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**Effects of Marital Fertility and Nuptiality
On Fertility Transition in the Islamic
Republic of Iran, 1976-1996**

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ABSTRACT

International stereotypes tend to portray Iran as a 'traditional' society resistant to many aspects of social change. Based on this assumption, the generally held view is that Iran is experiencing one of the highest fertility rates in the world, and that demographic transition has not started yet. Recent statistics has proved, however, that the reality is profoundly different. Iran has experienced an astonishing fertility decline in recent years.

This study aims to review the trends and changes in fertility over the period 1976 to 1996. The Islamic Republic of Iran experienced a moderate increase in fertility during 1976-1986, mainly due to the relaxation of family planning programs by the government. On the other hand, fertility began to decline in 1984, and has sharply declined since 1988. The question has arisen to what extent this significant change has been due to the changes in nuptiality and marital fertility. The own-children data from the 1986 and 1996 censuses allow us to analyse the change in fertility in the last two decades, and to decompose the change in fertility into two main components of nuptiality and marital fertility. The result has shown that around 85 percent of the changes is due to marital fertility, which suggests that most of the fertility of Iranian women has been controlled within marriage. Around 15 percent of the change is attributable to changes in nuptiality, specifically an increase in age at marriage and thus a reduction in the proportion of women married at early ages.

After reviewing the literature on the demographic transition in Iran, the paper will first analyse the changes in nuptiality patterns during the last two decades. Second, the changes in fertility trends and levels will briefly be discussed for the period 1976 to 1996. Then the change of fertility will be decomposed into the two components of nuptiality and marital fertility. Tentative explanations for the dramatic decline in marital fertility will be put forward; and the future prospects of the fertility decline, policy implications and issues for further studies will be discussed.

EFFECTS OF MARITAL FERTILITY AND NUPTIALITY ON FERTILITY TRANSITION IN THE ISLAMIC REPUBLIC OF IRAN, 1976-1996

Mohammad Jalal Abbasi-Shavazi[*]

DEMOGRAPHIC TRANSITION IN IRAN DURING THE 20th CENTURY

At the beginning of the 20th century the population of Iran was estimated to be around 10 million (Bharier 1968); it increased to 13 million in 1933, to 34 million in 1976 and to 49 million in 1986. By 1996 the Iranian population had reached 60 million, a more than sixfold increase in a century (Statistical Centre of Iran 1996). Although the first nationwide Iranian census in 1956 was indicative of a sudden rise in the population growth rate, Iran was among the countries that voted against the issue of government intervention in fertility control put forward by the United Nations General Assembly in 1962. The government attitude, however, changed after the release of the 1966 census results, and the Imperial Government of Iran then adopted a national family planning policy in 1966 and established an active family planning program in 1967 (Mehryar et al. 1998: 4). The aggressive family planning program was not warmly welcomed by the people, however, as little attention was given to socio-cultural and religious contexts of the society. Therefore, the program could not reach its goals a decade later. During 1966-1976 the Iranian population experienced a modest fertility decline, but restricted to urban areas (Aghajanian & Mehryar 1999; Mehryar et al. 1998; Mirzaie 1998).

Immediately after the Islamic Revolution, the family planning program was suspended and the Ministry of Health, responsible for the program, discontinued all

family planning services. In addition, the new government adopted a pronatalist approach encouraging earlier marriage in the society. The eight-year war with Iraq also created a pronatalist atmosphere in Iran. A rationing system was introduced for food and basic necessities, and this was helpful to large families. The pronatalist policies continued even after the revelation of the high population growth rate by the 1986 census, but the government population policy was reversed and a new antinatalist family planning program was officially inaugurated in December 1989. The details of this fundamental policy reversal and its success in such a short period of time have been elaborated elsewhere (Mehryar et al. 1998).

A number of studies have been undertaken to analyse the fertility of Iranian women before and after the Revolution (Aghajanian 1994, 1995a, 1995b; Aghajanian & Mehryar 1999; Mehryar & Gholipour 1995; Mehryar et al. 1999; Mirzaie 1998). Aghajanian and Mehryar (1999) analysed the fertility transition in Iran over three time periods associated with different social, economic and political environments. The first stage of the transition started in the 1970s. The stalled transition stage began after the 1979 Revolution when pronatalist policies emerged, and lasted till 1989 when the official family planning program was inaugurated. Abbasi-Shavazi (1999b, 2000) has proposed that the Iranian fertility transition took place in five periods: a fall in fertility in the early 1970s after a long history of high fertility; a rise during 1977-1979 due to circumstances before and during the Islamic Revolution; a fairly constant trend until 1983 due to the social changes and pronatalist policies after the Islamic Revolution; a moderate decrease from 1984 to 1988; followed by a remarkable decline after the introduction of the new antinatalist policies by the government. The question arises: how and under what conditions has fertility in Iran dropped so much in such a short time?

Several factors have been proposed to explain the fertility transition and differentials in Iran. The family planning program has been seen as the keystone of the transition, and it is widely accepted that the fertility transition accelerated after the inauguration of the new family planning program in 1989 (Aghajanian & Mehryar 1999; Mehryar et al. 1998). However, Abbasi-Shavazi (2000) demonstrated that fertility rose from 1976 to 1984 and fell thereafter, suggesting that there was a rise and a fall that occurred independently of the official family planning program. It is of great interest

therefore, to consider the role of social change beyond the family planning program. For example, it has been claimed that ideational change in recent years and demand for fewer children due to the fall in infant mortality rates have also had a role in the fertility transition (Aghajanian & Mehryar 1999; Raftery et al. 1995). It is not clear, however, how and under what conditions the fertility behaviour of Iranian women in different provinces across the country has been affected by ideational change. Support and guidance from religious leaders (Aghajanian 1995a; Ladier-Fouladi 1996), as well as the commitment of the government (McNicoll 1998) have all legitimized the revived family planning program, which has contributed to the decline. As Aghajanian (1995a: 3) noted, the most important aspect of Iran's success in family planning is the interest, support and guidance of religious leaders, and this holds many implications for other societies with strong religious traditions. Exploring the role of such social, economic, religious and political institutions on population policy changes in Iran and their interaction with 'individual attitudes and behaviour and what goes on in people's heads' (McNicoll 1985: 177) would deepen the understanding of fertility decline in Iran.

The province-by-province analysis covering a period of about three decades has added considerable detail to the knowledge of demographic transition and fertility differentials in Iran. Abbasi-Shavazi (2000) has observed that all provinces and urban-rural regions of the country have followed fertility patterns and trends that are similar to the national trends. Similarity of such patterns across the country inevitably calls for precise description and for explanation. Although all provinces displayed trends similar to the national level in recent years, there exist substantial fertility differences among provinces and between rural and urban areas. A comparison of the fertility levels and patterns of each province against the national average during 1972-96 revealed several fertility patterns. Provinces such as Sistan-Baluchistan, Hormozgan, Kohgilooyeh-Booirahmad and Ilam had considerably higher fertility than the national average, while Gilan, Semnan, Tehran and Yazd, on the other hand, displayed substantially lower fertility than that of the total population (Abbasi-Shavazi 2000). Fertility differentials have also been shown among ethnic groups and different religious sects (Mehryar & Gholipour 1995: 28-29).

It has been suggested that modernization factors such as the rise in literacy and increasing education levels, particularly for women, and urbanization have also been important contributors to the sharp decline (Mehryar & Tabibian 1997; Mirzaie 1998). Paydarfar and Moini (1995) examined the possible causal links between modernization forces and fertility patterns in the Iranian provinces during two time periods, 1966-1976 and 1976-1986. Their findings showed that modernization proceeded in an almost consistent pattern in all the provinces during 1966-1986. They found that the provincial modernization and fertility ratios had a consistently and significantly inverse relationship during the two decades. The provinces of Tehran, Yazd and Isfahan had the highest Modernization Scale Scores (MSS), whereas Kohgilooyeh-BooirAhmad, Sistan-Baluchistan and Kurdestan showed the lowest MSS in Iran in 1986. On the other hand, fertility ratios were lower in Gilan and Tehran, while Kohgiloyeh-Boirahmad showed the highest fertility ratio in 1986 (Paydarfar and Moini 1995: Table 3). Increased age at marriage and reduction in the proportion of women ever-married have also been considered as important factors contributing to the fertility transition. Aghajanian and Mehryar (1999) demonstrated that age at marriage increased during 1967-76, remained relatively unchanged during 1976-1986, before increasing substantially during the period 1986-1996. They argued that economic pressures have led to the postponement of marriage and reduced demand for children, and in turn lower marital fertility. In his recent study on fertility trends and differentials in Iran, Abbasi-Shavazi (2000) concluded that no single explanation should be put forward for the dramatic decline in Iran. The question of the extent to which the sharp decline has been due to the rise in age at marriage or to lower marital fertility due to the use of contraceptives remains unanswered.

Given the above observations, the following sets of questions will be addressed in the present paper. To what extent has the fertility change been due to marriage change? What has been the contribution of marital fertility in fertility decline in the last decade? What is Iranian fertility behaviour within marriage? What are the mechanisms of the sharp fertility decline in Iran? What are the future prospects for fertility in Iran? Is the decline in fertility sustainable? What policy implications can be drawn from this study?

DATA AND METHODOLOGY

The 1986 and 1996 Iranian Censuses are the main sources of data for fertility estimates used in this study. Proportions of ever-married women are calculated from on published data from the 1976, 1986 and 1996 censuses.

