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The Dramatic Drop in Fertility in Iran

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It has been a widespread opinion that the development in crude birth and death rates in most countries around the World follow the pattern known as the model of “The Demographic Transition”, and a comparison of the development in crude birth and death rates will show this tendency. However, there are countries that do not follow this pattern.

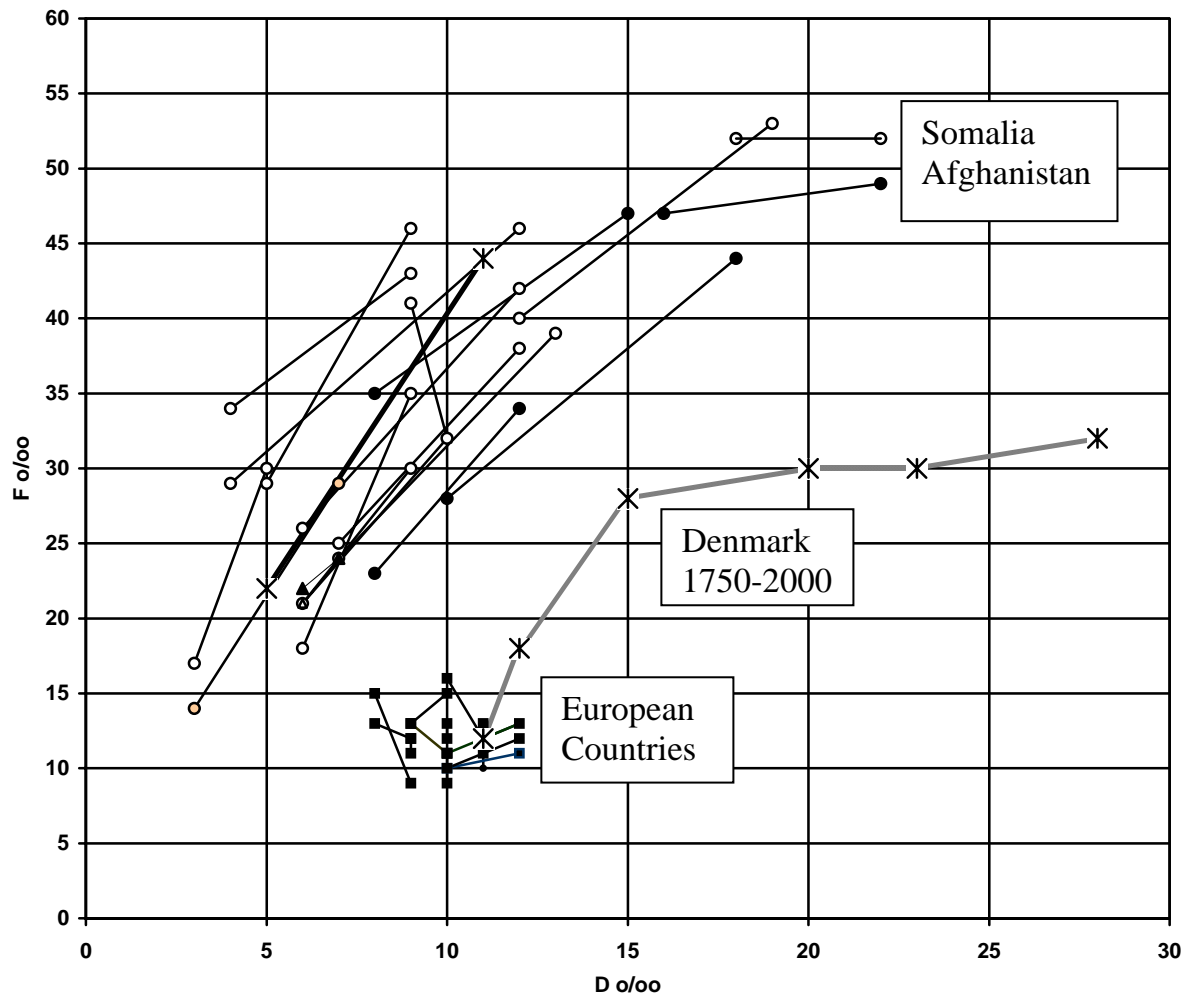
Normally the birth rate falls when economic development with old age provision, health care and low infant mortality occurs. Children are no longer the only possible help and security for the parent generation and this affects the number of birth pr. family.

There are countries where the crude birth rates still continue at a high level or even have increased, when economic development sets in. This phenomenon is normally explained with a fall in number of women who die in childbirth, but for some countries other explanations are also needed.

The tendency with a continuing high or increasing birth rate has also been seen in countries where Islam is the predominant religion. For some of the countries in this category even after they have reached very high productivity measured by GNP pr. capita. This has had the effect of a very high population growth in these countries since 1950.

