

## The Emergence of Low Fertility As a Policy Issue

*While it may seem to be inordinately prescriptive,  
the target range for fertility in all countries should be  
from 1.6 to 2.1 births per woman.*

By Peter McDonald\*

In the 1960s, demographers projected that the world's population would reach 16 billion people by 2050, if the then very high fertility rates in most countries were not brought under control. Today, the projected population in 2050 is around 9 billion. This reduction of the world's population by 7 billion people from what might have been is one of the most remarkable but least heralded achievements of humankind. Most of the success, in numerical terms, can be attributed to falls in birth rates in Asian countries. In China alone, if fertility had remained at its late 1970s, relatively low level of 2.6 births per woman, the Chinese population in 2050 would be 1 billion more than is now projected.

In most instances, Governments in Asia have actively engaged in promoting such falls in fertility by implementing efficient and effective national family planning programmes. Also vital to the success have been individual couples themselves who have understood the benefits of having smaller families. The idea that having large

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numbers of children threatens the economic well-being of a family is now very much embedded in the Asian psyche from Tokyo to Tehran. I am just old enough to remember that there was considerable skepticism at the beginning of the 1970s that such results could be achieved. Research at that time focused on the cultural supports that favour high fertility, projecting much slower changes in fertility than have actually been achieved. The scope for policy to interact with individual aspirations was underestimated by experts. The extension of education to all segments of the population and especially to women was one of the main foundations of this remarkable social change. In many Asian countries, women's lives have been redefined within one or two generations. It is not unusual to find women who have led largely traditional, localized lives having adult daughters or granddaughters today who are practising professions that interact with the global economy. The success of such women is very visible and feeds the aspirations of other young women in Asian countries. The visibility of couples who have succeeded economically also feeds the aspirations of couples who are less successful.

The emerging picture, however, is not all rosy: there are two problems. First, progress toward goals of gender equality has been variable across social institutions. As individuals, women have been able to make rapid progress in terms of education and employment. In most advanced Asian countries today, young women are more likely to be enrolled in higher education than young men. It is not uncommon for more than 60 per cent of university students to be women. In a growing number of occupations, young women are able to compete equally with their male peers so long as they are willing to serve their employers with long hours and absolute dedication. However, social institutions related to family life, such as the family itself, the tax-transfer system and employment conditions (as distinct from employment itself), have been slow to adapt to the changes that have affected women as individuals. Consequently women have seen that their personal aspirations would be severely curtailed if they married or had children. Survey evidence indicates that young women still aspire to marry and have children but, for many, the choice between work and family is highly problematic. Gender inequity is indicated by the fact that there is no such choice for young men. It is remarkable in itself that women in these recently highly traditional societies are now able to make these decisions as individuals, but it is highly problematic that the choice is so difficult for them.

The second problem is that the economic aspirations of young people have risen in many instances beyond the capacity of economies to meet those aspirations. Globalization and modern communications provide young people with images of living standards that appear to be within their reach; indeed, for many, such aspirations are achievable. However, for many more, achievement falls short of aspiration.

**Table 1. Total fertility rates (TFR), 2005**

<b>First group: TFR&gt;1.50</b>	<b>TFR</b>	<b>Second group: TFR&lt;1.50</b>	<b>TFR</b>
United States of America (2004)	2.05	Switzerland	1.42
Iceland	2.05	Austria	1.41
New Zealand	2.00	Portugal	1.40
France	1.94	Malta	1.37
Ireland	1.88	Germany	1.34
Norway	1.84	Italy	1.34
Australia	1.82	Spain	1.34
Finland	1.80	Greece	1.28
Denmark	1.80	Japan	1.26
United Kingdom of Great Britain and Northern Ireland	1.80	Singapore	1.24
Sweden	1.77	Taiwan Province of China	1.12
Netherlands	1.73	Republic of Korea	1.08
Belgium	1.72	Hong Kong, China	0.97
Luxembourg	1.70		
Canada (2004)	1.53		

*Source:* Eurostat and national statistical offices.

*Note:* The total fertility rate (TFR) of a population is the average number of children that would be born to a woman over her lifetime if she were to experience the current age-specific fertility rates throughout her lifetime.

Young people in all of today's advanced economies, whether in Asia or elsewhere, face these two problems. However, their impact on family formation is evidently greater in advanced Asian countries than in other places. Advanced Asian countries nowadays have the lowest fertility rates in the world, while some experience the lowest marriage rates (table 1). The choices facing young people in advanced economies are starker than they are, for example, in Western European countries or in English-speaking countries. There are both macro- and micro-levels of explanation for this.

At the macro-level, advanced Asian economies specialize in the highly competitive areas of manufacturing and finance, generally competing mainly with each other (if China is included). Both employers and Governments in those countries focus on keeping labour costs low in order to maintain their competitiveness. Employers, therefore, are very reluctant to introduce family-friendly workplace policies such as reduced working hours, flexible working hours and family-related leave. Governments in advanced Asian economies also face fiscal deficits and they are under both domestic and international pressure to curtail their deficits. Accordingly, Governments have been reluctant to spend money on family support. The 1997 Asian financial crisis exacerbated this situation. Employers who had

previously employed workers in jobs “for life” began employing young workers on short-term contracts. A new element of risk entered the prospects and aspirations of young men and women. Even more than before, they need to invest in their own human capital and their relationship with their employer rather than investing in altruistic endeavours such as the formation of families.

At the micro-level, Asian cultures have a history of family-centeredness. They take pride in the ideology of “the Asian family”, whereby families look after their own members. Family-care responsibilities should not, if at all possible, be handed to the state or to non-relatives – except perhaps for domestic workers who are redefined as family members. However, the practical result is that female family members must manage all family caring responsibilities, not only those of children but also of any family member requiring assistance. Once more, because of this ideology, Asian Governments have been much slower than Governments in other countries with advanced economies to provide alternative forms of family care or financial support.

Table 1 divides countries into two groups: those with total fertility rates above 1.5 births per woman and those below that level. With the exception of Canada, the gap between the fertility rates of the two groups of countries is quite wide (0.3 births per woman) and getting wider over time. Also notable is an absolute cultural divide. The first group of countries, with fertility rates above 1.5, consists of all of the Nordic countries, all of the French- and Dutch-speaking Western European countries and all of the English-speaking countries. By contrast, the second group of countries or areas with fertility rates below 1.5 consists of all of the German-speaking Western European countries, all of the Southern European countries and all of the economically advanced East Asian populations. I have argued elsewhere that this divide is policy driven: that the first-mentioned countries have a history of government support for families whereas the second group, especially the Asian countries, have been slow to implement such policies.

Does very low fertility matter? The fall of fertility from high levels to around replacement level in the advanced East Asian countries, as described above, was a substantial achievement that was associated with highly favourable economic outcomes. Those countries, it has been argued, have benefitted from a demographic “dividend” or bonus because, through fertility decline, the population became heavily concentrated in the productive, working ages. In the short term, fewer births mean lower costs for families and for nations. A continually falling birth rate, even to a very low level, thus leads to improved and rising living standards.

The principal short-term negative effect of very low fertility is not economic but psychosocial: people might like to have children but do not do so because they perceive that society is not organized in a way to facilitate family formation. This may

be regarded as an unhealthy social trend. However, these psychological outcomes for individuals have not led Governments to policy action. Instead it has been the longer-term economic implications of low fertility that have motivated some 30 or more Governments to instigate pronatalist policies in recent years.

In the longer term, around 25 years, very low fertility leads to sharp falls in the size of the labour force at the same time that the population from the previous era of high fertility is ageing. The age of the labour force itself therefore increases because the falls in labour supply are all at young ages. Young workers are said to play a key role in economic development because, in each generation of new technology, they tend to be the assimilators of the new technology. In other words, very low fertility leads to a future demographic crunch. The Japanese demographer Naohiro Ogawa has referred to this crunch as the demographic onus. Thus, countries that take action to increase their fertility rates from very low levels are generally not acting in any present interest but rather in their longer-term interest.

Several demographers including myself have argued that fertility rates of around 1.7 to 1.9 births per woman do not create problems with future labour supply, although they are below replacement level, because the fall in the number of young workers is very slow. If countries are already crowded, a slow and controlled fall in their population sizes may be welcome. However, when fertility remains at a very low level (below 1.5 births per woman) for an extensive time, the fall in the size of the future labour force can be precipitous. Furthermore, where fertility has fallen below 1.5 births per woman, it has regained or exceeded that level in only a few minor instances. Both Japan and Singapore have been attempting for some time to increase their fertility rates above 1.5 with little success. The persistence of very low fertility has led the Austrian demographer Wolfgang Lutz to refer to the possibility of a “low fertility trap” – once entered, it is difficult to escape. The experience of the Republic of Korea shows that very low fertility can happen at very short notice.

The lesson to be learnt from this regional experience is that countries are wise to intervene to stop the decline of fertility before the rate falls below 1.5 births per woman. The Governments of Australia and France have done so relatively deliberately and the Nordic Governments have done so less deliberately. Asian countries now presently in this category where future fertility may fall below 1.5 include China, Thailand, Indonesia, Malaysia, Viet Nam and the Islamic Republic of Iran.

On the other hand, countries with fertility well above replacement need not stop their efforts to reduce fertility. A large country like India adds enormous numbers to its population when fertility is only a little above replacement. While it may seem to be inordinately prescriptive, the target range for fertility in all countries should be from 1.6 to 2.1 births per woman.

# Fertility Decline in Asia: The Role of Marriage Change<sup>1</sup>

*In the future, Asia will see a surge of smaller families and therefore smaller networks of resources regardless of the living arrangements in place.*

By Gavin W. Jones\*

In current discussions of the fertility transition in Asia, the role of marriage change is frequently understated, because of the strong emphasis (perhaps flowing from the influence of the family planning movement) on marital fertility. Yet, since the time of Malthus, marriage change has been given strong attention in historical studies of fertility transition in Europe. In North-Western Europe, early in the twentieth century, non-marriage was a major factor affecting fertility. In some countries, the proportion of women remaining single at the end of their childbearing period reached 20 per cent (Hajnal, 1965; Therborn, 2004: 147-155). Such high levels of non-marriage did not always directly translate into lower

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fertility, because out-of-wedlock births were not uncommon; but they certainly played an important role in fertility decline.

Nevertheless, in the search for a general theory of the demographic transition, the role of marriage change can be overemphasized. McDonald (1993:4) implies that such might be the case in the most detailed study of the demographic transition by the French demographer Jean-Claude Chesnais (1992).

In dealing with fertility decline in Asia, the present article needs to strike an appropriate balance, examining the role of marriage change without exaggerating its role. The first section summarizes current trends in fertility in some Asian countries, particularly where fertility has reached very low levels. Changes in marriage (particularly delays in marriage) in those countries are discussed in the second section. Available evidence of the disaggregation of fertility decline into marriage change and marital fertility decline is then summarized. The fourth section examines the factors influencing marriage and those influencing fertility within marriage, considering the extent to which they are interlinked or separate. A brief discussion of policy on marriage change for fertility reduction rounds out the substantive scope, followed by the final section that draws some conclusions.

### **Fertility trends over the past decade**

Asian demography has broken new ground during the past decade in a few respects, one of which is that fertility in some Asian countries has sunk to levels below that in almost all countries of Europe. It is no longer appropriate to perceive Asian countries as “catching up” with earlier trends in European fertility. Rather, a number of Asian countries are pioneering ultra-low fertility levels, and hence their Governments are also pioneering responses to such low levels.<sup>2</sup>

Of course, fertility levels in Asian countries still range across a wide spectrum, from extremely high in such countries as Afghanistan and Nepal (at levels associated with very high levels of both infant and maternal mortality) to among the lowest in the world, in Japan and the Republic of Korea. But the general trend has been downward in Asian countries over the past decade (Gubhaju and Moriki-Durand, 2003), dramatically so in the case of the Islamic Republic of Iran (Abbasi Shavazi and McDonald, 2006), robustly so in countries such as Thailand, Indonesia, India and Myanmar (in all of which fertility had less far to fall than in the Islamic Republic of Iran), more tentatively so in Bangladesh (which over the previous decade had experienced a robust decline in fertility), the Philippines and Malaysia. Even in Pakistan, where signs of fertility decline had long been sought in vain, fertility is clearly on the way down (Feeney and Alam, 2003).

Particularly interesting is the trend towards ultra-low fertility in a number of East Asian countries over the last 8 years (see table 1). Before that, Japan and Hong Kong, China were considered the only countries or areas of Asia in the very-low-fertility range – having a total fertility rate (TFR) of less than 1.5. Both areas could be considered exceptional in various respects: Japan as the Asian country that had long been in the “developed” league; Hong Kong, China as a “develop city-state”. There was no evidence yet that East Asia could in any way be considered to match Southern and Eastern Europe in the low-fertility category. Since then however, fertility has plummeted further in the Republic of Korea, in Taiwan Province of China and in Singapore, not to mention in the major Chinese cities of Beijing and Shanghai, and in Hong Kong, China. Even China itself is apparently not far above the 1.5 TFR level. East Asia may therefore be considered as a major bloc of very-low-fertility countries, on the same level as Southern and Eastern Europe.

**Table 1. Trends in the total fertility rate, in selected East Asian countries**  
units: births per adult woman

Year	Japan	Republic of Korea	Taiwan Province of China	Singapore	Hong Kong, China
1995	1.42	1.64	1.78	1.67	n.a.
1996	1.43	1.70	1.76	1.66	1.19
1997	1.39	1.54	1.77	1.61	1.12
1998	1.38	1.47	1.47	1.47	1.02
1999	1.34	1.42	1.56	1.47	0.98
2000	1.36	1.47	1.68	1.60	1.04
2001	1.33	1.30	1.40	1.41	0.93
2002	1.32	1.17	1.34	1.37	0.94
2003	1.29	1.17	1.24	1.25	0.90
2004	1.29	1.16	1.18	1.24	0.93
2005	1.25	1.08	1.12	1.24	0.97

*Sources:* Japan: Ministry of Health and Welfare, Vital Statistics, various years; Republic of Korea: June 2004, table 3.6; Hong Kong, China: Census and Statistics Department, The Government of the Hong Kong Special Administrative Region (using resident population approach); Taiwan Province of China: Tsay, 2004. Figures for 2003-2005 from Department of Household Registration Affairs, Ministry of Interior; Singapore: Singapore Department of Statistics, 2005.

Of course, TFR trends are not necessarily consistent with trends in cohort fertility. Period fertility is lower than cohort fertility when the mean age of childbearing rises; the reverse is true when the mean age of childbearing declines



(Ryder, 1983). In effect, when successive cohorts delay childbearing, their births are spread out over a longer period than would be the case if the timing were constant. The result is a reduction in period fertility. Thus it has been argued that in European countries, if part of the recent fertility decline has been due to postponement of births, the underlying cohort fertility will turn out to be higher than the period fertility. In other words, each cohort of women will eventually have more children than the TFRs seem to indicate, because the current TFRs are artificially suppressed by postponement of the total births over the women's life spans. Once the rise in mean age at childbearing ends, as it inevitably must, "the corresponding fertility-depressing effect stops, thus putting upward pressure on period fertility" (Bongaarts, 2002: 439).

This factor must also be kept in mind in understanding fertility trends in Asian countries, in almost all of which the age at marriage and mean age at childbearing have been steadily rising. The key uncertainty in forecasting increases in period fertility in Asian countries that result from cessation of increases in mean age at childbearing stems from uncertainty about when the increases in the underlying factor (i.e., mean age at marriage) are likely to end.

### **Changes in marriage patterns in Asia**

Just as for fertility levels, Asian countries cover a wide spectrum in terms of marriage patterns, specifically in female ages at marriage and the universality of marriage. There is a strong divide between South Asia (with the exception of Sri Lanka), on the one hand, and South-East and East Asia, on the other. In South Asia, marriage remains near universal and women marry at a very young age. For example, in India, 24 per cent of girls 20 to 24 years old had been married by age 15, and 50 per cent by age 18 (IIPS and ORC Macro, 2000). In Bangladesh, in 2000, 48 per cent of girls 15 to 19 years old had ever married, twice the proportion in India (Jones, 2006). There has been a tendency for ages at marriage to increase in South Asian countries, and for parental arrangement of marriage to decline to some extent. But in general, the pattern of early, parent-arranged marriage has proven extremely resilient.

By contrast, recent decades have seen revolutionary changes occurring in marriage patterns in East and South-East Asia, the most important shift being that towards delayed marriage and non-marriage. The proportions not marrying in some countries are reaching levels not seen in European countries since the very early decades of the twentieth century, after which proportions marrying in Europe rose substantially. The recent rise in proportions remaining never married in many European countries should not mask the reality that many of those "never married"

people are cohabiting; i.e., they are in long-term consensual unions, which in many respects can be considered a form of marriage.

Table 2 shows trends in female non-marriage in a number of South-East and East Asian countries over recent decades. South Asia is not covered in table 2, as the author has not collected the same detailed data for countries in that particular subregion. However, available evidence clearly shows that the changes in delayed and non-marriage have been most marked in South-East and East Asia.

**Table 2. Proportion of women single at ages 30-34 and 40-44 in selected Asian populations**

Population	30-34		40-44	
	1970	2000	1970	2000
Japan	7.2	26.6	5.3	8.6
Myanmar	9.3	25.9	6.2	14.8
Thailand	8.1	16.1	3.9	9.3
Singapore Chinese	11.1	21.6	3.6	15.0
Singapore Malays	3.9	12.2	1.7	8.2
Malaysia Chinese	9.5	18.2	3.4	8.4
Malaysia Malays	3.3	9.7	1.1	4.4
Philippines	8.9	14.8	6.0	7.1
Republic of Korea	1.4	10.7	0.2	2.6
Indonesia	2.2	6.9	1.2	2.4

*Source:* Jones, 2004, appendix table 1.

Table 2 reflects a striking trend towards delayed marriage and in many cases a failure to marry at all (Jones, 2004; 2005). While the trend has not been universal (with China being a notable exception), it has been so widespread that it can be called a regional transition to new behaviour. Countries including Japan, Thailand, Myanmar, Singapore, Malaysia, Taiwan Province of China, the Philippines and, to a more limited extent, Republic of Korea and Indonesia, exhibit this new behaviour. In some populations of the region, the changes have been truly dramatic. In Japan and Republic of Korea, at least, the increases at ages 40 to 44 years are likely to continue in the coming years, because the cohort whose marital behaviour has been changing most sharply (the cohort born in the 1960s) has not yet reached those middle ages.

The trends indicate that in some countries of the region (Japan, Thailand, Myanmar and Singapore, for example) 15 per cent of women or more may remain single at the end of their reproductive period. Such figures are not unknown historically in the West; using the same statistic (percentage of women remaining single at the end of their reproductive period), the Western European delayed marriage pattern (extensively discussed by Malthus) saw most countries of that region in the 10 to 20 per cent range around 1900 (Hajnal, 1965; Therborn, 2004, table 4.1), and even higher in the early decades of the twentieth century, at 12 to 25 per cent (Therborn, 2004, table 5.1). But in Western Europe, there was a subsequent resurgence in marriage, which does not appear to be in prospect in South-East and East Asia.

What further increase can be expected in proportions of women not marrying in Asian countries? In countries such as the Republic of Korea and Indonesia, the increase in non-marriage is likely to continue for a long time, as evident from the sharp rise in proportions of women not married in the cohorts of 25 to 29 and 30 to 34 years old, which will lead to higher rates of non-married at older age groups as those cohorts grow older. By contrast, however, in many Asian countries the continued increase in the proportion of women never married in their 30s and 40s has been due to compositional changes (that is, the rising proportions who have completed secondary and higher education, groups which include much higher proportions of unmarried women), rather than to increases in unmarried proportions, controlling for education. Indeed, it is clear from the 1990 and 2000 population censuses that in a number of countries, including Singapore, Malaysia and Thailand, the proportion of women with a post-secondary education who remained unmarried in their 30s and 40s did not increase at all after 1990. Nevertheless, the proportions remaining single in those countries could still be pushed even higher by further increases in educational attainment of women entering those age groups.

In Europe, young people are also delaying marriage. But many South-East and East Asian countries have actually run ahead of the countries of Northern and Western Europe in proportions effectively single, if we take into account the high prevalence of cohabiting relationships in Northern and Western Europe, many of which produce children (Jones, 2007). While cohabiting relationships are also increasing in Japan and the Philippines, and probably in some other Asian countries despite the social unacceptability of such unions, cohabitation clearly remains much less prevalent in most of Asia. Moreover, even in those Asian countries where such relationships are more common, they rarely produce children. Therefore, in focusing on the effect of marriage change on fertility,

effective non-marriage has become more prevalent in much of South-East and East Asia than in most of Western and Northern Europe.

### **Role of marriage delay in fertility decline**

Evidence about the role of marriage change in fertility decline is summarized here, as derived from studies disaggregating fertility decline over certain time periods into components contributed by (a) changing proportions married and (b) decline in fertility within marriage. Such disaggregation is straightforward technically, provided that the relevant data are available (see Smith, 1983). In many parts of the world, however, the procedure is conceptually inappropriate because considerable childbearing takes place outside of relationships officially designated as marriage. That is the case in many parts of Latin America and the Caribbean (Goode, 1963; Therborn, 2004: 157-160, 169-172, 185-187), and nowadays in Europe and North America, where in many countries one third or more of children are born in non-marital relationships (Kiernan, 2003: figure 3); but not the case in Asian countries. Although there is certainly more cohabitation and non-marital relationships of other kinds in many Asian countries than is normally recognized, such relationships rarely produce children. Therefore an analysis that disaggregates fertility decline into its components of changes in proportions married and changes in marital fertility still makes sense in this part of the world.

European countries differ greatly among themselves in the extent to which childbearing takes place outside marriage. The Mediterranean pattern differs greatly from that of Scandinavia, for example. In Sweden and Norway, around 50 per cent of births are extramarital. That proportion is around 40 per cent in France and the United Kingdom of Great Britain and Northern Ireland and 30 per cent in Australia and in the United States of America, falling to around 15 per cent in Belgium, Western Germany and Spain and below 10 per cent in Italy and Greece. Greece's premarital or extramarital fertility rate is so low that it strongly resembles that of Asia.

With this preamble, evidence can be examined for the role of marriage delay in fertility decline in a number of Asian countries. Notably, although delayed marriage and low fertility tend to be closely linked in Asian countries, the correlation is far from precise. For example, Myanmar shows the most extreme marriage delays in the region, while fertility is still slightly above replacement level; the Republic of Korea, however, has one of the lowest levels of fertility in the world, while marriage is not yet very delayed. The TFR in Bangladesh in 1995 was fully two children lower than in Pakistan, despite Bangladesh's much lower

average age at marriage for females. In Indonesia, cross-sectional evidence across provinces in the 1970s showed little relationship between female ages at marriage and levels of fertility (Jones, 1977: 34). Although age at marriage has risen there, and fertility fallen, some of the provinces with the lowest fertility have relatively early ages at marriage.

The relative roles of changing age at marriage and marital fertility control in the early and later stages of fertility transitions has varied across Asian countries. In Sri Lanka, a rise in age at marriage preceded significant declines in marital fertility. In Singapore, the early stages of fertility decline, beginning in 1958, appear to have been triggered by a rising age at marriage of women (Saw, 1999: 170-171), although declines in marital fertility rates soon took over as the main factor in the decline. The fertility decline for Malays in Malaysia in the 1960s and 1970s was entirely due to a rise in female age at marriage (Hirschman, 1986: 170-172), whereas the subsequent rise in Malay fertility post-1978 was due mainly to a rise in third-to-fifth order birth rates (Leete, 1989: table 4). In Indonesia (where, as noted in the paragraph above, there was no evidence in the early 1970s of a consistent inverse relationship between the age at marriage in a region and its fertility), marital fertility decline has been more important than rising age at marriage in the subsequent fertility decline. Marital fertility decline was the main factor in Thailand's fertility transition (Knodel, VanLandingham, Saengtienchai and Pramualratana, 1996, figure 5.1).

Systematic studies disaggregating fertility declines in those countries into their component factors have identified falling proportions ever married at any given age as having played a considerable part in the fertility declines in Taiwan Province of China and Peninsular Malaysia between 1960 and 1970, as well as in Malaysia, Thailand and Indonesia between 1970 and 1980. However, only in Malaysia did the contribution of the marriage component in any way rival that of the marital fertility component (Caldwell, McDonald and Ruzicka, 1980; Hirschman and Guest, 1990).

