REVOLUTION, WAR AND MODERNIZATION: POPULATION POLICY AND FERTILITY CHANGE IN IRAN

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Fertility trends in Iran over recent decades can be plausibly related to a number of causal factors. Population policy shifts were quite marked, and were related to political upheaval and war, which influenced both official policy and popular perceptions of the nation's need for children. A range of developmental factors were also important. The key fertility trends to be explained include the rise to an exceptionally high level in the early 1980s (a TFR of just below 7), and the speed of the subsequent decline to a TFR of about 2.7 in 1996. As well as estimating the proximate determinants of these trends, the paper sets them in their political and developmental context. Iran's fertility trends are then compared with those of Islamic countries of North Africa and West Asia to gain additional insights into possible causal factors. An adequate explanation of fertility change in Iran needs to draw on elements of a number of theories of fertility transition.

The key periods of fertility change in Iran over the past three decades have been the onset of a modest decline, mainly in urban areas, in the early 1970s, a resurgence in fertility rates from 1977 to 1984, and the renewed onset of fertility decline since 1988 (Aghajanian and Mehryar 1999; Abbasi-Shavazi 2000b). These changes coincide rather neatly with three political periods: the later stages of the Shah's regime; the Islamic Revolution and the war against Iraq; and a subsequent period of renewed modernization and pragmatism. There appears, then, to be a relationship between the dramatic political events and fertility trends. The obvious linkage is the shifts in population policy that took place over the period: antinatalism and a government-sponsored family planning program in the later stages of the Shah's regime; denunciation of family planning and encouragement of early marriage in the post-Revolutionary period; and a pragmatic return to antinatalism in the post-1988 period.

Fertility has declined dramatically since the adoption of a new population policy in 1988. This rapid decline was greeted with incredulity for some time by many overseas observers. The reason was that much of the world was unaware that in the period following the Islamic Revolution, social change consisted not only of a

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retreat into traditionalism and anti-Western feeling, as symbolized by the enforced wearing of the *chador* by women, but also of widened educational opportunities for girls, improved public health services, rural development activities, increased urbanization and other trends much more favourable to lowered fertility (Hoodfar and Assadpour 2000). This article aims to present an explanation and interpretation of Iran's demographic history over the past three decades, setting it in the context of the country's turbulent political history, and relating it to various theories of the determinants of fertility.

Adoption of antinatalist policy during the Shah's regime

Until the late 1940s, Iran's population had grown at a very low rate. This was despite the fact that Iran's traditionally pronatalist culture (which emphasized early and universal marriage as a social and religious value) as well as prevailing health and social conditions (high infant mortality and dependence of parents on children as the main source of old-age support) provided a favourable environment for high fertility. In this period, mortality was high enough to offset the high fertility and keep the rate of population growth at a very low level.

Fertility in Iran was very high in the 1950s and 1960s: the total fertility rate was estimated at 7.3 from the 1956 population census and 7.7 from the 1966 census; and the rate of population growth was increasing (Maroufi Bozorgi 1967; Amani 1968; Bulatao and Richardson 1994). Partly in response to the heightened growth rate of 3.1 per cent per annum between 1956 and 1966, the government of Iran adopted a population policy with explicit health and demographic targets. A national family planning program was officially inaugurated in 1967 and the Ministry of Health was given responsibility for controlling the birth rate.

This family planning program was not warmly welcomed by rural people, however, as little attention was given to the socio-cultural and religious contexts of the society. Therefore, it is hardly surprising that during 1966–76, the Iranian population experienced only a modest fertility transition,[1] despite a reasonable rise in the proportion of eligible couples practising contraception (to 37 per cent in 1977); and how much this was attributable to the family planning program and how much to other factors is open to question. The fact that 54 per cent of urban couples were contracepting in 1977 does suggest that the idea of family planning had gained considerable legitimacy in these areas.

Population policy shifts after the revolution

Pronatalist ideology and suspension of the family planning program

Shortly after the Islamic Revolution in early 1979, the family planning program was suspended. In contrast to the previous regime, high fertility and rapid population growth were looked upon favourably. Religious leaders emphasized marriage and family formation as basic Islamic virtues, and the government was urged to adopt economic policies that would facilitate and encourage early and universal marriage. Simultaneously, grassroots charitable foundations that had emerged in the wake of the Revolution offered tangible economic rewards, in the form of relatively generous wedding gifts or dowries, for early marriage and family formation.

Despite this drastic change in emphasis, the Ministry of Health kept the family planning program alive by obtaining *fatwas* (rulings) regarding the permissibility of contraceptive use from Imam Khomeini and several other leading Ayatollahs (Mehryar forthcoming).

With the start of the eight-year war with Iraq in September 1980, high fertility and population growth acquired new significance. Population size immediately began to be considered as a matter of comparative advantage. The creation of a popular 'Twenty Million Man Army' was adopted as a national slogan early in the war. On a more personal level, the rising casualties of the war encouraged many middle-aged couples to produce more children to replace those whose loss they were anticipating. The universal rationing system that was introduced as a means of ensuring equal access to basic necessities provided further impetus for high fertility. The rationing system included not only basic food items but also locally produced or imported modern consumer goods like television sets, refrigerators, carpets and even cars. These were distributed on a per capita basis and larger families were entitled to a better share of both the basic commodities and highly prized modern consumer items. Thus, newborn babies were automatically entitled to a separate book of ration coupons which, in the case of ordinary families, was far above the costs involved in raising a child.

The demographic consequences of this pronatalist policy in the political context of the time soon became evident. The first general census of population and housing conducted in 1986 by the government of the Islamic Republic of Iran (IRI) indicated that the population had grown at an average annual rate of 3.9 per cent between 1976 and 1986. Even taking into account the effect of the immigration of Afghan and Iraqi refugees during this period, the natural growth rate was no less than 3.2 per cent. The Census indicated a TFR of 7.1: 5.9 in urban and 9.0 in rural areas (SCI 1992). Other national TFR estimates derived from the same census vary from as low as 6.4 (PBO 1989: 2–6) to 7.7 (Agha 1989; Bulatao and Richardson 1994). The unexpectedly large population size (49.3 million) revealed by the 1986 Census was at first hailed as a 'God-sent' gift by the Prime Minister and other leaders of the IRI.