A correlation of crude birth rates and crude death rates for a number of Moslem countries (fig. 1) and some European countries shows, that Moslem countries in the Middle East and North Africa (the MENA countries) since 1980 in general follow the development for these to parameters in non-Moslem countries. The crude death rate is falling, especially because of the falling infant mortality rates. The crude birth rate is also falling but in smaller numbers than the death rate. The result is now a falling natural growth (F-D). As a result of age structure and increasing life expectancy, the number of inhabitants in the different countries will still increase for a long period of years.

Figure 1



Changes in crude birth and death rates from 1980 to 1998.

(World Bank Data Sheet. See table 1).

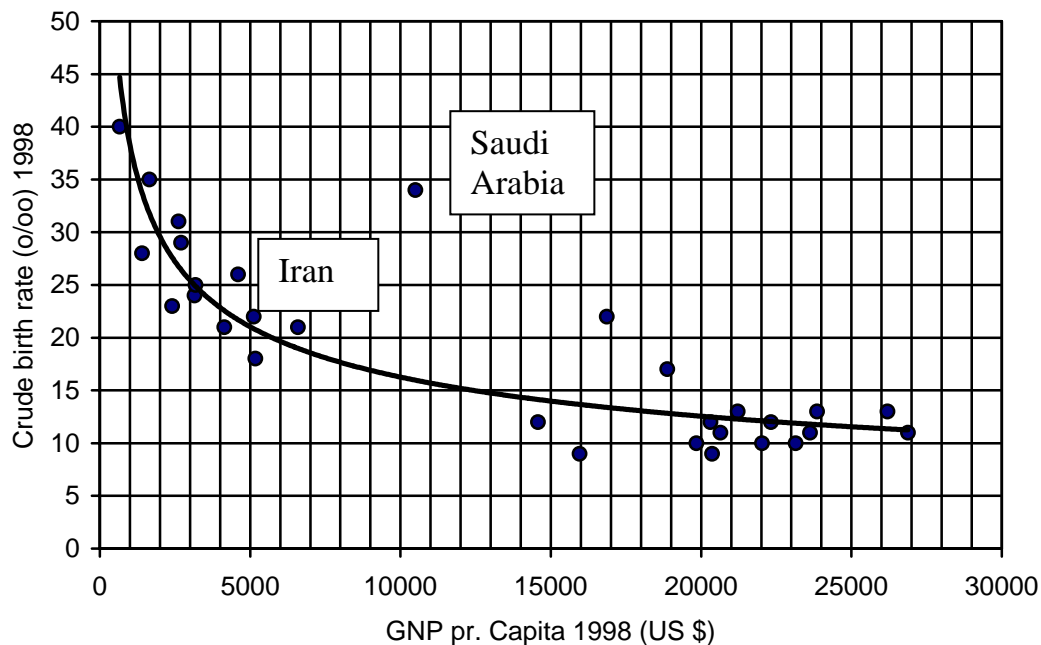
Lines (vectors) showing development from high values (upper right corner) to low values (lower left corner). X-X: Iran. Quadrates: European countries. Circles: MENA-countries. Black balls: Asian countries. Triangle: Israel. Long line = Fast change. Short line = Slow change.

In the preindustrial start-up phase of the Demographic Transition the European countries had F-o/oo values around 30-35 and D-o/oo values around 25-30. This means an extra surplus of newborn in the Moslem countries compared with Europe. The Demographic Transition in Denmark is shown by a broad grey line with 50 years intervals since 1750. The difference in the course of the demographic transition in Europe and in Denmark can be demonstrated with these figures: In Denmark at the start of the Demographic Transition (DT) in 1780 live about 0.84 million inhabitants. When DT ended about 1930 Denmark had 3.5 million inhabitants. This means extra 1.7 million people in 150 years. In Iran lived in 1950 about 16 million people, and in 2003 with TFR below 2.0 there are 68 million people. This means extra 52 million people in a period of 50 years. In Denmark the population

doubled for every 75 years. In Iran it doubled for every 25 years. The population growth when passing the Demographic Transition has in Iran at least had twice “the effect” as in Denmark.