In Japan, fertility decline started in the two decades before the Second World War. It was greatly facilitated by the postponement of marriage, first in the 1930s and then, accompanied by swift and substantial reductions in marital fertility, during the decade following the postwar jump in births between 1947 and 1950. Since the mid-1970s, the importance of marriage change in fertility decline has assumed great importance: (a) according to Retherford and Ogawa (2005: 2), about half of the decline in Japanese TFR since 1973 is attributable to later marriage and less marriage; and (b) according to Tsuya and Mason, 1995 and Choe, Retherford and Kim, 2004, it is attributable entirely or almost entirely to marriage change.

In the Republic of Korea, marriage change accounted for about one third of the decline in fertility at the beginning and end of the main period of fertility decline (i.e., 1960-1965 and 1985-1990 periods), but only around one fifth to one quarter in the 1965-1985 period (Jun, 2004: table 3.2; Choe and Park, 2006). The main period of Korean fertility decline was largely the result of declining marital fertility. However, the sinking of Republic of Korea's fertility to very low levels since 1995 appears to be entirely the result of marriage trends.

Encouragement of late marriage had a modest but important role in reducing China's fertility, especially in the 1970s and 1980s. One study has estimated that the rise in age at marriage accounted for 8 per cent of the reduction in the number of births between 1950 and 1970 and 19 per cent of the reduction between 1971 and 1980, avoiding about 100 million births (Coale and others, 1991).

In Myanmar, the recorded proportion of couples making use of any form of contraception is only 37 per cent (Union of Myanmar, 2003); yet fertility has fallen close to replacement level. Myanmar, then, is an outlier with respect to the multi-country regression line relating fertility levels to proportions of couples practising contraception<sup>3</sup>, for two main reasons of (a) abortion is probably seriously understated in surveys in Myanmar; and (b) the very high and rising proportion of women remaining single in their 30s and 40s. A recent exercise which disaggregated the decline in the total fertility rate in Myanmar from 4.7 in 1983 to 2.4 in 2001 indicated that 38 per cent of the decline was attributable to the nuptiality effect and 62 per cent to the fertility effect (Jones, 2004: 29).

The Philippines can serve as an example of a country where the sluggish nature of a fertility decline appears to be related to the lack of very substantial change in proportions married. Although the Philippines has long had larger proportions remaining single than most Asian countries, the rise in recent times has been much slower than in Thailand and Myanmar, for example (Jones, 2004: figures 2 and 3). Moreover, possibly rising levels of cohabitation further confuse the picture; there may have been little if any increase in proportions "effectively single" (i.e., neither married nor in a cohabiting relationship) in the Philippines. Both that possibility and low rates of contraceptive prevalence among couples help to explain the limited extent of fertility decline.

Further complexity is provided by Bangladesh, where the rapid fertility decline recorded between the mid-1970s and the mid-1990s must have been overwhelmingly due to marital fertility decline. The female age at marriage, although rising a little, remained very young.

The conclusion from the evidence presented here seems to be that marriage change can play an important role in major fertility declines. While intercountry variation is considerable, broadly speaking, changes in marriage patterns tend to play a greater role in the early and the late (sub-replacement fertility) stage of the fertility transition than in the middle stage, when typically decline in marital fertility is the main driving force. Although theoretically possible, in practice no countries reach replacement level fertility without low fertility within marriage. Both factors normally need to come into play to reach well-below-replacement levels of fertility.

Given the apparently very close interactions between changes in marriage incidence and reduced fertility within marriage during most fertility transitions, it is very important to find answers to the following question: to what extent are the factors making for delayed marriage and for lower marital fertility identical, or at least synergistic?

#### **The interrelatedness of the avoidance of marriage and avoidance of childbearing<sup>4</sup>**

Both delayed marriage and sharp fertility declines have occurred in South-East and East Asia when women's educational levels have been rising and their workforce participation generally increasing. In Thailand and the Philippines, female labour force participation has always been high, while in recent times the structure of employment opportunities for females has shifted markedly away from agriculture and into manufacturing, clerical, service and professional occupations. In some other countries of the region, concurrently with the rapid rise in numbers of women with secondary and tertiary education, there has been a very sharp rise in the proportion of females working. Trends in labour force participation rates (LFPRs) for women aged from 25 to 39 years in Japan, Singapore and Republic of Korea are shown in table 3. In both Japan and Singapore, there has been a sharp increase from 1975 onwards for all three age groups. In Republic of Korea, by contrast, female participation rates rose sharply only after 1985, and even then to levels well below those in Japan or Singapore.

The sharp rise in LFPRs in Japan and Singapore coincided with sharp increases in delayed marriage. The delayed increase in LFPRs in the Republic of Korea was consistent with the much later onset of delayed marriage for females in that country. Causation, of course, remains difficult to determine, because of the "chicken or egg" issue: did women remain single longer because they were in the workforce, or were they in the workforce because they were still single? Japan has the best data for examining such issues; the faster increase in LFPR after 1975 for

women of ages 25 to 29 years than for women in other age groups indicates that some reverse causality was occurring at ages 25 to 29 (Retherford, Ogawa and Matsukura, 2001: 77). There was a major increase in the proportion single in that age group; and because the LFPR was much higher for single women, that drove up the LFPR independently of other factors that were also driving up that rate. But the LFPR for single women was also rising over that period (from 81 per cent in 1972 to 92 per cent in 1999). Retherford, Ogawa and Matsukura (2001: 82) claim that there is evidence of a substantial increase in the opportunity cost for women of quitting their job to marry and have children, which would have driven up the age at marriage, although that pressure may be abating because a declining proportion of women have quit the labour force after marriage and first birth, especially between 1995 and 1998.

**Table 3. Labour force participation rates for females in Japan, Singapore, and the Republic of Korea, certain age groups, 1960 -2000**

	Japan			Singapore			Republic of Korea		
	25-29	30-34	35-39	25-29	30-34	35-39	25-29	30-34	35-39
1970	46	48	46	31	23	19	31.7	36.3	43.1
1975	43	44	43	47	32	29	35.1	40.7	49.3+
1980	49	48	49	59	44	37	34.1	46.1	55.5
1985	54	51	54	67	49	45	35.9	43.2	55.8
1990	61	52	61	76	63	55	42.8	49.6	58.0
1995	66	54	66	79	64	58	47.8	47.5	59.2
2000	70	57	70	84**	74**	63**	55.9	48.5	59.1
2004	74	61	74	86	77	68	63.9	50.4	58.9

*Sources:* Statistics Bureau, Japan Ministry of Management and Coordination, Roudo-ryoku Chosa Houkoku (Labor Force Survey Report), various years. Singapore: Singapore Ministry of Manpower, various years; Singapore Department of Statistics, 1983, \* 1957, \*\* 2001. Republic of Korea: Labour Force Survey data taken from ILO Labour Statistics Database. Republic of Korea 1980 figure actually 1982. + excludes widowed and divorced women.

In theory, young people may be avoiding marriage for reasons that differ from those that influence married couples to avoid having children. For example, marriage itself could be seen by young women intent on pursuing a career as a distraction from that goal; or they may be delaying it until, inadvertently, they find that they are faced with a lack of suitable partners (the “good man is hard to find” syndrome). In reality, however, “marriage is a package” (to quote Tsuya, 2005), as it is not simply about the relationship between two people, but tightly linked with



childbearing, child-rearing, and other family obligations. Thus the delay in marriage in the region is undoubtedly linked to a considerable, but not easily measurable, extent with the same kinds of concerns that are influencing married couples to delay childbearing or to have only one or two children. To marry without the intention to have children is still considered aberrant behaviour throughout the region. While “DINK” (double income, no kids) households may appear fashionable in the West, in Japan the fashion among young women seems more to be to avoid marriage. Young couples in Japan, after marrying, are subjected to considerable pressure from family to have a baby, and to a lesser extent from friends. The easiest way to avoid such pressure is to remain single. Although single people are also pressured to marry, the pressure may be less than that exerted on married couples to produce their first child.

The arguments against having children, especially for upwardly mobile women throughout the region, have already been noted. Not only are the opportunity costs of having children alarmingly high, but the actual financial costs of raising and educating children are also very substantial. For female university graduates in Japan, the costs of raising and educating a child have been estimated to exceed US\$ 1 million. (For the data on which that estimate is based, see Retherford and Ogawa, 2005: 15-16).

The role of women in some South-East and East Asian societies may provide additional reasons to avoid bearing children. Patriarchal attitudes among employers and in Government, resulting in poor workplace provision for the needs of working mothers, and the reluctance of husbands to relieve working wives of housework and child-rearing tasks, add considerable stress to the lives of women with children. The extreme pressure in such countries as Japan, Republic of Korea and Singapore to raise high-quality children, and the unequal role given to mothers in achieving that goal, add further strong deterrents to beginning the process of family building (see Hirao, 2004).

Another possibility is that a “second demographic transition” along the lines of that documented in Western countries (Lesthaeghe, 1995; Van de Kaa, 2001) has also occurred in the very low-fertility Asian countries, with greater stress on individualism and self-realization and a related downgrading in the importance people attach to fulfilling social norms such as having children. Some observers may assume that those countries are not greatly affected by postmodern values; however, a number of surveys in the region show a tendency for postmodern values to be increasing among younger respondents. The alternative explanation of the very low fertility currently recorded in many East and South-East Asian countries

is that people still want two or more children, but the pressures they face in modern industrial societies make that ideal very difficult to realize (Quah, 2003: 71-73).

Surveys in the region tend to show that people on average express a preference for two or more children (e.g., Prachuabmoh and Mithranon, 2003: 39-40). That does not prove, however, that the obstacles to higher fertility are more in the nature of “work-life balance” issues rather than in a lack of interest in having the number of children that would lead to replacement-level fertility. In the European countries with well-below replacement fertility too, expressed desired fertility is much above the actual levels of fertility and rarely falls below 2. Similarly, it does not differ much by cohort or social group (Van de Kaa, 2001; Bachrach, 2001).<sup>5</sup> Internationally, there tends to be a crossover in actual and expressed desired family size, when actual family size falls to levels a little above replacement level. Above that level, desired fertility tends to be below the actual level; but below that level the reverse holds, too (Bongaarts, 2001: 263-266). As Livi Bacci (2001: 284) notes, “...the suspicion is that stated preferences are heavily influenced by stereotypes and particularly by the model of the two-child family (a boy and a girl). This stereotype is pervasive and many surveyed individuals are “prisoners” of it.”

McDonald (2000) has argued that the lowest levels of fertility are found in countries or societies where high levels of gender equity have been achieved in individual-oriented institutions, but where relatively low gender equity persists in family-oriented institutions. The list of countries where fertility is extremely low (in Europe: Italy and Spain; in Asia: Japan, the Republic of Korea, Taiwan Province of China and Singapore) seems to follow this argument. Italy and Spain not only stand out for their low fertility, but also for their very low proportions of women married or cohabiting. So, too, do Japan, Singapore and Taiwan Province of China, although not (yet) the Republic of Korea. There seems to be a correlation here, suggesting that childbearing is avoided in such countries, as well as marriage or marriage-like relationships.

The discussion of factors underlying very low fertility in Southern Europe in a paper by Caldwell and Schindlmayr (2003) is interesting for its possible application to East Asia. The authors argue (in summarizing the arguments of many other writers) that a key factor is “familism” (“a family-centred welfare system, a family-biased production system and a family-oriented value system”: Bettio and Villa, 1998: 138). In the context of high youth unemployment, such a system promotes great delays in young people leaving home and makes it more difficult for the mother to work. Rising incomes and consumerism, rapid rises in educational levels, especially for girls, and increasing employment opportunities

for women give them strong incentives to enter the workforce. But the unwillingness of employers to allow time off to give birth or care for children, or return to the workforce thereafter, along with strong sexual division of labour within the household, means that the opportunity cost is very high for women to raise a family. Grandmothers do expect to look after the children of working mothers, but that practice also causes strains.

This article has no space for the parallels and differences between such patterns in Southern European and East Asian countries, except the observation that all those countries consider themselves very family-oriented. In practice, the rhetoric of “familism” and the reality of ultra-low fertility seem to go together, thus occasioning some introspection about the linkages.

### **Policy on marriage change for fertility reduction**

This article has focused primarily on countries where fertility has sunk to very low levels. However, Asia also includes many countries with high or moderate fertility that are seeking to lower their fertility levels. To what extent can policies to raise the age at marriage assist in reducing fertility in those countries where fertility remains too high?

First of all, legislating minimum ages at marriage tends to achieve little unless accompanied by more far-reaching changes. The minimum age at marriage for girls is 16 years in Indonesia and 18 in Bangladesh, but many girls are marrying below these ages, especially in Bangladesh. What else can be done? Family planning programmes in many countries have given prominence to raising age at marriage in their family planning communications strategy. Indonesia is a prominent example. However, it is important to recognize that in countries where age at marriage for girls is very low (such as Bangladesh or Nepal), raising the median age at marriage from 16 to 18 or even 19 or 20 still leaves a very long period of potential reproduction, and therefore will not necessarily lead to a decline in completed fertility. That is not an argument against efforts to raise the age at marriage, which are important for three reasons: (a) even if completed fertility were to remain the same, the rise in age at marriage would lower the rate of population growth by extending the mean length of generation; (b) such a rise in age at marriage, especially if it is linked to extended periods of schooling for girls, tends to broaden women’s perspectives and to empower them within the marital relationship – thus it is likely to be associated as well with reduced marital fertility; (c) third, from a more general perspective of human rights and empowerment of women, teenaged marriage should be discouraged, particularly where the girl has little or no say in the choice of marriage partner.

What we know about the factors leading to rising age at marriage in most cases seems to argue for policies that are likely to be pursued primarily for other reasons. Increased educational opportunities for girls and young women, widened opportunities for women to enter the paid labour market, and exposure to communications media bringing new ideas and attitudes, etc. can be mentioned in this context. The effect of such policies on age at marriage is unlikely to be a prime consideration in adopting them, though it is an effect that is arguably undervalued.

There are specific linkages between effective family planning and age at marriage in countries wishing to reduce their fertility. The impact of effective birth control would be greatest where a high proportion of early first marriages are triggered by an unplanned pregnancy or where out-of-wedlock births are met with social disapproval or economic hardship. But effective birth control in such a context would mean giving unmarried women access to contraceptive information and services, which remains a very controversial issue in many Asian countries.

### **Summary and conclusions**

Marriage change has played a considerable role in the recent fertility declines in a number of Asian countries: in countries as different as Myanmar, where fertility has moved from moderate to low levels, and Japan, where it has moved from low to very low levels.

This article has given primary emphasis to the decline to ultra-low fertility in a number of South-East and East Asian countries (“the Pacific Asian” countries), that show some similarities with countries in Europe, especially in Southern Europe, as well as many differences. Systematic thinking about fertility trends in those Pacific Asian countries should not ignore the possibility that involuntary childlessness resulting from involuntary non-marriage could play a substantial role in the currently very low fertility levels in those countries, for a number of interacting reasons.

(a) Essentially no childbearing occurs outside marriage in Pacific Asian countries. Therefore marital status there directly affects fertility, whereas its effect on fertility is more blurred in Northern and Western Europe.

(b) Many factors affect marriage in Pacific Asia, aside from the desire for children or lack of it. For example, the notion of who should marry whom is perhaps less flexible in Pacific Asia, where hypergamy remains strong; yet parents have forsaken their traditional role in arranging marriage. Such factors are likely to make involuntary non-marriage more common in Pacific Asia than in Western countries;<sup>6</sup> fertility analysts should therefore avoid exclusive concentration on the fertility goals of married people.

Both delay in marriage and postponement of childbearing by married couples hold down fertility. Frequently, perceived obstacles to starting a family push potential childbearing into an age range where the obstacles and opportunity costs are likely to loom even larger, and where decreasing fecundity of women in their late 30s and 40s becomes an under-recognized factor. Among the many factors lowering desired childbearing among married couples in Pacific Asia, prominent possibilities are uncertainty of continued employment, conflict of work and family responsibilities, lack of appropriate policies to support child-rearing, the ideology of the “quality” child, financial costs of child-rearing, gender ideologies on housework, and difficulties of the urban environment. Possibly rising individualism also plays a part.

Finally, in those Asian countries where there is an urgent need to lower fertility (for example, Afghanistan, Bangladesh, Nepal and Pakistan), policies to increase age at marriage for females can be considered a vital part of any strategy to reduce fertility, in order to narrow the age ranges within which reproduction takes place, and to give later-marrying women a better chance of asserting control over their fertility within marriage. However, setting a minimum age for marriage is, according to evidence from a number of countries (including Indonesia and Bangladesh), unlikely to achieve the goal of eliminating very young marriages where such marriages remain socially acceptable to large sections of the society. In such contexts, minimum age regulations are more likely to be effective if allied with efforts to (a) increase the proportion of girls remaining longer in school, (b) increase workforce opportunities for women, and (c) engender wide-ranging discussion about human rights with regard to freedom to choose one’s marriage partner.

### **Endnotes**

1. Revised version of paper prepared for the ESCAP Seminar on Fertility Transition in Asia: Opportunities and Challenges, held from 18 to 20 December 2006, Bangkok.
2. For summaries of some of these policy responses, see McDonald, 2002; Saw, 2005; Jones, 2007.
3. For this line, see Nortman, 1982, figure 4.
4. This section draws heavily on Jones, 2007.
5. There is recent evidence of fertility ideals falling as low as 1.7 for younger men and women in German-speaking parts of Europe (Goldstein, Lutz and Testa, 2003). However, this is still well above actual fertility levels.
6. For categories of voluntary and involuntary non-marriage, see Stein, 1981.

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# Declining Fertility in Japan: Its Mechanisms and Policy Responses

*Among the population ageing policy options currently available to Japan, the extension of the retirement age and the utilization of the accumulated second demographic dividend appear promising...*

By Rikiya Matsukura, Robert D. Retherford  
and Naohiro Ogawa\*

Global population growth has been slowing down over the past few decades primarily because of the almost universal reduction in fertility. From 1970 to 1975, the number of countries with below-replacement fertility was 19, increasing to 65

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by the period from 2000 to 2005. The overwhelming majority of those low-fertility countries are in the developed regions. However, the number of countries in the developing regions with below-replacement fertility has been increasing substantially over the past three decades, reaching 19 in the recent past. The number of countries with lowest-low fertility, being those with a total fertility rate (TFR) below 1.3, has grown from 0 to 17 during the same period.

In a low-fertility region such as Europe, considerable inter-country differentials exist in the TFR. In recent years, Europe's industrialized countries have been divided into two groups in terms of their fertility levels (MacDonald, 2005). Group 1 is comprised of all the Nordic countries, all the English-speaking countries, and the French- and Dutch-speaking countries of Western Europe. In those countries, the TFR is above 1.5 births per woman. Group 2 countries, with a TFR below 1.5, consist of all the Southern European countries and all the German-speaking countries of Western Europe. The industrialized East Asian countries, although they are outside Europe, can be categorized in Group 2 as well, and it is in East Asia that the world's lowest fertility levels currently prevail. Group 2 countries have strong traditional values relating to familial responsibilities, so that families play a principal role in supporting their own members without heavy support from the state. Group 1 countries, with some exceptions, tend to be the opposite, showing heavy reliance on state support and correspondingly less family support.

In East Asia, Japan was the first country where the fertility transition occurred. More importantly, Japan's fertility reduction has been the greatest in magnitude among all industrialized nations. As a result, the ageing of the Japanese population has been extremely fast and is expected to accelerate in the next few decades. In 2005, the Japanese population became the oldest in the world and its growth rate turned negative.

Japan's fertility has trended downward over the past several decades. Since the beginning of the 1990s, the Government has been concerned about the loss of economic dynamism and future solvency of the social security system (Ogawa and Retherford, 1997; Mason and Ogawa, 2001). Businesses have been concerned about the shrinking number of consumers on the demand side and of workers on the supply side (Clark and Ogawa, 1996, 1997). Moreover, with only one or two, or perhaps no children, adults worry about who will take care of them when they reach old age (Ogawa and Retherford, 1997; Ogawa, 2005).

Over the past decade or so, both central and local governments of Japan have been implementing a series of policies with a view to raising fertility levels

(Retherford, Ogawa, and Matsukura, 2001; Retherford and Ogawa, 2006). In addition, the majority of large- and medium-scale firms have recently initiated a variety of programmes for relieving child-rearing burdens of their employees and their families.

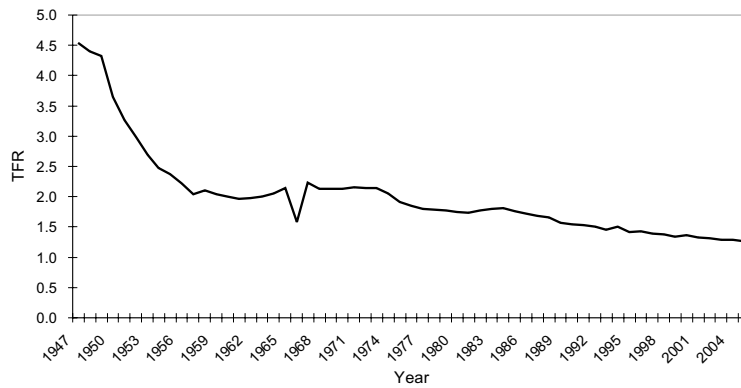
This article seeks to analyse the fertility transformation in post-war Japan. The following section discusses how the demographic mechanism of Japan's postwar fertility decline varied over time, while the ensuing section examines what factors contributed to such demographic shifts. Subsequently, a number of the policies and programmes to raise fertility that the Government of Japan has formulated and implemented over the past decade are discussed, and their limitations briefly considered. The final section discusses aspects of Japan's postwar experience which may be relevant for developing countries in Asia, particularly with regard to the first "demographic dividend" yielded by fertility reduction.

### **The pattern and causes of fertility reduction in postwar Japan**

Japan's fertility decline since 1947 can be divided into three stages, as shown in figure 1. In the first stage, between 1947 and 1957, the TFR fell from 4.54 to 2.04 births per woman over her reproductive lifetime. During that period, the impact of contraception was reinforced by abortion, which was legalized in 1948. In the second stage, between 1957 and 1973, the TFR stabilized at about 2.1 births per woman. Economic growth became very rapid, averaging about 10 per cent a year. People felt that they could afford to get married and have children. Age at marriage stopped rising and marital fertility stopped falling. The "baby bust" occurred in the third stage, from 1973 to the present. The TFR fell gradually from 2.14 in 1973 to 1.26 in 2005, the latest year for which the TFR is available. The 2005 TFR was an all-time low in postwar Japan. If fertility were to remain constant at this level, each successive generation would decline approximately at a rate of 40 per cent.

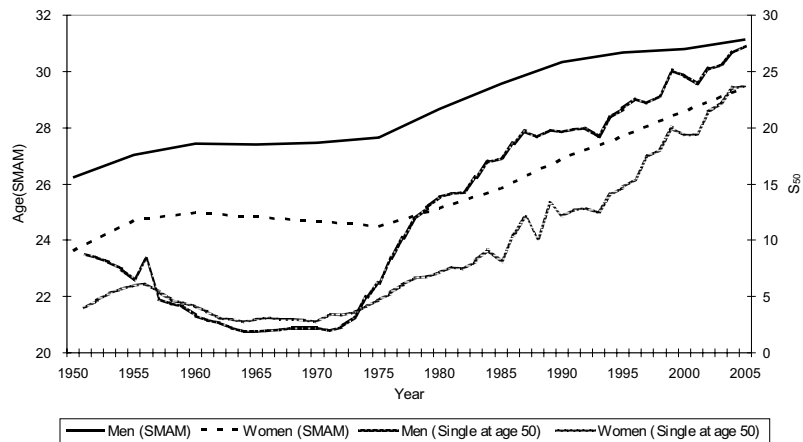
Most of the decline in the TFR between 1973 and the present occurred because of reduction in marriage and later age at marriage. (In this regard it should be noted that only about 2 per cent of births occur out of wedlock in Japan.) As depicted in figure 2, between 1970 and 2005, the singulate mean age at marriage rose from 27.5 to 31.1 for men and from 24.6 to 29.4 for women. Over the same period, the synthetic proportion still single at age 50 (calculated from age-specific first-marriage rates in a specified year) rose from 9 to 27 per cent for men and from 4 to 24 per cent for women.

**Figure 1. Total fertility rate in Japan, from 1947 to 2005**



Source: Ministry of Health, Labour and Welfare (various years).

**Figure 2. Trends in the singulate mean age at marriage (SMAM) and the synthetic lifetime celibacy rate ( $S_{50}$ ) by sex, Japan, from 1950 to 2005**



Source: The SMAM data are from Statistics Bureau, Population Census of Japan (various years).

Note: Values of the synthetic lifetime celibacy rate are calculated from data on period parity progression ratios pertaining to the transition from a woman's own birth to her first marriage.