Return to antinatalism and gradual revival of the family planning program

Publication of the 1986 Census results focused attention on the long-term economic and social implications of the high rates of fertility and population growth, and behind-the-scene discussions on the need for a population control policy were initiated. Two government departments are known to have played a major role in this debate: the Ministry of Health and Medical Education (MOHME) and the Plan and Budget Organization (PBO). The first had been responsible for the family planning program before the Revolution; indeed, the first Minister of Health of the IRI discussed the need for family planning with Imam Khomeini a few months after the Revolution and reportedly had secured his oral endorsement of contraceptive use by couples who did not want to have more children. As a result, MOHME had been allowed to continue with the provision of family planning services (including the free distribution of the three modern methods of contraception) to couples visiting its maternal and child health clinics throughout the period when there was no official program. The Plan and Budget Organization, as the national agency responsible for the monitoring and allocation of the government's financial resources, was

in a unique position to know the critical state of the war-shattered economy and its fast-dwindling ability to support a large and rapidly increasing population.

To raise public support for the idea of population control and family planning, a three-day 'Population and Development' seminar jointly organized by the MOHME and PBO was held in the city of Mashad in September 1988. This seminar explicitly recommended the adoption of a national population policy aimed at birth control. At the end of the Mashad seminar, the Minister of Health and Medical Education, in a press conference, reiterated Imam Khomeini's *fatwa* regarding the legitimacy of contraceptive use by consenting couples, and announced that a family planning program would soon be established. Almost simultaneously, the prime minister declared that 'birth control' was a 'destiny factor' for Iran and invited Iranian women to prevent unwanted pregnancies by seeking help from publicly run clinics and rural health houses. To overcome any misconception regarding the legality of birth control, the head of the judicial system publicly declared that the use of contraceptive methods for preventing unwanted pregnancies was not against Islamic criminal law.

Following the Mashad seminar, family planning was considered by a group of eminent clergy and religiously minded physicians attending a seminar on 'Islamic Perspectives in Medicine' organized by the Mashad University of Medical Sciences in February 1989. This was followed by another seminar explicitly dealing with 'Islam and Population Policy' which was held in Esfahan in April 1989, and brought together a large number of eminent theologians and politically influential clergy. Most of the recommendations of the Mashad seminar were taken into consideration in the preparation of the First Five Year Development Plan, 1989–93 (FFYDP).

Thus, the idea and objectives of population control and family planning were given formal legislative endorsement when the FFYDP bill was approved by the Islamic Legislative Assembly (*Majlis*) in 1989. This was four years before the eventual enactment of the Family Planning Law of the IRI in 1993. The FFYDP had also set some relatively modest demographic targets for the newly established family planning program. These included the reduction of the TFR from 6.4 in 1986 to 4.0 by the year 2011 and reduction of the rate of natural increase from 3.2 per cent to 3.05 by the end of the Plan (1993), and to 2.3 by 2011. To reach these goals, the coverage of public family planning services was to be extended to 24 per cent of eligible couples by the end of the FFYDP (PBO 1989: 2–6).

In line with the above-mentioned goals, MOHME was given the mandate and the resources to provide free family planning services to all married couples, to promote small family-size norms and to help individual couples keep their family size at a reasonably low level (2 to 3 children). Several other Ministries as well as the Islamic Republic of Iran Broadcasting Organization were required to closely cooperate with MOHME in promoting these objectives. A separate Population and Family Planning Directorate was set up within MOHME in 1991 under the overall supervision of the Deputy Minister for Public Health, whose office was also in charge of the primary health care and maternal and child health services.

To further ensure the intersectoral co-operation needed, an interdepartmental Family Limitation Commission was set up by a cabinet decree passed in September 1990. Headed by the Minister of Health and Medical Education, the Commission was to include the Ministers of Health and Medical Education, Education, Higher

Education, Labour and Social Affairs, National Guidance, and Plan and Budget as well as the head of the Civil Registration Organization of the Ministry of Interior. The main functions of the Commission were to

> monitor, supervise and coordinate all government policies and activities bearing on the control of the population growth rate, to report on steps taken by member agencies, to make recommendations on the formation of a High Council on Family Planning and its functions and membership, and to review proposals made for changing laws and regulations that may encourage or inhibit population growth (Jahanfar and Jahanfar 2000).

A remarkable feature of this decree is the attention it gave to such 'beyond family planning' measures as the reduction of infant mortality, facilitation of women's education and employment, and extension of social security and retirement benefits to all parents so that they would not be motivated to produce a large number of children as a source of old-age security and support.

Most of these points were also incorporated into the Family Planning Law that had been prepared in 1989 but not finally ratified by Parliament until May 1993. This law not only removed almost all economic incentives for high fertility, but also provided the necessary statutory basis for the population control policy and family planning program envisaged as part of the FFYDP. The Parliamentary Bill concerning the Second Five-Year Development Plan (SFYPD), passed in 1994, also reiterated the IRI government's commitment to population control and family planning.

Evidence for rise in contraceptive use and decline in fertility

A KAP survey carried out by MOHME in 1989, just after the family planning program had commenced, revealed that almost half of married women aged 15–49 years were already using some form of contraception. Most of these (56 per cent) used such modern methods as the pill, condom, and IUD. Clearly, contraceptive use was already higher than most had realized, and this evidence of strong demand provided a favourable basis for development of the revived family planning program, despite the pessimistic view taken by the authors of the FFYDP and most other experts. A larger survey carried out in 1992 showed that contraceptive prevalence rates had risen to almost two-thirds of all married women, 69 per cent of whom used a modern method. These figures indicate a surprisingly high demand for and acceptance of family planning services when compared with the contraceptive prevalence rate (about 37 per cent) that had been achieved by the pre-Revolutionary family planning program by 1977, ten years after its formal introduction (Aghajanian 1994; Aghajanian and Mehryar 1999).

With regard to actual fertility behaviour, some evidence of a gradual decline in fertility rates had already been revealed by a 12-round household survey conducted by the Statistical Centre of Iran (SCI) between 1987 and 1989 (Mehryar and Gholipour 1995). This trend was supported by the findings of the combined census–survey carried out in 1991 which showed that the population had risen to only 55.8 million. This figure implied an annual growth rate of 2.5 per cent for the period 1986–91, a 64 per cent decline in comparison with the growth rate of 3.9 per cent revealed by the 1986 Census. Analysis of the 1991 data indicated that the TFR had declined from 7.1 to 4.9 during the preceding five years (SCI 1998: Table 10.1), although other estimates from these data range from 4.8 to 6.3 (Bulatao and

Richardson 1994: Table 3). Judging by this evidence, the revived family planning program reached all of the demographic targets set in the FFYDP before the Plan had in fact been implemented.