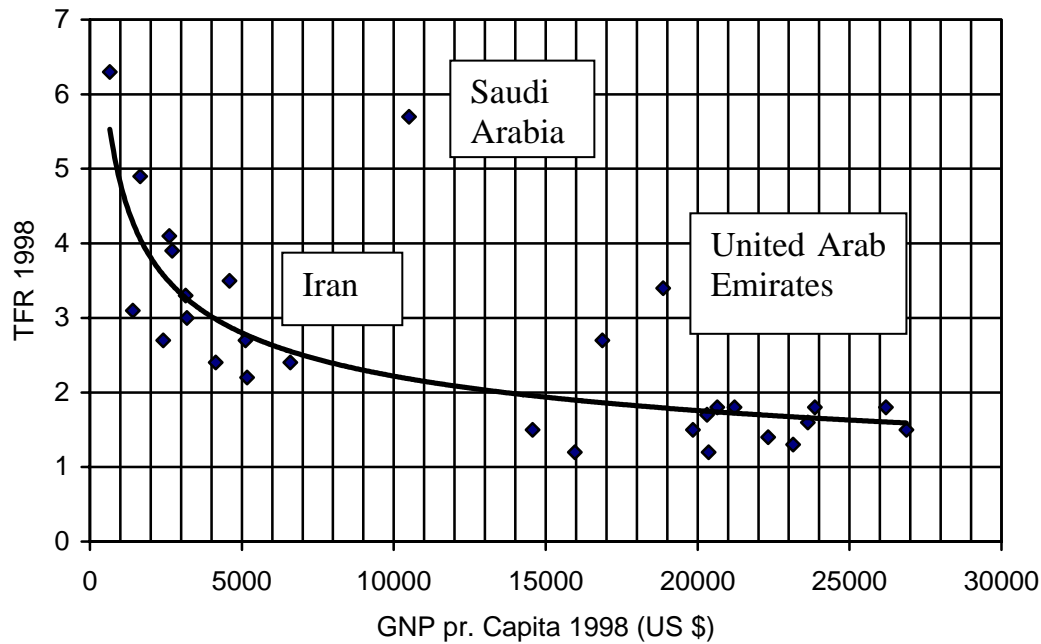
The lines in fig. 1 are showing that Moslem countries also follow the path of the “demographic transition” although there are some differences. The fertility in the Moslem countries in the first phases of the transition is far higher (in the 20th and the twenty-first century than the fertility was in Europe in the 18th century. This means that there is a considerable larger surplus of people in these countries when passing the demographic transition.

Figure 2



Crude Birth Rate vs. GNP pr. Capita 1998 in MENA-countries, other Islamic countries and European countries.
(World Bank Data Sheet. See table 1.)

Iran is following the “trend-line”. Saudi Arabia is an “out-lier” having either too high a birth rate or too high a productivity/welfare compared to other MENA-countries.

Figure 3

TFR (Total Fertility Rates) vs. GNP pr. Capita 1998 in MENA-countries, other Islamic countries and European countries.
(World Bank Data Sheet. See table 1.)

Iran is also following the “trend line”. but Saudi-Arabia and The United Emirates are “outliers” on these parameters.

To reveal the economic situation of the different, countries the crude birth rate can be correlated to the economic status (productivity/welfare) of the country measured by the GNP pr. capita (fig. 2). This demonstrates that as the economy is growing the birth rates (or TFR (fig. 3) is falling. Some Moslem countries, Algeria and Saudi Arabia, have a birth rate that proceeds the level that their economy (measured by GNP pr. capita) entitle to, showing that the economy has developed faster than the family structure.

In the following the MENA-countries in the Middle East and North Africa will also be referred to as Islamic or Moslem countries because of the dominant religion in these countries.

Within the last few years there has been observed a development in some of these Islamic counties, indicating that the former very high birth rates now are rapidly decreasing. This is for example happening in countries like Tunisia, Turkey, Qatar, The Arab Emirates and Iran.

A remarkable example is seen in Iran. In this country there has been a period, where birth rates and total fertility rates have been extremely high but during the last two decades the birth rate and the total fertility rate has been violently falling. These fluctuations are the

result of the political, religious and economic development in the country during the last 40 years.

The first family planning policy was introduced in 1966 under Shah Reza Pahlavi, who wanted to accelerate the economic growth in Iran, looking at family planning as a human right (Abbassi-Shavazi 2002; Larsen 2001). These initiatives were reversed in 1979 in the 10-year long Islamic revolution. It led to an enormous population growth for the following years. The former family planning programmes were then reintroduced in 1989.

The Iranian demographer Mohammad Jalal Abbassi-Shavazi of the University of Tehran and colleagues have in several works described the demographic development throughout the last half century in Iran and have made their studies accessible on the Internet.

Abbassi-Shavazi and the other authors are showing an increase in birth rates and total fertility rate in Iran in the first short period after the Islamic revolution in 1979. The political efforts in this first period was to establish a high birth rate for reasons of an active foreign policy because of the need of the “20 Million Army” (Larsen 2001) for the war against Iraq.

However, the extremely high birth rate between 1976 and 1986 with an annual population growth rate of 3.9 % (Mehryar et al. 2001) did not solve the short-sighted need for military personnel – as it takes about 20 years to produce a soldier.

The big birth cohorts created instead vast economic problems with their need for education and economic support. And after the end of education there is a need for employment in industry etc. But here another big problem like in the other MENA-countries occurred: The lack of natural resources etc. to form the background for the needed production.