For the first time in Iran, this study applies the own-children method to the 1986 and 1996 censuses to estimate fertility measures for the period 1972-1996. The own-children method is a reverse-survival technique for estimating fertility measures for years previous to a census or household survey. From the basic household records, enumerated children are first matched to mothers within the household. The matched children are then reverse-survived to estimate numbers of births by age of mother in previous years. Reverse survival is similarly used to estimate numbers of women by age in previous years. After some adjustments are made for misenumeration and unmatched children, age-specific fertility rates are calculated by dividing the number of reverse-survived births by the number of reverse-survived women. The details and the application of the technique have been elaborated elsewhere (Abbasi-Shavazi 1997, 1998; Cho 1971, 1973; Cho et al. 1970; Dugbaza 1994; Grabill & Cho 1965; Jain 1989; Mahmoudian 1998; Retherford & Cho 1978; Retherford et al. 1984; Retherford et al. 1979; Rindfuss 1976, 1977; Rindfuss & Sweet 1977). The Statistical Centre of Iran has undertaken the application of the method to the censuses, and has generously provided the data required for this study.

The advantages and problems of the application of the method to Iranian censuses have been elaborated elsewhere (Abbasi-Shavazi 1999a). Age-specific fertility rates and total fertility rates were calculated for Iranian women as a whole, as well as for women of all provinces by rural-urban areas for single years from 1972 to 1986 (using the 1986 census) and 1982 to 1996 (using the 1996 census), with a five-year overlap, 1982 to 1986. An assessment of the application of the own-children method in estimating fertility in Iran showed that the method produced reliable results (Abbasi-Shavazi 1999b).

It is worth noting that age reporting has generally improved in the Iranian censuses. The improvements in the census coverage and age reporting of the censuses have been documented by other studies (Leete et al. 1997; Mirzaie et al. 1996). However,

Retherford et al. (1979) noted that in application of the own-children method in developing countries, fertility estimates for the first two years before enumeration, based on enumerated children aged 0 and 1, are generally discarded. This reflects underenumeration and age overstatement of children under age 2, which produces an apparent but spuriously large fertility decline during those two years. Preliminary analysis showed that the fertility estimates for the years 1986 and 1996 were affected by underenumeration of children under 2. Unfortunately, precise under-enumeration estimates for the Iranian censuses are not available. However, the effects of underenumeration on fertility estimates were eliminated by the following procedure. The estimates of fertility for the year 1986 were taken from the 1996 census (based on children 10 years of age), instead of using the estimates from 1986 census (based on children aged 0). Using the fertility estimates for the year 1986 from the two censuses, the adjustment factors for underenumeration were estimated and applied to the fertility estimates for 1996. It was assumed that the level of underenumeration remained constant during 1986 and 1996. The results showed that the adjusted fertility measures for 1996 were consistent with the annual fertility rates for previous years, which were based on children 2 and above.

The trends and patterns of fertility for Iran and provinces during the period 1972 to 1996 were discussed in an earlier paper (Abbasi-Shavazi 2000). Total fertility rates, changes in TFRs and a decomposition of fertility changes for Iran and all provinces for the years 1976, 1986 and 1996 are presented in this paper. The study uses the decomposition method of Kitagawa (1955), and adapted by Retherford and Ogawa (1978). The detail of decomposition technique used in this paper has been discussed in Retherford and Cho (1973) and Retherford and Rele (1989). The 20-year change in fertility for Iran and each province is decomposed into a component due to changing age-specific proportion married (nuptiality) and a component due to changing age-specific marital fertility rate. Each of these two components is further broken down by age. For the sake of convenience, the result of decomposition by age is only presented for the total country. The analysis summarizes the contribution of nuptiality and marital fertility to overall fertility change during the two periods 1976-1986 and 1986-1996 for all provinces; the data for rural and urban areas are limited to the later period. In these two periods there were virtually two different population policies in Iran. The first period was mainly affected by pronatalist policies implemented after

the 1979 Islamic Revolution, whereas the second period reveals the changes mainly due to antinatalist policies introduced and executed by the government.

NUPTIALITY CHANGE IN IRAN: 1976-1996

In any study of fertility, marital status is important to the extent that it affects three stages of reproduction: intercourse, conception and parturition (VandenHeuvel & McDonald 1994: 69). It is generally assumed that early marriage is associated with a high proportion eventually marrying. Rising mean ages at marriage and rising percentages single are, on the other hand, associated with declines in period measures of fertility such as the birth rate. Later marriage reduces the total duration of fecund exposure to sexual activity, and shifts it to the older ages of lower fecundity (Smith 1983: 476-80). There is an inverse relationship between the number of children ever born and age at marriage at the level of individual couples (Knodel 1983: 78). The change in nuptiality is discussed in this section.

A profound change in marriage pattern has occurred in Iran over the last two decades. The extent of change is greater during the period 1986-1996 than in the earlier decade, 1976-1986. Table 1 shows female sigulate mean age at marriage (SMAM) and age-specific proportion married during 1976-1996 for Iran by province. As can be seen from the table, SMAM for Iran increased slightly, by around 1 per cent, from 19.5 in 1976 to 19.7 years in 1986, which was followed by a sharp increase, by around 12 per cent, from 19.7 to 22 years during 1986-1996. Interestingly, the government of the Islamic Republic of Iran has consistently encouraged early marriage since 1979. During the decade after the 1979 Islamic Revolution, young couples were receiving many incentives for early marriage. The legal minimum age at marriage was reduced from 16 to 9 for girls after the Revolution. Despite the tremendous campaign for early marriage, age at first marriage increased slightly during this period. The proportion of women ever married declined moderately in all age groups from 1976 to 1986, except for age group 20-24. In 1976, around 34 percent of women were ever-married by ages 15-19, and 78 percent by ages 20-24. These figures slightly declined by 2 to 3 percent during 1976-1986. However, there was a sharp decline in proportion married at all ages, except ages 40-44 and 45-49 during 1986-1996. The decline at ages 15-19 and 20-24 was substantial. The proportion of ever-married women at ages

15-19 declined, by 45 percent, from 33.5 percent in 1986 to 18.6 percent in 1996. The percentage of women married at ages 25-29 decreased also from 90 in 1986 to 85 in 1996.

Profound changes have also taken place in marriage patterns in both rural and urban areas of Iran during the period 1986-1996. In rural areas, female singulate mean age at first marriage increased from 19.7 in 1986 to 22.1 in 1996, whereas in the urban areas the figure rose from 20.1 to 22. The changes in proportion of ever-married women in both rural and urban areas were similar to the national level. Marriage was delayed to later ages, with a sharp reduction at ages 15-19 and 20-24. This is consistent with the increase in the female literacy rate during this period. Aghajanian (1998) noted that the social norm for female age at marriage is moving to after finishing high school education.

Despite the increase in mean age at marriage, universality is one of the major characteristics of the Iranian marriage pattern. Marriage is strongly supported by both religion and tradition in Iranian society. To get married is not only a matter of personal interest, but also a duty of the young to their families and to society. As a result, the majority of women get married before age 29, and almost all women get married by their early 40s. The percentage of women ever-married at ages 35-39 declined slightly from around 98 in 1976 to around 97 percent in 1996. Nevertheless, by their late 40s, 99 percent of women were ever-married. Although the proportion of never-married women is slightly higher for urban women in general, the rural-urban difference is negligible.

The change in marriage patterns in the provinces of Iran was similar to the national level, a slower pace during 1976-1986, and a major change during 1986-1996. The singulate mean age at marriage increased moderately in most provinces. The figure remained unchanged in two provinces, Yazd and Kurdistan, but declined slightly in such provinces as Khoozistan, Khorasan, Booshehr and Markazi. Both Tehran and Zanjan provinces had an increase of more than one year, 1.8 and 1.2 years respectively, during the period. Mean age at marriage in all other provinces rose by less than one year. Similarly to the national level, the extent of change in marriage in all provinces was significant during the period 1986-1996. Although all provinces revealed a sharp increase in SMAM during the period, the extent of change was

different from one province to another. For example, SMAM in Ilam province increased by around 20 percent from 19.2 years in 1986 to 23.0 in 1996. Kohgilooyeh-BooirAhmad and Booshehr, both under-developed, experienced a sharp increase in SMAM, by more than three years, during 1986 and 1996. The pace of the increase in SMAM for such provinces and Gilan, Semnan and Yazd, all developed, was small compared to other provinces. In general, SMAM increased by more than two years in most provinces. Despite the dramatic change in SMAM during the last two decades, there are provincial differences in mean age at marriage in Iran. In 1996, the highest SMAM was recorded for Gilan (23.4 years), while the lowest figure was revealed for Sistan and Baluchistan province (20.4 years).

The proportion of women ever-married at each age also changed concomitantly in all provinces during the last two decades. In 1976, between 30 and 45 percent of women in most provinces were married at ages 15-19, while in 1996 fewer than 20 percent in that age group got married. Moreover, in 1976, more than 95 percent of women were married before age 29; the figure fell to 80-85 percent in most provinces in 1996. The shift to later marriage has also been observed in both rural and urban areas of Iran during the last two decades. The decline in rural areas has been sharper than in urban areas, and the gap between the two has narrowed substantially over the periods. Clearly, marriage has been increasingly delayed over the last two decades in all provinces. It seems likely, however, that virtual universality will continue to be one of the prominent features of Iranian marriage in the future.