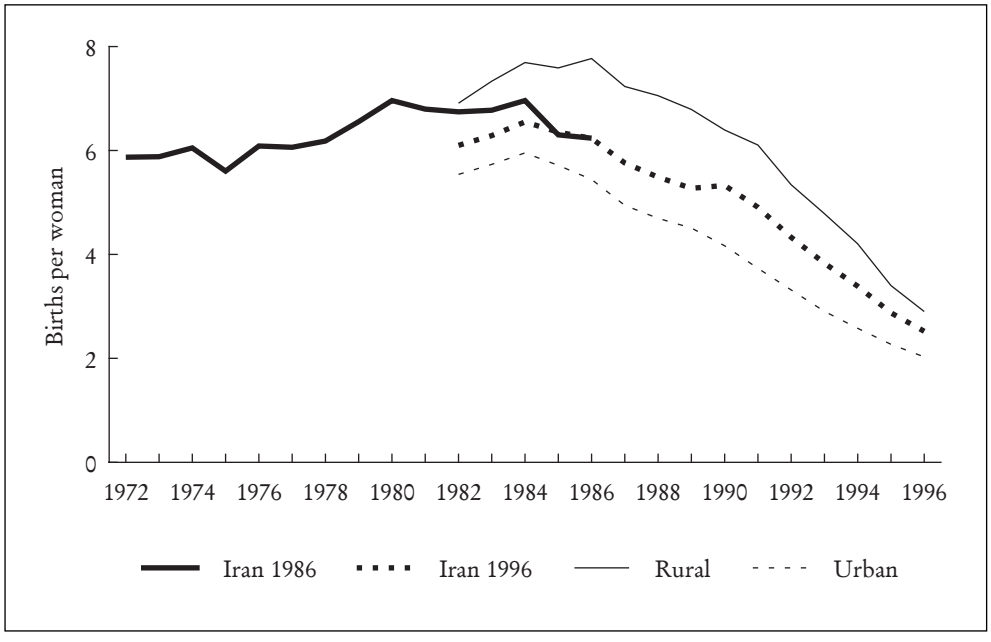
Because of the unexpectedly sharp decline in the growth rate indicated by the 1991 census–survey and presumed anomalies in the age structure of the population enumerated, most demographers both within and outside Iran received these results with some scepticism.[2] Even PBO (1993), the parent organization of SCI, refused to accept the results as a basis for the projection of population trends during the period of the second plan (1993–98). However, large-scale annual population surveys conducted by SCI in 1992 and 1993 indicated a continuation of the downward trend revealed by the 1991 census–survey. These were supported by smaller-scale, but nationally representative, surveys undertaken by MOHME as well as a new set of panel surveys on the socio-economic conditions of Iranian households conducted by SCI between 1991 and 1995. All these were received with more than the usual measure of caution, if not disbelief, by demographers outside MOHME and SCI. At the same time, evidence of an accelerating fall in the number of births registered by the Central Registration Office was not taken seriously even by the demographers working for that organization, presumably because of known under-coverage. Using the number of officially registered births, Ladier-Fouladi (1996) noted a marked drop (from 43.4 to 30.4 per thousand) in the crude birth rate of Iran between 1986 and 1991. The corresponding decline in TFR estimates was from 6.2 to 4.2.

In view of the persistent doubts regarding the coverage and quality of the 1991 census–survey and later surveys conducted by the SCI and MOHME, the 1996 Census had been anxiously awaited. The results of this census indicated an even more precipitous decline in fertility than the 1991 census–survey. The population growth rate fell to only 1.47 per cent in 1991–96. The inference that fertility decline was the main reason was clearly supported by the marked decline in the number of children aged 0–4 between censuses (6.16 million in 1996 compared with 8.14 million in 1991 and 9.04 million in 1986), and by the fertility indices officially calculated on the basis of the 1996 Census (TFR of 2.96, and CBR of 20.5). The TFR of 2.96 was only 42 per cent of that for 1986 (7.1) and 60 per cent of that for 1991 (4.9).

Applying the own-children method to the 1986 and 1996 Censuses, Abbasi-Shavazi (2000a) analysed the single-year fluctuation in fertility over the period 1972–96 (Figure 1). The TFR rose slightly from 1972 to 1977 (5.8 to 6.1), then rose to 6.5 in 1979. This suggests that any impact on fertility of the family planning program implemented by the Shah's regime was felt in the period before 1972. Following the Revolution, TFR rose further to almost 7 in 1980, and remained very high until 1984. As mentioned earlier, the policies of the IRI government emphasized early marriage. The revolutionary slogans were also supportive of the poor, and people had a rather positive attitude towards the new government subsidies on family expenditure, particularly those on electricity, water, telephone, education and health. Consequently, Iranian couples had every reason to marry early and have more children while married.

The period from 1985 to 1989 appears crucial: this is when the high-fertility regime created by the Revolution faltered and fertility started to decline. TFR declined from its peak in 1984 to 6.2 in 1986 and 5.3 in 1989. The decline accelerated during the 1990s, and the TFR of 2.7 in 1996 represented a 50 per cent decline in six

Figure 1 Own-children estimates of total fertility rates by rural/urban area, Iran, 1972–96[a]

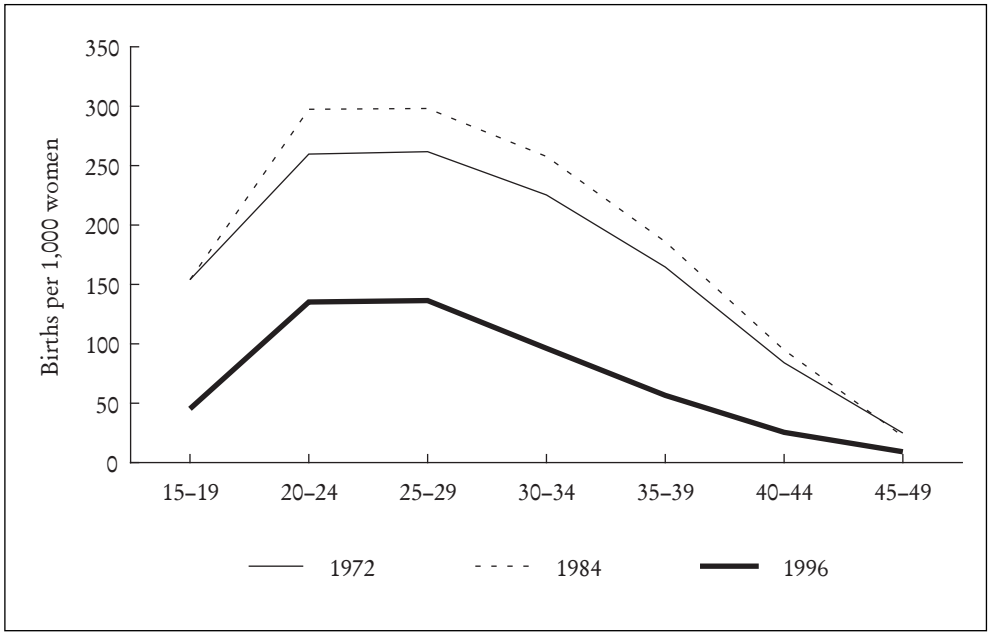


a Estimated from 1986 and 1996 census data.
Source: Abbasi-Shavazi (2000a).