In 1989 the Iranian government revised the family planning programme. Women were now encouraged to wait 3 – 4 years between pregnancies, and to avoid pregnancies when younger than 18 or older than 35. Postponing of marriage was also one of the means to reach the objectives in the programme. The rise of education and a higher prosperity level created a demand for family planning. Information on this item was broadcasted. The money for the educational programmes was funded with savings caused by fewer maternity leaves. Also religious leaders were involved in the campaign for smaller families issuing fatwas (religious edicts) that encourage the use of all types of contraceptives including as the first among Muslim countries permanent male and female sterilization. Iran is also the first country in the world that requires that both men and women take a class on contraception before receiving a marriage licence. (Larsen 2001)

15.000 health houses were established after 1990 providing 80 % of the Iranian population with family planning and health services. The government (M. Khatami) covered up till 80 % of the family planning costs (Larsen 2001). The use of contraceptives increased both in rural and in urban areas. The percentage of the women in rural areas (57%) using modern methods of contraception in 1997 was higher than in urban areas (46%) (Abbasi-Shavazi 2001)

The effect of the changes in birth rates had a significant effect on the age distribution of the population of Iran during the following years.

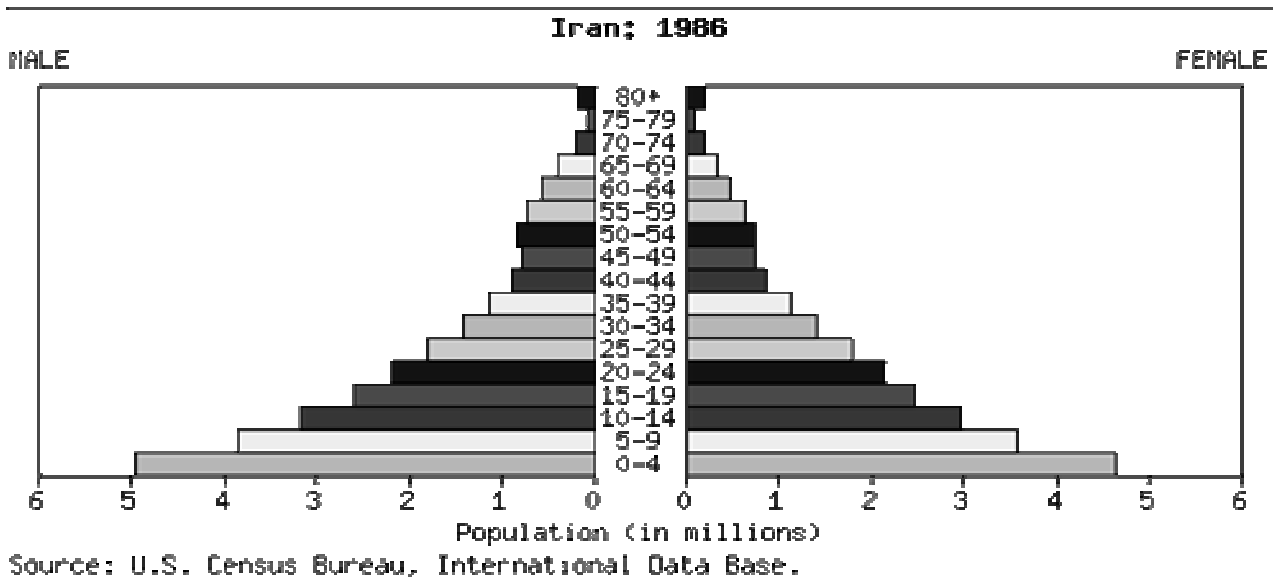
The age distribution of the Iranian population in 1976 and 1986 (Abbasi-Shavazi 2002) clearly shows the dominant group of persons younger than 20 compared with the economically productive age groups.

In the 1986 census the Iranian population younger than 15 were 45.5 % of the total population (Statistical Yearbook of Iran), people older than 64 were only 3 %. In the 1996 census these figures had changed to 39.5 % for persons younger than 15, 4.3 % for persons older than 64 years and 57.2 % for persons from 15 to 64 years of age. The corresponding numbers for Denmark in 2001 are 18 % (< 15), 14.9 % (>64) and 66.7 % (15-64).

In 1996 this gives dependency ratios for Iran of 0.69 for the young population and 0.08 for the old population. The corresponding figures for Denmark 2001 are 0.27 for young and 0.23 for old population.