The change in marriage pattern is consistent with other socio-economic changes in the Islamic Republic of Iran over the last two decades. The educational attainment of Iranian women during the last two decades consistently stands out as a factor contributing directly and indirectly to the country's fertility decline. Female literacy for the age groups 6 years and above increased from 15 percent in 1956 to 35 in 1976, and to 74 percent in 1996 (Table 2). The school enrolment rate of the female population has also increased in this period. The increasing cost of rearing children, particularly the cost of education, is another important factor. Economic pressure has also been a major factor in the postponement of marriage and the age at first marriage. It is asserted that age at marriage is late where the direct costs of marriage (both ceremonial and transfer costs) are high (Smith 1983: 496). Iran has been experiencing

economic hardship after the revolution, particularly the decade after the War with Iraq. The cost of living has risen dramatically in recent years. Young people tend to delay their marriage until they get a salaried job to be able to afford the high living costs. Hull and Hatmadji (1988) found that, in Indonesia, the age at marriage had risen because the nature of the institution of marriage was evolving from traditional patterns where parents arranged matches for their young adolescent daughters, to more modern forms of couples finding and courting their own partners. They concluded that schooling, literature and films appeared to be the basic causes of the change in marriage patterns and the rise in age at first marriage. It seems that these factors are also responsible for the dramatic change in marriage pattern in Iran. In sum, the changing age at marriage means that there has been a reduction in exposure to intercourse at the youngest age group, which has to some extent led to the decline in fertility, the amount of which is investigated later in this paper.

Table 2. Changes in literacy rates of Iranian population aged 6 years and above, 1956-1996 (%)

Year	Males			Females		
	Total	**Urban**	**Rural**	**Total**	**Urban**	**Rural**
1956	22.2	45.2	10.8	14.9	20.6	1.0
1966	40.1	61.5	25.4	17.9	38.3	4.3
1976	58.8	74.4	43.6	35.6	55.7	17.4
1986	71.0	80.5	60.1	51.0	65.2	36.0
1996	84.7	89.6	76.7	74.2	81.7	62.4

Source: Mehryar and Tajdini (1998).

FERTILITY TRENDS AND CHANGES DURING THE PERIOD 1976-1996

I. OVERAL FERTILITY TRENDS

Table 3 shows the trend of total fertility rates (TFRs) for Iran as a whole and for all provinces during the period 1976-1996. As mentioned earlier, yearly fluctuations of fertility suggested that fertility transition in Iran could be divided into five periods (Abbasi-Shavazi 2000). This paper only presents estimates of TFRs for the years 1976, 1986 and 1996. The fertility rates presented in this section are all period fertility rates.

Total fertility rate declined from 7.2 in 1956 to 7.0 in 1966 (Mirzaie 1998). As can be seen from Table 3, the total fertility rate fell further to 6.1 in 1976. This moderate decline was mainly due to the aggressive family planning program implemented

during the decade before the 1979 Islamic Revolution.   However, owing to the relaxation of the family planning program and the pronatalist campaign after the revolution, TFR increased by 0.15 from 6.09 in 1976 to 6.23 in 1986. The majority of provinces experienced a moderate rise during this period. The exceptions were the two Azarbayjans, Isfahan, Gilan, Mazandaran and Markazi provinces. The rise in all other provinces was moderate. The provinces of Kohgilooyeh Booir Ahmad, Sistan and Baluchistan and Ilam, in order, consistently revealed much higher fertility than other provinces from 1976 to 1986. Sistan and Baluchistan province was the only province where TFR increased substantially, by 1.77, from 7.85 to 9.62 during the period. Tehran and Gilan provinces, on the other hand, experienced lower fertility than other provinces during the period.

As shown in Table 3, Iran experienced an astonishing fertility decline between 1986 and 1996. The total fertility rate fell by 3.7, around 60 percent, from 6.23 in 1986 to 2.53 in 1996. All provinces followed the national trend and experienced tremendous declines in this period. The decline in fertility in such provinces as Kohgilooyeh Booir Ahmad, Ilam and Charmahal Bakhtiari was significant: TFRs decreased by more than 62 percent. Generally speaking, TFRs fell significantly in those provinces whose fertility was very high during the previous decade. These provinces have had lower socio-economic characteristics compared to the national level and other provinces. On the other hand, the absolute decline in TFR was lower in such provinces as Tehran and Gilan whose low fertility was consistently recorded during 1976-1996.

The spectacular decline also occurred in both rural and urban areas.   In rural areas of Iran, TFR dropped by 4.87 from 7.77 in 1986 to 2.90 in 1996. TFR for urban areas declined from 5.44 to 2.04 in that period. Similarly, the tremendous decline in TFR was observed in both rural and urban areas of all provinces. In rural areas, TFR declined by more than 5 in eight provinces. For example, in rural areas of Charmahal Bakhtiari TFR fell by 5.72, from 9.08 in 1986 to 3.36 in 1996. The drop in fertility in urban areas, though sharp, was not as spectacular as the decline in rural areas.

Despite the dramatic decline in fertility during 1986-1996, substantial fertility differences exist in Iran. Although the gap between rural and urban areas has narrowed over the last two decades, fertility is still higher in rural areas. High fertility

is also characteristic of some provinces. Thus, Iran is likely to experience further fertility decline in the future.

II. THE AGE PATTERN OF FERTILITY

While the trends in the TFRs reveal the general direction of Iranian fertility transition, examination of the trends in age patterns yields more detailed information on when and in which age groups the entire movement started. The age patterns of fertility for Iranian women as a whole and for women from all provinces are summarized in this section.

Age-specific fertility rates (ASFR) and age-specific marital fertility rates (ASMFR) for Iran for the years 1976, 1986 and 1996 are illustrated in Figure 1. As can be seen from the figure, both ASFRs and ASMFRs increased moderately at all age groups, except for age groups 15-19 and 20-24, during the period 1976-1986. Closely connected with the postponement of marriage is the consistent decline of both ASFR and ASMFR for age groups 15-19. In 1986, both the ASFRs and ASMFRs for the two age groups were slightly lower than those of 1976. The gap between ASFR and ASMFR, however, widened during this period. ASMFR in age group 20-24 was considerably higher than ASFR in 1976, but the gap between the two rates for age group 25-29 was smaller compared to ages 20-24. The two rates were very close for ages 30-34 and 35-39, and were similar for ages 40-49. The reason for this similarity is the universality of marriage in Iran. As discussed earlier, around 98 per cent of women have been married before age 39, and less than 2 percent were never married.

The most striking finding from this figure is the astonishing decline of both ASFRs and ASMFRs in all age groups during 1986-1996. It is clear that, in 1996, ASMFR for age group 20-24 was even lower than ASFR in 1986. As in the previous period, the gap between ASMFR and ASFR in age group 20-24 is wider than that in age group 25-29. The substantial decline at higher ages is also worth noting.

The steep fertility decline in all age groups during 1986-1996 suggests that changes in starting, spacing and stopping of childbearing have all occurred at the same time. That is, young couples are starting their childbearing later, married women are increasing the spacing of their births and older women are stopping their childbearing at earlier ages, simultaneously. This pattern and model of fertility is different from the

standard pattern of fertility decline in which fertility decreases at the younger ages only. In a stable condition one would expect fertility decline to start gradually from the earlier ages (cohort effect); whereas in Iran, which has been experiencing a dramatic decline, fertility has fallen in all age groups (period effect). It seems likely that family planning has had a major role in fertility decline over the recent decade.

Figure 1. ASFRs and AFMFRs for Iran, 1976, 1991 and 1996
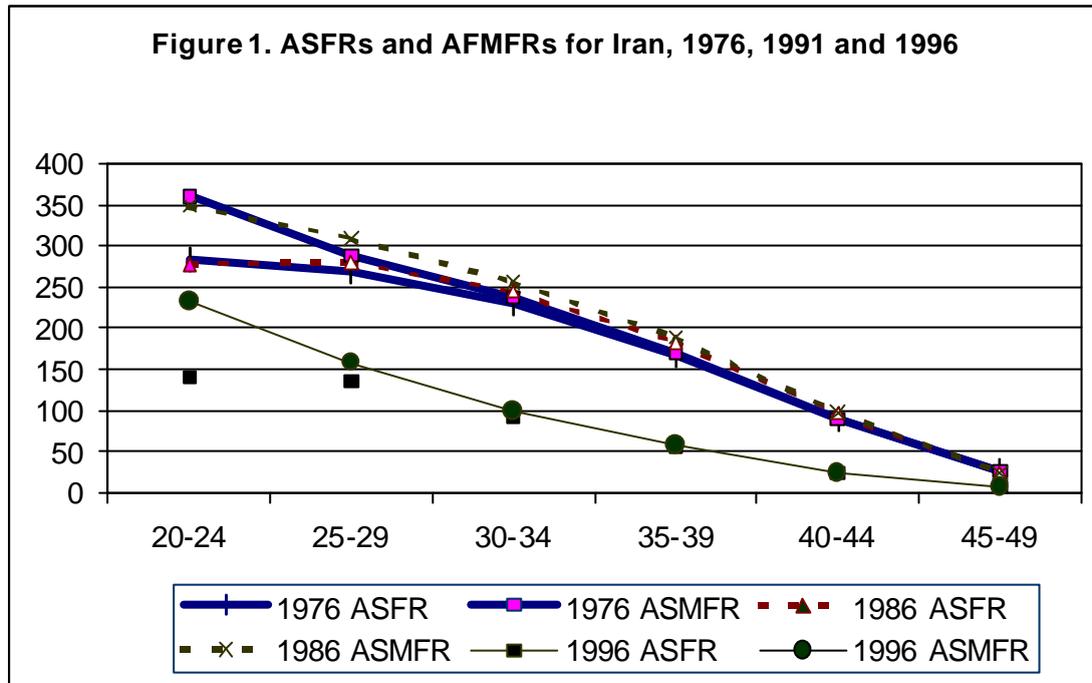
Source: Statistical Centre of Iran, Own-children data from the 1986 and 1996 censuses.