years. It is worth noting that the fertility decline in urban areas started in 1985, while rural fertility began to decline two years later, in 1987. The subsequent spectacular decline in TFR occurred in both rural and urban areas: in rural areas, from 7.7 in 1986 to 2.9 in 1996; in urban areas from 5.4 to 2.0 over the same period. At the provincial level, the majority of provinces experienced a moderate rise in fertility during the period 1976–86 (Abbasi-Shavazi 2000a). However, all provinces followed the national trend and experienced tremendous declines in the period 1986 to 1996. Generally speaking, TFR fell most significantly in those provinces where fertility was very high during the previous decade. These provinces had had lower socio-economic levels than the country as a whole. On the other hand, the absolute decline in TFR was lower in the more developed provinces such as Tehran and Gilan. In sum, the dramatic decline in fertility in Iran from 1986 to 1996 was common to both urban and rural areas and to all provinces of Iran irrespective of their level of development.

Changes in Iran's age specific fertility rates are shown in Figure 2. Between 1972 and the peak of fertility in 1984, fertility rates rose by roughly equal proportions in every age group (except 15–19). Then, between 1984 and 1996, the rates fell substantially in every age group. Conventionally, during fertility transitions, fertility falls mainly at younger or older ages or both. The very substantial falls in fertility in the middle, peak ages of childbearing provide the explanation of why the fall in fertility in Iran from 1984 to 1996 was faster than any other recorded case. The steep fertility

Figure 2 Age-specific fertility rates, Iran, 1972, 1984 and 1996[a]



a Own-children estimates based on 1986 and 1996 census data.
Source: Abbasi-Shavazi (2000a).

decline in all age groups suggests that later starting, increased spacing and earlier stopping of childbearing all occurred at the same time. This cross-sectional effect may have been a compensation for the very high fertility at all ages before 1986.

The influence of changes in nuptiality and family planning usage

Nuptiality change

Fertility transition in developing countries is often associated with an increase in age at marriage for women. Since 1979, the government of the IRI has consistently encouraged early marriage. The legal minimum age at marriage for girls was reduced from sixteen to nine years after the 1979 Islamic revolution. During the following decade, young couples received many incentives for early marriage. However, despite this wholehearted campaign for early marriage, female age at first marriage hardly changed during this period, as Table 1 shows. After 1986, there was a profound change in the marriage pattern. The singulate mean age at marriage (SMAM) increased from 19.7 to 22.1 years between 1986 and 1996. This shift to later marriage took place in both rural and urban areas. There is very little difference between rural and urban areas in females' SMAM (Abbasi-Shavazi 2000b).

While the mean age at marriage has increased, universality remains 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

Table 1 Indicators of marriage for females, Iran, 1976 to 1996

Year	SMAM	Percentage ever married at age				
		15–19	20–24	25–29	30–34	35–39
1976	19.52	34.3	78.6	93.2	97.3	98.7
1986	19.73	33.5	79.6	90.6	95.4	97.1
1996	22.09	18.6	60.7	85.2	93.6	96.7

Source: Calculated from published data from the 1976, 1986 and 1996 Censuses.

society. As a result, the vast majority of women marry before age 30, and almost all women marry by their early 40s.

The change in marriage patterns is consistent with other socio-economic changes in the IRI over the last two decades. Economic pressure appears to have been a major factor in the postponement of marriage. Smith (1983: 496) has asserted that age at marriage is late where the direct costs of marriage (both ceremonial and transfer costs) are high. Iran has been experiencing economic hardship since the revolution, particularly in the decade after the war. The cost of living has risen dramatically in recent years. In order to be able to afford the high living costs, young people tend to delay their marriage until they get a job.

Abbasi-Shavazi (2000b) decomposed the change in the TFR from 1976 to 1996 into the components due to nuptiality and marital fertility. He found that the increase from 6.09 in 1976 to 6.24 in 1986 was entirely due to the increase in marital fertility, which was offset to some extent by nuptiality change. The TFR then fell substantially by 3.71 births per woman from 1986 to 1996. Nuptiality contributed 14 per cent to this fertility decline, but most of the decline (86 per cent) was due to marital fertility. For rural and urban areas, the decomposition of the change in TFR is identical to that of the total population.

Fertility control through family planning

The contraceptive prevalence rates by rural and urban area over the 1976–97 period are summarized in Table 2. At the time of the 1976 survey, Iran was ten years into its pre-Revolutionary family planning program. Yet interestingly, contraceptive prevalence had reached only 37 per cent at that time, and rose to almost 50 per cent by 1989, despite the official pronatalism during most of the 1980s. By 1992, almost two-thirds of married women aged 15–49 were practising some form of contraception, and five years later, almost 75 per cent. The urban–rural gap was shrinking over time, and was down to 12 percentage points in 1997.[3] The remaining urban advantage mainly resulted from the much larger proportion of urban couples (23 per cent) compared with rural (9 per cent) who reported using the traditional method of *azl* (withdrawal) which is not encouraged by the program.

Although the prevalence of withdrawal had gone up considerably (from 13 to 18 per cent) between 1976 and 1997, the majority of current contraceptive users seem to be relying on modern methods. The modern methods used in 1997 were pill (20.9

Table 2 Contraceptive prevalence rates among married women aged 15–49 by rural/urban area and type of method, 1976 to 2000, percentages[a]

	Urban			Rural			Total		
Year	Mod	Trad	All	Mod	Trad	All	Mod	Trad	All
1976	34	21	54	15	5	20	24	13	37
1989	33	31	64	21	10	31	30	19	49
1997	55	23	78	57	9	66	55	18	7
2000	55	22	77	57	10	67	56	18	74

a Method type: Mod=Modern Methods; Trad=Traditional Methods

Sources: Iran Fertility Survey 1976 (see Aghajanian 1994); National KAP Surveys for 1989 and 1997 (Ministry of Health and Medical Education 1989, 1997); preliminary results from Iran Demographic and Health Survey, 2000.

per cent), IUD (8.3 per cent), condom (5.4 per cent), injectable (2.9 per cent), and Norplant (0.5 per cent). In addition, 15.5 per cent of women and 1.9 per cent of men had undergone sterilization. Iran is one of the few Muslim countries where male and female sterilization is not only permitted but actively promoted by the national program.