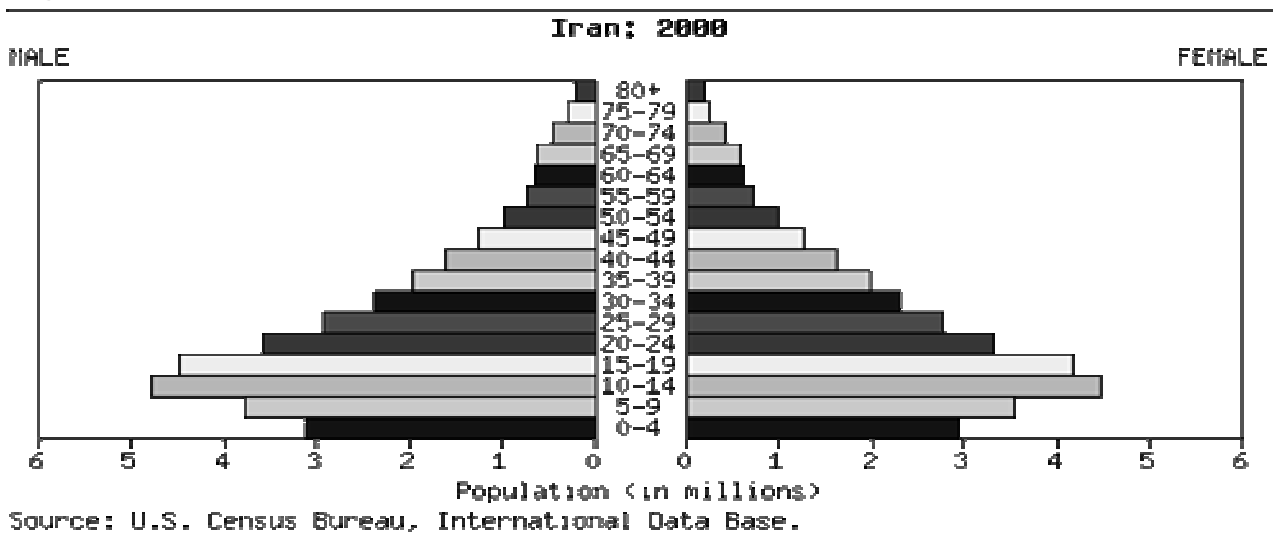
In the years following 1989 the total fertility rate in Iran fell from 7 till about 2 (fig.8). (Abbasi-Shavazi 2002). An extrapolation for the age distribution of the Iranian population was made by U.S. Census Bureau and is showing the influence of the 10 years of high fertility on the Iranian population in the coming decades.

Figure 4



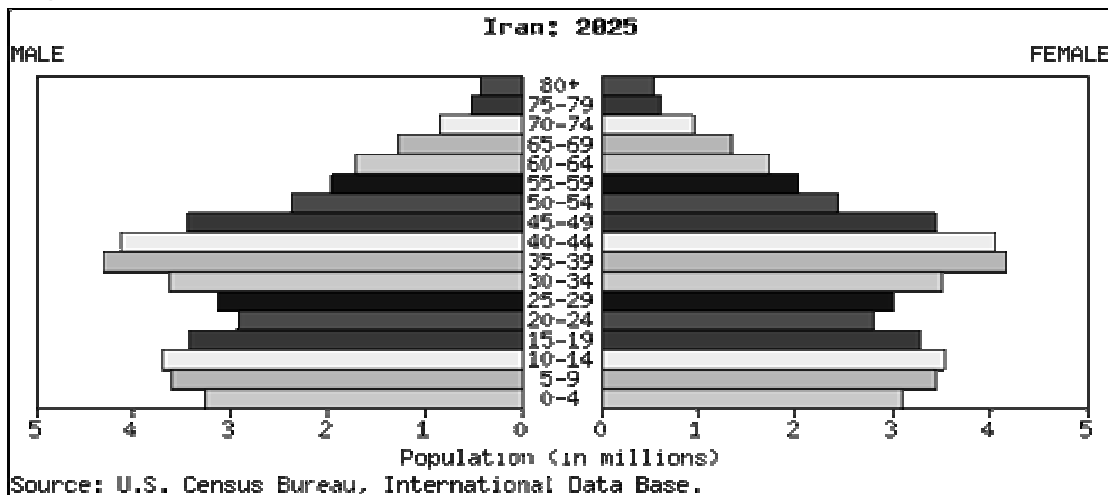
Age-distribution in Iran 1986. 49 million inhabitants acc. to Statistical Center of Iran.

Figure 5



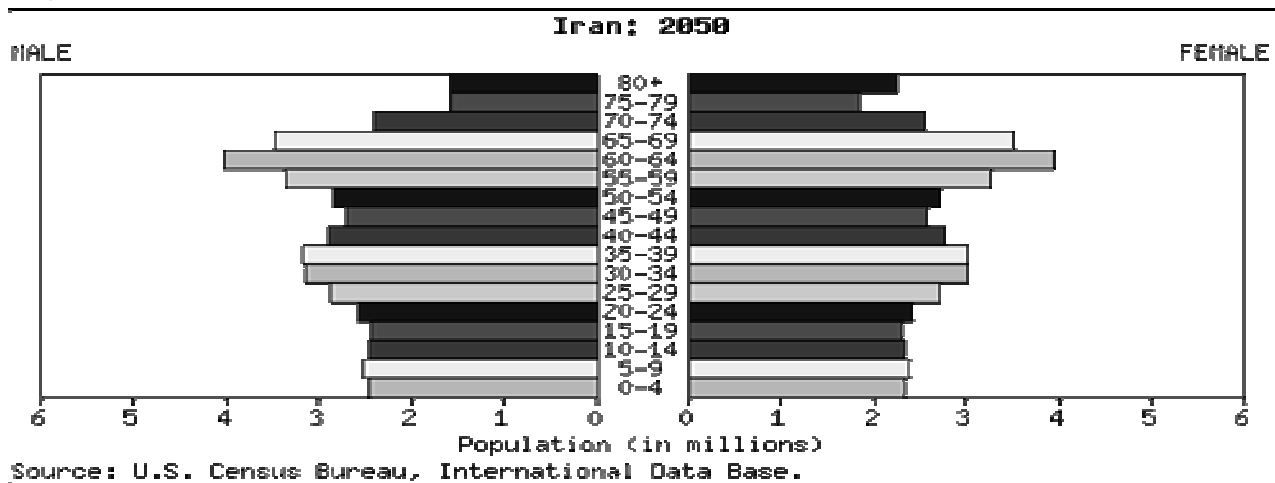
Age-distribution in Iran 2000. 66 million inhabitants.