As mentioned earlier, there has been a wide gap between ASFRs and ASMFRs at two age groups, 20-24 and 25-29, over the last two decades. Since the highest marital fertility for all provinces was recorded in these two age groups, hereafter we examine ASMFR for married women at ages 20-24 and 25-29 during 1976-1996 for Iran by province. Because of data constraints, however, the data for rural and urban areas are limited to the period 1986-1996. Table 4 compares the ASMFRs for all provinces by rural and urban areas for the years 1976, 1986 and 1996. The following observations can be made from the table.

1. ASMFR for women aged 20-24 increased for all provinces, except for such provinces as Ilam, Kohgilooyeh Booir Ahmad and West Azarbayjan. The extent of increase varied by province, ranging from 0.5 percent in East Azarbayjan and 35 percent in Semnan. It seems likely that marital fertility shifted from age 15-19

to 20-24 during 1976-1986 as a result of the moderate increase in mean age at first marriage.

2. The increase in ASMFR in age group 20-24 was offset by the modest decline in age group 25-29. The decline ranged between 10 and 20 percent in most provinces. The sharpest decline in this age group for the period 1976-86 was recorded for Tehran (26 percent) followed by Mazandaran and Gilan (around 20 percent).

3. Married women aged 20-24 and 25-29 experienced a dramatic decline in fertility during the period 1986-1996 in all provinces. The amount of the decline was higher for women at ages 20-24 than for women at ages 25-29. ASMFR for the total women at ages 24-24 and 25-29 decreased by 33 and 49 percent, respectively.

4. Both urban and rural women aged 20-24 substantially reduced their fertility during the period 1986-1996. But the decline of fertility in age group 25-29 was lower for rural than for urban women. For example, ASMFR for total women aged 25-29 in urban areas fell by 53 percent, whereas the rate declined by 27 percent for rural women. The decline in this age group was even lower than the decline in age group 20-24.

5. There are substantial fertility differentials between the provinces in both rural and urban areas, although the diversity has narrowed over the period. Of the provinces, Kohgilooyeh Booir Ahmad stood out for having the highest ASMFRs in both age groups 20-24 and 25-29 in 1986. Booshehr and Khoozistan also had higher ASMFRs than other provinces in age group 24-29 in 1996.

Generally speaking, the ASMFR is higher in both age groups for rural women. This suggests that further declines in fertility for women in rural areas are under way. The fall in fertility in young ages is consistent with the rise in age at marriage, and the reduction in the proportion married at earlier ages. The Islamic Republic of Iran experienced a moderate rise in fertility during the period 1976-1986, which was followed by a steep decline in fertility during the decade 1986-1996. The changes in fertility are consistent with the two official family planning policies, pronatalist and antinatalist, implemented by the Islamic government since 1979.

DECOMPOSITION OF CHANGE IN TOTAL FERTILITY RATE

Changes in the overall fertility and marital fertility for the last two decades have been analysed. The logical question is the extent to which nuptiality and marital fertility contributed to the fertility transition. In Iran, childbearing outside marriage forms no part of the cultural tradition, and ex-nuptial births can safely be excluded from the current analysis. The overall fertility is, therefore, determined mainly by the proportion of women married and by fertility within marriage. In what follows, an attempt is made to decompose the changes of total fertility rate into components due to marriage and marital fertility. The results for the national level are presented first, and provincial and rural and urban differences are then discussed.

NATIONAL LEVEL

Table 5 shows the decomposition of the change in the total fertility rate for Iran as a whole during the periods 1976-1986 and 1986-1996, and for rural and urban areas during the period 1986-1996.

1976-1986

As can be seen, total fertility increased by 0.15 (2.4 percent), from 6.09 in 1976 to 6.23 in 1986. The increase was mainly due to the increase in marital fertility (0.22), but was slightly offset by nuptiality (-0.07).

The nuptiality component is broken down further by age. Changes in nuptiality tended to reduce the TFR in ages 15-39, but the effect was greater in age group 25-29 than in other age groups. This occurred because the decline in proportion married was greater in age group 25-29. As discussed earlier, the proportion of ever-married women decreased slightly in all age groups during 1976-1986, except for age group 20-24. The female singulate mean age at marriage (SMAM) increased from 19.52 to 19.73 years during the period.

The marital fertility component is also broken down further by age. Changes in marital fertility at younger reproductive ages, 15-19 and 20-24, as well as age group 45-49 reduced the TFR, whereas changes at other age groups increased the TFR (Tables 1 and 5). The decline in marital fertility at earlier ages is mainly due to the rise of female education during the period. The female literacy rate increased from 35

to 52 percent during the period. The contribution of marital fertility to the increase in total fertility was higher in age groups 25-29 and 35-39 (0.10) followed by age groups 30-24 (0.09) and 40-44 (0.04).

1986-96

The total fertility rate fell by 3.71 (59.5 percent), from 6.23 in 1986 to 2.52 in 1996. The increase was mainly due to the decline in the marital fertility rate (3.11), and a further decline by 0.60 through nuptiality change. In other words 86 percent of the fertility decline was due to the change in marital fertility and only 14 percent due to nuptiality change.

Changes in nuptiality tended to reduce the TFR in the younger reproductive ages, 15-19, 20-24 and 25-29. This is consistent with the sharp rise in SMAM during the period, and reduction in the proportion ever-married, particularly in younger ages. The singulate age at marriage increased from 19.73 to 22.09 years during the period 1986-1996. The literacy rate for female also increased from 52 to 74 percent during the period.

Marital fertility declined in all ages, so that the contribution of marital fertility to the change in the TFR was negative in all ages. However, the decline in marital fertility in middle ages, 25-29, 30-34, 35-39, was more pronounced than the two extremes, 15-19 and 45-49. The decline in fertility in younger ages is probably due to delay in the onset of childbearing for young couples, whereas the decline in middle and older ages stems from the official population policies of the government, and the rise of the contraceptive prevalence rate during this period.

The result of fertility change for rural and urban areas during this period has also been shown in Table 4. As shown, the decomposition of the change in TFR for both rural and urban areas is identical to that of the total population. The pace of the decline in TFR in both rural and urban areas is similar (62 percent). The effects of marital fertility on the decline in both areas have been far greater than that of nuptiality. Around 87 percent of the decline in urban areas was attributable to marital fertility, whereas the corresponding figure for rural areas was 85 percent. This is because the increase in SMAM for rural areas was sharper (2.2 years) than in urban areas (1.88 years) during this period. In both rural and urban areas the effect of nuptiality on

fertility was concentrated at younger ages. However, in rural areas the effect of nuptiality was greater in age group 25-29 followed by age group 15-19, while in urban areas the effect in age group 15-19 was greater than in other groups. As in the total population, marital fertility tended to decrease TFR sharply in all age groups in both areas. The decline was sharper at middle ages, 20-39.

In summary, fertility increased slightly during the first period, which was mainly due to the increase in the marital fertility rate. This may stem from the abolition of the family planning program and the low level of contraceptive use among families. The socio-cultural context of the post-revolutionary era was another factor in encouraging couples to have more children and high fertility. However, there was a sharp decline in fertility during 1986-96. Changes in nuptiality tended to reduce fertility by 15 per cent only. Marital fertility contributed substantially to fertility decline in the second period. This may suggest the importance of family planning programs as the key factor in the sharp fertility decline in Iran during the last decade.

PROVINCIAL DIFFERENCES

Table 6 illustrates the changes in TFR and the effects of component changes for the periods 1976-86 and 1986-96 for all provinces. Several points emerge from the table. Generally speaking, the effect of marital fertility on fertility transition was far greater than that of nuptiality over the periods. In the first period, fertility increased in all provinces, except five. Marital fertility was mainly responsible for the increase in the majority of provinces. The exceptions were Gilan, Markazi and East Azarbayjan. Sistan and Baluchistan had the sharpest increase (1.9 child per woman) in marital fertility during the period 1976-86. Marriage had a negative effect on fertility in most provinces, and contributed to the increase of fertility in only seven provinces. For example, 33 percent of the increase in TFR in Yazd province was attributable to marriage, where the singulate mean age at marriage did not change during 1976-86. The largest effect of marriage on fertility was recorded for Zanjan province.