The mix of modern methods seems to be largely determined by MOHME policy and shows some interesting variations across urban and rural areas and over time. It appears that between 1992 and 1997, the shares of pill and condom users have declined noticeably among both urban and rural users of modern methods, and the share of sterilization has risen in both urban and rural areas. Thus, the proportionate share of women undergoing tubectomy has risen steadily among both urban women (16.3 to 27.5 per cent) and rural women (from 18.0 to 29.1 per cent). A similar upward trend is also noticeable for male sterilization in both urban (2.7 per cent to 4.3 per cent) and rural areas (1.0 to 1.8 per cent).

The 1997 data show interesting provincial differences in both the overall contraceptive prevalence rate and its modern–traditional mix. For rural areas, provincial contraceptive prevalence rates vary from over 80 per cent in three provinces to below 50 per cent in Hormuzgan. Provincial contraceptive prevalence rates for urban areas vary within the much narrower range of 87 per cent (in Yazd) to 68 per cent (in Sistan-Baluchistan). As expected, in all provinces urban women have higher overall contraceptive prevalence rates than rural women. This is, however, mainly due to the higher prevalence of withdrawal among urban couples.

The socio-economic context of contraceptive use and fertility decline

Neither the early repression nor the later revival of the family planning program took place in a political, social or economic vacuum. The rapidly evolving situation is what makes assessment of the causes of Iran's fertility decline so challenging. There is clearly a need to assess the evidence in relation to the various families of

fertility theories with widespread currency: theories assigning the key role to modernization (Notestein 1953), ideational change (Cleland and Wilson 1987; Bongaarts and Watkins 1996; National Research Council 2001), institutional change (McNicoll 1980, 1985, 1994; Greenhalgh 1988), and specifically to the influence of family planning programs (Bongaarts, Mauldin and Phillips 1990).

Fertility change over the past three decades occurred in the context of a complicated series of historical events involving many players with diverse agendas. A number of major social and political groups with diametrically opposed aims and agendas were involved in the Revolution. The two main uniting themes were a shared opposition to the Shah's regime and a rather simplistic belief that Iran had all the natural and human resources for rapid socio-economic development, modernization, and free access to modern amenities and services. Few of the revolutionaries could be regarded as being against development and modernization in the sense of raising the level of education of all citizens, improving their health status, ensuring the proper satisfaction of their basic needs and providing the modern amenities and consumer goods that had flooded Iranian markets after the oil glut of the early 1970s. That even the fundamentalist *ulama* (Muslim religious scholars), who quickly filled the power vacuum left by the sudden disintegration of the old regime, were not against these popular ideals is clearly reflected in several of the speeches made by Imam Khomeini on his return to Iran in 1979, as well as in public pronouncements and promises made by many of his close advisors. In fact, some of the latter promised that the new regime would not only provide all social services free of charge but also abolish all existing taxes and arrange for the regular disbursement of oil revenues among the populace. An announcement by the cleric in charge of the Islamic Housing Foundation, created shortly after the revolution, that all people living in Tehran would be given free land and an interest-free loan to build a house, is believed to be one of the reasons behind the tremendous increase in migration to Tehran during the first year after the Revolution.

Most of the above-mentioned populist promises were taken into consideration in the preparation of the Constitution, drafted hastily and put to public referendum less than a year after the Revolution. The Constitution of the Islamic Republic of Iran clearly envisages a welfare state anticipating many of the ideals currently advocated by the United Nations as part of its new paradigm of Sustainable Human Development (Mehryar 1997). However, because of the eight-year war and its enormous costs, the government of the IRI had limited resources to devote to the social development programs and priorities enshrined in the Constitution. Nevertheless, a recent study revealed that, even at the height of the war period, investment in the basic social services (primarily education and health) accounted for a sizable proportion of the annual budget. Expenditure of 20 per cent of the annual budget on basic social services as proposed by UNDP's 20/20 compact has consistently been exceeded (Mehryar, Tabibian and Souri 1999). Moreover, a deliberate effort has been made to target the traditionally neglected rural and lower-class segments of the population.

As a result of this investment in social services, the past two decades have witnessed significant changes in modernization and living standards, as reflected in the indicators shown in Tables 3 and 4. There have been substantial falls in infant and maternal mortality rates and rises in the expectation of life. Adult literacy has risen greatly and the enrolment ratio for children of secondary school age has

Table 3 Selected socio-economic and demographic indicators, Iran, 1976, 1986 and 1996

Indicator	1976	1986	1996
Infant mortality rate			
Male	129	54.4	48.0
Female	142	59.7	52.6
Maternal mortality rate[a]	277	140	37
Life expectancy			
Male	58.7	65.9	67.0
Female	57.8	65.6	66.8
Adult literacy rate (%)			
Male	58.5	70.7	84.7
Female	35.3	51.9	74.0
Net enrolment ratio in secondary school	50[b]		81
Females per 100 males			
Primary school students	66	n.a.	90
Secondary students	59	n.a.	81
Higher education enrolment	47	n.a.	68
Women (non-student) with			
Secondary diploma ('000)	447	n.a.	2,100
Tertiary education ('000)	75	n.a.	495
Urbanization (%)	47.0	54.6	61.3

a Per 100,000 births.
b The figure is for 1980.

Sources: Mehryar and Tajdini (1998); World Bank (2000).

increased to above 80 per cent. More important for fertility decline, women's share of the educated population has increased considerably, and the absolute increase in numbers of well-educated women has been striking. Urbanization has continued but, at the same time, the urban–rural gap in access to health, education and modern amenities has been considerably narrowed. By 1997, almost all rural households had electricity and almost 80 per cent had piped water. Ownership of consumer durables such as refrigerators, gas cookers, radio and television has also increased significantly, especially in rural areas.