Figure 6



Age-distribution in Iran 2025. 85 million inhabitants.

Figure 7



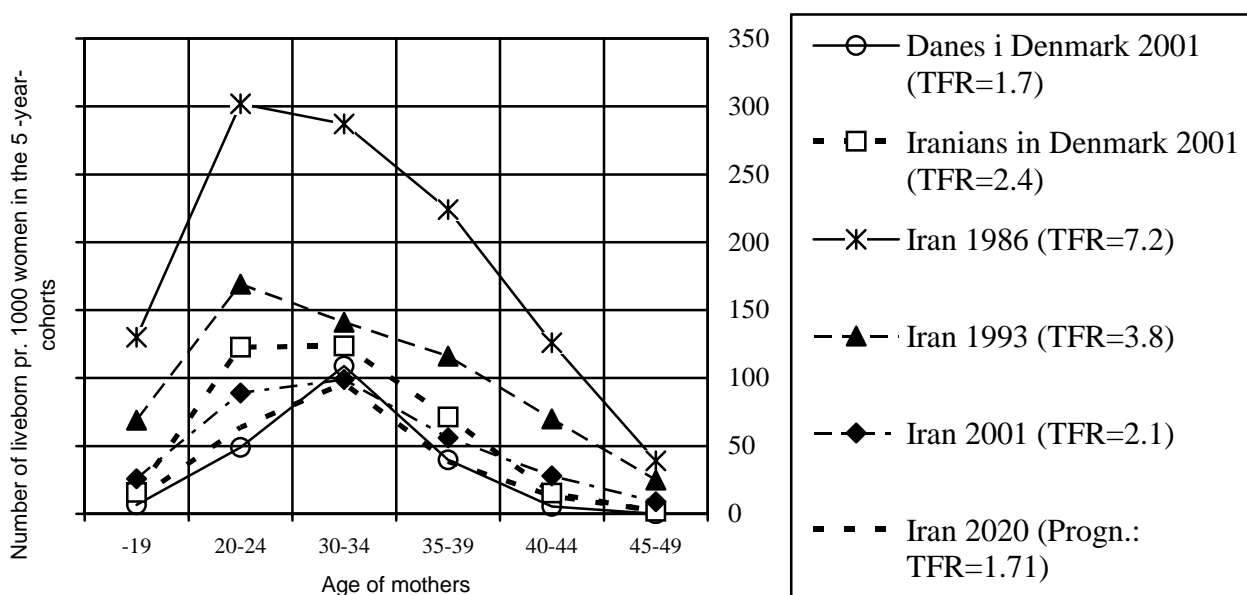
Age-distribution in Iran 2050. 91 million inhabitants.

Figure 8



Total Fertility Rate (TFR) development in Iran 1972-2001. (Census by Statistical Centre of Iran, IDHS (Iranian Demographic and Health Service). (Abbasi-Shavazi 2002)

With figures for 2003 and 2004 as low as 1.99 and 1.93 according to www.indexmundi.com Iran is since 2003 below replacement-fertility.

Figure 9

Age specific fertility rates in Iran 1986, 1993, 2001 and 2020 (prognosis), Denmark 2001 and women in Denmark of Iranian origin 2001.