Both marriage and marital fertility had considerable negative effects on fertility in all provinces during the last period, 1986-96. The contribution of marital fertility in fertility decline ranged from 74 percent in Hormozgan and Ilam provinces to around 87 percent in Kurdistan province. In absolute terms, TFR declined by 4.47 in Kohgilloyeh BooirAhmad followed by Charmahal Bakhtiari, by 4.35, due to marital

fertility. On the other hand, Tehran and Gilan, with already low fertility, had the lowest decline due to marital fertility (2.3 child per woman). Ilam, Hormozgan and Kohgilooyeh provinces stood out as marriage contributed to the decline of more than one child in these provinces during the last period. In general, the effects of both marriage and marital fertility were greater in provinces with high fertility than in others.

RURAL-URBAN DIFFERENCES

Trends and changes in TFRs and the effects of component change for rural and urban areas of Iran during the period 1986-1996 are also shown in Table 6. As revealed, in absolute terms, the fall in TFR was steeper in rural areas than in urban areas, mainly because fertility was already lower in urban areas. The pattern of change in both urban and rural areas was identical to that of the provinces. Provinces with high fertility experienced sharper fertility decline in both rural and urban areas. The contribution of marital fertility was also significantly higher than that of marriage change in the two areas. Around 85 percent of the decline of TFR in rural areas was attributable to marital fertility. The extent of change, however, differed, from 71 percent in Ilam to 89 percent in Tehran province. In 1986, fertility in rural areas was much higher than in urban areas, but the gap narrowed by 1996 and rural fertility was relatively close to urban fertility, probably because of better implementation of family planning programs in rural areas. Studies have shown that modern contraceptive use in rural areas is higher than in urban areas (Mehryar and Tajdini 1998).

In summary, the effect of marriage patterns on overall fertility reduction was relatively small. Despite the extensive postponement of marriage over the last two decades, almost all Iranian women did eventually get married. Hence, changes in marriage pattern only affect fertility at early ages. Moreover, although marriage patterns were considerably different between the mid-1990s and early 1980s, marital fertility, particularly for those in middle ages, changed more significantly; probably through the effective implementation of family planning programs. As a result, the reduction in marital fertility was four times more important than changes in marriage patterns in Iran as a whole and in all provinces and urban and rural areas.

MECHANISMS OF FERTILITY DECLINE IN IRAN

POPULATION POLICIES

Around 85 percent of the fertility decline in Iran was attributable to the changes in marital fertility over the last decade. Thus, it is reasonable to argue that family planning programs have had a significant effect on the spectacular fertility transition in Iran. During the first decade, 1976-86, fertility increased moderately, which was due the relaxation of family planning programs and the wholehearted campaigns for early marriage and for large families. Despite the lowering of the legal age for marriage for girls and boys, and providing incentives for early marriage, age at marriage rose slightly and had a negative effect on fertility. However, the social and psychological atmosphere of the society was favourable to high fertility. The rationing system implemented during the war with Iraq and all other incentives by the government encouraged couples to have more children. Nevertheless, the tremendous campaign had a small and a temporary effect on people's lives, as was confirmed by the fact that fertility in Iran began to decline as early as 1984, well before the official inauguration of the family planning program in 1988. Moreover, the effect of pronatalist policies on fertility was not as great as was expected. Fertility rose moderately by 10 to 15 percent in Iran and most provinces in both rural and urban areas. Some provinces even had a modest decline in fertility during this period. In general, the pronatalist campaigns pushed fertility up only slightly.

LEGITIMIZATION OF FAMILY PLANNING

In contrast to the pre-revolutionary family planning program, the Islamic Republic of Iran was culturally, economically and socially favourable to the introduction of the family planning program by the mid-1980s. This situation was reinforced by the entire support of religious leaders and high government officials who were convinced that the high population growth rate had a negative effect on the development of the country in general and on the standard of living in particular. The support of religious leaders legitimized the family planning program, by which the government was able to provide family planning services to people without any religious barriers. The legitimization also paved the way for printing family planning brochures, teaching population education in high schools, holding workshops for young couples and other educational campaigns by the mass media. Commenting on the success of family

planning in Iran, Wright (2000: 165) wrote that 'the Islamic Republic had been more successful in reaching a wider audience, as compared with the monarchy, because it had won the approval from the clergy, many of whom had called just a few years earlier for the birth of an Islamic generation'. Legitimization of family planning by religious leaders and government officials was one of the main factors in the success of the family planning program. Owing to the legitimization of family planning, not only has there been no major religious barrier to the implementation of the family planning program and the use of contraceptives, but also birth control is being advertised as the social and religious duty of couples and individuals.

The improvement of health is not a controversial issue, and as a result there has been a common ground for the improvement of health in Iran. The issue of birth control has become an element in people's lives since the late 1980s. Through the availability of contraceptives people were able to control their fertility after 1988, as a result of which fertility transition was accelerated. Legitimacy and availability of contraception in Iran have been enabling mechanisms by which couples controlled their fertility. Also, given the already low fertility in such provinces as Tehran, Semnan, Gilan and Yazd in 1976-1986, it could be argued that people had independent choices on contraception regardless of pronatalist policies in the country. Mehryar et al. (1998) showed that the level of contraceptive use in Iran before 1988 was around 50 percent.

The high level of contraceptive use in Iran is an indication of the strength of demand for contraceptives, but could also be considered as the indication of success of the family planning program in the last decade (Table 8). The spectacular fertility decline during the period 1986-1996 and the acceleration of fertility transition since 1988 (Abbasi-Shavazi 2000), have supported the contribution of the Iranian family planning program. Furthermore, the sharp decline in fertility in such remote provinces as Sistan-Baluchistan, Ilam and Charmahal Bakhtiari and the low fertility in rural areas, is further evidence of the success of the family planning program. However, studies have shown that around 25 percent of births are due to unwanted pregnancies; moreover, 20-30 percent of families rely on traditional contraceptive methods. It seems that the family planning program has still a long way to go.

MODERNIZATION

Economic hardship during the War had also a significant effect directly and indirectly on fertility limitation in Iranian families. Marriages were delayed during the 1986-1996 period. Paydarfar and Moini (1995) argued that some of the socio-demographic characteristics of families in the post-revolutionary era were more in favour of fertility reduction compared to the pre-Islamic revolution era.   The government's implicit policies such as increasing public education, particularly of girls, the establishment of the health network system, reduction in child mortality and the increase in access to electricity and safe water, transport and communication in remote areas of Iran have all had indirect effects on fertility decline. For instance, the decline in infant mortality was a very important factor in the demand for fewer children and smaller family size. The infant mortality rate declined from around 114 per thousand live births in 1975 to 64 per thousand in 1985 and 34 in 1994. The sharp decline in infant mortality occurred in all provinces during 1986-1996 (Table 8). The maternal mortality occurred also decreased substantially over the last two decades. In 1974, the maternal mortality rate was 277 per 100,000 births, but it declined to 140 in 1985, 54 in 1991 and 37 in 1996 (Ministry of Health and Medical Education 1999).

High aspirations and investments of families in their children's schooling have also affected couples' fertility decision making. Aghajanian and Mehryar (1999: 40) argued that the increase in levels of schooling and the aspiration for higher education among women have contributed to the lower demand for children. Iranian girls and women stay more years in school and university than was the case previously and this factor delays marriage and childbearing.

GENDER EQUITY

McDonald (2000) has argued that the fertility transition from high to low levels has been associated mainly with slowly improving gender equity within family-oriented social institutions, almost exclusively within the family itself. He believes that 'where women are provided with decision-making power within the family, especially in regard to the number of children that they have, it is possible that fertility can fall to low levels without there being major changes in women's lives outside of the family'. The changes which occurred in Iranian society support this view. In the decade after the revolution, the official policy limited the role of women in 'social-institutions

outside family'. Ideologically, the Islamic Republic urged domesticity and motherhood as the most important roles for women. At the same time, with quotation from the Koran and Hadith, the equality of men and women within the family was supported. The notion of sex preference has been changing gradually over time. Women have more power within the family than in the pre-revolutionary era. Along with these changes, the status of women in the society has been improving.

Hoodfar (1996: 32-33) wrote that family planning in Iran has been defined in such as way that its most important function is to empower parents to create the kind of family they wish to have. She argued that the government officials have recognized that the success of the program depends upon linking the interests of individuals, children, parents and especially women. Empowered by information, facilities and appropriate channels of distribution so that they and their families can fulfil their choices, women have found sufficient leverage to raise other demands for reform. Aghajanian (1998) observed that slowly but consistently changes in roles of women are emerging and women are combining familial roles with economic roles. Iranian women are delaying marriage and getting more education. Government is also supporting women's participation in the labour force as long as the Islamic values and norms are observed. Parents are increasingly concerned with, and prepared to support, the education of their daughters as well as their sons. Recent data show that education of girls is catching up with that of boys in the Islamic society of Iran. In 1996, the literacy rate among the female population was 74 percent; the rate of male literacy in the same year was 84 percent (Table 2). In sum, the empowerment of Iranian women within the family, along with the rise of gender equity in the society, has had a significant effect on the success of family planning in general, and on the fertility transition in particular.

RURAL DEVELOPMENT

Rural and urban fertility differentials have been well established in all countries (Lucas & Meyer 1994). Watkins (1986) reported that in Europe, the fertility decline began first in the urban areas, and the larger urban areas had an earlier and swifter decline than the smaller areas. Nevertheless, it was clear from this study that rural areas of all provinces in Iran, even those of deprived regions of the country, had a

sharp fertility decline similar to the national level and urban areas. The question arises: what is behind the similarity in fertility decline in rural and urban areas in Iran?