The gains in women's educational attainment have not, however, been associated with any rise in their labour force participation rates. There was, in fact, a noticeable decline (from 12.9 per cent to 8.2 per cent) in the labour force participation rate of women between 1976 and 1986 and only a slight increase to 1996 (9.1

Table 4 Percentage of households with selected amenities by rural/urban area, Iran, 1977 and 1997

	1977		1997	
Amenity	Urban	Rural	Urban	Rural
Household access to:				
Electricity	91	15	99	92
Piped water	80	12	98	78
Telephone	16	1	53	12
Radio	78	52	78	60
TV	52	24	93	69
Ownership of:				
Refrigerator	81	15	96	77
Gas cooker	75	29	96	69
Indoor bathroom	40	3	83	35

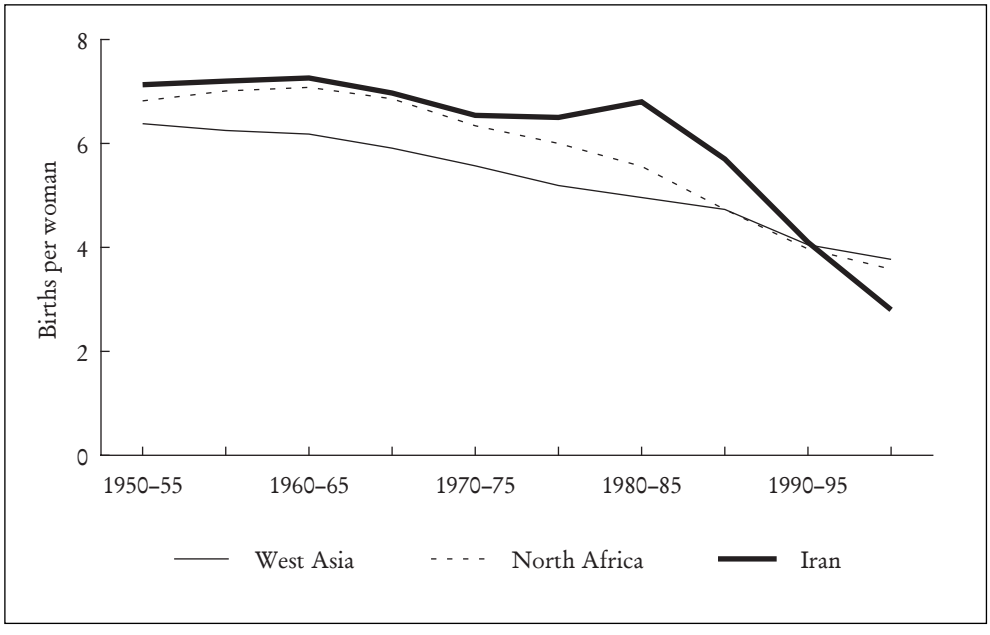
Source: Mehryar and Tajdini (1998).

per cent). This discrepancy is mainly due to cultural factors which preclude women's employment in such areas as construction, sales, and even food preparation and the hotel industry (Mehryar and Farjadi 2000).

That most of these developments are due to sustained government investment in social services, particularly education and health, is confirmed by the fact that educational expenses remained under 1 per cent of total household expenditure for the period 1979–89 for both urban and rural households. They rose above 1 per cent of total expenditure for urban households in 1990 and continued to rise until 1995 when they accounted for 2.3 per cent. For rural households, there has been a steady rise in this percentage since 1990. Health expenses fluctuated between 4 and 5 per cent of the total expenditure of both urban and rural households for most of the period under review, and have risen to just above 5 per cent in urban areas since 1994 and in rural areas since 1996 (Tabibian *et al.* 2000).

During the war period (1980–88), the influences on fertility were complex. The economic conditions worsened seriously, with a high rate of inflation and a total freeze on the salaries of government employees. The average per capita GDP fell by 3.2 per cent per annum over the 1975–88 period (Plan and Budget Organization 1989). Such economic hardship could be expected to lead to caution in having additional children, and the social development that was accomplished despite economic stringency should also have tended to lower fertility. On the other hand, as noted earlier, the rationing system adopted over that period was a pronatalist influence. In the event, fertility remained high up to 1984, after which the beginnings of a decline were apparent. It appears that patriotic rhetoric and official pronatalism, along with the influence of the rationing system, held the upper hand in influenc-

Figure 3 Trends in total fertility rates in North Africa, West Asia and Iran, 1950–55 to 1995–2000



Source: United Nations (1999).

ing fertility up to about 1984, after which the antinatalist factors started to gain the ascendancy.

There is no convincing evidence that the drastic fertility decline observed since the late 1980s was caused by a sharp rise in the cost of children. On the other hand, there is evidence that the per capita income of the majority of families has remained below its pre-Revolutionary purchasing power, while the consumer tastes developed during the oil glut period just preceding the Revolution continue unabated. Thus, although by objective evidence the proportion of the population living in poverty has not gone up noticeably since the mid-1970s (Mehryar *et al*. 1999), many families seem to perceive themselves as suffering economic hardship.

Comparative perspective on fertility transition in North Africa and West Asia

The Iranian fertility decline can be considered in the context of fertility changes in the predominantly-Islamic region of North Africa and West Asia (see Figure 3). As a whole, this region was characterized in the past as bound by a culture founded in Islamic approaches to women that supported the persistence of very high and unchanging fertility (Omran 1980; Caldwell 1986). In 1992, Obermeyer (1992: 56) concluded that high fertility would persist in this region in the absence of a redefinition of gender roles and the structure of the family. Recent falls in fertility rates in countries from Morocco to Iran have led to a reassessment of this alleged cultural hegemony. Rashad (2000) argues that cultures in North Africa and West Asia, as much as cultures in other parts of the world, have been sensitive to popular needs

and aspirations. She shows that fertility decline was slow to start in this region but, once under way, has proceeded at a rapid rate. Her explanation is that the fertility transitions in North Africa and West Asia are much like other fertility transitions, being influenced broadly by modernization factors such as education and changing aspirations.

However, cross-sectional factors, especially the state of the economy, war and political upheaval, have influenced the timing and pace of change in North African and West Asian countries. In broad terms, Rashad argues that where fertility still remains high in this region, largely in the Gulf countries, it is because these countries have remained very wealthy, so that rising aspirations could be met with a continuance of high fertility. Costs of children in the Gulf countries are highly subsidized by the state. In other countries of the region, however, economic circumstances have been much more difficult and the rising aspirations of families brought on by modernization and education could only be met through later marriage and lower family size. Rashad suggests that later marriage has played a much more prominent role in the fertility transition in this region than fertility control within marriage, despite the fact that new roles for unmarried women in the paid labour force remain very restricted.

In Rashad's view, 'Islamic culture' did not stand as an immutable force in opposition to lower fertility in all of North Africa and West Asia. Indeed, she argues that, despite the similarities already described, each country in this region has had its own transition. The evidence in this article shows that this is especially true of Iran. Of all of the countries stretching from Morocco to Iran, the changes in fertility in Iran are by far the most spectacular as Table 5 shows.