As discussed extensively elsewhere (Retherford, Ogawa and Matsukura, 2001), the main reasons for later marriage and less marriage after 1973 in Japan are the following:

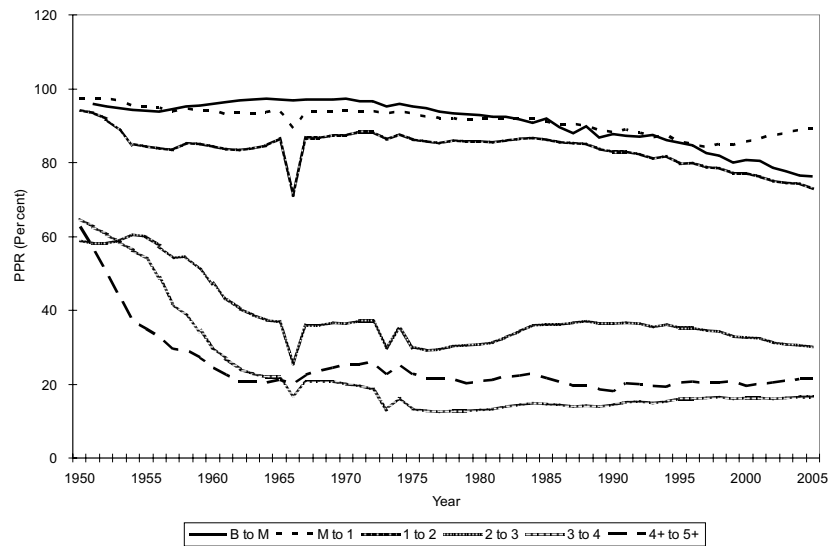
- (a) Remarkable educational gains by women. The proportion of women enrolled in tertiary education increased from 5 per cent in 1955 to 50 per cent in 2005.
- (b) Massive increases in the proportion of women working outside the home and earning a salary. Currently, about 99 per cent of women work before marriage, almost all of them in paid employment, so that they have no financial need to marry.
- (c) A huge decline in the proportion of arranged marriages, from 63 per cent in 1955 to 2 per cent in 2002. People now must rely on themselves to find their own spouse, which is not so easy in Japan as the marriage “market” is not well developed.
- (d) A major decline in the proportion of young couples living with their parents when they marry; i.e., from 64 per cent in 1955 to 29 per cent in 2002. Young couples increasingly do not want to live with their parents; with the decline in coresidence, young couples face greater financial difficulty in getting married and setting up a household.
- (e) A major increase in premarital sex, implying that young people do not need to get married to have a sexual relationship. Between 1990 and 2004, the proportion of single women aged 20 and over who reported that they were using contraception rose from 39 to 57 per cent.

As a consequence of those changes, Japanese women of marriageable age have become more individualistic in outlook. They increasingly do not want to live with a mother-in-law and they aspire to a more egalitarian relationship with their husband whom they expect should help in child-rearing and housework. However, men’s attitudes have lagged in that regard and their long working hours have not been conducive to attitudinal shifts.

In analysing the baby bust since 1973, not only the changes in the marriage component should be examined but those in the marital fertility component too. To a considerable extent, marital fertility declined after 1973. In that regard, period parity progression ratios (PPPRs) should be calculated for particular calendar years. Parity here is defined as the number of children that a woman has ever borne, while the parity progression ratio is the fraction of women of a given parity who go on to have at least one more child (i.e., the fraction who progress to

the next parity). The concept of parity is extended to include the stage of being married but still without children. The computed PPPRs over the period from 1950 to 2005 are plotted in figure 3.

**Figure 3. Trends in period parity progression ratios (PPPRs), among Japanese women from 1950 to 2000**

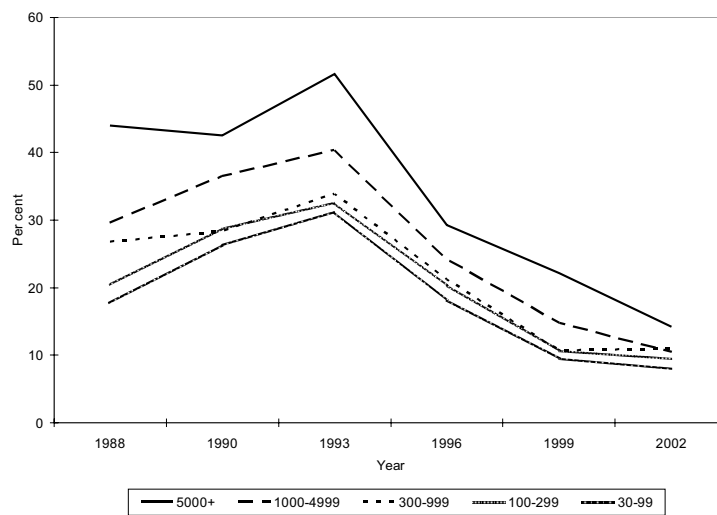


*Source:* Retherford and Ogawa (2006), updated with more recent data. PPPRs were calculated from published vital registration and census data, using methodology described by Feeney and Saito (1985) and Feeney (1986).

After 1973, virtually all of the decline in fertility occurred in PPPR(M-1) and PPPR(1-2); i.e., progression from marriage to first birth and progression from first to second birth. The main reasons for the decline in those two progression ratios are: (a) the rise in direct costs of children (higher education is a major component of rising direct costs, which involve a substitution of quality for quantity of children), (b) the rise in opportunity costs of children for women (in terms of lost income as a result of temporarily dropping out of the labour force), (c) the shift in preferences away from children towards “other goods” (in other words, the “consumption utility” of children has fallen), and (d) the reality that women want their husbands to participate in child-rearing and housework.

As Japan's economy has evolved, family security diminished. For example, with the decline of the extended family, elderly parents and other relatives are increasingly unavailable to help during hard times. Economic globalization and market-oriented reforms also mean less security for families, especially in Japan because a large proportion of its economy is geared to international trade. There is more job competition and less job security. The husband's future income stream is perceived to be less certain than before. Thus a woman's job becomes more precious, which also contributes to later childbearing and fewer children. Diminishing job security is reflected in the declining trend in the proportion of Japanese firms that report following the lifetime employment system. As indicated in figure 4, the proportion fell from about 30 per cent in 1993 to 10 per cent in 2002.

**Figure 4. Trends in the proportion of firms in Japan reporting that they follow the lifetime employment system, by firm size (number of employees), from 1988 to 2002**



Source: Ministry of Health, Labour, and Welfare, Survey on Employment Management (various rounds).

In addition, the rise of divorce has also meant less security for families. Wives perceive that they need a good job as a hedge against divorce, especially since they are the ones who typically keep the children. As a consequence, a woman's job tends to become relatively more important and having children



relatively less important to her. Husbands are likewise less keen on having children if they increasingly perceive that they may have to pay for their upbringing and education. Japan's crude divorce rate (divorces per 1,000 population per year) rose from 0.74 to 2.15 between 1960 and 2005. In comparison, the rate was 2.1 for France and 2.6 for Germany in 2003. Japan's rate is currently between that of France and Germany.

### Japan's increasing efforts to raise fertility

Governmental concern has grown because the TFR has fallen to 1.26 births per woman and continues to fall, and because falling fertility contributes greatly to population ageing. Very low fertility is the reason why Japan's population started declining in 2005, raising concerns that falling consumer demand would hurt the economy.

The Government became actively concerned about low fertility in 1990, when the TFR for 1989 was announced: 1.57 births per woman, the lowest it had ever been. The media picked up the story and the "1.57 shock" hit the headlines throughout the country. As a result, in 1990, the Government established an interministerial committee on creating a sound environment for bearing and rearing children, as presented in table 1.

**Table 1. Major actions by the Government of Japan aimed at raising fertility**

TFR	Year	Actions
2.14	1972	Establishment of child allowances (no pronatalist intent at first)
1.54	1990	Establishment of interministry committee on "Creating a sound environment for bearing and rearing children"
1.53	1991	Enactment of Childcare Leave Act
1.50	1994	Announcement of Angel Plan for 1995-1999
1.42	1995	Enactment of Childcare and Family Care Leave Act
1.34	1999	Announcement of New Angel Plan for 2000-2004
1.33	2001	Amendment to the Employment Insurance Law, specifying 40 per cent of salary to be paid to regular full-time employees during childcare leave
1.32	2002	Announcement of "plus one" plan
1.29	2003	Enactment of "next generation" law
	2003	Enactment of law on "Basic Measures to Cope with a Declining Fertility Society"
1.29	2004	Announcement of New Angel Plan for 2005-2009

Source: National Institute of Population and Social Security Research (NIPSSR), 2003.

The Government of Japan has employed two approaches to raising fertility: (a) direct subsidies for marriage, childbearing and child-rearing; and (b) institutional measures to facilitate marriage, childbearing and child-rearing.

As regards direct subsidies, the Government introduced child allowances in 1972. The economy was still booming and fertility was still at replacement level then, so there was no pronatalist intent. The purpose was instead to help low-income families who were being left behind by rapid economic growth and the accompanying rapid social changes that went with it. After 1990, pronatalist concerns led to a substantial increase in the allowances. Currently a couple can receive an allowance of US\$100 per month for children up to age 2, US\$50 per month for each of the first two children aged 3 to 12, and US\$100 per month for each higher-order child. The eligibility criterion for a four-person household in which the head of household is a paid employee is that annual household income must not exceed US\$68,400. The allowances are paid until the child has completed the third grade in school. The eligibility criterion for a four-person household is that household income must be less than US\$41,500 per year. (Japan's new Government is proposing to provide an allowance of US\$100 per month to each child up to age 2, regardless of his or her birth order, beginning in 2007.)

The Japanese Diet passed the Childcare Leave Act in 1991, whose objective was to enable working women to have children more easily. The law provided for unpaid childcare leave for either the mother or the father of an infant for up to one year. Benefits were restricted to full-time employees in firms with more than 30 employees. Part-time workers were excluded. In 1994, the Government announced its "Angel Plan" for the period from 1995 to 1999. Again, the objective was to enable working women to have children more easily. The Angel Plan called for major increase in the number of day-care centres throughout the country. It also called for expansion of after-school sports and other programmes and for family support centres.

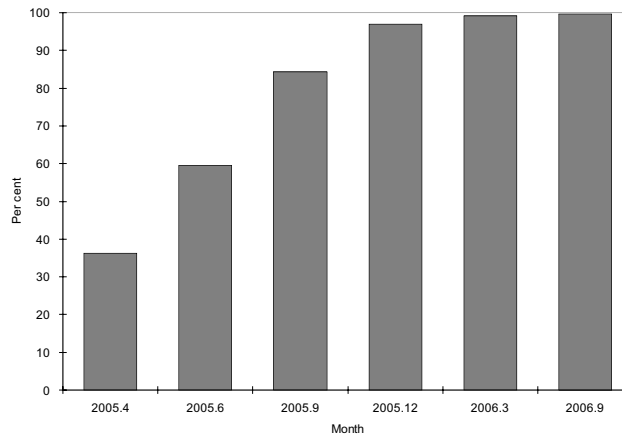
The 1991 Childcare Leave Act was superseded by the 1995 Childcare and Family Leave Act. Under the 1995 law, full-time employees were again eligible for one year of leave for an infant. Part-time workers were again excluded. (Among married women workers, about half work part-time. About three quarters of part-time workers are women.) The new law also entitled employees to (a) up to three months of leave per year to care for a sick parent or other family member; (b) 25 per cent of salary during the leave, to be paid out of the Employment Insurance

Fund; (c) accumulation of seniority while on leave; and (d) payment of their share of social security contributions by the employer.

In 1999 the Government enacted the New Angel Plan for the 2000-2004 period which further expanded of day-care centres, after-school programmes and family-support centres. In 2001, the Employment Insurance Law was amended to increase the proportion of salary that an employee received during childcare leave from 25 to 40 per cent.

The Government announced its “Plus One” Plan in 2002 to strengthen efforts to raise marital fertility. The Plan exhorted husbands to step up their help with child-rearing and housework in numerous ways. In 2003 the parliament passed the “Next Generation” Law, whose primary objective was to implement the Plus One Plan. The law addressed the problem that many parents (mainly women) were not taking childcare leave because of social disapproval from co-workers and employers. The law therefore included measures aimed at creating an atmosphere within firms that would encourage parents to take the childcare leave to which they were entitled. To do so, the law required employers with more than 300 employees to come up with a plan to raise fertility among their employees and to submit the plan to the Government (i.e., to the prefectural Labour Bureau) by 1 April 2005. As shown in figure 5, the proportion of firms which submitted their plans to the Government grew at an impressive rate during 2005.

**Figure 5. Proportion of firms that submitted their “Plus One” Plan to the Government during 2005**



Source: Data released by the Ministry of Health, Labour and Welfare of Japan.

Under the Next Generation Law, local Governments have been required to formulate their own pronatalist programme. Among those implemented, one of the most unusual provides an allowance of US\$50 per month to women beginning with their fifth month of pregnancy.

Dating services have increasingly substituted for the traditional family arrangement of marriages. All the big *keiretsu* (families of allied industries) already provide dating services for their employees that are contracted out to private-sector firms, of which there are approximately 3,100 in Japan. In addition, in January 2005, the government established an expert committee to examine the possibility of Government subsidies for “marriage information services,” including not only dating services but also training in interpersonal communication skills between men and women.

Despite such measures, the TFR has continued to decline. Without those measures, however, the TFR probably would have declined even more than it did. In any case, more than 30 countries around the world have had a TFR of less than 1.5 births per woman, yet none has ever been able to reverse the trend and return its TFR to 1.5, much less to the replacement level of 2.1. The “low fertility trap” hypothesis (Lutz and others, 2006) can shed light on why Japan, with its TFR in 2005 at 1.26, has not yet been able to reverse the decline despite more than a decade of strenuous effort.

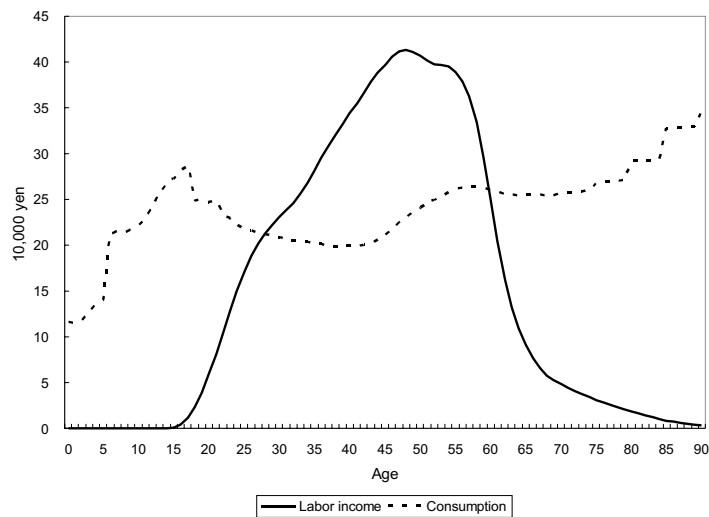
Pronatalist programmes should not unduly burden businesses. Moreover, the Government must give high priority to restoring the health of the economy. Otherwise it cannot properly fund pronatalist programmes, which are very expensive.

### **Gains from age-structural transformations: lessons from Japan**

One of the critical linkages between the demographic transition and economic growth is the role of two “demographic dividends” in economic development (Mason, 2001, 2007; Mason and Lee, 2005). As fertility begins to fall in a country, the first demographic dividend develops because changes in population age structure have led to an increase in the working ages relative to non-working ages. In other words, the first demographic dividend stems from an increase in the share of the population at ages during which production exceeds consumption. The first demographic dividend is positive when the rate of growth in output per effective consumer exceeds the rate of growth in output per effective producer (Mason, 2005).

With reference to Japan, in calculating the first demographic dividend, the present authors have estimated the age-specific profiles of consumption with both private and public sectors combined and those of production in contemporary Japan. The estimated results are presented in figure 6. Age profiles have been generated from (a) private-sector information derived from the National Survey of Family Income and Expenditure (NSFIE) for 2004 by the Statistics Bureau of Japan and (b) public-sector information for 2004 gleaned from Government publications. By applying the computed age-specific results displayed in the figure as statistical weights to adjust the entire population over the period from 1920 to 2025, the authors have calculated the change in the first demographic dividend as shown in figure 7. A brief glance at the results reveals that Japan's first demographic dividend, which corresponds to the difference between the annual growth rate of output per effective consumer and the annual growth rate of output per effective producer, was positive for 47 years from 1950 to 1996. The magnitude of the positive effects was extremely large during the period of rapid economic growth of the 1960s and the early 1970s, as presented in figure 7.

**Figure 6. Age profiles of labour income and consumption, Japan, 2004**

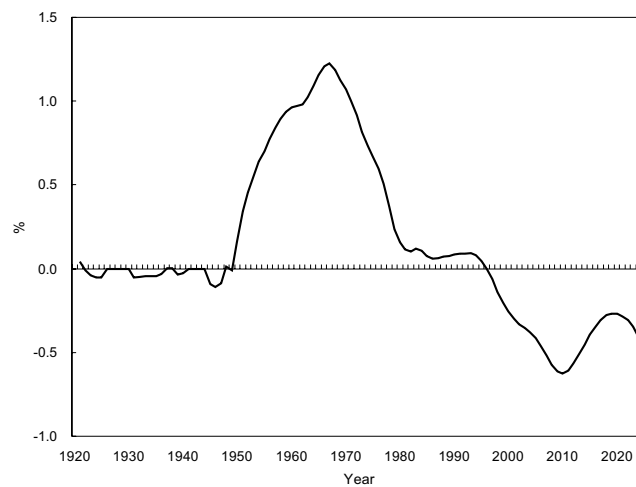


Source: Statistics Bureau, Ministry of Internal Affairs and Communications (2005).

As with the case in post-war Japan, the first demographic dividend typically lasts for a few decades, but is inherently transitory in nature. The same

demographic forces that produce an end to the first demographic dividend lead to a second demographic dividend. In the process of age-structural transformations, the second demographic dividend arises in response to the prospect of population ageing. For instance, in countries that rely on capital accumulation to meet the retirement needs of the elderly, population ageing provides a powerful incentive to accumulate wealth. However, in countries that rely on public and familial transfers in meeting the retirement needs of the elderly, the second demographic dividend may not emerge. While the first is purely accounting-oriented, the second consists of both compositional and behavioural effects (Mason, 2007; Ogawa and Matsukura, 2007).

**Figure 7. The first demographic dividend in Japan from 1920 to 2005**

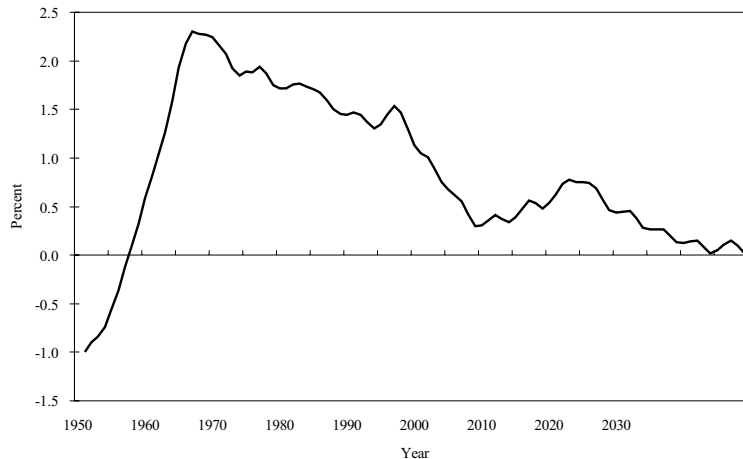


*Source:* Computed by the Nihon University Population Research Institute, based on the Family Income and Expenditure Survey (2004), Statistics Bureau, Ministry of Internal Affairs and Communications, Japan.

The estimates of the second demographic dividend over the period from 1950 to 2050 are shown in figure 8. A few points of interest emerge. First of all, Japan's second demographic dividend is negative up to 1957, apparently reflecting the slow recovery of the Japanese economy during the 1950s after the destruction during the Second World War. Second, Japan's second demographic dividend increased remarkably in the 1960s and 1970s, remaining at a considerably high

level for the latter half of the twentieth century. One salient example of the rapid increase in wealth in the early 1960s was the establishment of universal pension plans; their reserved funds accumulated at a phenomenal rate particularly in the 1960s and 1970s. Third, beginning with the 1990s, the amount of the second demographic dividend fluctuates considerably, with a pronounced trough in the 2010s, followed by a substantial upsurge in the 2020s and 2030s. Those oscillations are substantially attributable to the rapid age-compositional shifts in the early part of the twenty-first century, primarily because the second generation of baby boomers enter the age group of 50 years old and above at which they commence accumulating wealth for their retirement life.

**Figure 8. The second demographic dividend in Japan from 1950 to 2050**



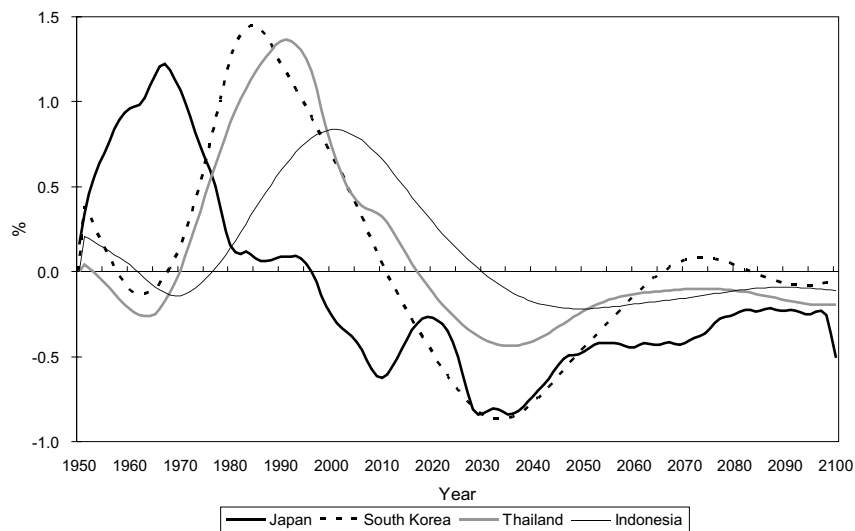
*Source:* Computed by the Nihon University Population Research Institute, based on the United Nations Population Projections, United Nations (2005).

Such computational results pertaining to both first and second demographic dividends in Japan provide an additional piece of empirical evidence, pointing to the likelihood that the unprecedented fertility decline subsequent to the baby boom (from 1947 to 1949) played an important role in boosting the growth of per capita income at a phenomenal rate during that period of high economic growth.

By applying the age profiles of consumption and labour income for Thailand in 2001, the Republic of Korea in 2000 and Indonesia in 1996 to the United Nations

population projection for those Asian countries, the authors have computed the timing of the first demographic dividend for those three countries. Their calculations are presented in figure 9. Owing to the differences in the timing of fertility reduction in those countries, the timing of the first demographic dividend is considerably different. Also, the magnitude of the first demographic dividend is considerably larger in Asian countries than it is in European countries, as discussed elsewhere (Ogawa, Maliki, and Matsukura, 2006). It is particularly large in such Asian countries as the Republic of Korea and China where the fertility level plummeted at unprecedented rates.

**Figure 9. The first demographic dividend in selected Asian countries, from 1950 to 2100**



*Source:* Computed by the Nihon University Population Research Institute, using data from the Long-range Population Projections, United Nations (2003).

Notably, the duration of the first demographic dividend is relatively short. For that reason, Asia's developing countries that are expected to enjoy a first demographic dividend as a result of fertility reduction, should make effective plans to capitalize on the opportunities of the first demographic dividend to boost their economic growth to provide for their future.



## **Conclusions**

Judging from numerous past experiences in many industrialized nations, demographic policy responses have not succeeded in coping with the problems of population ageing. For instance, low fertility is resistant to policy, as this article has tried to demonstrate for contemporary Japan. International immigration has also proven to be of limited help.

Among the population ageing policy options currently available to Japan, the extension of the retirement age and the utilization of the accumulated second demographic dividend appear promising, as has been examined elsewhere (Ogawa and Matsukura, 2007). Particularly, by taking advantage of the differential timing of the first demographic dividend among other Asian countries, Japan might be able to produce enough resources to achieve healthy ageing and retain the dynamism of its economic growth.

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# Lowest-low Fertility in the Republic of Korea: Causes, Consequences and Policy Responses

*One of the key principles behind resolving low fertility in the Republic of Korea is the Government's commitment to creating a family-friendly and gender-equal social culture.*

By Ki-Soo Eun\*

For the past several decades, in rich and poor countries alike, life expectancy at birth has seemed to rise. Contrary to the predictions of demographers, the expected lifespan at birth has increased nearly linearly, in developed countries as well as the developing countries of Africa, South America and Asia as if there were no upper limits. More recently, fertility rates appear to be no exception to that sort of convergence. Fertility has declined dramatically almost everywhere, first in

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European countries and later in non-European countries. Demographers predicted that fertility would stabilize around replacement levels once the fertility transition from high to low was completed in the twentieth century. Unfortunately, declining fertility has not stabilized in developed countries. For years, fertility has hovered below the replacement level in developed European countries. As if in imitation, fertility in developing countries also has approached replacement level, or in many cases, dipped below. As is the case for mortality, fertility in both rich and poor countries is certain to converge towards lower fertility.