One of the reasons for the sharp decline in fertility in rural areas is the process of development in rural areas after the Islamic Revolution. Soon after the revolution, the *Constructive Jihad* was established to revive and develop the cultural, economic and social conditions of the villages and deprived regions. The activities of the organization ranged from providing educational and health services to constructing roads and pools, and to distribution of agricultural machinery and equipment. Many schools and health centres in rural areas were built by the hands of revolutionary engineers, university students and teachers, who were voluntarily and energetically working as *Jihadgars* or Jihad Organization officers during the decade after the revolution. This contributed to the establishment of a sound and healthy rural environment after the Revolution, and made rural areas of Iran significantly different from those of other countries in the region.

Table 8 shows selected socio-demographic characteristics of the Iranian population by province. As can be seen, by 1996 the majority of rural communities had access to electricity, TV, radio and piped water. The Literacy Movement was another organization created after the Revolution, aiming to instruct all illiterates above 10 years of age. The organization began its task in 1979 by dispatching volunteer school graduates as teachers to the villages. There were also some classes to instruct illiterate employees under 50 working in government offices, factories and workshops. Such developmental processes facilitated the success of family planning programs in Iran, in general, and in rural areas, in particular, during the second decade after the revolution.

To summarize, the spectacular fertility decline in Iran should be analysed within the socio-economic and cultural context of society in the post-revolutionary era. The process of institutional development in the country, particularly in rural areas, legitimization of family planning programs by religious leaders and government officials, the rise of education, and the improvement of health in rural areas could be named among the factors responsible for the astonishing fertility decline in recent years.

SUMMARY AND CONCLUSION

Trends and changes in fertility during the last two decades have been reviewed in this paper. Fertility increased moderately from 1976 to 1986, mainly because the family planning programs was relaxed after the 1979 Islamic Revolution. During the decade 1986 to 1996, under the Islamic Republic of Iran, there was a spectacular fertility decline: the total fertility rate declined by more than 60 percent during the decade. The pace of the decline was similar in all provinces and rural and urban areas of the country. Age-specific fertility rates declined substantially in all age groups during 1986-1996, suggesting that changes in starting, spacing and stopping of childbearing have all occurred at the same time.

Nuptiality has undergone major changes during the period 1976-1996, although the change was not significant during the first decade after the revolution, 1976-86. The results of the decomposition analysis showed that the change in fertility was mainly attributable to marital fertility during each of the last two decades. Around 85 percent of the decline in fertility was due to the decrease in marital fertility during the period 1986-1996; nuptiality was responsible for only 15 percent of the decline. The results of this study suggest that Iranian women have controlled their fertility within marriage. Thus, it could be argued that the family planning program has been effective in controlling fertility during the last decade.

Given the dramatic fertility decline and the similarity of the decline in all provinces and rural and urban areas of the country, a question has risen: how and under what conditions has fertility dramatically declined in such a short time? There were several factors in the fertility decline in Iran. The process of institutional development, particularly in rural areas; legitimization of family planning programs by religious leaders and government officials; the rise in literacy and level of education; and the improvement of health in rural areas could be mentioned as the main factors responsible.

Because of the high fertility experienced in the early 1980s, during the next decade there will be a large increase in the proportion of the population who are young women of childbearing age. Agahjanian and Mehryar (1999) noted that despite the potential for further decline, the country faces the prospect of a 'baby boom' within

the coming decade. Thus, substantial fertility decrease is needed to offset the expected increase in fertility resulting from large number of women in childbearing ages. There are substantial fertility differentials by level of urbanization in Iran, despite the fact that fertility has fallen in both rural and urban areas. One reason to expect further decline is the likelihood that the rates now characterizing urban areas and provinces with very low fertility will prevail in Iran as a whole after a few years. But, given the already low fertility in most provinces of Iran, the extent of change will not be as large as in the last decade. Future marital fertility trends probably depend on further increase in the proportion of Iranian couples using birth control to have only the number of children they want, as well as decreases in the number of desired children. Obviously, a logical target for a family planning program is couples who want no more children but are not using contraception. Current family planning programs need to be continued, while more emphasis should be given to quality of services.

This study has shed further light on the fertility transition in Iran. Nevertheless, the extent to which Iranian women are making their own decisions, the mechanisms of decision making among couples, the institutional framework by which the government implemented its policies, and the question of sustainability of low fertility in Iran are among the questions which remain unanswered. Further studies are needed to investigate these issues in the future.

Table 1, Female singulate mean age at marriage (SMAM) and age-specific proportion married, 1986 to 1996, Iran by province

Province	1976				1986				1996			
	SMAM	15-19	20-24	25-29	SMAM	15-19	20-24	25-29	SMAM	15-19	20-24	25-29
IRAN	19.52	0.343	0.786	0.932	19.73	0.335	0.796	0.906	22.09	0.186	0.607	0.852
Ardabil									22.22	0.189	0.580	0.841
Azarbayjan E	19.36	0.369	0.831	0.951	20.15	0.332	0.737	0.916	22.34	0.173	0.578	0.840
Azarbayjan W	19.98	0.300	0.782	0.937	20.80	0.284	0.690	0.896	22.24	0.186	0.589	0.844
Booshehr	20.11	0.304	0.748	0.906	19.83	0.347	0.752	0.903	23.11	0.142	0.536	0.790
Charmahal & B.	18.90	0.398	0.862	0.955	19.06	0.408	0.795	0.932	21.88	0.184	0.620	0.872
Fars	19.79	0.356	0.769	0.920	20.13	0.381	0.736	0.887	22.36	0.188	0.594	0.829
Gilan	21.21	0.197	0.675	0.906	21.48	0.296	0.594	0.861	23.41	0.140	0.512	0.781
Hamadan	18.79	0.405	0.869	0.965	19.22	0.425	0.813	0.942	21.61	0.214	0.632	0.872
Hormozgan	18.49	0.456	0.875	0.965	18.85	0.435	0.824	0.940	21.55	0.207	0.648	0.878
Ilam	18.70	0.447	0.868	0.955	19.27	0.410	0.817	0.940	23.00	0.117	0.506	0.830
Isfahan	18.86	0.435	0.840	0.952	19.23	0.425	0.799	0.931	21.32	0.212	0.672	0.895
Kerman	20.13	0.278	0.771	0.914	20.30	0.300	0.721	0.920	22.90	0.132	0.522	0.830
Kermanshah	19.78	0.301	0.954	0.983	20.48	0.315	0.725	0.902	22.56	0.179	0.572	0.816
Khorasan	19.38	0.356	0.816	0.953	19.30	0.404	0.798	0.938	21.53	0.208	0.643	0.883
Khoozestan	20.24	0.330	0.730	0.911	20.01	0.413	0.740	0.889	22.25	0.193	0.602	0.838
Kohgiluyeh & B	18.08	0.540	0.881	0.963	18.17	0.537	0.860	0.950	21.68	0.193	0.630	0.880
Kurdistan	19.94	0.317	0.754	0.952	19.95	0.340	0.760	0.923	21.74	0.181	0.619	0.891
Lorestan	18.45	0.469	0.869	0.966	19.37	0.435	0.790	0.918	22.22	0.175	0.586	0.851
Markazi	20.19	0.331	0.747	0.900	20.09	0.349	0.750	0.907	22.06	0.194	0.600	0.883
Mazandaran	20.28	0.261	0.752	0.939	20.84	0.276	0.679	0.891	22.66	0.163	0.571	0.827
Qom									20.75	0.243	0.711	0.914
Semnan	20.45	0.254	0.728	0.928	20.37	0.327	0.722	0.892	22.21	0.176	0.603	0.855
Sistan & Baluch.	18.39	0.480	0.874	0.968	18.54	0.504	0.838	0.946	20.46	0.287	0.720	0.920
Tehran	18.70	0.384	0.748	0.900	20.55	0.344	0.724	0.837	22.13	0.169	0.613	0.851
Yazd	19.54	0.323	0.879	0.973	19.54	0.323	0.879	0.973	20.86	0.211	0.700	0.930
Zanjan	18.34	0.489	0.879	0.965	19.56	0.377	0.793	0.936	22.08	0.186	0.590	0.854

Note: The boundaries for some provinces have changed between the censuses. Ardabil was part of East Azarbayjan Province in the 1976 and 1986 censuses. Qom was included in Markazi Province in 1986 and 1996 censuses.

Sources: Statistical Centre of Iran, published data from the 1976,1986 and 1996 censuses.