Rashad's arguments about the cross-sectional effects of war, political upheaval and economic hardship seem to be particularly apposite to the Iran case. Political upheaval and war not only stalled the fall in fertility in Iran from the late 1970s, but also appear to have led to a sizable increase in cross-sectional fertility rates. This cross-sectional surge in births to women of all ages probably partly precipitated the cross-sectional fall at all ages that began in the mid-1980s because at the older ages, most high-fertility aspirations had been satisfied. However, again consistent with the argument made by Rashad, there is a strong case that economic hardship relative to material aspirations accelerated the fall in fertility in Iran from the mid-1980s. On the other hand, in contrast to the other countries in the region, changes in nuptiality have played only a minor role in the Iran transition which has been dominated by widespread control of fertility within marriage. Here an explanation may be that the prior existence of a well-developed health system that had been extended to all parts of Iran offered the opportunity for the successful and rapid implementation of a national family planning program. Knowledge of the ready availability of contraception within marriage may be supporting the earlier marriage in Iran compared with other countries in North Africa and West Asia where fertility has declined. As in these countries, paid employment opportunities remain restricted for both married and single women in Iran.

Discussion

Fertility in Iran in the early 1970s was somewhat higher than in other countries at the same level of development. However, it was not exceptionally high for an

Table 5 Total fertility rates for predominantly Islamic countries in North Africa and West Asia, 1980–85 and 1995–2000

Region/country	1980–85	1995–2000	% decline
Iran	6.80	2.80	59
North Africa	5.56	3.58	36
Algeria	6.36	3.81	40
Egypt	5.06	3.40	33
Libya	7.18	3.80	47
Morocco	5.10	3.10	39
Sudan	6.42	4.61	28
Tunisia	4.90	2.55	48
West Sahara	5.47	3.98	27
West Asia	4.96	3.77	24
Azarbaijan	3.04	1.99	35
Bahrain	4.63	2.90	37
Gaza	7.40	7.30	1
Iraq	6.35	5.25	17
Jordan	6.77	4.86	28
Kuwait	4.87	2.89	41
Lebanon	3.79	2.69	29
Oman	7.20	5.85	19
Qatar	5.45	3.74	31
Saudi Arabia	7.28	5.80	20
Syria	7.38	4.00	46
Turkey	4.10	2.50	39
United Arab Emirates	5.23	3.42	35
Yemen	7.60	7.60	0

Sources: United Nations (1999); Abbasi-Shavazi and Jones (forthcoming).

Islamic country at this level of development, because at that time there was a tendency for Islamic countries to have fertility levels higher than the average for countries at any given level of development. What was out of the ordinary was the exceptionally high fertility in Iran in the early 1980s, a TFR of just below 7, and the speed of the subsequent decline to a TFR of 2.7 in 1996.

The timing of the 'baby boom' of the late 1970s and early 1980s indicates a clear relation to the Islamic Revolution and the pre-revolutionary atmosphere. Revolutionary zeal, the war with Iraq, and strong government pronatalism do appear to have influenced fertility behaviour – by means of a temporary 'bunching' of births among the already married, not a swing towards earlier marriage in adherence to government rhetoric. From these high fertility levels, a decline was likely to emerge through a delay or cessation of further childbearing as a reaction

to this bunching of births. Another factor is the weakening of the child loss motivation for high fertility because of the higher proportion of babies and young children surviving over time. Nevertheless, once such factors are taken into account, there is still much to be explained. The speed of the decline was definitely out of the ordinary, and caught analysts, both Iranian and foreign, by surprise.

Both the rise in fertility in the late 1970s and early 1980s and the subsequent rapid decline need to be dealt with in any comprehensive explanation of fertility trends. The rise in fertility began before the Revolution, but in a period when underground exhortations to the faithful were attacking all that the Shah's regime stood for, including the family planning program and the idea of limiting family size. The rhetorical stance of the new regime was in favour of early marriage, suspicious of contraception, and unwilling to give women major breakthroughs in public life. The inactivation of the national family planning program both sent out the message that family planning was not in favour and made it harder for couples to access the contraceptive services which, as noted above, continued to be made available by government sources. Pronatalism was definitely fostered by the war situation, both an 'official' pronatalism and a family-level pronatalism arising out of a sense of patriotism. However, there were clearly limits to the effectiveness of government exhortation campaigns, as indicated by the fact that age at marriage for women did not fall in revolutionary times despite the wholehearted campaign for early marriage. Age at marriage has subsequently risen substantially despite lack of government rhetoric to this end.

It is important to note that the fertility decline from the mid-1980s began before the shift to an antinatalist policy. It is as though the 'bunching' of births influenced by Revolutionary zeal and a response to official pronatalism could raise fertility only temporarily, particularly when calls for early marriage had little effect in lowering the age at which childbearing began. Thereafter, pent-up pressures resulting from economic hardship and social development were able to influence fertility in a downward direction.

The pervasiveness of this fertility decline is also noteworthy. Unlike the early stages of fertility transition in many countries, there is no evidence of selective declines at the young and old extremes of the childbearing ages, but rather a decline across all age groups. Likewise, there is no evidence of diffusion of fertility decline from urban to rural areas, but rather a simultaneous and substantial decline across all geographic regions and in both urban and rural areas. Over time, there was a considerable narrowing of urban–rural and regional differences both in fertility levels and in contraceptive prevalence rates. This has important implications. The story of Iran's fertility decline after 1989 is really a story of change in rural areas. As indicated above, economic and social change has been pervasive in rural areas since the Revolution (see Table 4) and contraceptive prevalence rates increased dramatically in rural areas between 1989 and 1992 (see Table 2).

In comparison with the experience of countries with a comparable religious background and somewhat similar level of economic development, the Iranian fertility decline has been faster, especially in the decade of the 1990s, than that in countries of North Africa, such as Algeria, Egypt, Morocco and Tunisia, or in West Asian countries such as Lebanon, Turkey and Kuwait. It has been faster, too, than those in Indonesia and Bangladesh, much poorer predominantly Islamic countries where a different set of factors has to be invoked to explain fertility trends.

How do these trends relate to theories of fertility determination? Available data do not permit the relevance of competing theories to be fully tested. Considering first the post-1986 decline, which was due only in small part to rising age at marriage and mainly to declining marital fertility, modernization theory is relevant. Modernization trends continued after the revolution in infrastructure developments (water and electricity supply in the villages), increased education, improvement of health services, widespread access to TV and radio, and stress on rural development. The level of urbanization increased to 61 per cent by 1996. Modernization indicators compiled by Paydarfar and Moini (1995) suggest that despite revolution and war with Iraq, the rate of modernization over the 1976–86 period was higher than in the previous decade. There was also stress on greater equity, and apparently some success in achieving this end. A number of theorists have argued that equitable distribution of the fruits of development is not unrelated to the fertility declines in places such as Kerala, Sri Lanka and Costa Rica (Ratcliffe 1978; Nag 1985; Caldwell 1986).