The Republic of Korea has been regarded as one of those countries that have successfully curbed high fertility with the implementation of nationwide family planning since the early 1960s. Prior to 1960, high total fertility rates (TFR) of 6 had been recorded, but dropped to below-replacement level 20 years after the introduction of an aggressive family planning programme.

It was only in the early 1990s that the Government of the Republic of Korea realized that low fertility had become problematic in the country. Belatedly, the Government discovered that fertility did not stop declining even after reaching replacement levels, although the absolute size of the population continued to grow. In the mid-1990s, fertility began to decline consistently and rapidly in the Republic of Korea. In 2001, the TFR was 1.30, defined as the level of lowest-low fertility by Kohler and his co-authors (Kohler, Billari and Ortega, 2002). There seemed to be no lower limit to declining fertility, even after rates had reached the lowest-low level. The TFR in 2005 was 1.08, unimaginable even ten years before and wholly unexpected by the Government, demographers and ordinary Koreans alike.

Declining fertility is, however, not confined to the Republic of Korea. Other East Asian societies such as Japan are also experiencing similar declines in fertility. One can be sure that fertility throughout Asia is converging towards lowest-low levels.

Many attempts have been made to understand lowest-low fertility globally. Demographers, governmental and international institutions have feared that lowest-low fertility might prove to be persistent in both developed and developing countries. There have also been several research trials to investigate the recent fertility decline in the Republic of Korea specifically (Chang, 2003; Eun, 2002, 2003; McDonald, 2003; Suzuki, 2005).

Lowest-low fertility appeared quite suddenly in the Republic of Korea although fertility has consistently declined for several decades. Demographers in the mid-1990s could not have predicted that fertility would fall so rapidly to such levels. Interestingly, the pace of the decline accelerated after the region-wide

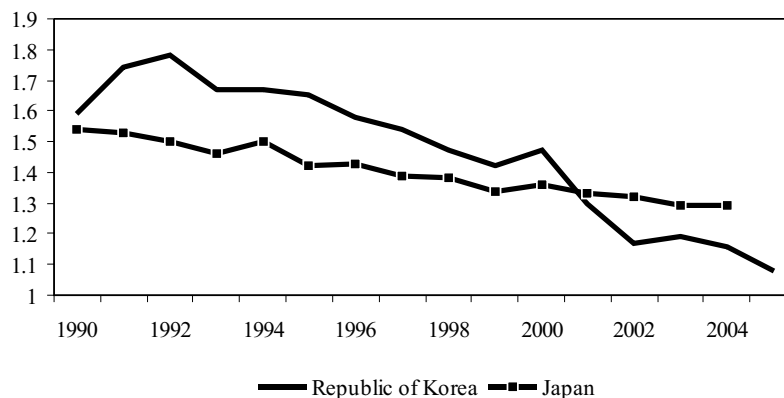
economic crisis in 1997. Not only did fertility but also other indicators related to fertility and the family adjusted suddenly and significantly after the country had passed through the crisis (Eun, 2002, 2003).

The present article aims to explain why lowest-low fertility appeared in the Republic of Korea in the late 1990s. The author approaches the recent fertility decline from a broader perspective that considers the traditional and cultural legacies which affect the everyday life of ordinary citizens. Finally, this article presents and discusses the latest population policies proposed by the Government of the Republic of Korea.

### Fertility transition in contemporary society

The Republic of Korea successfully completed its fertility transition in the 1980s, if the standard of success is the achievement of replacement level rates. With the TFR at 2.08 in 1983 and 1.76 in 1984, in terms of period TFR, the fertility transition can be said to have been completed in the early 1980s in that country. The rapid reduction in fertility rates can be attributed to the effectiveness of family planning programmes introduced in the early 1960s. The speed of the transition was widely praised. However, the decline in fertility did not stop at replacement level. Fertility plunged to a TFR of 1.55 in 1987. Early in the 1990s, the decline in fertility reversed briefly and climbed to 1.78 in 1992, a peak for the last two decades of fertility change.

**Figure 1. Fertility change in the Republic of Korea and Japan since 1990**

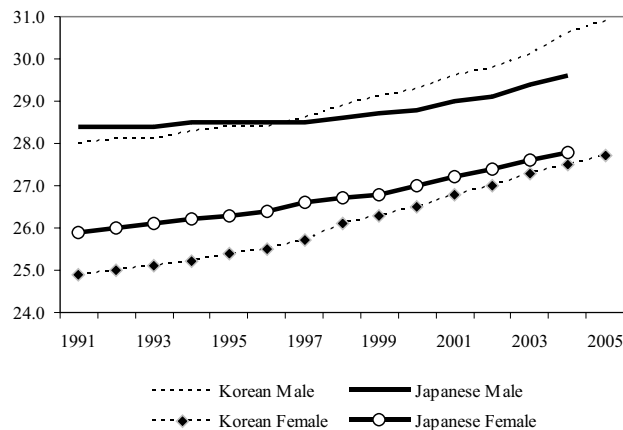


Source: Korean Statistical Information Service (KOSIS) (<http://www.kosis.kr>) for Republic of Korea; and National Institute of Population and Social Security Research (NIPSSR) (<http://www.ipss.go.jp>) for Japan.

Figure 1 clearly shows how fertility has changed in the Republic of Korea and Japan since 1990. As a result of consistent and rapid decline in fertility in the former, fertility rates were close to identical in both countries by the late 1980s. One difference is that while fertility in Japan continuously declined, the Republic of Korea experienced a brief upswing in fertility rates in the early 1990s, thus temporarily widening the gap in fertility rates between the two countries. However, as fertility rates in the Republic of Korea resumed their decline, the difference in fertility between the Republic of Korea and Japan decreased later in the 1990s.

Interestingly, the fertility changes in the Republic of Korea were accompanied by remarkable changes in marriage and divorce patterns in general in the late 1990s. An understanding of the causes of lowest-low fertility involves an overall understanding of the changes occurring in marriage and the family sphere; fertility change does not occur by itself but in combination with attitudes and behaviours regarding marriage and divorce. Figure 2 shows the trends in age at first marriage for both males and females in the Republic of Korea and Japan.

**Figure 2. Age at first marriage in the Republic of Korea and Japan since 1991**



Source: Korean Statistical Information Service (KOSIS) (<http://www.kosis.kr>); and National Institute of Population and Social Security Research (NIPSSR) (<http://www.ipss.go.jp>).

Age at first marriage is crucial in determining the fertility level, especially where marriage is considered the only legitimate condition for a woman to have children. Unlike some other developed nations such as France that witness high birth

rates among unmarried women, births are legitimized only within marriage in the Republic of Korea and other Asian societies; the changing age at first marriage in the Republic of Korea is thus directly related to fertility levels. Owing to such strong societal norms, changes in age at first marriage deserve a high level of attention.

As can be seen in figure 2, age at first marriage in both the Republic of Korea and Japan has increased for males as well as females gradually, sometimes markedly, since 1991. For example, age at first marriage was 28.0 and 28.4 for Korean and Japanese men, respectively in 1991. By 2004, it had increased to 30.6 and 29.6 for Korean and Japanese males, respectively. Similar trends are also seen in age at first marriage for females in both countries. Age at first marriage for Korean women rose to 27.5 in 2004 from 24.9 in 1991. Japanese women have also increasingly delayed their first marriage, to an average of 27.6 in 2004.

Koreans currently marry later than their Japanese counterparts, while fertility in the Republic of Korea is far lower than that in Japan. The phenomenon surely signals a sea change during the past decade in Korean practices regarding marriage and fertility. In terms of age at marriage and fertility, Japan has revealed characteristics typical of the second demographic transition of Europe. However, the Republic of Korea is currently much closer to the representative features of the second demographic transition, with the exception of the practice of cohabitation.

### **Mechanism of fertility decline**

With the transformation of fertility patterns in Korean society since the early 1960s, it is essential to consider the sea change that has also taken place recently in marriage and family in this society. In the present section, the author proposes a mechanism of fertility decline that may not be unique to fertility decline in Korean society and can be applied to fertility decline in other societies, especially other East Asian societies.

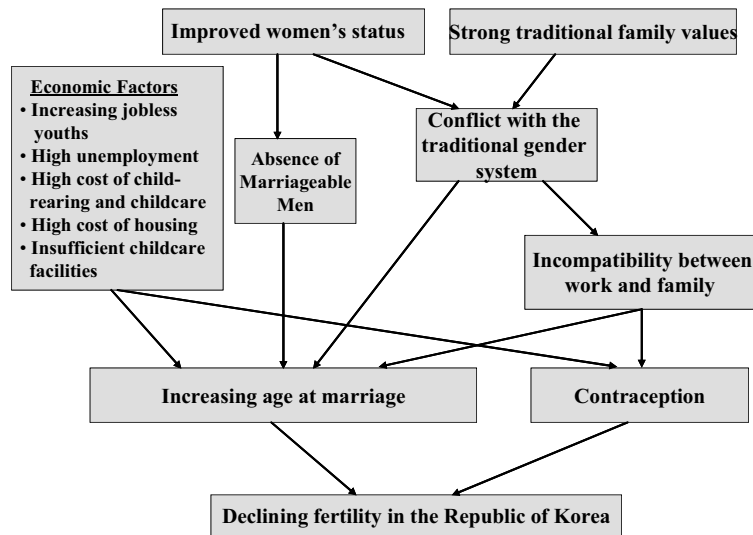
Figure 3 shows the sectors that must be considered when investigating lowest-low fertility in contemporary Korean society: the economic sector, the changing status of women and strong social norms. They are briefly discussed in the following paragraphs.

#### **Economic causes**

Economic factors are increasingly more significant in explaining lowest-low fertility in Korean society, to the extent that many scholars fret that economic determinism has become the sole explanation for fertility decline. Although the author would submit that economic causes are not the only reasons for low fertility, the importance of economic factors has been growing, especially in times of economic hardship.



**Figure 3. Mechanism of fertility decline in recent Korean society**



Unemployment soared among all age groups when the economic crisis struck in 1997. Youth were hardest hit by joblessness. Most observers, including the media, have asserted that Korean society recovered from the crisis within a few years.

After the economic crisis that began in late 1997, youths struggled to find employment owing to the dearth of entry-level positions. Those who were not employed within a year of graduation watched the window of opportunity shrink as time passed because of the custom of age hierarchy in Korean society. Companies prefer “young” entrants in order to exert effective control over workers. As the overall number of available jobs was reduced, graduates had no choice but to contend with more competitors for fewer positions.

As employment opportunities have diminished, youth have tried to equip themselves with more knowledge, experience and languages, especially English. Currently, many college students are likely to take five or six years to complete their first degree after matriculating at a university because they interrupt their undergraduate studies temporarily to gain overseas experience. Many youths go abroad to study foreign languages, especially English, for six months up to two years. While enrolled in university, many young people work part-time not only to earn money but also to acquire work experience. Such work experience is favourably viewed by recruiters at companies. More recently, as sex or age

discrimination has come under fire in Korean society, Korean companies have preferred more experienced entrants to novices. That directly affects the timing of graduation by prolonging the period of enrollment as students attempt to cobble together a sufficient package of skills and experience to be successfully hired. While official statistics indicate a decrease in youth unemployment, young adults who linger in universities are not counted when calculating unemployment rates because they are regarded as economically inactive.

Another factor in Korean society that hinders fertility is the high cost of child-rearing and childcare. Because of the lack of public childcare facilities, Korean families must resolve child-rearing and childcare matters privately. Provision of childcare by grandparents or close kin members has traditionally been the best solution. However, rapid urbanization, high mobility and the shift towards nuclear families over the course of modernization have weakened the capacity of close relatives to provide childcare. As public and private sources of childcare services have become scarcer, the cost of child-rearing and childcare has soared.

Furthermore, Korean parents' interest in their children's education has fundamentally altered since the economic crisis. Prior to the crisis, the primary objective of Korean parents was for their children to matriculate at prestigious universities such as the so-called SKY triumvirate (Seoul National University, Korea University, Yonsei University). Parents sent children to private academies to supplement their knowledge and prepare for the college entrance exams. After the economic crisis, parents realized that a diploma from even the most prestigious Korean universities was insufficient to guarantee job security. In addition to private tutoring and after-school academies, parents must provide children with a way to differentiate themselves from their peers. The frenzy over children's education induces parents to enroll even toddlers and infants in English-only nursery schools, or even to go so far as to send children of elementary school-age with a parent to study in an English-speaking country. Such initiatives are common examples of changes in mentality and behaviour since the economic crisis. Simply speaking, all those measures are expensive. The Korean media reports that more than half of family net income is invested in children's education. How can one expect parents to choose to have more children in such a wretched situation?

A final economic factor has contributed to lowering fertility in the Republic of Korea: soaring housing costs. There, the concept of public housing is underdeveloped and home ownership is assumed for every family. With a population concentrated in high-density urban districts with an inadequate housing supply, the Government has struggled to solve the result and problem. Recently, the demand for housing in neighbourhoods with greater educational

opportunities has been increasing, but the supply is limited. Exacerbating the situation, profits from real estate investments have far surpassed profits from security bonds or interest rates, resulting in frenetic real estate speculation over the past several decades. Although such speculation is advocated by some as a way to increase financial assets and independence, those speculative investments have resulted in soaring housing costs, and ultimately a contributing factor in young adults decisions to abandon marriage and family life prospects.

### **Changing women's status**

Korean society is notoriously male-centered. Visibly and invisibly, females suffer from discrimination. For example, huge differentials in wage by sex exist in the Republic of Korea. The proportion of women in professional occupations or the number of high-ranking female officers in government is still negligible. At Seoul National University, one of the country's prestigious universities, the percentage of female professors is much less than 10 per cent. Furthermore, most women professors have been "ghettoized" in such fields as nursing, family studies or music. When a high-ranking female officer in Government is appointed, the occurrence is rare enough that it makes the news, testifying to the widespread sex discrimination that characterizes Korean society.

Sex discriminatory attitudes are stronger in the Republic of Korea than in other countries, even among other East Asian countries. Even though college education has become almost mandatory for both sexes, differential attitudes towards higher education by sex still persist in the Republic of Korea. A look at table 1 reveals that a preference for men's higher education is stronger in the Republic of Korea than it is in Japan or China. Although negative attitudes toward women's college education diminishes in the younger age groups, the Republic of Korea still shows a stronger negative attitude towards women's college education than do other countries.

However, the reality of Korean women's progress in higher educational attainment is fascinating. Despite ambivalence or even distaste towards women's higher education, Korean women have striven inexorably towards achieving increasingly higher levels of education.

In 1995, women's educational attainment was lower than men's. In the 30 to 34-year-old age group, 32.5 per cent of males had a college education or higher while only 18.2 per cent of females had earned a college diploma. For the 25 to 29 age group, the gap in educational attainment was much narrower than the older cohort : 27.8 per cent of males and 22.5 per cent of females had a college diploma in 1995. Overall, however, in 1995 men's educational attainment was higher than that of females.

**Table 1. Proportion of agreement to  
“College education is more important for males than for females”**

Variables		Republic of Korea	Japan	China	United States	Sweden	Egypt
<b>Total</b>		22.6	17.1	8.8	7.5	6.6	30.8
<b>Sex</b>	<b>Male</b>	26.7	19.5	9.2	7.6	7.3	39.1
	<b>Female</b>	18.4	14.7	8.4	7.5	5.8	22.0
<b>Age</b>	<b>20</b>	11.2	10.1	7.2	5.9	5.9	27.0
	<b>30</b>	20.2	13.4	6.8	5.2	8.0	34.1
	<b>40</b>	26.8	15.2	9.2	6.7	4.1	32.3
	<b>50+</b>	33.8	22.4	13.5	10.9	7.6	33.4

Sources: *World Value Survey, 2000*; author's analysis.

Ten years later, a striking change had occurred in women's educational status. While 30.8 per cent of women had a college degree or higher in the 30 to 34 age group in 2005, 38.3 per cent of men in the same age bracket were college graduates. However, in the age group 25 to 29, women's educational attainment finally surpassed that of men. In the latter age group, 37.9 per cent of females compared with 34 per cent of males had graduated from college by 2005. Women's educational attainment at junior colleges was also higher than men's in 2005. By contrast, 44 per cent of males and only 37 per cent of females had obtained a high school diploma. From those statistics, it is obvious that women's educational attainment has increased to the point that there are more women than men currently pursuing higher education, including graduate schools. More female students than males attend college or graduate school in the Republic of Korea. That trend in educational attainment is likely to continue in the future.

While the Republic of Korea has been notorious for its culturally strong preference for sons, male preference has been markedly weakened owing to decreasing family sizes and low fertility. Sex ratio at birth is nearly normal in the Republic of Korea. For first or second births, sex ratio at birth does not deviate from a natural sex ratio. Only higher-order births show some distortion. Therefore, there is little sex preference or discrimination against daughters at the familial level, although pervasive sex discrimination persists at the societal level. More importantly, there is no discrimination against daughters nowadays when allocating family resources, leading to the increased levels of educational attainment for females in the Korean society.

As women's educational attainment has improved, their participation in the labour market has also increased. Labour force participation for males has gradually decreased in younger age groups. For the 25 to 29-year age group, the male labour force participation rate decreased from 90.8 in 1985 to 91.9 in 1990, to 89.6 in 1995, to 84.0 in 2000 and to 80.7 in 2005. Such a decline is also seen among males aged 30 to 34.

However, in contrast to labour force participation trends for young women, participation rates among the 25 to 29-year age group increased drastically from 35.9 per cent in 1985 to 65.9 per cent in 2005. An expansion in women's workforce participation can also be observed for females aged 30 to 34. Although the increase is not as large in that age group as in the age group 25 to 29, nevertheless, labour force participation has consistently increased. The trend for females is opposite to that of males.

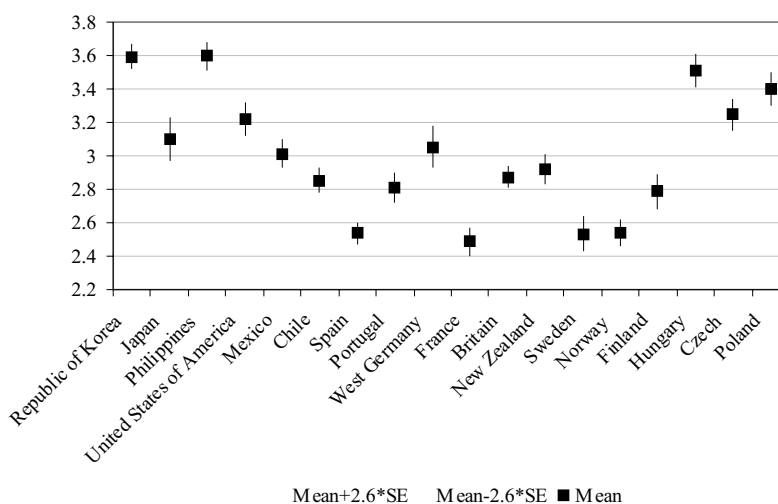
As women's educational attainment has surpassed men's, the desire for the labour force participation by women has been heightened in Korean society. Although evidence currently cannot be provided, young women often choose, anecdotally and in the media, to pursue a career rather than marriage and family upon graduation. When marriage was the primary option for women, the desire to participate in the labour market was not as high. However, after the economic crisis, women with stable jobs have been preferred as marriage partners to those unemployed. Korean men who have guarded their primacy as breadwinner and seemed to prefer full-time housewives as marriage partners, have realized the difficulties of a single-earner household, which is reflected in the attitudinal change in gender roles at home. No longer do Koreans automatically assume that men should work while women take care of the home and children. Rather, when considering marriage partners, many Korean men do not mind if the woman has a higher economic capacity. That also reflects the decreasing financial power of men. In such a situation, women are finding that marriageable male partners are scarce in the Republic of Korea. Even when they desire marriage, Korean women face difficulty in finding suitable partners as a result of their improved social status and heightened economic capacity.

Improved women's status has occasioned high opportunity cost in childbearing and child-rearing. Because of the high costs of childcare and child-rearing and the lack of childcare facilities, many women are being forced to quit their jobs to care for children. With women's higher educational attainment and labour force participation, opportunity costs have been rising in the Republic of Korea. Both high opportunity costs and the high cost of child-rearing and childcare contribute to lowering fertility in contemporary Korean society.

### Strong traditional family values

Unlike the sea change occurring in women's social status and economic capacity, Korean family values and attitudes are still very conservative and traditional in many respects. Contemporary family-related values and attitudes remain in the continuum of the traditional Confucian culture, characteristic of nineteenth century Joseon dynasty culture. Though women's public participation in education and the labour force have grown by leaps and bounds, family norms regulating family life remain within a male-centered and female-subordinated structure. For example, working mothers are expected to fulfill the role of a full-time housewife after returning from work. "Second shift" is mandatory for Korean women regardless of their educational achievement or professional careers. Korean women are expected to live as a superwoman or "perfect mother" (Warner, 2006).

**Figure 4. Mean score of agreement to the statement "Married people are generally happier than unmarried people"**



Sources: International Social Survey Programme, Family Module (2002) and Korean General Social Survey (2003).

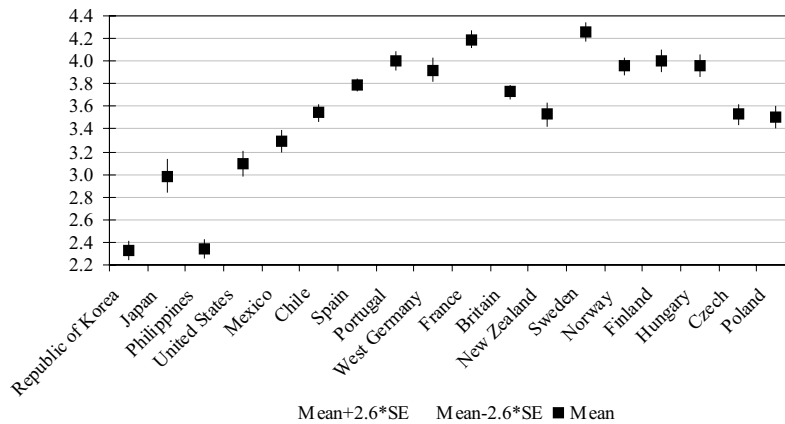
When the author examined family values and attitude from an earlier comparative perspective in a paper (Eun, 2006), Korean family values and attitudes were found to be among the most conservative in the world. East Asian countries showed similar level of conservativeness in family values, yet in the

Republic of Korea those values were even more conservative than those in other Asian countries.

To the statement “married people are generally happier than unmarried people,” the mean response was the highest in the Republic of Korea and the Philippines in the 2002 International Social Survey Programme data and the 2003 Korean General Social Survey data. Considering the argument that socio-economic factors affect value changes (Inglehart, 1997; Inglehart and Welzel, 2005), surprisingly the Republic of Korea has recorded the same mean score as the Philippines, despite the wide gap in economic performance between the two countries and the strong influence of Catholicism among the majority of Filipinos. If Koreans possess just as conservative attitudes towards marriage or marital life as Filipinos, that suggests that cultural legacies other than Catholicism may also exert a great influence on people’s perspectives on marriage and family.

The strong attachment to marriage as a social institution is also reflected in the attitude towards cohabitation.

**Figure 5. Mean score of agreement to the statement “It is all right for a couple to live together without intending to get married”**



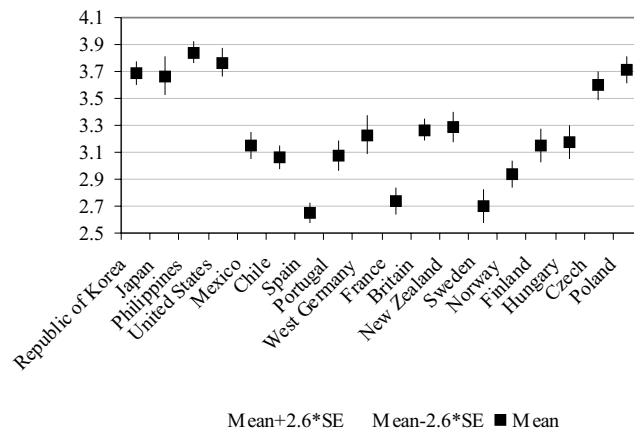
Sources: International Social Survey Programme, Family Module (2002) and Korean General Social Survey (2003).