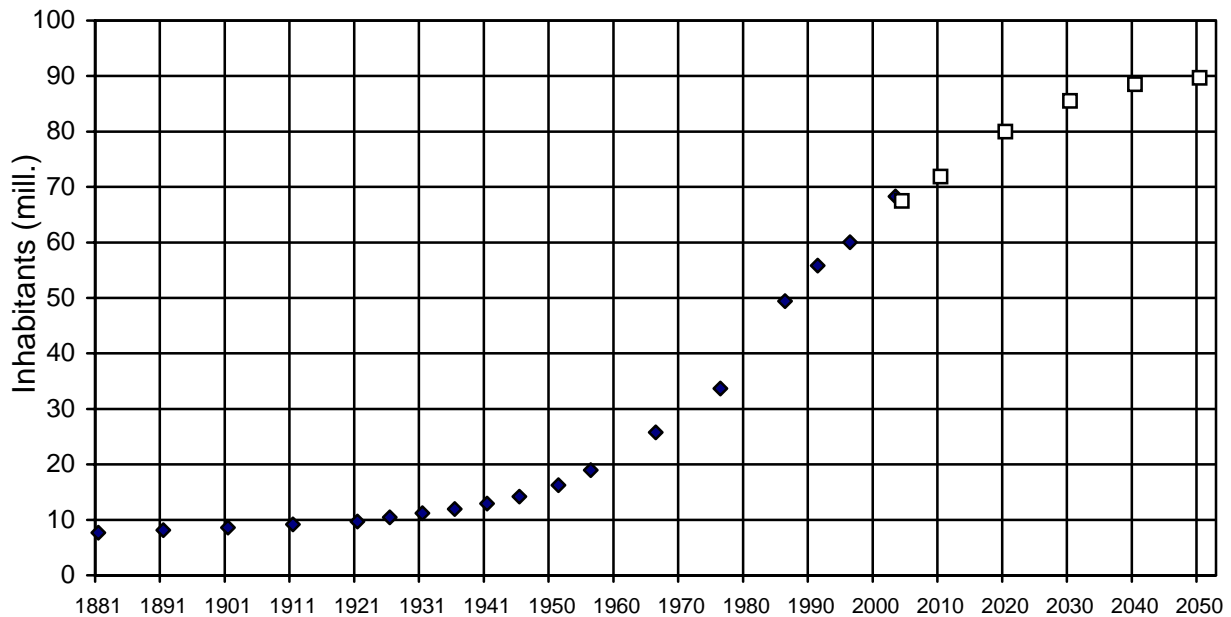
(Danmarks Statistik/US Census Bureau. See table 2.).

The age specific fertility-rates of the Iranian population have over a period of 16 years fallen in all cohorts and are now similar to the situation in Europe both in ethnic Danish population and for women of Iranian origin.

The TFR in Iran is now below replacement fertility. Figures from the US Census Bureau shows that the fertility has been reduced in all cohorts with no special preference of age, region (urban/rural), ethnicity etc. (Abbasi-Shavazi 2000, 2001, 2002) The structure of the age specific fertility rates for Iran is very similar to the ones in Europe (Denmark for example) and the group of women of Iranian origin who live in Denmark.

Although the total fertility rate is now (2004) 1.93 and below 2.00 (replacement fertility) (www.indexmundi.com), this does not have the effect that number of inhabitant in Iran is falling. A vast number of persons are now entering the reproductive groups and will in the coming decades probably give birth to an almost similar number of children as they are themselves. This means, that the population growth will continue within the coming 40-50 years and in this period nearly double the Iranian population. The life expectancy is also growing. In 1980 Iranian women looked forward to 61 years, Iranian men to 59 years. In 1998 women could expect 72 years and men 70 years. In the passed 18 years women added 11 and men 9 years to their life-expectancy. In Denmark women added 1 year (77 to 78) and men added 2 years (71 to 73) in the same period. (World Bank Data Sheet)

The development in Iran in the last 20 years can roughly be compared with the situation in Japan at the end of the Second World War, where the industrialization and economic growth created a vast demand for female workforce and gave background for a new law of abortion.

Figure 10

Population of Iran 1881 – 2003 and prognosis until 2050.

(1881-2003: Statistical Center of Iran/ 2004-2050: Prognosis from US Census Bureau).

Earlier US-prognosis for Iran 2050 has been as high as 125 million inhabitants.

However, there are differences. The TFR in Japan in 1945 was far below the TFR-level for Iran in the period before 1980. But first of all the development in Japan showed, that even though Japan had a violent fall in fertility, there came a period of more than 50 years where the Japanese population still was growing. The maximum has still not been reached, but is expected within the next decade. And in these 60 years the Japanese population has grown from 84 million till 126 million inhabitants. The crude birth rates in Japan fell strongly over a very short period. The number of newborns got significant smaller than the number of persons in the parent cohorts. In spite of this very strong effect on the number of children pr. family, we will have to reach at least the year 2005-2010 according to Japanese studies, before the Japanese population reaches its maximum number of inhabitants and starts to descend.

Many of the countries in Europe have had birth control and falling fertility for at least one hundred years, and only a few of them have experienced a direct fall in number of inhabitants.

It must here be mentioned, that changes in life expectancy also play a role. In Japan (both men and women) experienced an increase in life expectancy from 57 years (in 1948) to 80 years (in 2001). Fewer people are born, but those who are born, live longer - and big cohorts who were born before the big fertility drop are having effect on the total number of births when they enter their years of parenthood two decades later.

Similarly there is also a considerable potential in some of the MENA-countries on behalf of life expectancy.