Table 3. Trends and changes of adjusted TFRs during 1976-1996, Iran by province

Province	TFR			Change in TFR during:	
	1976	1986	1996	1976-86	1986-96
Iran	6.09	6.23	2.53	**0.15**	**-3.70**
Ardabil		7.68	2.98		**-4.7**
Azarbayjan E	6.68	5.97	2.11	**-0.72**	**-3.86**
Azarbayjan W	6.50	6.32	3.01	**-0.18**	**-3.31**
Booshehr	6.70	7.22	2.75	**0.52**	**-4.47**
Charmahal	7.87	8.11	2.92	**0.24**	**-5.19**
Fars	6.12	6.83	2.54	**0.71**	**-4.29**
Gilan	5.72	4.93	2.09	**-0.79**	**-2.84**
Hamadan	6.87	7.11	2.62	**0.24**	**-4.48**
Hormozgan	6.93	7.72	3.59	**0.79**	**-4.13**
Isfahan	5.80	5.70	2.02	**-0.10**	**-3.68**
Ilam	7.81	8.27	3.22	**0.46**	**-5.05**
Kerman	7.02	7.34	3.10	**0.32**	**-4.24**
Kermanshah	6.16	6.56	2.68	**0.40**	**-3.88**
Khorasan	6.64	7.06	3.17	**0.42**	**-3.89**
Khoozestan	6.57	7.47	3.19	**0.90**	**-4.28**
Kohgilooyeh	8.13	8.81	3.27	**0.68**	**-5.54**
Kurdistan	7.07	7.57	3.26	**0.50**	**-4.31**
Lorestan	7.35	7.73	3.12	**0.38**	**-4.61**
Markazi	6.40	6.36	2.40	**-0.04**	**-3.96**
Mazandaran	5.85	5.68	2.48	**-0.17**	**-3.21**
Qom		6.30	2.76		**-3.54**
Semnan	4.94	5.52	2.46	**0.58**	**-3.06**
Sistan and B.	7.85	9.62	4.85	**1.77**	**-4.76**
Tehran	4.06	4.64	1.93	**0.58**	**-2.71**
Yazd	5.54	6.36	2.81	**0.82**	**-3.54**
Zanjan	6.97	7.22	2.82	**0.25**	**-4.40**

Sources: Statistical Centre of Iran, Own-children data from the 1986 and 1996 Censuses.

Table 4, Age-specific marital fertility rates for ever married women ages 20-24 and 25-29, Islamic Republic of Iran by province and rural and urban areas, 1976, 1986 and 1996

Province	National level						Urban areas				Rural areas			
	1976		1986		1996		1986		1996		1986		1996	
	20-24	25-29	20-24	25-29	20-24	25-29	20-24	25-29	20-24	25-29	20-24	25-29	20-24	25-29
IRAN	359.6	287.5	347.8	308.3	232.1	158.3	351.1	279.4	197.8	131.3	429.9	370.2	241.3	175.0
Ardabil														
Azarbayjan E	358.0	311.4	359.7	290.6	312.0	145.1	330.9	253.9	191.3	120.2	422.9	364.1	264.2	186.3
Azarbayjan W	409.7	319.7	396.6	323.8	264.9	186.2	196.9	266.8	169.5	161.9	440.3	374.2	293.5	218.5
Booshehr	360.0	295.0	404.1	338.0	233.2	162.3	376.2	328.2	229.5	169	458.0	432.4	274.9	228.0
Charmahal	360.0	316.6	386.6	328.9	218.6	159.0	435.3	340.2	249.4	165.6	462.6	416.9	289.9	209.7
Fars	379.8	314.6	422.9	368.0	270.8	196.9	378.4	300.8	214.6	146.4	461.8	403.8	264.1	192.1
Gilan	365.1	294.2	378.4	304.9	247.1	172.3	326.9	243.1	220.3	138.1	427.6	340.1	250.6	162.2
Hamadan	281.2	206.2	310.7	252.3	193.1	129.3	350.2	283.7	182.9	129.3	478.5	384.3	252.6	195.6
Hormozgan	308.3	251.0	339.3	281.0	243.8	159.0	353.7	312.7	222.0	164.6	427.5	399.3	266.8	221.4
Ilam	400.0	367.2	444.0	377.9	236.7	163.8	388.4	368.3	265.3	186.0	457.1	423.0	333.0	249.2
Isfahan	377.5	340.6	395.3	364.5	238.3	189.6	324.8	251.6	185.5	121.0	392.9	336.1	205.1	136.7
Kerman	355.9	320.1	410.4	358.9	271.6	192.1	410.9	333.2	280.7	180.5	472.9	405.5	305.8	217.0
Kermanshah	350.7	271.8	339.0	267.7	190.5	124.7	423.5	301.5	219.9	152.8	454.6	386.7	286.0	214.3
Khorasan	346.1	317.1	368.2	353.7	246.4	193.8	360	308.4	221.8	162.5	421.2	378.3	281.4	236.0
Khoozestan	391.0	383.4	418.3	384.3	288.4	207.3	406.8	342	246.9	173.5	480.7	451.4	318.7	245.6
Kohgilooyeh & B.	390.1	316.5	365.5	308.7	225.0	147.3	436.2	384.1	241.6	179.8	438.7	402.1	282.2	204.9
Kurdistan	398.4	318.8	419.5	363.5	272.1	195.1	397.1	333.7	234.2	158.9	430.3	401.1	295.6	215.5
Lorestan					191.0	144.0	402.1	334.9	249.4	171.1	440.0	404.1	304.9	226.2
Markazi	342.0	327.1	442.4	405.9	292.6	242.4	335.8	276.8	212.1	143.7	409.4	364.8	243.1	179.2
Mazandaran	319.1	244.1	339.5	270.2	240.5	157.6	347.9	275.3	229.0	156.5	407.2	334.2	261.2	187.0
Qom	428.9	348.0	433.5	391.6	266.1	199.9			219.8	160.3				
Semnan	292.3	281.1	393.4	328.7	242.4	171.9	317.6	252	232.4	152	509.6	359.5	258.0	172.5
Sistan & Baluch.	357.2	306.6	383.8	335.8	246.8	189.8	446.2	400	307.7	246.6	445.3	419.1	286.0	243.1
Tehran	388.3	297.3	374.8	278.2	236.7	149.8	299.4	230.6	190.2	126.8	365.4	302.7	206.0	141.2
Yazd	349.6	308.5	387.3	336.2	232.0	169.7	342.6	271.7	237.2	155.6	407.9	333.6	264.9	170.9
Zanjan	406.3	331.2	432.7	359.4	290.6	202.9	346	302.8	194.7	134.7	436.7	372.0	265.9	211.2

Note: Age-specific marital fertility rates were obtained by dividing age-specific fertility rates by corresponding age-specific proportions ever married. See note on province boundaries in Table 1.

Sources: Statistical Centre of Iran, the own-children data from the 1986 and 1996 censuses, and published data for the census years.

Table 5. Decomposition of the change in the adjusted total fertility rate, 1976 to 96, the Islamic Republic of Iran, by rural and urban areas

		Age group						
Total								
1976-1986	All ages	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Marital fertility	0.22	-0.04	-0.06	0.10	0.09	0.10	0.04	-0.01
Nuptiality	-0.07	-0.02	0.02	-0.04	-0.02	-0.01	0.00	0.00
Total	0.15	-0.06	-0.02	0.06	0.06	0.09	0.03	-0.01
	TFR increased by 0.15 (2.4 percent), from 6.09 to 6.23							
1986-96								
Marital fertility	-3.11	-0.24	-0.40	-0.66	-0.74	-0.63	-0.36	-0.08
Nuptiality	-0.60	-0.25	-0.28	-0.06	0.01	0.00	0.00	0.00
Total	-3.71	-0.49	-0.68	-0.72	-0.75	-0.64	-0.36	-0.08
	TFR declined by 3.70 (59.5 percent), from 6.23 to 2.52							
Rural								
Marital fertility	-4.15	-0.29	-0.64	-0.86	-0.95	-0.81	-0.48	-0.11
Nuptiality	-0.72	-0.25	-0.27	-0.13	-0.05	-0.02	-0.01	0.00
Total	-4.87	-0.54	-0.91	-0.99	-0.99	-0.83	-0.49	-0.11
	TFR declined by 4.87 (62.7 percent), from 7.76 to 2.89							
Urban								
Marital fertility	-2.96	-0.21	-0.51	-0.65	-0.68	-0.55	-0.30	-0.06
Nuptiality	-0.44	-0.25	-0.15	-0.03	-0.01	0.00	0.00	0.00
Total	-3.40	-0.46	-0.66	-0.68	-0.69	-0.55	-0.30	-0.06
	TFR declined by 3.41 (62.5 percent), from 5.44 to 2.04							

Source: see Table 4.

Table 6. Changes in adjusted TFR and the effects of components changes for the periods 1976-86 and 1986-96, Iran by province

	1976-86			1986-96		
		Attributable to:			Attributable to:	
Province	TFR	Marriage	Marital fertility	TFR	Marriage	Marital fertility
Iran	**0.15**	-0.20	0.35	**-3.70**	-0.52	-3.20
Ardabil				**-4.7**		
Azarbayjan E	**-0.72**	-0.34	-0.38	**-3.86**	-0.57	-3.86
Azarbayjanw	**-0.18**	-0.32	0.14	**-3.31**	-0.44	-2.87
Booshehr	**0.52**	0.05	0.47	**-4.47**	-0.90	-3.57
Charmahal	**0.24**	-0.21	0.45	**-5.19**	-0.84	-4.35
Fars	**0.71**	-0.12	0.83	**-4.29**	-0.67	-3.62
Gilan	**-0.79**	-0.04	-0.75	**-2.84**	-0.50	-2.34
Hamadan	**0.24**	-0.13	0.37	**-4.48**	-0.73	-3.75
Hormozgan	**0.79**	0.27	0.52	**-4.13**	-1.07	-3.06
Ilam	**0.46**	-0.24	0.70	**-5.05**	-1.29	-3.76
Isfahan	**-0.10**	-0.15	0.05	**-3.68**	-0.55	-3.13
Kerman	**0.32**	-0.06	0.38	**-4.24**	-0.85	-3.39
Kermanshah	**0.40**	-0.23	0.63	**-3.88**	-0.61	-3.27
Khorasan	**0.42**	0.01	0.41	**-3.89**	-0.62	-3.27
Khoozestan	**0.90**	0.10	0.80	**-4.28**	-0.74	-3.54
Kohgilooyeh	**0.68**	-0.12	0.80	**-5.54**	-1.07	-4.47
Kurdistan	**0.50**	-0.02	0.52	**-4.31**	-0.57	-3.74
Lorestan	**0.38**	-0.38	0.76	**-4.61**	-0.95	-3.66
Markazi	**-0.04**	0.05	-0.09	**-3.96**	-0.54	-3.42
Mazandaran	**-0.17**	-0.22	0.05	**-3.21**	-0.49	-2.72
Qom				**-3.54**		
Semnan	**0.58**	0.07	0.51	**-3.06**	-0.50	-2.56
Sistan & B.	**1.77**	-0.12	1.89	**-4.76**	-0.65	-4.11
Tehran	**0.58**	-0.19	0.78	**-2.71**	-0.38	-2.33
Yazd	**0.82**	0.27	0.55	**-3.54**	-0.72	-2.82
Zanjan	**0.25**	-0.46	0.71	**-4.40**	-0.75	-3.65

Sources: see Table 4.