Korean people strongly believe that men and women should be married. Marriage is the only social institution that can legitimize men and women living together. Cohabitation outside of marriage is severely stigmatized. Figure 5 shows

how conservative Koreans' attitudes towards cohabitation are. Again, Koreans show a very negative attitude towards cohabitation, similar to that of Filipinos, being much more conservative when compared to Japanese and Taiwanese.

Because marriage legitimizes men and women living together, childbirth can only be legitimized within the framework of marriage. Cohabitation, though beginning to be practiced by younger generation, has not been accorded formal status as a structure within which childbearing can be permitted in the Republic of Korea. That the Korean National Statistical Office does not collect data on cohabitation testifies to the societal resistance to even asking about cohabitation as one of the possible living arrangements between men and women. The attitude necessarily linking childbearing with marriage can be confirmed by the data from the International Social Survey Programme, Family Module (2002) and the Korean General Social Survey (2003).

**Figure 6. Mean score of agreement to the statement “People who want children ought to get married”**



Sources: International Social Survey Programme Family Module (2002) and Korean General Social Survey (2003).

As can be seen from figure 6, Asians generally seem are more likely to link childbearing with marriage than do people in other societies. The survey results may fail to show specific individual's attitudes and values, but individual responses may reflect social norms, because respondents in those kinds of values and attitudes surveys frequently reflect a bias toward social desirability.



Many Korean researchers claim that weakening family values are leading to low fertility, assuming a direct causation between the two phenomena. However, it is unclear whether such a direct causation exists. The relationship between attitudes and behaviours has been subject to endless debate in the social sciences. In the Korean case, it is not appropriate to presume that changes in family values have affected fertility decline. Korean family values and attitudes in general are very conservative and traditional, reflecting strong customs and a neo-Confucian legacy. The significance of family values and attitudes in relation to low fertility in the Republic of Korea is that the strongly traditional family values are unfavourable to women, are not commensurate with improved women's social status, and are likely to cause conflict in women's lives. The difference between family ideals and social circumstance inevitably causes a work life imbalance for women, an imbalance precisely regarded as the most significant factor contributing to fertility decline in contemporary Korean society.

### **Rapid ageing as a consequence of lowest-low fertility**

The ageing of Korean society is briefly discussed here as a consequence of lowest-low fertility in the Republic of Korea, based on data presented in table 2.

**Table 2. Ageing of Korean population and its future: 1960-2050**

Year	Population (Million)	Percentage of total population		Median age	Aged dependency ratio	Ageing index
		65+	80+			
1960	25.0	2.9	0.2	19.0	5.3	6.9
1980	38.1	3.8	0.5	21.8	6.1	11.2
2000	47.0	7.2	1.0	31.8	10.1	34.3
2005	48.3	9.1	1.4	34.8	12.6	47.4
2020	50.0	15.7	3.8	43.7	21.8	124.2
2040	46.7	32.0	9.5	53.1	55.2	316.6
2050	42.3	37.3	13.8	56.2	69.4	415.7

Source: Kim, D. (2006, table 1).

Note: Elderly dependency ratio = (Population aged 65 and over / Population aged 15-64)\*100

Ageing index = (Population aged 65 and over / Population aged 0-14)\*100

The figures until 2005 are based on the yearly Korean census.

It is estimated that the Republic of Korea's population will peak at about 50 million people in 2020. After 2020, the absolute size of the population is expected to rapidly decrease with fertility remaining at the lowest-low level. Conversely

with decrease in population size, the proportion of older persons will increase as fertility continues to decline. In 2000, the proportion of those aged 65 and over among the total population was 7.2 per cent. That year, the Korean society was categorized as an ageing society. In 2005, the proportion of those aged 65 and over rose to 9.1 per cent. It is forecast that the proportion of the elderly will reach 15.7 per cent in 2020 and that the Republic of Korea will then make the transition to an aged society. If fertility does not rebound, those aged 65 and over are estimated to occupy nearly 40 per cent of the total population in 2050. Koreans may soon live in a society where 4 out of 10 Koreans are 65 years old and over.

In the 2005 census, the proportion of persons aged 80 and over was just 1.4 per cent. However, this proportion is projected to increase to 3.8 in 2020 and to 9.5 in 2040. By 2050, the proportion of those aged 80 or over will occupy 13.8 per cent of the total population.

Lowest-low fertility and the subsequent ageing of Korean society are reflected in the ever increasing median age. In the past when fertility was high, the Republic of Korea's population maintained a young age structure with the median age in 1960 at only 19.0 years. When the TFR approached the replacement level in 1980, the median age increased slightly to 21.8. However, the median age rose rapidly to 31.8 when fertility remained below the replacement level and the economic crisis precipitated a steep decline in fertility. In 2005, the median age was recorded at 34.8. The age structure of the Korean population is maturing so quickly that the median age is estimated to reach 43.7 in 2020. In another 20 years, Koreans will live in a "super-aged" society where the median age will be 53.1 in 2040.

Ageing can also be understood on the basis of an ageing index, defined as the ratio of persons aged 65 and over to those aged less than 15. In other words, the index captures the ratio of the old to the number of children. By that definition, low fertility necessarily brings about an increase in the ratio because the denominator is reduced. In 2005, the ageing index stood at 47.4, which corresponds to one old person per two children. However, the deepening ageing of the Korean society has caused the index to rise precipitously. It is estimated that the ageing index will be 124.2 in 2020. That means that the number of persons aged 65 or more will surpass the number of young children by 25 per cent. The index is also projected to continue to increase steeply, so that it will reach 316.6 in 2040 and 415.7 in 2050.

The Republic of Korea is a latecomer to population ageing. The country was categorized as an ageing society only six years ago, in 2000, while Japan had reached that status in 1970, France in 1864, Germany in 1932, and the United States in 1942. It will, however, take only 18 years for the Republic of Korea to make the transition to an aged society, when it took 115 years for France, 61 years

for Italy, 40 for Germany and 24 years for Japan. The United States of America has not yet become an aged society, but estimates suggest that it will take 71 years for it to make the transition. Truly, the Republic of Korea's pace of change from an aged to a super-aged society is amazing.

**Table 3. Pace of ageing in selected countries**

Country	Year at each stage of ageing			Years in the transition	
	7 per cent	14 per cent	20 per cent	7-14 per cent	14-20 per cent
Republic of Korea	2000	2018	2026	18	8
Japan	1970	1994	2006	24	12
France	1864	1979	2020	115	41
Germany	1932	1972	2012	40	40
Italy	1927	1988	2007	61	19
United States	1942	2013	2028	71	15

*Source:* Kim, T. (2006, table 8).

Because of low fertility worldwide, the pace of the transition from an aged society to a super-aged society is usually faster than that from an ageing society to an aged society. It is estimated to take only 8 years for the Republic of Korea to become a super-aged society, by 2026. Other societies are taking much longer in their shift to super-aged status; for example, 41 years for France, 40 years for Germany, 19 years for Italy, and 12 years for Japan.

The Republic of Korea seems to belong to the ranks of “normal” industrial societies when judged from various indicators of marriage, divorce, life expectancy at birth and others, as the indicators for the Republic of Korea are similar to those in other countries of the Organization for Economic Cooperation and Development (OSCD). But those changes have been achieved within a very short time in comparison with Europe and America. The process of rapid industrialization and ageing in the Republic of Korea can be called “compressed” modernization and modernity (Chang, 1999, 2003). Compressed modernity in the Republic of Korea exhibits the characteristics of “growth first, distribution later”, lacking preparation for “rainy days” because modernization has pursued external growth, not internal maturity. The perils of such compressed modernity are typified by the lack of a social safety net, a problematic feature which Korean society experienced during the era of the economic crisis.

With rapid population ageing, Korean society must face a revolutionized transformation at both the individual and societal levels, a revolution accompanied

by previously unimaginable problems. National expenses for pension for the elderly will increase exponentially. Social expenses for health care for that age group will also rise enormously. Increased demand for a more effective social safety net will be heard from socially weak people, mainly the elderly in a super-aged society. Lowest-low fertility as an aggregate result of individual choices in the Republic of Korea will begin to return an unprecedented social and economic burden to individuals and Korean society as a whole in the near future.

### Policy responses to rapid ageing

The Government of the Republic of Korea is developing new policies in response to low fertility and population ageing. Their comprehensive proposal, explained in the “*Saeromaji Plan 2010*”, addresses both issues and can be broadly divided into three areas.

**Table 4. Policy responses to lowering fertility and rapid ageing by the Government of the Republic of Korea**

I. Favourable environment for childbirth and child-rearing	<ul style="list-style-type: none"> <li>a) Emphasize society’s responsibility on childbirth and child-rearing</li> <li>b) Foster family-friendly and gender-equal social structure and culture</li> <li>c) Nurture a healthy next generation</li> </ul>
II. Foundation for improving quality of life in aged society	<ul style="list-style-type: none"> <li>a) Secure income for seniors</li> <li>b) Provide health coverage and protection</li> <li>c) Promote an active lifestyle for seniors</li> </ul>
III. Human Resources in a low-fertility and aged society	<ul style="list-style-type: none"> <li>a) Utilize women’s and senior citizens’ working potential</li> <li>b) Raise competitiveness and efficiency of human capital</li> <li>c) Promote financial foundation for aged society</li> <li>d) Nurture the future development of workforce through senior-friendly industries</li> </ul>

Sources: Presidential Committee on Ageing Society and Population Policy (2006), *Saeromaji Plan 2010*.

First, the proposal seeks to create a favourable environment for childbirth and child-rearing. Second, policies will be implemented to build the foundation by which to improve the quality of life in an aged society. Third, *Saeromaji Plan 2010* hopes to develop the labour force within a low-fertility and aged society. The main contents of the *Saeromaji Plan 2010* are presented in table 4.

In creating a favourable environment for childbirth and child-rearing, the Government of the Republic of Korea is stressing that society should take on more responsibility for raising the next generation. In order to combat the astronomical costs of child-rearing, the Government plans to help families that are fumbling for ways to reduce the financial burden. More concretely, programmes to subsidize the costs of child-rearing and education are to be extended to the middle classes. A proposal by which day care for children aged 0 to 4 would be subsidized according to the family's income level is currently under formulation. In addition, after-school programmes would be expanded, particularly for elementary school students in the lower grades. Such programmes would provide an alternative to expensive private tutoring institutions and reduce the financial burden on families while still providing children with after school learning opportunities. Taxes would also be lowered for households with young dependent children or large families, and the tax system would be reviewed to reduce the costs of health insurance for such families. Additionally, the Government plans to introduce a "birth credit" system in which the family is regarded as paying for the pensions of as many as as much as the number of their children. Korean society has no child allowance system yet, which is also being seriously considered for introduction.

Another area for improvement is to diversify and increase the number and types of child-related infrastructure. Above all, the Government is aware that childcare facilities must expand in number and quality, with efforts made to ensure that services adequately meet demands. They would include both publicly and privately run childcare facilities. As families' needs vary widely, a wide range of options should be offered. After determining what the major needs of families are, the Government will play a central role in implementing a system that can satisfy those requirements.

Lastly, the Government of the Republic of Korea has proposed to expand support for pregnancy and childbirth. The programme will systematize reproductive health care and the health of infants and children. Childless couples attempting to conceive will also find the costs of fertility treatment subsidized in part by the Government plan. Low-income families in that programme will also benefit from the help of maternal aids who will be sent to their households.

One of the key principles behind resolving low fertility in the Republic of Korea is the Government's commitment to creating a family-friendly and gender-equal social culture. The Key issue is to provide an environment in which work and family are compatible. The Government proposes to support companies so that paid maternity leave can be made available at every workplace. Women workers at small to mid-sized firms who take maternity leave after birth can receive up to 3

months of employment insurance protection. In addition, in the case of miscarriage past 16 weeks or stillbirth, 30 to 90 days paid leave will be offered. Starting in 2008, as a paternity leave, male partners will automatically receive three days off to help after childbirth.

Furthermore, childcare leave that originally applied only to parents of children under the age of one will now be extended to apply with children up to three years of age while raising the salary. Those policies include not only full-time workers, but are flexible and can shift according to the needs of working women.

Compounding the difficulties that Korean women face with childcare and childbirth, women encounter problems upon their return to the workforce. Proposals to strengthen support programmes for returning workers are in development and will help mothers maintain their positions even after childbirth.

### **Summary and conclusions**

Korean society has experienced rapid transformation over the last 40 years from successful economic development to democratization in the political sphere. From a demographic perspective, beginning with aggressive family planning policies that were implemented in the 1960s, Korean fertility has also rapidly declined. Within 20 years of the launching of family planning, fertility had declined to replacement levels at an unprecedented rate.

However, once fertility had begun to decline, the trend continued. Although fertility was already falling below replacement level, the Government did not revise its policies. It was only after low fertility had become firmly fixed as a pattern that the Government realized the social consequences of low birth rates and began to reconsider population policies.

Currently the route to marriage seems full of obstacles and many young people choose to postpone marriage. Even those already married find that the fear of unemployment, as well as real income reduction, induces them to delay or even abandon plans to have children. In addition, divorce rates have skyrocketed as families split under pressure, further reducing the birth rate.

Thus the combination of material and psychological factors have colluded to change behaviour and attitudes in the Republic of Korea. Hard work no longer guarantees job security. The rush to secure "safe" jobs for one's offspring has led to an obsession with children's education and spiraling tuition and tutoring fees. Professions such as the law, medicine or Government service that were perceived to be stable have become highly competitive. English language is also considered as a good investment for children's future careers and the costs of such language

education have spun out of control. In what has become an increasingly popular choice, part of the family splits up to send children to study abroad. All those developments have originated with the changes wrought by the economic crisis of late 1997.

The decline in fertility must be seen in a broad perspective. First, economic factors remain a key. High unemployment among the young, instability in the labour market, soaring real estate prices have all contributed to the declining birth rate. Second, with women's educational attainment equal or superior to that of men's and more women being active in the workforce, female Koreans are finding it difficult to locate suitable marriage partners, delaying marriage even further. However, the belief prior to the crisis that life as a housewife was a good option for women has been shattered with the realization that single-earner households were not economically stable in the newly flexible labour market. Third, the persistence of strong traditional values of family and marriage has created conflict between work and home. Korean society consistently ranks among the most conservative in comparative surveys on family values and is as conservative as the Philippines in most respects. However, with the post-crisis sense that men could no longer serve as sole breadwinner, women were also supposed to grab any opportunity to make money. The result is that the traditional gendered division of labour has come into conflict with new attitudes towards women's workforce participation. Women's responsibilities have merely expanded to include both home and the workplace. The tensions arising from that discrepancy have also contributed to the steep decline in fertility in Korean society.

Linked to lowest-low fertility is the Republic of Korea's rapidly ageing society. Compared to the developed nations in Europe, the Republic of Korea has experienced a transition to an ageing and aged society that is unprecedented in world history. While observers might point out that societal indicators are comparable to other post-industrial nations and thus there is no need to worry excessively, the problem lies in the exponential speed of population ageing. Without the time to prepare for an aged society, how will the Republic of Korea be able to cope with such enormous changes?

In 2006, the Government of the Republic of Korea launched its Vision2020 programme as a comprehensive response to the low birth rate and ageing of the population. The burdens of childbirth and child-rearing are no longer to be placed solely on the individual or the family. Instead, the state and society takes responsibility for helping to support families. Most importantly, the Government is formulating policies to address and resolve the conflict between work and home responsibilities for working mothers.

Overpopulation and underpopulation cause unique sets of difficulties. High birthrates or low birth rates are equally problematic. The fears of high fertility rates that were widespread just a few decades ago have shifted into concern over excessively low fertility. The greater difficulty lies in crafting effective policies that can reverse the decline in fertility. While countries often enjoy great success in population control policies that limit high birth rates, once fertility begins to decline, policy measures become much less effective in halting or reversing the adverse consequences.

The causes of low fertility are diverse and complex. Accordingly, a simple solution that can address both low fertility and population ageing is not easily found. From universal factors common to all societies, to culture-specific causes, each society must discover the policy set best suited for its unique combination of ingredients. As research continues on low-fertility and aged societies, investigators can share findings and glean important understandings from each other's work.

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# Low Fertility in China: Trends, Policy and Impact

*The arrival of below replacement fertility in China requires us to revisit population dynamics and review population policies to better address the issues brought forward by low fertility.*

By Baochang Gu\*

China currently is the country with the largest population in the world. The Fifth National Population Census in 2000 reports that the total population of mainland China stands at 1.27 billion (Zhuang and Zhang, 2003), while the 1 Percent National Population Sample Survey (mini-census) carried out in November 2005 reports the total population to be at 1.31 billion (National Statistics Bureau (NSB), 2006).<sup>1</sup> China is also the country with the most stringent and government-directed family planning programme and fertility policy, having experienced a dramatic decline in fertility from 5 to 6 children per woman in the

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1950s to less than 2 in recent years. The 2000 census reports China's total fertility rate (TFR) to be at 1.4 (NSB, 2003). The rapid changes occurring in China's population dynamics call for a review of the fertility transition in China in terms of trends, policy and impact. This article will first discuss the population dynamics ongoing in China in terms of growth, birth rate and fertility and then examine the fertility policy implemented by the Government of China, before exploring the impact of fertility decline in terms of population ageing, gender equality, sex ratio at birth and labour supply.

### Population growth and fertility trends in China

The rapid population growth and its possible negative impact on the socio-economic development of the country has long been a primary concern for the Government and society alike. Even after the 2000 Census reported a TFR well below replacement level, and the historical transition of the reproductive pattern from a typical high fertility to a typical low fertility one had been acknowledged (Chen and Guo, 2006), it was still argued that "while its [the country's] fertility has declined to below replacement at the level of 1.8, the annual births remain at 20 million and population increment at 10 million. The demographic profile of China is characterized by low fertility level with rapid population growth" (Gu, 2003). It was even predicted that the annual births would remain at 20 million and population increment at 10 million. This assertion, however, has been strongly questioned by the situation witnessed in recent years.

**Table 1. Population changes: 2000-2006**

Year	Year-end total population (million)	Crude birth rate (per thousand)	Births (million)	Crude death rate (per thousand)	Deaths (million)	Natural growth rate (per cent)	Population growth (million)
2000	1267.43	14.03	17.71	6.45	8.14	0.758	9.57
2001	1276.27	13.38	17.02	6.43	8.18	0.695	8.84
2002	1284.53	12.86	16.47	6.41	8.21	0.645	8.26
2003	1292.27	12.41	15.99	6.40	8.25	0.601	7.74
2004	1299.88	12.29	15.93	6.42	8.32	0.587	7.61
2005	1307.56	12.40	16.18	6.51	8.49	0.589	7.69
2006	1314.48	12.09	15.84	6.81	8.92	0.528	6.92

Sources: NSB 2005, 2006, 2007.

Table 1 presents data published by the National Statistics Bureau of China based on the annual population change sample surveys and the 1 per cent National Population Sample Survey in 2005. It shows that, while the total population has been continuously increasing since 2000, the annual growth of the population has been decreasing from more than 9.5 million in 2000 to less than 7 million in 2006. The declining trend is quite apparent. While the number of deaths has remained virtually unchanged at about 8 million, the crude birth rate and the number of births have both been decreasing. The birth rate has declined from 14 per thousand in 2000 to 12 per thousand in 2006, while the number of births has declined from close to 18 million to less than 16 million – a decline of about 2 million over a five-year period. As a result, the population growth rate has declined to below 0.6 per cent. In fact the population growth rates of all the 31 provinces of the country are below 1 per cent, except for the three remote provinces of Tibet (1.12 per cent), Ningxia (1.12 per cent) and Xinjiang (1.09 per cent). Consequently, it is no longer tenable to claim that China is a country with “rapid population growth”.

The declining trend of population growth can also be seen from the predictions regarding the timing for reaching China’s peak population. A decade ago, it was predicted that China would not achieve zero population growth until the mid-twenty-first century, with a peak population of 1.6 billion. By the turn of the century, zero population growth was estimated to be achievable by the 2040s with a population of 1.5 billion. The growing consensus now is that it will be reached in the early 2030s with a population less than 1.5 billion. The most recent projections from the United Nations estimate that China’s population will peak in 2030 with a population of 1.458 billion, while India will have a population of 1.506 billion, surpassing China as the largest country in the world in terms of population size (United Nations, 2007).

China has not always been experiencing rapid population growth. In the long history, the population had been growing quite slowly owing to a high birth rate compensated by a high death rate. Rapid population growth as a demographic phenomenon did not occur until the 17th century, when mortality started to decline while the birth rate remained at a high level (Poston, Gu and Luo, 2005). This pattern is consistent with what is suggested by the demographic transition theory. It indicates that rapid population growth is a one-time phenomenon although in China it spanned over several centuries. Now this growth is about to be over after having dominated China’s population dynamics for so long.

Fertility is most commonly assessed by observing a country’s total fertility rate (TFR). China’s measurement of fertility was claimed to be “of very high quality” in the early 1980s (Coale, 1984) but the accuracy of the statistics has been

the focus of debate for many years now, particularly since the mid-1990s. A more reliable estimate was expected to arise with the 2000 population census results. However, surprisingly, the 2000 census reported a fertility level of only 1.22.<sup>2</sup> This has been widely considered “unacceptable”; even the National Statistics Bureau deemed the figure “too low”. More debates arose on China’s fertility level in recent years, the estimations ranging from as low as 1.35 to as high as 2.3 (see Chen and Guo, 2006). Among them, several studies employing various methods have estimated China’s TFR to have ranged “between 1.5 and 1.6” in the year 2000 (Guo, 2004; Retherford and others, 2005; Zhang and Zhao, 2006), while the official figure remains at “about 1.7 to 1.8” (Chen and Guo, 2006).

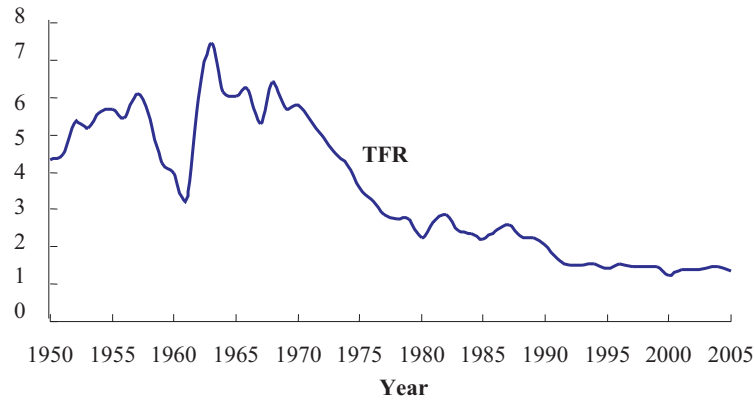
**Table 2. Age-specific fertility rates and total fertility rate in China: 2000-2005**

Age-specific fertility rate (per thousand)	Year					
	2000	2001	2002	2003	2004	2005
15-19	5.96	2.70	2.68	5.25	5.56	6.34
20-24	114.49	107.70	113.15	122.67	120.85	114.46
25-29	86.19	115.37	106.09	102.44	107.60	91.70
30-34	28.62	40.06	42.68	38.28	42.21	40.22
35-39	6.22	9.22	9.68	8.65	10.14	10.98
40-44	1.46	1.83	1.88	1.77	1.93	2.05
45-49	0.68	0.60	0.37	0.56	0.41	0.77
<b>TFR</b>	<b>1.22</b>	<b>1.39</b>	<b>1.38</b>	<b>1.40</b>	<b>1.44</b>	<b>1.34</b>

Sources: 2002: 2000 Population Census, 2001-2005: Annual Population Change Sample Surveys.

Despite the ongoing debate, the National Statistics Bureau continues to publish the detailed fertility information by age, sex, and parity every year based on the results of the annual population change sample surveys. The age-specific fertility rates and total fertility rates in China for 2000-2005 are shown in table 2, demonstrating a consistent trend of fertility at around 1.4 in the early twenty-first century. Whatever the method employed and the data source used to determine the fertility level in China, it is hardly refutable that China’s fertility has now fallen below the replacement level of 2.1. China’s fertility transition has definitely reached the stage of a low fertility (see figure 1).

**Figure 1. Total fertility rate in China: 1950-2005**



*Source:* NSB, 2005.

### **Fertility policy and policy fertility in China<sup>3</sup>**

It is well-known that China's fertility decline and its population control have relied heavily on a draconian fertility policy and a strong family planning programme. However, less is known about the country's fertility policy, a national priority for over two decades, which is actually highly localized. As a result, China's national fertility policy has been known mostly as a "one-child policy".