Life expectancy in the MENA-countries is varying but normally considerably lower than in Europe. The infant mortality is still high. Even if the birth rates in the MENA-countries should fall violently throughout the next decade or two until European level, there is good reason to expect a doubling of the number of inhabitants in the countries in the Middle East and North Africa because of the expected extension of life expectancy and the fall in infant mortality still to come.

For the MENA-countries this means they will have to secure resources for another 400 million persons in an area with strongly limited natural resources. The amount of precipitation (rain) is insufficient to give a good supply of water to both population and agriculture. Good farmland is not at hand in needed amount for future self-sufficiency.

Mineral resources in the MENA-countries are few. One possibility for economic development can be seen in targeting investments on production, while there still is an income from the oil production.

With increasing demands for oil to industrial production also in China and India these resources will probably be empty within half a century.

Both the MENA-countries and the Industrialized Countries in Europe and America will have to face vast problems in the near future.

The population in the Islamic countries is foreseen to continue to grow for another 50 years at least. Resources here are not sufficient and there are limits to the economic sustainability of production and welfare systems in the European countries to solve the problems when receiving further immigration.

These complex problems must seriously and with high priority be taken on the demographic and political agendas in all the involved countries. Solutions must be found while they are still possible.

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Appendix – tables

Table 1. Table 1 is containing data used in fig.1 (crude birth and death rates from 1980 and 1998), fig. 2 (Crude Birth Rate vs. GNP pr. Capita) and fig. 3 (TFR vs. GNP pr. Capita).

Country	Crude birth and death rates (0/00)				Total Rates	Fertility	Infant Mortality	Prod./Welfare GNP/Cap.
	Birth 1980	Death 1980	Birth 1998	Death 1998	TFR 1980	TFR 1998	Rate 1998	1998
Algeria	42	12	26	6	6.7	3.5	35	4595
Egypt	39	13	24	7	5.1	3.2	49	3146
Libya	46	12	29	4	7.3	3.7	23	--
Morocco	38	12	25	7	5.4	3.0	49	3188
Somalia	52	22	52	18	7.3	7.2	121	--
Tunisia	35	9	18	6	5.2	2.2	28	5169
Israel	24	7	22	6	3.2	2.7	6	16861
UAE	30	5	17	3	5.4	3.4	8	18871
Saudi Arabia	43	9	34	4	7.3	5.7	20	10498
Jordan	--	--	31	4	6.8	4.1	27	2615
Libanon	30	9	21	6	4.0	2.4	27	4144
Syria	46	9	29	5	7.4	3.9	28	2702
Turkey	32	10	21	6	4.3	2.4	38	6594
Iraq	41	9	32	10	6.4	4.6	103	--
Iran	44	11	22	5	6.7	2.7	26	5121
Yemen	53	19	40	12	7.9	6.3	82	658
Qatar	29	7	14	3	5.6	2.7	18	--
Pakistan	47	15	35	8	7.0	4.9	91	1652
Afghanistan	50	23	47	20	7.0	6.8	149	--
Bangladesh	44	18	28	10	6.1	3.1	73	1407
Indonesia	34	12	23	8	4.3	2.7	43	2407
Denmark	11	11	13	11	1.5	1.8	5	23855
Norway	12	10	13	10	1.7	1.8	4	26196
Sweden	12	11	10	11	1.7	1.5	4	19848
UK	13	12	12	11	1.9	1.7	6	20314
Germany	11	12	10	10	1.4	1.4	5	22026
Holland	13	8	12	9	1.8	1.6	5	22325
Belgium	13	12	11	10	1.7	1.6	6	23622
Finland	13	9	11	10	1.6	1.8	4	20641
France	15	10	13	9	1.9	1.8	5	21214
Italy	11	10	9	10	1.6	1.2	5	20365
Schwitzerland	12	9	11	9	1.5	1.5	4	26876
Austria	12	12	10	10	1.6	1.3	5	23145
Portugal	16	10	12	11	2.2	1.5	8	14569
Spain	15	8	9	9	2.2	1.2	5	15960

Table 2. Data used in fig. 9. Age specific fertility rates in Iran 1986, 1993, 2001 and 2020 (prognosis), Denmark 2001 and women in Denmark of Iranian origin 2001. (Danmarks Statistik/US Census Bureau).

Age specific Fertility Rates	TFR	Age of mothers						
		-19	20-24	25-29	30-34	35-39	40-44	45-49
Population group:								
Danes in Denmark 2001	1.7	6.7	49	127.3	108.9	39.8	5.5	0.1
Iranians in Denmark 2001	2.4	15.8	122.6	126.4	123.7	71.3	15.2	2
Iran 1986	7.2	130	302	322	287	224	126	39
Iran 1993	3.8	69	169	170	141	116	70	25
Iran 2001	2.1	26	89	123	99	56	28	9
Iran 2020	Progn.: 1.71	10.4	63.6	118.1	96.1	38.4	13.3	2.2

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