Table 7. Changes in TFR and the components of change for the period 1986-96, by province and rural and urban areas, Islamic Republic of Iran

Province	TFR for urban areas					TFR for rural areas				
			Change	Attributable to:				Change	Attributable to:	
	1986	1996	1986-96	Marriage	Marital fertility	1986	1996	1986-96	Marriage	Marital fertility
Iran	5.44	2.04	**-3.40**	-0.44	-2.97	7.77	2.90	**-4.87**	-0.72	-4.15
Ardabil										
Azarbayjan E	5.06	1.82	**-3.23**	-0.24	-2.59	7.37	3.00	**-4.37**	-0.73	-3.65
Azarbayjan w	4.56	2.06	**-2.50**	-0.12	-2.01	7.36	3.55	**-3.82**	-0.54	-3.28
Booshehr	6.51	2.52	**-3.99**	-0.73	-3.26	8.48	3.24	**-5.24**	-1.16	-4.08
Charmahal	7.07	2.45	**-4.62**	-0.68	-3.94	9.08	3.36	**-5.72**	-0.95	-4.77
Fars	5.83	2.26	**-3.57**	-0.49	-3.08	8.72	3.08	**-5.64**	-0.99	-4.65
Gilan	4.27	1.93	**-2.34**	-0.37	-1.97	5.60	2.26	**-3.35**	-0.38	-2.97
Hamadan	5.90	2.08	**-3.82**	-0.56	-3.26	8.40	3.21	**-5.19**	-0.79	-4.40
Hormozgan	6.68	2.85	**-3.83**	-0.63	-3.20	8.76	4.25	**-4.51**	-0.83	-3.68
Isfahan	5.26	1.94	**-3.32**	-0.31	-2.22	7.17	2.29	**-4.88**	-0.63	-4.26
Ilam	7.71	2.87	**-4.83**	-1.18	-3.66	9.35	3.83	**-5.52**	-1.61	-3.91
Kerman	6.48	2.72	**-3.76**	-0.76	-3.00	8.59	3.60	**-5.00**	-0.97	-4.03
Kermanshah	5.92	2.40	**-3.52**	-0.38	-3.15	7.79	3.26	**-4.53**	-0.87	-3.67
Khorasan	6.37	2.66	**-3.70**	-0.53	-3.17	8.03	3.97	**-4.06**	-0.78	-3.29
Khoozestan	6.64	2.70	**-3.95**	-0.58	-3.37	9.43	3.76	**-5.67**	-0.89	-4.78
Kohgilooyeh	8.16	2.82	**-5.35**	-1.01	-4.33	9.28	3.62	**-5.65**	-1.07	-4.59
Kurdistan	6.76	2.66	**-4.10**	-0.47	-3.63	8.30	3.60	**-4.70**	-0.65	-4.06
Lorestan	6.81	2.72	**-4.09**	-0.81	-3.28	9.16	3.74	**-5.42**	-1.16	-4.26
Markazi	5.69	2.25	**-3.44**	-0.49	-2.95	7.27	2.65	**-4.62**	-0.84	-3.78
Mazandaran	4.77	2.22	**-2.55**	-0.44	-2.11	6.23	2.70	**-3.52**	-0.54	-2.98
Qom	6.28	2.76	**-3.52**			6.63	2.78	**-3.85**		
Semnan	4.98	2.34	**-2.64**	-0.50	-2.15	6.29	2.78	**-3.51**	0.34	-3.85
Sistan & B.	9.15	4.82	**-4.33**	-0.72	-3.61	10.15	4.97	**-5.19**	-0.62	-4.57
Tehran	4.22	1.82	**-2.41**	-0.38	-2.02	6.53	2.58	**-3.96**	-0.43	-3.53
Yazd	6.02	2.76	**-3.26**	-0.60	-2.66	7.41	2.98	**-4.43**	-0.81	-3.62
Zanjan	6.31	2.13	**-4.17**	-0.69	-3.49	8.11	3.54	**-4.57**	-0.83	-3.74

Sources: Statistical Centre of Iran, Own-children data from the 1986 and 1996 Censuses, and published data for the relevant years.

Table 8, Selected socio-demographic characteristics of the population, Islamic Republic of Iran, by province

Province	Female literacy (6 years and above)[a] %		IMR		CPR in 1996 [c]			Rural communities with access to:[d] %			
	1986	1996	1986 [a]	1996 [b]	Rural	Urban	Urban pop [b] %	Electricity	TV Channel 1	Radio	Piped water
1	2	3	4	5	6	7	8	9	10	11	12
IRAN	52.1	74.2	77.7	34.9	70.1	80.7	61.3	57.5	68.5	87.9	87.2
Ardabil	31.4	64.9	-	45.8	68.7	80.6	48.7	51.5	81.4	88.5	71.5
Azarbayjan E	41.7	68.2	96.7	42.8	76.5	79.9	60.3	56.7	73.9	94.4	81.6
Azarbayjan W	34.3	58.7	103.6	48.1	67.3	78.7	52.7	60.9	80.4	96.0	78.1
Booshehr	50.6	75.2	58.0	43.9	59.1	74.7	53.1	69.1	81.3	91.2	84.6
Charmahal	44.3	70.4	67.2	44.9	67.3	78.5	45.1	55.4	56.9	88.3	92.8
Fars	56.3	77.4	56.2	38.5	68.8	77.7	56.7	50.3	67.0	89.0	94.5
Gilan	58.0	74.6	51.1	31.4	77.6	82.0	46.8	77.4	79.1	95.9	52
Hamadan	43.6	71.3	91.1	46.6	70.3	80.8	41.8	88.7	95.6	96.7	82.7
Hormozgan	41.8	66.6	63.9	45.1	42.5	74.9	48.3	44.3	54.4	78.1	78.7
Ilam	40.0	71.2	78.7	54.1	66.0	75.3	53.2	69.9	74.4	79.6	92.1
Isfahan	62.7	80.9	71.3	32.3	81.8	84.5	74.3	77.1	85.2	91.6	96.6
Kerman	51.5	74.8	75.9	47.1	71.3	80.7	52.9	48.4	56.1	77.3	86.8
Kermanshah	42.8	70.1	74.8	49.4	69.6	77.3	61.8	74.4	75.6	94.9	84.8
Khorasan	46.9	76.8	115.2	51.6	68.8	80.2	56.6	47.0	72.6	91.9	86.9
Khoozestan	48.6	70.0	71.3	41.1	57.7	73.0	62.5	54.8	61.3	84.8	89.4
Kohgilooyeh	39.9	68.3	83.2	58.0	54.2	73.5	39.2	36.8	28.8	88.1	73.9
Kurdistan	23.2	57.4	130.7	63.6	67.3	78.1	52.4	70.6	72.0	97.1	81.8
Lorestan	41.2	68.9	76.4	50.6	61.0	74.9	53.7	57.0	57.6	87.1	84.1
Markazi	51.2	73.9	105.8	41.7	78.0	86.3	57.1	81.7	90.3	92.0	91.5
Mazandaran	54.4	74.6	63.1	42.0	74.8	80.6	45.9	81.7	84.4	96.1	82.5
Qom	57.5	77.0	-	37.8	-	-	91.2	80.5	86.1	89.0	98.3
Semnan	63.2	80.8	63.1	37.5	84.6	85.2	68.3	64.5	88.0	93.7	97.4
Sistan & Baluch.	25.3	48.8	83.7	65.4	55.8	68.2	46.1	24.8	37.1	67.8	58.8
Tehran	78.4	85.0	46.3	31.4	79.8	83.9	86.2	79.5	83.7	90.8	97.8
Yazd	61.6	79.8	68.5	37.2	85.3	87.2	75.2	71.2	89.4	96.4	94.6
Zanjan	39.6	67.8	105.9	42.8	69.3	78.6	47.6	75.2	86.3	93.4	86.2

Notes: IMR= Infant Mortality Rate; CPR= Contraceptive Prevalence Rate.

Sources: [a] Beladi-Mousavi (1997); [b] Statistical Centre of Iran (1999); [c] Mehryar, et al. (1998); [d] Mehryar and Tajdini (1998).

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