Following numerous modifications made to the initial one-child policy over two decades, what is now the desired or expected fertility level for each of China's provinces and for China as a whole? To quantify the outcome of fertility policies in various localities and populations across the country, the term policy fertility was coined as a quantitative indicator summarizing the fertility level implied by the policies on fertility implemented in a given region.

Fertility policies in China can be grouped into four categories: (a) one-child policy (one child per couple); (b) 1.5 children policy (those whose first child is a girl may have a second child); (c) two-children policy (two children per couple); and (d) three-children policy (three children per couple).

The areas with the most stringent fertility policy are mainly those of municipalities directly under the jurisdiction of the central government, provincial capital cities. Most prefectures with a policy fertility of 1.3-<1.5 are located in eastern and central China, whereas prefectures with the highest policy fertility (above 2.0) are mostly found in the central and western regions of the country.<sup>4</sup> These are usually areas with a high concentration of minority populations.

The population distribution by policy fertility for China as a whole is presented in table 3. Slightly more than a third of the population (35.4 per cent) falls into the one-child policy category. Over half of the total population of the country (53.6 per cent) falls into the 1.5 children policy category. Combined, these two categories encompass nearly 90 per cent of China's population, which is subject to a below-replacement fertility policy. Only 9.7 per cent of the population falls within the two-child category, while the percentage of population under the three-child policy is even more trivial (about one per cent).

**Table 3. Demographic distribution of fertility policy, China, late 1990s**

Policy	Population (million)	Percentage
One-child policy	439.16	35.4
1.5-children policy	664.94	53.6
Two-children policy	120.33	9.7
Three-children policy	16.13	1.3
<b>Total</b>	<b>1,240.56</b>	<b>100.0</b>

Which proportion of China's population could have only one child, as per the policies summarized above? Taking the one-child couples in the 1.5-children policy areas into account, 63 per cent of all couples in China would end up with only one child, 36 per cent two children, and one per cent of the population only is allowed to have three or more.

The estimated policy fertility levels for China's provinces are presented in table 4. Next to the policy fertility level for each province is the observed total fertility level as reported in China's 2000 census (NBS, 2003). Table 4 shows that the average policy fertility among Chinese provinces varies widely, from a low of one or slightly higher (1.06) in Shanghai and Jiangsu, to a high of two or more

(2.37) in Xinjiang. China's provinces can therefore be grouped into four categories according to their fertility policy. There are six provinces classified in category one with a policy fertility level of less than 1.3. There are 12 provinces in category two, with policy fertility between 1.3 and 1.5. Seven provinces are classified in category three with a policy fertility ranging from above 1.5 to below two. Finally, five provinces fall in category four, where policy fertility is above two. All but one (Hainan) of these latest provinces are located in the western region of China. Moreover, at the provincial level, policy required and census observed fertility levels are very close to each other. As seen in table 4, whereas only six of China's 30 mainland provinces (excluding Tibet) have a policy fertility level at 1.3 or lower, 12 provinces according to the 2000 census reported a fertility level of 1.2 or lower. The differences between the policy's required fertility and the census observed fertility for the 30 provinces are generally quite marginal. Relatively large differences (above 0.5 children) are found only in three provinces (Jiangxi, Guizhou, and Xinjiang).

Subnationally, the distribution of fertility policy follows a gradient of economic development levels, from east to west. The economically most developed eastern region has the largest share of prefectures and population, as well as the highest share of population falling under the requirement of the one-child rule (69.6 per cent). The overall policy fertility level for this region is only 1.39. The economically least developed western region has the second largest share of prefectures (36.7 per cent), but the smallest share of national population (28.8 per cent). Overall the policy fertility requirement for the region is also the most lenient (1.56), allowing over 40 per cent of the population to have two or more children. The policy targeted fertility for the central region is moderate and stands at 1.47.

Thus, as explained above, China's fertility policy encompasses much variation, both geographically and demographically. Nevertheless, the majority of the Chinese population (more than 70 per cent) lives in areas where the policy fertility level ranges from 1.3 to 2.0 children per couple. Meanwhile, the one-child policy remains a core element of China's fertility policy and inevitably exerts an enormous impact on the country's demographic processes. Should all couples living in various regions follow strictly the current fertility policies, more than 60 per cent of Chinese couples would still end up having only one child. Based on local fertility policies and corresponding population distributions, the overall average fertility targeted by the fertility policies for China as a whole was estimated to be 1.47 at the end of the 1990s. This is a level far below the replacement.



**Table 4. Policy fertility and observed fertility of China's provinces, circa 2000**

Province	Policy fertility	Observed fertility	Difference (P - O)	Province	Policy fertility	Observed fertility	Difference (P - O)
<b>Between 1.0 and 1.3</b>				Anhui	1.48	1.5	-0.02
Shanghai	1.06	0.7	0.36	Fujian	1.48	1.1	0.38
Jiangsu	1.06	1.0	0.06	Shanxi	1.49	1.7	-0.21
Beijing	1.09	0.7	0.39	<b>Between 1.5 and 2.0</b>			
Tianjin	1.17	0.9	0.27	Henan	1.51	1.7	-0.19
Sichuan	1.19	1.4	-0.21	Shaanxi	1.51	1.3	0.21
Chongqing	1.27	1.5	-0.23	Guangxi	1.53	1.8	-0.27
<b>Between 1.3 and 1.5</b>				Gansu	1.56	1.3	0.26
Liaoning	1.38	1.1	0.28	Hebei	1.59	1.5	0.09
Heilongjiang	1.39	1.0	0.39	Inner-Mongolia	1.60	1.2	0.40
Guangdong	1.41	1.1	0.31	Guizhou	1.67	2.4	-0.73
Jilin	1.45	1.0	0.45	<b>2.0 and above</b>			
Shandong	1.45	1.3	0.15	Yunnan	2.01	2.0	0.01
Jiangxi	1.46	2.0	-0.54	Qinghai	2.10	1.7	0.40
Hubei	1.47	1.1	0.37	Ningxia	2.12	1.8	0.32
Zhejiang	1.47	1.2	0.27	Hainan	2.14	1.8	0.34
Hunan	1.48	1.5	-0.02	Xinjiang	2.37	1.7	0.67

*Source:* Observed fertility based on the 2000 population census (NBS, 2003), in which the national total fertility rate was again reported at 1.4.

## **Impacts of low fertility in China**

The impact of low fertility is not a new topic for demographers. It was, for example, addressed as early as in December 1991 in a Seminar on Impact of Fertility Decline on Population Policies and Programme Strategies: Emerging Trends for the Twenty-First Century held in Seoul (KIHASA/ESCAP, 1992), during which the case of China was discussed (Gu and Peng, 1992). Low fertility will have repercussions, among others on population ageing, gender equality, sex ratio at birth and infant mortality, and labour supply.

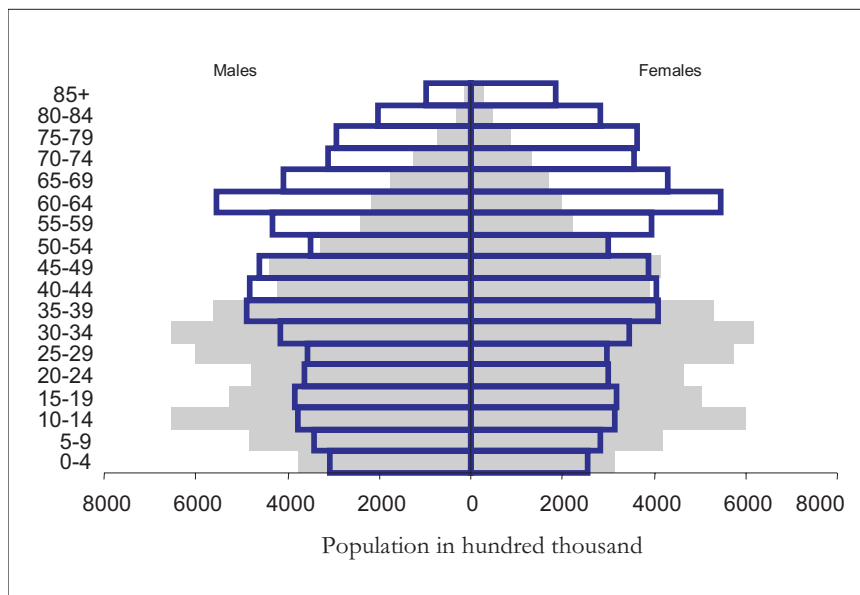
Along with the decline in fertility and the improvement in life expectancy, population ageing will naturally arise as a demographic consequence. The faster the fertility declines the faster population ageing occurs. Ageing started to attract wider attention in China after the release of the 2000 census results which reported the country's population aged 60 and above to exceed 10 per cent, while persons aged 65 and above accounted for more than 7 per cent – a definite indication of China becoming an ageing society. More recent data from the 2005 mini-census reveal that China's population aged 60 and above accounts for 11 per cent and those aged 65 and above for about 8 per cent. Most importantly, in terms of actual size and numbers, these proportions translate into approximately 144 million persons aged 60 years and above and 100 million aged 65 and more.

Support to the elderly becomes an acute social issue to be addressed, particularly in China's rural areas. Traditionally, rural people have been relying heavily on the younger generation for elderly support, but with the sharp reduction in the number of children, the practice becomes no longer feasible. Meanwhile, the coverage of the social security programme for the rural population is unlikely forthcoming in the near future. In addition, owing to accelerated population movements triggered by the market-oriented economy, an increasing number of young people leave their native villages. As a result, although fertility in rural areas is higher than in urban areas, the pace of population ageing turns out to be faster in rural areas than in urban areas. Compared with 1982 (the Third National Census), the number of urban elderly aged 65 and above has increased from 4.5 per cent to 6.4 per cent in 2000, while in rural areas, it increased from 5.0 per cent to 7.5 per cent (Gu, 2006). "Unlike the case in the developed countries however, population ageing occurs in China far before the realization of its modernization" (Gu and Peng, 1992).

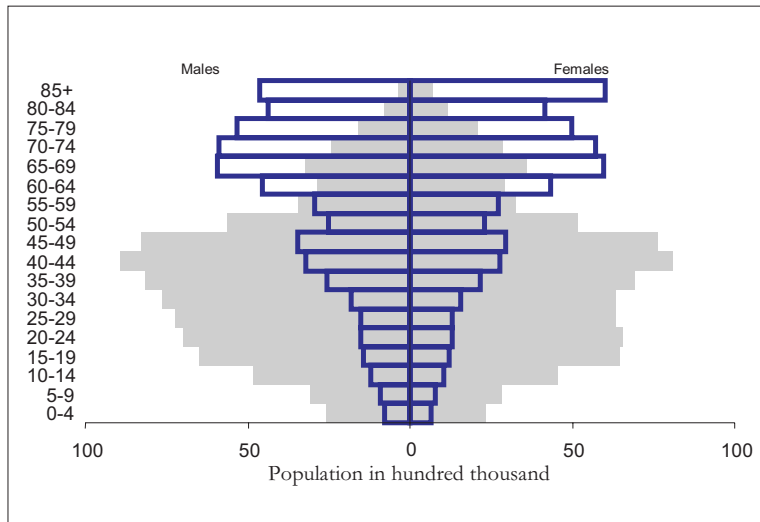
Population ageing extends far beyond the issue of elderly support. This process implies an overall transformation of the entire society. It is estimated that

by the mid-twenty-first century, more than one third of China's population is likely to be aged 60 and above, with more than 100 million 80 years and above, which will mean that less than every 2 young adults will have to support one older person. Figures 2, 3 and 4 present comparisons of population pyramids between 2000 and 2050 for China as a whole as well as Shanghai and Beijing, the two largest metropolitan cities in China.<sup>5</sup> It shows that within a few decades, China's population structure will evolve from a pyramid shape to a pillar shape, while for Shanghai and Beijing, the population pyramid will simply turn upside-down. The challenges a society with such an ageing population structure will face remain to be answered. To begin with, childbearing and child-rearing facilities are likely to become superfluous while by contrast services for older persons will become in dire need. Also, people will tend to reduce their consumption in order to save and pay for their own medical costs in old age. The labour supply will also start shrinking.

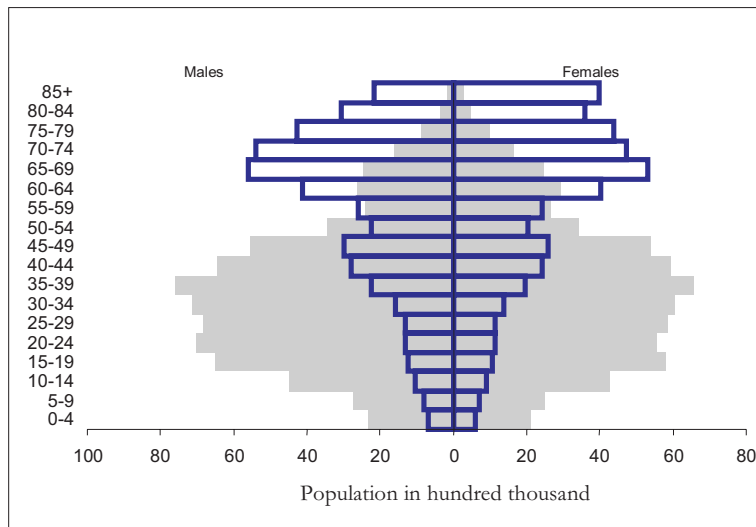
**Figure 2. Population structure of China, 2000 (in shaded areas) and 2050**



**Figure 3. Population structure of Shanghai, 2000 (in shaded areas) and 2050**



**Figure 4. Population structure of Beijing, 2000 (in shaded areas) and 2050**



Along with mortality decline and increase in life expectancy, the sexual disparity in life expectancy is becoming more apparent. Table 5 presents the life expectancy by sex in China for a few selected years over the last two decades. While the overall life expectancy has been increasing from 67 to 73 years, the disparity between male and female has widened from less than 3 years in the early 1980s to more than 4.6 years in the early 2000s. This gap can be expected to further widen in the future. Because women tend to live longer than men, more women than men will survive in old age. The higher the age, the lesser the number of men. This trend can also be observed from the population pyramids shown in figures 2, 3 and 4. At high ages, the bar for female tends to be longer than that for male. The 2004 annual sample survey suggests that the sex ratio by age tends to fall below 100 at age 65 and even below 60 at age 80. In this regard, the issue of population ageing heavily concerns women. However, the impact of ageing is not only on elderly women but also on women at young and middle ages. The responsibility of elderly care often lies on the shoulders of women, i.e. daughters or daughters-in-law. Should they devote more time and energy to their parents, they will naturally have less time and energy for their career and for making other contributions to the society. As life expectancy grows, so does the period during which older persons will need care, giving rise to situations in which younger elderly will take care of older elderly. What is a plus in terms of family support will likely translate into a minus for these care-givers' careers and the society at large (Gu and Peng, 1992). This becomes an issue related to population ageing and women's status. Population ageing seems to call for an overall review of social functions and social structures.

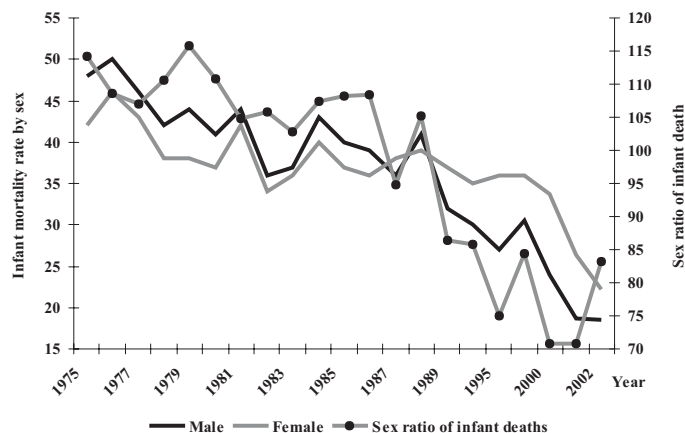
**Table 5. Life expectancy by sex in China for selected years: 1981 2002**

Year	Total	Male	Female	Difference in years (M-F)
1981	66.77	66.28	69.27	2.99
1990	68.55	66.84	70.47	3.63
1996	70.80	68.71	73.04	4.33
2000	71.40	69.43	73.33	-3.90
2001	72.31	70.24	74.59	4.35
2002	72.88	70.69	75.25	4.56

Source: NSB, 2003.

Another issue related to rapid fertility decline is arguably the abnormal sex ratio at birth (SRB) as well as the infant mortality. China's sex ratio (number of males to 100 females) among new-born babies has risen since the mid-1980s. The 1990 population census reports China's SRB to stand at 111, much above the acceptable level observed internationally. The abnormality of the country's SRB raised much concern and gave rise to an animated debate about the authenticity of the reported abnormality (Zeng and others, 1993; Gu and Roy, 1995). The debate has been continuing for about ten years until the release of the 2000 population census results, which reports China's SRB at 117, even higher than previously reported. The abnormality of the SRB has thus been observed in China for two decades. While China is not the only population with a skewed SRB, it is the population with the most abnormal SRB for a longest period in the world.

**Figure 5. Infant mortality rate by sex and sex ratio of infant deaths in China for selected years: 1975-2002**



Source: NSB, 2003.

Over the last two decades, not only did we witness a rising sex ratio at birth in China but also an increasingly abnormal infant mortality rate (IMR) by sex. While the overall IMR has been declining, the IMR for girls rose abnormally higher than that for boys. The sex ratio of infant deaths plunges below 100, and even more so in recent years (see figure 5). The excessively high sex ratio at birth and the excessively low sex ratio among infant deaths can be seen as two sides of the same coin of sexual selection in childbearing, i.e. “before-birth solution” and “after-birth solution”, and reflects sexual discrimination in childbirth and child survival

(Li, Wei and Jiang, 2006). It has been much discussed that among other factors, the occurrence of abnormal SRB has a lot to do with the pace of fertility decline, which in turn intensifies the conflict between the number and sex of children people intend to have (Gu and Roy, 1995).

Finally, the labour supply, as impacted by low fertility, ought to be briefly discussed. A smaller birth cohort will naturally bring about a smaller labour force in later decades. Assuming that the current fertility continues, China will experience a rapid decline in labour supply in the late 2020s, from 966 million to 761 million by the mid twenty-first century. While the size of the labour force will remain huge in terms of actual numbers, the reduction of the labour population will be quite sharp, declining by about 100 million per decade, or 10 million per year. The labour population itself will age as well (Guo and others, 2006). A relative “labour shortage” has been reported since the spring of 2004. Though it occurs owing to various reasons, some Chinese economists have started to claim that China’s labour force has turned from a period of “abundant supply” to a period of “limited surplus” (Cai and Wang, 2006). It is claimed that in the next few years (around 2013), the growth of the labour force population in China will even approach zero (Cai and Du, 2007).

### **Conclusions**

This article has sketchily discussed the fertility transition ongoing in China with regard to population growth and fertility decline, fertility policy as measured by policy fertility, as well as the impact of low fertility on population ageing, gender equality, sex ratio of newborns and infant deaths, as well as labour supply. The arrival of below replacement fertility in China requires us to revisit population dynamics and review population policies to better address the issues brought forward by low fertility. “Low fertility” as a demographic phenomenon has been observed in Europe as well as in Asia, in developed and developing countries, in traditionally “high fertility” countries and “low fertility” countries alike (Gubhaju and Moriki-Durand, 2003; Morgan and Taylor, 2006). There are 65 countries accounting for 43 per cent of the world population with a fertility below replacement, 31 countries among them have a TFR less than 1.5 and more countries are expected to reach the “very low fertility” level. “Below replacement fertility” has gradually become a global trend in population dynamics and a genuine concern for the international community (United Nations, 2000). It is even claimed to be “the norm in post-transitional societies” (Demeny, 1997; Bongaarts, 2001). The understanding of this trend of below replacement fertility and its implications for policy response is still in its infancy. If China wishes to avoid serious negative consequences associated with below-replacement fertility

in the long run, the need to revisit of China's current fertility policy is compelling (Wang, 2005).

### **Endnotes**

1. The discussion in this article has excluded the three areas of Hong Kong, China; Macao, China and Taiwan Province of China.
2. NSB (2003) later adjusted the 2000 total fertility rate to 1.4 according to the short form of the census.
3. This part is based on Gu, Wang, Guo and Zhang, 2006; Gu, Wang, Guo and Zhang, 2007.
4. In a classification commonly used in China, the 31 mainland provincial units are divided into three broad economic regions: the most developed "East" region, which includes 11 provinces of Beijing, Tianjin, Hebei, Liaoning, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong, Hainan; the least developed "West" region, which includes 12 provinces of Chongqing, Sichuan, Guizhou, Yunnan, Tibet, Shaanxi, Gansu, Qinghai, Ningxia, Xinjiang, Inner-Mongolia, Guangxi; and 8 provinces in between as "Central" region, which includes Shanxi, Jilin, Heilongjiang, Anhui, Jiangxi, Henan, Hubei, Hunan.
5. Developed by Cai Yong based on data from 2000 population census.



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# The Path to Below Replacement Fertility in the Islamic Republic of Iran

*Recent statistics have shown that the majority of provinces in the Islamic Republic of Iran have experienced below replacement levels of fertility. A rise in age at marriage and declines in the progressions to the second and third order births associated with reduction in desired family size have contributed to low fertility in this country.*

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Meimanat Hosseini-Chavoshi and Peter McDonald\*

Low fertility has become an important area of demographic research as fertility in many countries has fallen to levels well below replacement. Advanced countries have experienced low fertility trends for decades (United Nations,

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2000), and some are experiencing lowest-low fertility (i.e. TFR below 1.3) (Kohler, Billari and Ortega, 2002; Caldwell, 2006). Less developed countries, by contrast, have recently experienced low fertility levels, and there no longer seem to be any barriers to most countries reaching replacement level and subsequently falling below that level. According to the United Nations, by 2000, around 44 per cent of the world population lived in countries where fertility had fallen below the replacement level. This proportion is expected to increase to 67 per cent by the year 2015 (United Nations, 2000). According to the United Nations median variant projections, approximately 80 per cent of the world's population is projected to live in countries with below-replacement fertility before mid-century (United Nations, 2002a). Several East and North-East, as well as North and Central Asian countries have attained below replacement in recent decades (Gubhaju and Moriki-Durand, 2003; Atoh, 2001; Hirschman, Chamrathirong and Guest, 1994; Knodel, Chamrathirong and Debavalya, 1987). However, countries have attained low fertility in different ways (Perelli-Harris, 2005) and thus, every country and region may have a unique experience in reaching low fertility. For instance, Hirschman, Chamrathirong and Guest (1994) have argued that the distinctive attributes of East Asian countries such as Hong Kong, China; Singapore; the Republic of Korea; and Taiwan Province of China in terms of rapid economic growth and Confucian cultural heritage would not make them a model for fertility decline in other countries in Asia.

The consequences of low fertility at both the macro- (national/country) and micro- (family/individual) levels also may differ according to the timing and the pathways by which low fertility is attained. Advanced countries today are now experiencing such demographic, social and economic consequences of low fertility as negative population growth and projected shortages of labour.

Although studies have focused on low fertility in recent years, theories of low fertility remain in the early stages of development. Social scientists have proposed different explanations for the fall of fertility to below-replacement level or to lowest-low fertility. Postponement of marriage and childbearing is one of the main factors pushing fertility in many advanced countries to the lowest end (Bongaarts and Feeney, 1998; Bongaarts, 2002). Post-modern materialistic views towards life and childbearing along with the second demographic transition (Lesthaeghe and Willems, 1999) and economic insecurity (Kohler, Billari and Ortega, 2002) have been mentioned as other factors leading to low fertility. The difficulties confronting women arising from coherence in the levels of gender equity in individual-oriented and family-oriented societies have also been proposed as one of the main forces driving fertility to a low level (McDonald, 2000b). However, given different pathways by which below-replacement is achieved (Perelli-Harris,

2005), studies should take into account the social context (McNicoll, 1980, 1985, 1994; Greenhalgh, 1988: 630) in analysing family-formation behaviour.

The Islamic Republic of Iran experienced a sharp fertility decline during the late 1980s and throughout the 1990s, and reached replacement-level fertility in 2000. In 1996, only four provinces displayed below-replacement fertility, but recent statistics have shown that this level of fertility is no longer exceptional. In 2003, the TFR in rural areas of the majority of provinces was below 2.1. The rapid fall of fertility as well as the attainment of such low levels of fertility in an Islamic context calls for attention.

The key instances of fertility change in this country have been: the onset of modest fertility decline, mainly in urban areas, in the early 1970s; a resurgence in fertility rates from 1976 to 1984; and the renewed onset of fertility decline since 1984 (Aghajanian and Mehryar, 1999; Abbasi-Shavazi, 2000, 2002a, 2002b; Mehryar, 2005). Those 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 broad relationship between dramatic political events and fertility trends. The obvious linkage would be the shifts in population policy that took place over the period: antinatalism and a government-sponsored family planning programme in the later stages of the Shah's regime; denunciation of family planning and encouragement of early marriage in the post-Revolutionary period; followed by a pragmatic return to antinatalism in the post-1988 period (Abbasi-Shavazi, Mehryar, Jones and McDonald, 2002).

