed to eventually be the level of marital fertility. If one assumes, additionally, that total fertility will be 20 to 30 per cent less than marital fertility, then the point of resistance of total fertility would be somewhere between 1.4 and 1.6 children, which is not very far from the situation prevailing at present in some of the European countries.

There are other, more global, implications to declining fertility. First, it is clear that the alarmists in this field are out of business, at least for the foreseeable future. The days of *the Population Bomb*, *the Limits to Growth* and *Famine 1974* are over.

Second, the old concern among some Western demographers and governments, apparent since the international population conference in Rome in 1954, that the proportion of world population living in Western Europe, North America and Australia is quickly diminishing, will undoubtedly become increasingly serious. In the recent past the problem was due to differentials in *positive* rates of population growth between the first and the third worlds, now the differential is between *negative* rates of population growth in the first-world and *positive* rates of population growth in third-world countries, some of which still have very high total fertility rates. It is worth noting in this regard that, according to the latest United Nations projections (2000 revision) the proportion of total population living in Western Europe, North America and Australia has declined from 17 per cent in 1950 to 11 per cent in 2000 and will reach little over 8 per cent in 2050. In addition, an increasing proportion of these populations is of third-world origin.

Finally, as first world populations decline and age, the need for opening the doors of immigration will intensify. The dilemma facing these countries in the near future, therefore, will not only be to keep their world political influence in the face of their diminishing proportion of world population, but also how to maintain economic growth and keep the non-native population within their borders in check.

TABLE 1. DEMOGRAPHIC INDICATORS FOR SELECTED WESTERN ASIAN COUNTRIES

Countries	Period	TFR	CBR	CDR	LE
Jordan	1950-1955	7.38	46.7	26	43.2
	1955-1960	7.38	46.7	23	45.7
	1960-1965	8	52.5	22	48.2
	1965-1970	8	52.5	21	51.7
	1970-1975	7.79	50	14.4	56.6
	1975-1980	7.38	45	9.6	61.2
	1980-1985	6.77	42.3	8.9	63.5
	1985-1990	6.03	39.9	7.1	65.9
	1990-1995	5.58	36.9	5.8	68.6
	1995-2000	4.86	34.8	4.6	70.1
	2000-2005	4.44	33	4.1	71.5
	2005-2010	4.01	30.3	3.8	72.6
	2010-2015	3.59	27.4	3.6	73.7
	2015-2020	3.16	24.6	3.6	74.7
	2020-2025	2.74	21.9	3.6	75.6
	2025-2030	2.31	19	3.8	76.4
	2030-2040	2.1	17.4	4.2	77.7
	2040-2050	2.1	16.1	5.3	78.8

Countries	Period	TFR	CBR	CDR	LE
Syria	1950-1955	7.09	46.6	21.4	46
	1955-1960	7.09	46.6	18.8	48.5
	1960-1965	7.46	47.4	16.6	51
	1965-1970	7.79	47.6	15.3	54
	1970-1975	7.69	46.6	12.1	57
	1975-1980	7.44	46	8.9	60.1
	1980-1985	7.38	45.7	8.7	62.6
	1985-1990	6.6	42.7	7	65
	1990-1995	4.7	33.2	5.6	67.1
	1995-2000	4	30.4	4.9	68.9
	2000-2005	3.58	29.2	4.5	70.2
	2005-2010	3.16	27.3	4.3	71.5
	2010-2015	2.73	24.3	4	72.7
	2015-2020	2.31	20.1	3.9	73.7
	2020-2025	2.1	17.7	4	74.7
	2025-2030	2.1	17.4	4.3	75.7
	2030-2040	2.1	16.8	4.9	76.9
	2040-2050	2.1	14.8	6.1	78.4

TABLE 1 (*continued*)

Countries	Period	TFR	CBR	CDR	LE
Lebanon	1950-1955	5.74	41	18.7	56
	1955-1960	6.15	43.4	15.2	58.5
	1960-1965	6.36	42.7	13.3	60.7
	1965-1970	6.05	38.8	11.8	62.9
	1970-1975	4.92	32.1	9.3	65
	1975-1980	4.31	30.1	8.7	65
	1980-1985	3.79	29.3	8.8	65
	1985-1990	3.42	27.9	7.8	67
	1990-1995	3.09	26.9	7.1	68.5
	1995-2000	2.69	23.8	6.4	69.9
	2000-2005	2.3	19.8	6.1	71
	2005-2010	2.1	17.6	6	72.1
	2010-2015	2.1	17.4	6	73
	2015-2020	2.1	17.4	6	73.9
	2020-2025	2.1	16.7	6.1	74.7
	2025-2030	2.1	15.5	6.4	75.7
	2030-2040	2.1	14	7.3	76.9
	2040-2050	2.1	13.7	8.9	78.2

Source: World Population Prospects, United Nations, 1998.

TABLE 2. CELIBACY RATE AMONG WOMEN, LEBANON, 1970 & 1996

Age group	1970	1996
15 - 19	86.8	95
20 - 24	50.9	72
25 - 29	25.1	46.6
30 - 34	14.2	30.4
35 - 39	10.1	20.9
40 - 44	7.6	15.2
45 - 49	6.9	11.5

Source: PHS 1996.

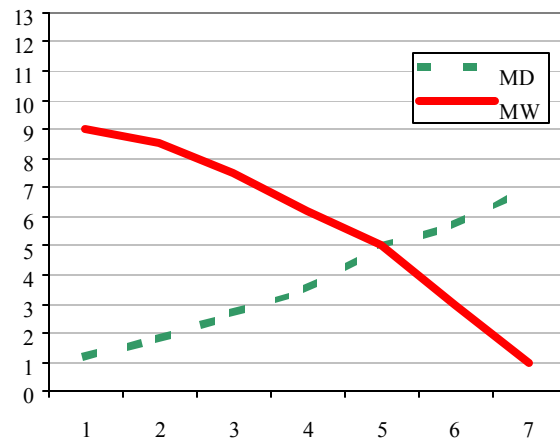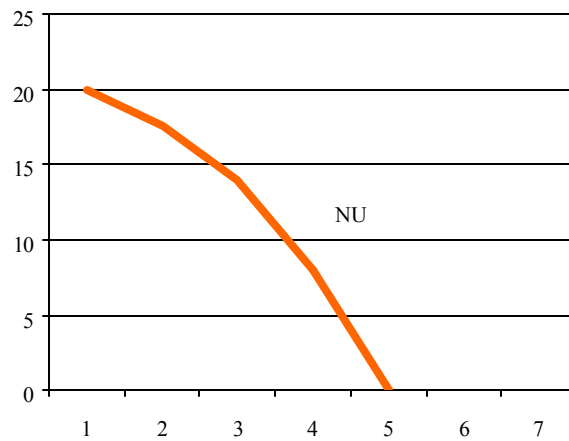**Figure 1. Marginal Utility and Disutility Function**

Figure 2. Natural Utility

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NOTES

[1] All data, unless otherwise indicated, are obtained from (United Nations, 1999a and 1999b).

[2] Leibenstein (1957 and 1974) includes in utility, the child as a source of future income. In this paper this aspect is included in the cost of children (as a negative cost) leaving only the socio-psychological considerations to utility and disutility.

[3] These are what Leibenstein called "opportunities forgone" by parents due to childrearing.

[4] Ideal number of children differs from the desired number in that it is free of income constraint. In a survey, for example, the appropriate question is of the sort: "if you had the necessary income, how many children would you want to have?" For the desired number, the question would be of the sort: "given your present and expected income, how many children do you want to have?" No income constraint exists when the two answer are equal.