The Revolution did not lead to rapid economic development. On the contrary, levels of real income fell. Therefore, while people were under considerable economic pressure during the Revolutionary period, the Revolution simultaneously engendered important social transformations through expanded education, social security, rural development and improvement of the health care system. These transformations are likely to have modified people's ideas and aspirations, as well as modifying institutions such as gender relations and the broader social structure.

Institutional theorists (McNicoll 1980, 1985, 1994; Greenhalgh 1988) stress the interaction of social, economic, religious and political institutions with population policy changes and with individual attitudes and behaviour. Analysis of institutional change in a revolutionary context should probably emphasize the role of the revolution in shaking society to its foundations, and thus making possible accelerated changes in many areas where slower incremental change would otherwise have taken place. Following the Iranian Revolution, the formation of the Revolutionary Jihad movement[4] led to faster and more egalitarian development in rural areas. There is still a Ministry of Jihad today. The health houses, providing primary health care, had existed before the Revolution, but this system was expanded after it by MOHME. In the new era of family planning beginning in 1988, the full involvement of the religious leadership in supporting and legitimizing family planning was crucial.

Probably the key institutional changes that occurred were those affecting the status of women. Women's important role in the Revolution was widely acknowledged, and no doubt increased their status in the community. Subsequently, their educational opportunities continued to widen, on average their marriages were delayed and arranged marriage declined, but, somewhat surprisingly, their participation in the labour force did not increase. Western commentators make much of the restrictive dress rules that were imposed on women after the Revolution, but in the Islamic context these are seen as increasing women's confidence in being able to move around freely without risk of harassment. They were certainly irksome to many of the more educated and Westernized women, but probably less so to the majority of women, who come from more traditional backgrounds. More important, perhaps, were developments in women's place within the family: in their decision-making functions, which were no doubt enhanced by their increasing levels of

education, and in their relation to their husbands *vis-à-vis* the extended family. Probably a more companionate form of marriage was tending to develop, in which pronatalist pressures from relatives were becoming less effective. McDonald (2000) has argued that increased gender equity within the family is likely to be a feature of fertility transition.

What direct role did the government play in the sharp fertility decline? Both the sudden collapse of the earlier pronatalist rhetoric, and also sudden strong government support for the family planning program, were undoubtedly important. But even before the announcement of the new family planning program, there was continued provision of contraceptives by government sources over the 1979–89 period, enabling rates of modern contraceptive use to remain at fairly high levels, and indeed to increase, though the exact timing of the increase is not known.[5] Moreover, the support of key religious teachers for the practice of contraception for valid reasons continued, even during the most strongly pronatalist period, when the family planning program was condemned by many as a Western plot (Mehryar forthcoming).

Since 1989, the family planning program has been well run and has brought modern contraception within reach of most couples, without strong campaigns of exhortation which might well have generated resistance from more traditional Muslims. Evidence that the revival of the family planning program followed rather than led demand is the fact that the date of onset of renewed fertility decline, 1986, was two years before the new population policy was agreed. The clear demand for its services enabled the family planning program to succeed.

It is difficult to assess the role of ideational change (Cleland and Wilson 1987) in this context. Nationalistic and religious rhetoric that came with the revolution and subsequent war would have had indirect effects on fertility, but it is hard to know exactly what these were. It is interesting that fertility was beginning to rise in the years immediately before the Revolution, when the temperature generated by anti-Shah (and anti-Western) pronouncements by leading clerics, and by intellectuals such as Ali Shariati and Jalal Al Ahmad, was rising. Pronatalism was subsequently fostered by the war situation, but once the war finished, people were more open to the renewed argument that rapid population growth was a serious impediment to development. This argument gained credence among planners, once they were able to shift their thinking from the pronatalist attitudes fostered by the war situation.

In the end, elements of each of the theories of fertility determination have a plausible role in explaining the rapid fertility decline. Indeed, there is no obvious reason why we should see these theories as competitive and not complementary. For example, with reference to ideational and institutional theories, 'most social scientists recognize that ideas are grounded in social and economic institutions' (Casterline 2001: 11).

One way of assessing the demographic effect of Iran's Revolution is to pose the counterfactual: what if the Revolution had not happened? We can speculate that Iran would have experienced a steady downward trend in fertility, as in the major North African countries of Algeria, Tunisia, and Egypt. The post-Revolutionary rise in fertility was actually fairly short-lived, and the subsequent sharp decline can be considered to represent a return to the secular downward trend. The ultimate population size, however, is substantially affected by the 'bulge' in fertility, which probably led to an extra 8 million Iranians by the year 2000.

How relevant is Iran's experience for other countries? This is difficult to determine. The specific religious, political and social context will never be replicated elsewhere. Nevertheless, Iran's experience in modifying its population and reproductive health policies in times of dramatic political and social change does, if carefully interpreted, have many lessons for other countries. For example, the Iranian experience raises some doubts about the efficacy of policy pronouncements by government or *fatwah* by religious leaders in modifying the actions of the populace, if these pronouncements are out of tune with emerging social trends. Despite religious support for early marriage and the overturning of the minimum age of marriage imposed by the Shah's regime, age at marriage has risen sharply over the past two decades. Other forces have clearly outweighed the influence of exhortations and religious pronouncements on this matter. On the other hand, the pragmatic process by which the *ulama*, the technocrats and the intellectuals were brought together to settle on a population policy with broad support from all sections of society carries important lessons for countries where Islamic, secular and various political forces are at constant loggerheads over population issues.

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Notes

1 TFR estimates derived from the 1976 Census vary from as high as 6.8 (PBO 1993) to 5.5 (Zanjani 1992). A carefully designed Population Growth Estimation study conducted a few years earlier (1973–76) had revealed a TFR of 6.3, which had not changed by the time the Iran Fertility Survey was conducted in 1977 (Aghajanian 1991).
2 This includes the United Nations Population Division. In their population projections the assumed TFR for 1995–2000 was revised as follows: in the 1990 projections, 4.30; in the 1992 projections, 5.40; in the 1994 projections, 4.52; in the 1996 projections, 4.77; in the 1998 projections, 2.80. It was not until the 1998 projections that the Population Division accepted the reality of Iran's fertility decline.
3 A series of independent surveys carried out by a joint team of Iranian and French researchers in Shiraz county of Fars province in 1996-1998 (Agha *et al*. 1997) revealed similarly high contraceptive prevalence rates in both urban and rural areas.
4 The Revolutionary Jihad movement was an organization established immediately after the Revolution by Ayatollah Khomeini to promote development in agriculture, as well as medical, educational and cultural activities in rural areas.
5 It was probably late in the period, judging from the fertility trends.

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