This article aims to review the phenomenal fertility change which occurred in the Islamic Republic of Iran during the period 1972-2003 and to discuss the pathways by which the below replacement-level fertility have been achieved in this country. Mean age at first marriage and age at the first and last birth are analysed. Progression to second and third birth are also examined. Finally, the future prospects for fertility as well as their policy implications are discussed.

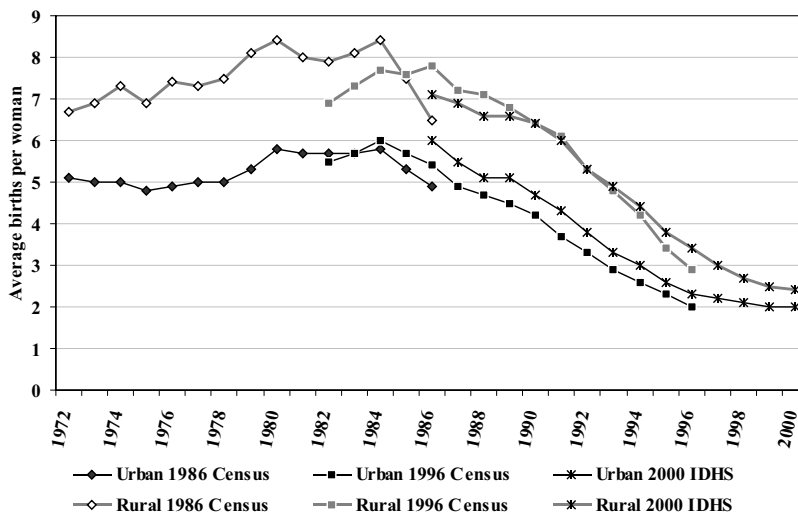
### **Fertility levels in the Islamic Republic of Iran: 1972–2000**

The fertility transition in the Islamic Republic of Iran has passed through different phases from 1972 to 2000. TFR decreased from around 7.7 in 1966 (Amani 1970, 1996) to around 6.5 in 1976 (Padidar Nia, 1977: 133-136). Then it rose again to 7.0 by the end of the 1970s during the Islamic Revolution. Although, no specific population policy was introduced after the revolution, the new Government adopted a pronatalist approach. The legal minimum age at marriage for girls and boys was reduced from 15 and 18 to 13 and 15 years, respectively

(Azimi, 1981). The war with Iraq created a pronatalist atmosphere by which families were encouraged to have more children and economic incentives were provided. Despite this, the high fertility regime was short lived and fertility started to decline by the mid-1980s. TFR declined from 7.0 in 1980 to around 5.5 in 1988. The decline of fertility was slow until the Government population policy was reversed and a new family planning programme was officially inaugurated in 1989. The TFR fell sharply from that time, dropping from 5.5 in 1988 to around 2.8 in 1996, and then reached replacement level by 2000 (Abbasi-Shavazi and McDonald 2005, 2006).

Trends in TFR for rural and urban areas of the Islamic Republic of Iran from 1972 to 2000 are shown in figure 1. As depicted, fertility rates were much higher in rural areas than in urban areas during the 1970s. This is consistent with the findings of earlier studies (Aghajanian, 1991, 1995; Mehryar and Gholipour, 1995; Mirzaie 2005).

**Figure 1. Own-children estimates of total fertility rates for rural and urban areas of Iran (Islamic Republic of), 1972-2000**



Sources: All age-specific and total fertility rates at national, rural-urban and provincial levels in this article were calculated by the first author using the own-children method applied to the 1986 and 1996 censuses, and the 2000 Iran Demographic and Health Survey. Only figures for urban and rural areas at the national level during 1972-1986 are from Nourollahi (2000). Also see Abbasi-Shavazi and McDonald (2005, 2006) for further details.

Interestingly, the trends in fertility in both rural and urban areas during the 1980s and 1990s mirror those of the national level discussed earlier. The IDHS results showed that fertility continued to decline by the mid-1990s, although the trends in both rural and urban areas have slowed down recently. The large gap between TFRs in rural and urban areas has narrowed substantially. The total fertility rate in urban areas reached below replacement fertility by the late 1990s, and recent statistics show that rural areas also attained replacement level in recent years. Fertility in rural areas declined from around 4.8 in 1993 to 2.7 in 1998 and 2.4 in 2000. Using Vital Horoscope Data (VHD) collected by health houses during 1993-2003, Naghavi and others (2005) demonstrated that the TFR in rural areas of Islamic Republic of Iran declined from 3.9 in 1993 to 2.4 in 1998 and 2.2 in 1999. The level remained stable at 2.0 from 2000 to 2003.

The fertility rates based on the IDHS are slightly higher than those obtained from the VHD. This may be because the reference date for the VHD is the Iranian calendar year, while that of the IDHS is the census year. For instance, the data for the year 2000 based on the IDHS refers to the births that occurred from October 1999 to September 2000, while those obtained from the VHD are based on the births that occurred from March 2000 to February 2001. Given the declining trend of fertility, it is likely that the difference between the results is due to lower fertility during the calendar year upon which the VHD is based. Another reason is that the IDHS covers all population of rural areas including mobile nomads and remote rural places – not under coverage of the health houses – while the data from the VHD is only based on the population of rural areas under the coverage of the health houses. Thus, it is possible that rural areas which are not under the coverage of the health houses experienced higher fertility than those under the coverage of health houses. Despite the differences, the two data sets confirm that Iranian rural areas have also been experiencing replacement-level fertility in recent years.

An examination of total fertility rates by province suggests that fertility transition has been socially inclusive; that is, fertility at the provincial levels had converged to the national level by the end of the period (see also Abbasi-Shavazi, 2000, 2002b). However, provinces located on the borders of the country such as Sistan and Baluchistan and Hormozgan still exhibit higher fertility than other provinces. Signs of the attainment of below-replacement fertility in the Islamic Republic of Iran appeared during the early 1990s. The four developed provinces of Gilan, Semnan, Tehran and Isfahan reached a below-replacement level of TFR by 1994-1996 (Abbasi-Shavazi, 2001). The IDHS results also revealed that, by the end of the 1990s, below-replacement fertility was no longer the exception, as around 50 per cent of provinces had had that experience.

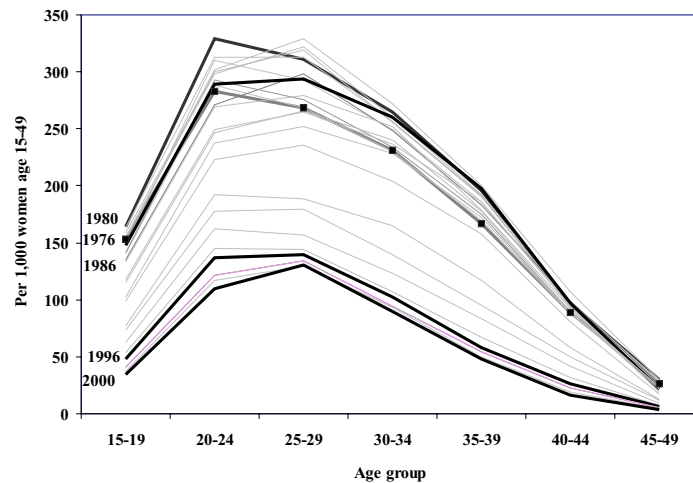


### Fertility patterns, 1972–2000

Figure 2 shows age-specific fertility for the period 1976–2000. The own-children estimates of ASFRs for single calendar years from 1972 to 2000 based on the 1986 and 1996 censuses as well as the 2000 IDHS have been presented elsewhere (Abbasi-Shavazi and McDonald, 2005, 2006).

In 1976, the highest age-specific fertility rate was recorded for age group 20–24 (283 per 1,000 women) followed by age groups 25–29 (268 per 1,000 women) and 30–34 (231 per 1,000 women). This age pattern remained in place in 1980 although fertility had risen overall. From 1976 and 1980, rises in fertility were evident for all age groups. However, during the first half of the 1980s, although the TFR remained high and nearly constant, the age pattern shifted towards later childbearing and the peak of childbearing occurred in age group 25–29. The falls in fertility at younger ages were matched by rises at older ages. Thus, Iranian women had a relatively early childbearing pattern in the first year of the revolution consistent with the pronatalist ideology adopted by the Government. This behaviour did not last long and as age at first marriage increased, fertility shifted to a relatively later childbearing pattern.

**Figure 2. Own-children estimates of age-specific fertility rates for the Islamic Republic of Iran, 1976, 1980, 1986, 1996 and 2000**



*Source:* All age-specific and total fertility rates at national, rural-urban and provincial levels in this paper were calculated by the first author using the own-children method applied to the 1986 and 1996 censuses, and the 2000 Iran Demographic and Health Survey. Only figures for urban and rural areas at the national level during 1972–1986 are from Nourollahi (2000). Also see Abbasi-Shavazi and McDonald (2005, 2006) for further details.

The figure depicts a decline in fertility from 1986 to 1990, particularly in the young age groups, 15-19 and 20-24. Age-specific fertility rates in age groups 25-29 and 30-34 were also lower in 1990 than 1986. However, there was a remarkable fall in fertility in all age groups during the 1990 to 1996 period, partly owing to the revival and successful implementation of the family planning programme during this period. Age-specific fertility rates continued to fall from 1996 to 2000, although the rate of decline was slower as there was less scope for further decline during this period. There was also an indication of a further shift towards delayed childbearing during the last period.

ASFRs for rural and urban areas for the period 1976-2000 (data not presented here) revealed that, in general, the trends in age patterns of fertility for both rural and urban areas during the period were similar to those at the national level (Abbasi-Shavazi and McDonald, 2005; 2006). The gaps between the TFRs in rural and urban areas had narrowed considerably by the end of the 1990s. The expansion of education and health networks in post-revolutionary Iran reduced the gap between rural and urban areas that was apparent prior to the revolution. This has contributed to the reduction of fertility in rural areas.

### **Pathways to below-replacement level fertility**

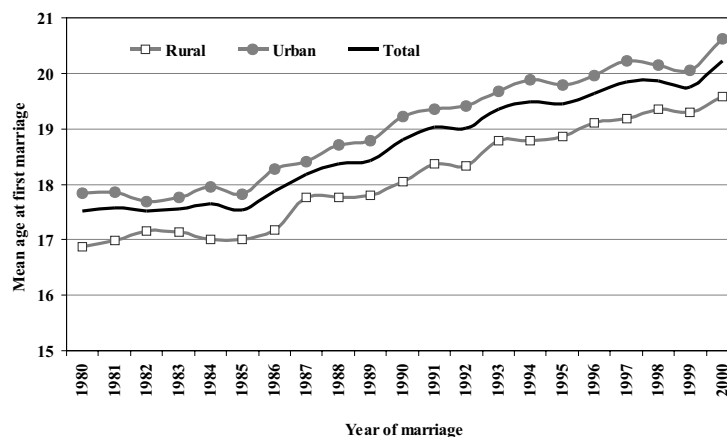
#### **Change in mean age at first marriage**

In any study of fertility, marital status and change in marriage patterns are important to the extent that they affect three stages of reproduction: intercourse, conception and parturition. Change in age at marriage has been an important factor in societies where below-replacement level fertility has been attained. For example, Jones (2004) noted that rising age at marriage has contributed to the fall of fertility in Asian countries in recent decades. Delayed marriage has been a principal factor accounting for the fertility decline in Japan since the early 1970s (Ogawa and Retherford, 1993; Ogawa, 2003).

A profound change in mean age at marriage has occurred in the Islamic Republic of Iran over the last two decades (figure 3). The extent of the change is concentrated in the years since the mid-1980s. Pronatalist ideology and encouragement of early marriage at the time of the Islamic Revolution kept age at first marriage constant during the first half of the 1980s. However, women's mean age at marriage started to rise in 1985 and by 2000, the figure had risen to around 20.2 years. The change in mean age at marriage is consistent with fertility transition over the last two decades. Interestingly, the stall of fertility decline during 1979-1984 matches the constant mean age at marriage during the same

period. By contrast, the fall of fertility since 1985 has been accompanied by a sharp increase in age at marriage.

**Figure 3. Mean age at first marriage, women married from 1980 to 2000 by area of residence, Iran (Islamic Republic of)**



Source: IDHS, 2000.

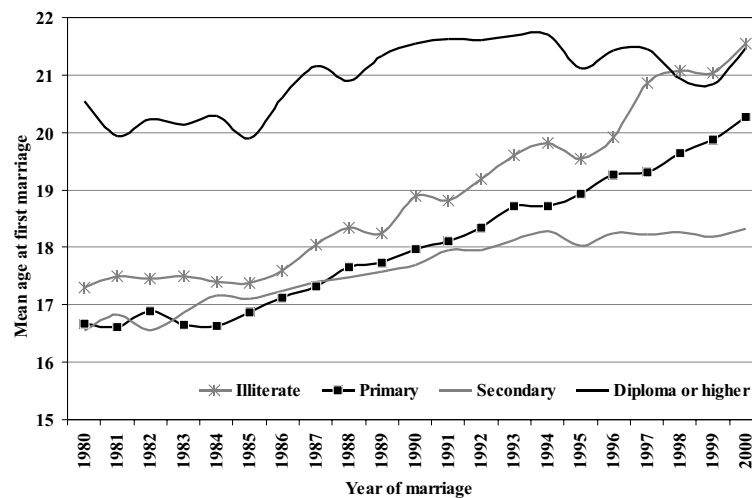
The female singulate mean age at marriage (SMAM) and age-specific proportions married at the 1976, 1986 and 1996 Iranian Censuses were examined in an earlier study (Abbasi-Shavazi, 2000). The results showed that SMAM for the Islamic Republic of Iran increased slightly from 19.5 in 1976 to 19.7 years in 1986, followed by a sharp increase, by around 12 per cent, from 19.7 to 22 years between 1986 and 1996. 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 per cent of women were ever-married by ages 15-19, and 78 per cent by ages 20-24. These figures declined by 2 to 3 percentage points between 1976 and 1986. However, there was a sharp decline in proportions married at all ages, except ages 40-44 and 45-49 between 1986 and 1996. The declines at ages 15-19 and 20-24 were substantial. The proportion of ever married women at ages 15-19 declined from 33.5 per cent in 1986 to 18.6 per cent in 1996. The percentage of women married at ages 25-29 decreased also from 90 in 1986 to 85 in 1996.

There has been a sharp increase in the mean age at first marriage for both rural and urban areas from the mid-1980s. The mean age at first marriage increased from around 16.8 for rural areas and 17.7 for urban areas in 1985 to around 19.5 and 20.5 in 2000, respectively (figure 3). In rural areas, the 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 22.0. In both urban and rural areas, marriages were delayed to later ages with sharp reductions in the proportions ever married at ages 15-19 and 20-24 (Abbasi-Shavazi, 2000).

The change in marriage pattern is consistent with the other socio-economic changes that have unfolded in the Islamic Republic of Iran over the last two decades. The educational attainment of Iranian women during the past 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 per cent in 1956 to 35 in 1976, to 74 per cent in 1996 (Abbasi-Shavazi, 2000; 2002a) to 76 per cent in 2000 (Ministry of Health and Medical Education, 2002) and to 80 per cent in 2006 (Statistical Center of Iran, 2007). There is a large gap between the mean age at first marriage for women with diploma and higher as compared with other levels of education.

**Figure 4. Mean age at first marriage by level of education, marriages from 1980 to 2000, Iran (Islamic Republic of)**



Source: IDHS, 2000.

The recent high age at marriage for illiterate women and women educated only up to the primary school level is due to the fact that, by 2000, this represented a very small and select group (figure 4). As education increases, the marriage market is not favourable for illiterate and lowly educated women and, thus, there

will be less chance for them to marry. With the rise in female education and with a marriage squeeze in the country (Doroudi Ahi, 2001), illiterate and lowly educated women are disadvantaged. By contrast, girls who pursue their education to the tertiary level prefer to postpone their marriage until they graduate from university or until they secure a job for themselves. However, girls with secondary education are more likely to marry at younger ages. This may be partly because they leave school in order to marry. In general, with the advancement of education and the fact that a significant proportion of girls continue their education, the age at marriage has been/will be pushed upward. This will have a negative impact on fertility as both marriage and childbearing are being/will be postponed.

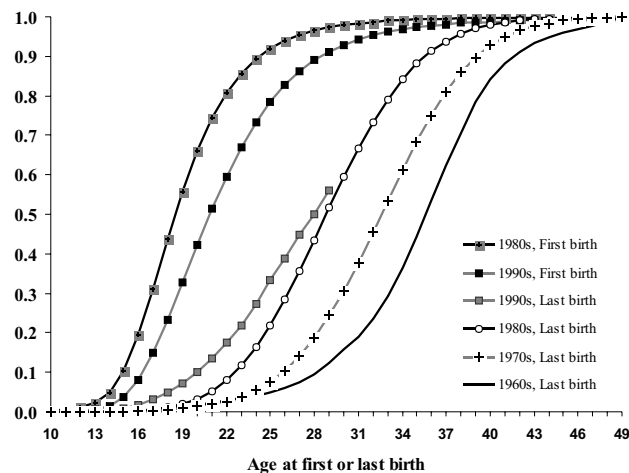
One important question is to what extent the significant fall of fertility has been due to changes in nuptiality and marital fertility. Abbasi-Shavazi decomposed the changes in fertility during the two periods of 1976-1986 and 1986-1996 into two main components of nuptiality and marital fertility. He showed that around 85 per cent of the changes in overall fertility were due to marital fertility indicating that most of the fertility decline was due to control within marriage. Around 15 per cent 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. Given the higher level of education and the increase in mean age at marriage in recent years, it is likely that the contribution of nuptiality on fertility has increased (See Hosseini-Chavoshi, McDonald and Abbasi-Shavazi, 2007). Nevertheless, the main story of the sharp fertility decline in the Islamic Republic of Iran revolves around fertility control within the marriage.

### **Shortening reproductive life span**

The ages at which women initiate and end childbearing are an important area of research, as they influence a variety of demographic and non-demographic phenomena (Pebley, Casterline and Trussell, 1982; McDonald, 1984). For instance, it has been shown that the size of completed families appears to be strongly influenced by age at first motherhood (Presser, 1971; Bumpass, Rindfuss and Janosik, 1978: 75; Knodel, 1987: 153-154). The age at which women end their childbearing is also related to the pace of fertility transition and has considerable impact on the level of fertility. Knodel (1987: 145) argued that in populations in which family limitation is common, the age of the mother at last birth is lower than in natural fertility populations, while age-specific marital fertility rates tend to show a more rapid decline at younger ages and to be particularly low at older ages. In brief, over the course of fertility transition, the age at first and the age at last birth change so that the reproductive life span of women declines substantially.

Figure 5 illustrates the change in age at first and last birth for Iranian women by marriage cohort. A dramatic change in the reproductive life spans of Iranian women married since the 1980s has occurred. The figure shows the cumulated proportions of each marriage cohort that had had a first birth by a given age among all those who ever had a first birth. It also shows the equivalent cumulated proportions by age for those who had had their last birth. It is to be noted that where the woman has only one birth across her lifetime, the first and the last births coincide.

**Figure 5. Cumulated distributions of age at first birth and last birth\* for marriage cohorts, Iran (Islamic Republic of)**



Source: IDHS, 2000.

Note: \*Last birth was defined using all of the following indicators: if the woman's last delivery was unwanted; if the woman wanted no more children at the time of the IDHS; if the woman had secondary infertility; if the woman or her husband had been sterilized; if the woman had reached menopause or had had a hysterectomy; if the woman was 40 years old or more and her last child was older than five years. The distribution for age at last birth for the 1990 cohort is not complete as they are still young and have not completed their childbearing.

The graph shows that age at first birth shifted upwards from the 1980s to the 1990s. With the advance of female education, increased age at marriage and the shift to delay of the first birth within marriage (see below), age at first birth rose considerably. For the 1980s marriage cohort, 50 per cent of first births occurred before age 18.5 years. For the 1990s cohort, the 50 per cent level was reached at age 20.8 years. Nevertheless, this is still relatively young for what is now a relatively highly educated population.

While age at first birth was moving up, age at last birth was moving down and by much larger amounts (figure 5). The 50 per cent level for age at last birth was 35.7 years for the 1960s marriage cohort, 32.5 years for the 1970s cohort, 28.7 years for the 1980s cohort and 27.9 years for the 1990s cohort. There will be a small bias downward in the most recent cohort because the calculation is made only for those who have completed their childbearing. Despite this caveat, childbearing has evidently been truncated to a very short age range mainly in the early 20s. This gives rise to issues about the delivery of a family planning programme to a population where a very substantial proportion of women complete their childbearing by age group 25-29. It also raises issues about the ways in which this early cessation of childbearing will change women's lives in a society where labour force participation rates for women have been low.

### **Progression to the second birth**

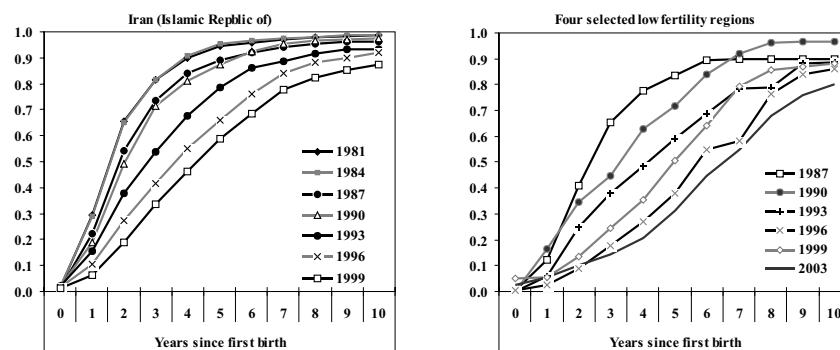
The vast majority of Iranian women (95 per cent) progress to have their first birth within the first two years of their marriage. This pattern has changed little over the last three decades, though there are slight signs of the delay of the first birth within marriage in recent years (Hosseini-Chavoshi, McDonald and Abbasi-Shavazi, 2007). Lifetime progression to the second birth for Iranian women (figure 6) was very high in the early years of the revolution (99 per cent), fell slowly to 97 in 1990 and then more sharply to 87 per cent in 1999.

The same result is observed in the selected low fertility provinces of Isfahan, Gilan, Yazd and the city of Tehran. Lifetime progression to the second birth for women in the four selected provinces was very high during the period 1985-1989 (around 99 per cent), fell slowly though with some fluctuations, to around 92 per cent in 1990, and then with some yearly fluctuation reduced slightly to around 88 per cent during 1990 and 1999 before falling to around 70 per cent by 2002-2004. Note that the yearly fluctuations are due to the relatively small number of cases and not to actual trends. These trends correspond closely to the observed trends in the total fertility rate discussed earlier.

In what is probably one of the most significant findings of this analysis, figure 6 shows the onset of a very substantial delay of the second birth. For example, the proportion of Iranian women having their second birth within 3.5 years of their first birth fell from 81 per cent in 1981 to 72 per cent in 1990 and then to 34 per cent in 1999. The difference between the 1981 and 1999 figures in the third year after the first birth (47 percentage points) is much wider than the corresponding difference in the tenth year after the first birth (12 percentage points). This is highly suggestive that what is being observed here is a wide spacing of the interval between the first and

second births (tempo), rather than a “stopping at one” pattern (quantum). Thus, the percentage of women who stop at one child may not be as high as 13 per cent for any real cohort. By contrast, the result of the 2002 Iran Fertility Transition Survey (IFTS) on preferences of women confirm an emerging trend in some parts of the country, especially the province of Gilan, for one child only.

**Figure 6. Cumulative parity progression, synthetic cohorts, first birth to the second birth, Iran (Islamic Republic of) and four low fertility regions, 1981–2003, selected years**



Source: Iran 2000 Demographic and Health Survey. Source: Iran 2005 Low Fertility Survey

Progression to the second birth is even slower in the low fertility provinces. The interval between the first and second births is now becoming very long indeed in these provinces with only 30 per cent progressing to a second birth within five years of the first birth. The timing of the widening of the second birth interval corresponds closely with the reintroduction of the nationwide family planning programme. Prior to 1990, there is little evidence of a change in the interval between the first and the second birth suggesting that this was not an explanation of the movements in fertility from the mid-1970s to the late 1980s.

### Progression to the third birth

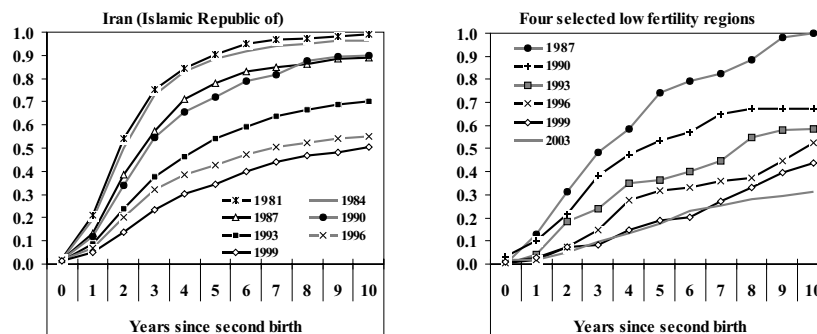
It is with progression to the third birth that one begins to observe the substantial changes in the quantum of fertility. In the early 1980s, the synthetic lifetime measure shows that 96-97 per cent of women in the Islamic Republic of Iran who had had a second child continued to the third. By 1999, this had fallen to 60 per cent. The results of the ILFS in figure 7 also show that during 1985-1987, almost all women in the four low fertility provinces who had had a second child continued to have a third child. The figure declined to around 56 per cent in 1993, before it fell to around 30 per cent during 2002-2004.



The trend over the period closely mirrored the trend in the total fertility rate – high in the early 1980s, a slow decline to 1990 and more rapid decline thereafter. It is very evident that “stopping at two” is the central story of fertility decline in this country. It is also evident that this new pattern had commenced prior to the reestablishment of the family planning programme. This programme can be considered to have facilitated and accelerated a pattern of behaviour that had become established in parts of the society since the mid-1980s. Abbasi-Shavazi, McDonald and Hosseini-Chavoshi based on analysis of the 2002 Iran Fertility Transition Survey proposed that the economic aspirations of the population were raised by the revolution but the failure of household economic outcomes to meet expectations had become clearly evident by the mid-1980s.

In addition, it was evident to parents by the mid-1980s that their children would have better opportunities for education and social advancement in the new society if they were able to support their children through education. Stopping at two must have been seen by parents as a strategy to improve their own economic outcomes and the educational opportunities of their children.

**Figure 7. Cumulative parity progression, synthetic cohorts, second birth to the third birth, Iran (Islamic Republic of) and four low fertility regions, 1981–2003, selected years**



Source: Iran 2000 Demographic and Health Survey. Source: Iran 2005 Low Fertility Survey.

The annual cumulative progressions (figure 7) indicate another very interesting trend not evident from age-based analyses. The emergence of “stopping at two” seems to have been preceded by a long-term trend towards wider spacing of the second and third births, a trend that continued through the early 1980s when fertility rates were at their highest. For example, based on the 1975-1979 cross-sections, 54 per cent of women had moved from their second to their third

birth by the end of the second year; for the 1980-1984 cross-sections, at the height of the high fertility period, 49 per cent had done so. This percentage then declines further in subsequent years. This may mean either that couples were already attempting unsuccessfully to stop at two or that they were indeed attempting to widen the interval between the second and third birth.

Movement to the third birth is slower among women in low fertility regions for all birth cohorts as shown in the right panel of figure 7. For the 1987-1990 cross-sections, before the revival of the family planning programme, 30 per cent had moved from their second to their third birth by the end of the second year, but less than 8 per cent had done so since 2000. The lifetime progression to the third birth has been around 30 to 40 per cent since 1999. This means that in these low-fertility regions either couples are successfully practising contraception or attempting to terminate childbearing at two children.

### **Summary and conclusions**

This article aims to examine the fertility trends and patterns in recent decades and to explore the pathways by which below-replacement level fertility has been achieved in the Islamic Republic of Iran. Single calendar year time in the total fertility rate allowed a precise association of the fertility decline to the timing of the momentous sociopolitical and population policy shifts before and after the 1979 Islamic Revolution. Fertility has declined considerably to below-replacement level, and most of the provinces are now experiencing below replacement level fertility. What are the pathways by which the below replacement level fertility has been achieved?

Changing marriage over the last three decades has been a contributing factor behind the fertility decline in the Islamic Republic of Iran. Age at marriage has risen considerably since the mid-1980s. Given that age at marriage is much higher among educated women than among non-educated women and given the considerable yearly rise in achieving higher levels of education, age at marriage can be expected to continue to rise in the future. This will lead to further postponement of fertility. Nuptiality change explained around 15 per cent of the decline in fertility between 1986 and 1996. However, the contribution of marriage to fertility decline will increase over the coming years.

A desire for small family size is a widely held ideal among Iranian women. The ideal family size of Iranian women is concentrated on two children. The result of the 2002 Iran Fertility Transition Survey (IFTS) conducted in the four selected provinces of Gilan, West Azarbaijan, Yazd and Sistan-Baluchistan showed that the majority of women, on average, desired only two children. Surprisingly, in

Gilan province, around 24 per cent of women aged 20-29 and around 18 per cent of those aged 40-49 indicated one child as their ideal number of children (Abbasi-Shavazi, McDonald and Hosseini-Chavoshi, 2003). The IDHS indicated that most women have their first birth soon after their marriage when they are still in their early twenties. Hosseini-Chavoshi, McDonald and Abbasi-Shavazi (2007) argued that widespread adoption and implementation of a two-child family norm is the essential story of fertility decline in this country. Their results showed that there is strong evidence of a cross-sectional cessation of childbearing for all women with parity two or more.

Fertility decline has led to the concentration of childbearing into a much narrower range of ages. The interval between the median age at first birth and the median age at last birth fell from around 11 years for the 1980s marriage cohort to around three years for the 1990s marriage cohort. Early cessation of childbearing raises policy issues in relation to the delivery of family planning and to the role of women.

There is also strong evidence of a widening of the interval between the first and the second birth post-1990. The interval between the second and the third birth has been widening from the 1970s onwards. This interval was actually longer during the years of very high fertility in the early 1980s than it had been in the 1970s. This may have been due to attempts to control fertility when contraception was not readily available.

Taken together, the individual level trends and the provincial level trends are likely to lead to fertility in the Islamic Republic of Iran falling well below replacement in the coming years. This will coincide with the entry of the very large post-revolutionary birth cohort into the childbearing ages. Thus, fortuitously, in terms of total number of births, the low fertility rate will not necessarily lead to further undercutting of the age distribution but to a dampening of the echo effect of the post-revolutionary cohort.

### **Policy implications**

What are the implications of low fertility? The new generation of Iranian women is much more highly educated than previous generations. This is likely to create a demand for paid employment both before the first birth and after the last birth. Given high economic aspirations, the motivation for women to take up paid employment is likely to be strong and the shortening of the reproductive span will facilitate such a trend. However, such a trend would be counter to existing social constraints on the employment of women. It could also come at a time when the demand for jobs from young men will be at an all-time high because of the entry into the labour market of a huge post-revolution baby-boom cohort.

Iran's population, though still young at present, will age rapidly in the future. In 2002, only 5 per cent of the population of the country were aged 65 and over, but this will increase to 22 per cent by 2050 (United Nations, 2002b). Behind this shift are the rapid fertility decline and substantial improvements in life expectancy. The increase and subsequent fall over the last two decades has created a unique age structure, representing a very young population, which will lead to a rapidly ageing population in the coming decades. The issue of ageing in the Islamic Republic of Iran becomes much more salient and current, however, if note is taken of the considerable movement of young people from rural to urban areas. The results presented in this paper suggest that the post-revolutionary antinatalist policy may no longer be relevant, as most of the targets of the policy have been reached. There have been discussions at the Ministry of Health on re-activating the National Population Council of Iran to re-design the population policy based on the current demographic situation. However, it will take some time before the new government policy is completed and its results achieved. Thus, as in the past, couples and individuals will follow their own way to determine the future of Iranian demography.

### **Endnote**

This article is based on the findings of two Wellcome Trust-funded projects, the 2002 Iran Fertility Transition Survey and the 2005 Iran Low Fertility Survey conducted by the authors. An earlier version of this article was presented at the Seminar on Fertility Transition in Asia: Opportunities and Challenges, 18–20 December 2006, Bangkok.

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# Stagnation in Fertility Levels in Pakistan

*The burning question for Pakistan's demographic history is whether it will converge rapidly to the lower fertility patterns of neighbouring South Asia or whether it will continue to lag behind by a couple of decades.*

By Zeba A. Sathar\*

Finally, at the turn of the century and after decades of stagnancy, there was definite evidence of a decline in fertility in Pakistan. Fertility in Pakistan probably began to decline in the early 1990s or even in the late 1980s. Significantly, all estimates for the 1990s for the first time fell below 6.0 births per woman to a little less than five. This is in contrast to numerous surveys that indicated that the TFR remained above six births per woman in the 1980s. Furthermore the last census held finally in 1998, indicated that the average population growth rate for the

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period 1981-1998 was 2.6 per cent per annum, a decline from previous intercensal rates, consistent with a decline in fertility in the 1990s. While this trend in fertility decline has continued – even touted as one of the “fastest declines in Asia” (Feeney and Alam, 2003) – the latest Pakistan Demographic and Health Survey (PDHS) indicates a stall in fertility at four children per woman.

### Fertility levels

The main contributor to rapid population growth in the recent past is most definitely high fertility. Though accepted as high by any standards, internationally and within the country, demographers continue to struggle to establish the exact level of fertility in Pakistan. Whereas in the 1960s the Population Growth Experiment (PGE) data established fertility levels at between 6 and 7 births per woman, the Pakistan Fertility Survey of 1975 – with its full reproductive histories and relatively better data collection procedures – placed fertility at 6.3 births per woman for the mid-1970s. For the 1970s and 1980s one relied on four major surveys to establish the most recent trends in fertility. These were the Population Labour Force and Migration Survey of 1979, the Pakistan Contraceptive Prevalence Survey of 1984-1985, the Pakistan Demographic and Health Survey of 1990-1991 and the Pakistan Demographic Surveys of 1984-1990. As can be seen in table 1, there is considerable divergence in the fertility rates presented by these various surveys: estimates for the late 1980s vary from 5.4 as reported by the PDHS to 6.8 as reported by the 1988 PDS.

Data from the 1990s demonstrate a distinct decline in fertility levels. Collectively, estimates imply a modest decline of around one birth per woman between the 1980s and the 1990s. The Pakistan Contraceptive Prevalence Survey, which did not collect birth histories, yielded an indirect estimate of total fertility rate of 5.6 for 1994-1995 based on information about last birth. The Pakistan Fertility and Family Planning Survey (PFFPS) of 1996-1997 (NIPS, 1998) provides a direct estimate of 5.4 for the period 1992-1996, which suggests a slightly more rapid decline during the 1990s than implied by the previous surveys. The extrapolated total fertility rate in 2000 is around 4.8 births per woman or less.

**Table 1. Trends in total fertility rates depicted by various data sources**

Source	TFR
<b>1960s</b>	6.3
PGE 1962-1965(CD)	7.95
PGE 1962-1965(LR)	6.09

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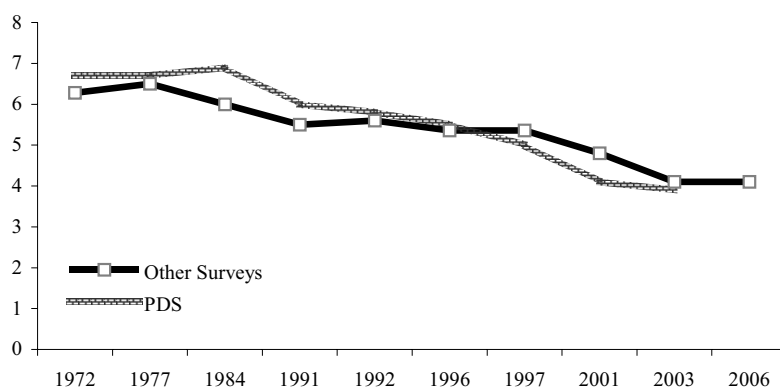
**Table 1 (Continued)**

Source	TFR
NIS 1968-1969	5.02
PGS 1968-1971	6.04
<b>1970s</b>	6.8
PLM 1975-1979	6.50
PLM 1970-1975	7.10
PFS 1970-1974	6.28
PFS 1965-1969	7.07
PGS 1976-1979	6.90
<b>1980s</b>	6.2
PCPS 1984-1985	6.0
PDS 1984-1988	6.9
PDHS 1986-1991	5.5
PIHS 1987-1991	6.3
<b>1990s</b>	5.1
PCPS 1994-1995	5.6
PFFPS 1992-1996	5.4
PIHS 1994-1996	4.5
<b>2000 and later</b>	4.2
PDS 2001	4.1
PDS 2003	3.9
PRHFPS 2000-2001	4.2
PSWFS 2003	4.2
PDHS 2006-2007	4.1

*Sources:* PGE (1962-1965) CD: Population Growth Experiment Rates Adjusted by Chandra – Deeming Formula PGE (1962-1965) LR: Population Growth Experiment – Rates Based on Longitudinal Registration; NIS (1968-1969): National Impact Survey; PGS (1968-1971): Population Growth Survey, 1968,1969,1971; PLM (1970-1974 and 1975-1979): Population Labour Force and Migration Survey 1979; PFS (1965-1969 and 1970-1974): Pakistan Fertility Survey 1975; PGS (1976-1979): Population Growth Survey, 1976,1977, 1978 and 1979; PCPS (1984-1985): Pakistan Contraceptive Prevalence Survey 1984-1985; PDS (1984-1988): Pakistan Demographic Surveys 1984,1985, 1986, 1987 and 1988; PDHS (1986-1991) Pakistan Demographic and Health Survey 1990-1991; PIHS (1987-1991): Pakistan Integrated Household Survey 1991; PCPS 1994-1995 Pakistan Contraceptive Prevalence Survey; PFFPS 1996-1997 Pakistan Fertility and Family Planning Survey; PIHS 1994-1996: PIHS 1998 Pakistan Integrated Household Survey; PDHS (2006-2007) Pakistan Demographic and Health Survey 2006-2007.

An examination of the most recent data from after the turn of the century shows a continuous fertility decline but at a slower pace. The Pakistan Reproductive Health and Family Planning Survey of 2000-2001 shows a fertility rate of 4.8, while the Pakistan Demographic Survey for the same year reveals a fertility rate of 4.1. The Status of Women and Fertility Survey of 2003 shows fertility rate of 4.2, while the TFR from the PDS 2003 is 3.9. There remains a difference of about half a child (more or less) between the directly reported Pakistan demographic surveys and the retrospective birth histories of the PRHFPS 2001 and the PSWF 2003. The latest PDHS 2006-2007 shows TFR stagnating at 4.1 for the period 2004-2006. While there is still a divergence in rates between the two types of surveys, this is much narrower than in earlier years. The other important point is the fertility decline seen in both sets of surveys in figure 1, albeit the difference in levels.

**Figure 1. Total fertility rates for 1975-2006 from demographic surveys and fertility surveys**



*Sources:* PGE (1962-1965) CD: Population Growth Experiment Rates Adjusted by Chandra – Deeming Formula PGE (1962-1965) LR: Population Growth Experiment – Rates Based on Longitudinal Registration; NIS (1968-1969): National Impact Survey; PGS (1968-1971): Population Growth Survey, 1968,1969,1971; PLM (1970-1974 and 1975-1979): Population Labour Force and Migration Survey 1979; PFS (1965-1969 and 1970-1974): Pakistan Fertility Survey 1975; PGS (1976-1979): Population Growth Survey, 1976,1977, 1978 and 1979; PCPS (1984-1985): Pakistan Contraceptive Prevalence Survey 1984-1985; PDS (1984-1988): Pakistan Demographic Surveys 1984,1985, 1986, 1987 and 1988; PDHS (1986-1991) Pakistan Demographic and Health Survey 1990-1991; PIHS (1987-1991): Pakistan Integrated Household Survey 1991; PCPS 1994-1995 Pakistan Contraceptive Prevalence Survey; PFFPS 1996-1997 Pakistan Fertility and Family Planning Survey; PIHS 1994-1996: PIHS 1998 Pakistan Integrated Household Survey; PDHS (2006-2007) Pakistan Demographic and Health Survey 2006-2007.

## Proximate determinants of fertility

### Marriage

Until the 1990s any hints of a fertility transition appeared to be largely a result of the rising age at marriage of females from 1961 until 1991 (table 2). Between 1981 and 1998, the proportion of women aged 15-19 who were never married increased from 70.6 to 79.4 per cent, and from 79.4 in 1998 to 86.6 in 2003. Similarly, the singulate mean age at marriage increased from 20.2 in 1998 to 22.3 years in 2003. While there was less of a change in marriage patterns of males, their singulate mean age at marriage also rose to 25.8 from 26.4, thereby reducing the spousal age gap to 4.1 years. These changes in marriage patterns are fairly dramatic. Notably, the higher age at marriage in Pakistan (attributable mainly to the “marriage squeeze” and availability of partners) as compared with India and Bangladesh is incongruous with its later fertility decline. Those changes have a direct impact on fertility and population growth rates.

**Table 2. Changes in marriage patterns, 1961-2003**

Various censuses	Singulate mean age at marriage (years)		Males-to-female spousal age gap (years)	Proportion of females never married at age 15-19
	Male	Female		
1951	22.3	16.9	5.4	27.1
1961	23.3	16.7	6.6	25.4
1972	25.7	19.7	6.0	65.6
1981	25.1	20.2	4.9	70.6
1998	25.8	21.7	4.1	79.4
2003	26.4	22.3	4.1	86.6

Source: PDS, 2003.

### Contraception

Contraceptive use rates hardly changed in the period 1975-1991 (table 3) and marital fertility consequently did not decline significantly until the late 1980s. A rise in the contraceptive prevalence rate (CPR) from 5 per cent in 1975 to 9 per cent in 1985, and to 12 per cent in 1991 was the beginning of fertility control within marriage. However, the 1990s were a period of distinct departure from this trend with a sharp rise in contraceptive prevalence rates; prevalence among currently married women rose from 12 to 18 per cent according to the Pakistan Contraceptive Prevalence Survey of 1994-1995 and to 24 per cent in the Pakistan

Fertility and Family Planning survey of 1996-1997 and 28 per cent in the PRHFPS 2001. The PSWFS 2003 shows a contraceptive prevalence rate of 32 per cent (NIPS, 2007). However, the preliminary findings from PDHS 2006-2007 point to stagnation in overall prevalence and note the CPR to be down slightly to 29.6 per cent. The earlier rises of 2 per cent per annum in the 1990s in CPR appear to have slowed down to half their levels at about 1 per cent a year. Almost 38 per cent of currently married women in 1997 had ever used a contraceptive method. The figure went up to 40 per cent in 2001 and was close to 49 per cent in 2006 (NIPS/Macro International, 2007). This implies that a notable proportion of women have used contraception and have discontinued use.

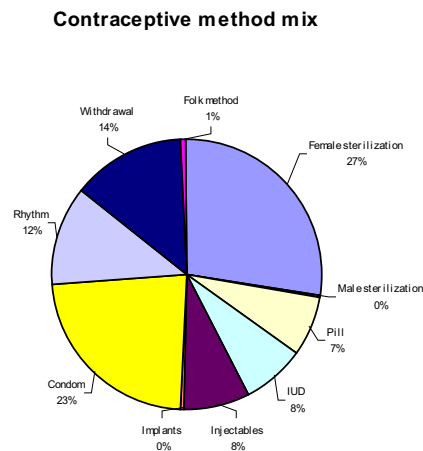
**Table 3. Contraceptive use amongst currently married women 1968-2007**

	NIS 1968- 1969	PFS 1975	PLFMS 1979	PCPS 1984- 1985	PDHS 1990- 1991	PCPS 1994- 1995	PFPS 1996- 1997	PRHFPS 2001	PSWFS 2003	PDHS 2006- 2007
Current use of contraception	5.5	5.2	3.3	9.1	11.9	17.8	23.9	27.6	32	29.6
Have ever used contraception	12.1	10.5	4.6	11.8	20.7	28.0	35.7	40.2	-	48.7

*Sources:* PGE (1962-1965) CD: Population Growth Experiment Rates Adjusted by Chandra – Deeming Formula PGE (1962-1965) LR: Population Growth Experiment – Rates Based on Longitudinal Registration; NIS (1968-1969): National Impact Survey; PGS (1968-1971): Population Growth Survey, 1968,1969,1971; PLM (1970-1974 and 1975-1979): Population Labour Force and Migration Survey 1979; PFS (1965-1969 and 1970-1974): Pakistan Fertility Survey 1975; PGS (1976-1979): Population Growth Survey, 1976,1977, 1978 and 1979; PCPS (1984-1985): Pakistan Contraceptive Prevalence Survey 1984-1985; PDS (1984-1988): Pakistan Demographic Surveys 1984,1985, 1986, 1987 and 1988; PDHS (1986-1991) Pakistan Demographic and Health Survey 1990-1991; PIHS (1987-1991): Pakistan Integrated Household Survey 1991; PCPS 1994-1995 Pakistan Contraceptive Prevalence Survey; PFFPS 1996-1997 Pakistan Fertility and Family Planning Survey; PIHS 1994-1996: PIHS 1998 Pakistan Integrated Household Survey; PDHS (2006-2007) Pakistan Demographic and Health Survey 2006-2007.

The latest PDHS (2006-2007) also provides the latest breakdown of the contribution of each contraceptive method to the overall CPR (figure 2). The overall trends seem to follow the pattern of past choices in family planning methods in Pakistan. Female sterilization with a contribution of a little more than a quarter seems to be the most popular method. Most curiously, Pakistanis demonstrate a propensity for a higher prevalence of male contraceptive methods and natural methods than other South Asian countries. In 2006, the combined contribution of withdrawal and condoms was 37 per cent, while natural methods accounted for 27 per cent of all methods.

**Figure 2. Distribution of users by contraceptive method, PDHS 2006-2007**



The PDHS 2006-2007 raises the question of why current contraceptive use rates are not continuing to rise at the same levels as in the 1990s, especially since the demand for birth spacing has gone up and the number of children desired has fallen to three children from over four earlier. While previously, changes in fertility in the 1980s were attributed to factors other than contraceptive use, in the 1990s it was the major contributor to the lower levels of fertility. It has been challenged that the current levels of contraceptive prevalence do not concur with levels of fertility.<sup>1</sup>

### **Induced abortions**

A distinguishing factor of Pakistani demography is the inconsistency between the size of the recent decline in average family size and the relatively low level of contraceptive use. There is a further discrepancy; between contraceptive use and fertility desires. Women's preference to postpone the next birth or to stop having children is seen in the high level of unmet need for family planning. The percentage of currently married women who are fecund, not using contraception but who do not want to be pregnant stands at 33 per cent in the PRHFPS 2000-2001. Consistent with those findings is the trend in unplanned childbearing (the combination of unwanted births and mistimed births); the proportion of recent births that are unplanned rose from 21 per cent in 1990-1991 to 28 per cent in 1996-1997 and to 35 per cent in 2000-2001. Those indicators – unmet need for contraception and the proportion of births that are unplanned – confirm that a large



fraction of currently married women in Pakistan are at risk of an unwanted pregnancy and potentially of undergoing an abortion. Abortions are also a very plausible explanation for the apparent inconsistency between still low levels of contraceptive use and the rapid decline in family size.

In Pakistan, as in many Islamic and some Asian countries, induced abortion is against the law except to save a woman's life. The initial expectation would be that, given the fact that abortion is illegal and that access to safe services is poor, the incidence of induced abortion would be low. However, smaller studies and informal accounts indicated that many women would seek an abortion rather than give birth to a child they cannot afford. These studies demonstrate that induced abortion has been occurring in Pakistan, and indeed the medical community has long recognized that this is a widespread phenomenon and is particularly concerned about the high mortality and morbidity associated with it.

**Table 4. Estimated pregnancy rate, general fertility rate, abortion rate, unwanted pregnancy rate and percentage of pregnancies that were unwanted in Pakistan in 2002**

	<b>Pregnancy rate</b>	<b>General fertility rate (GFR)</b>	<b>Abortion rate</b>	<b>Unwanted pregnancy rate</b>	<b>Percentage of unwanted pregnancies</b>
	Per 1,000 women 15-49	Per 1,000 women 15-49	Per 1,000 women 15-49	Per 1,000 women 15-49	Per 1,000 women 15-49
Pakistan	205.8	145.2	28.9	76.7	37.3

*Source:* Sathar, Singh and Fikree (2007): *Estimating Abortions in an Illegal Setting: The Case of Pakistan. Studies in Family Planning*, March 2007.

*Notes:* The pregnancy rate is estimated as: (GFR + abortion rate+ spontaneous abortion rate). The spontaneous abortion rate is estimated as (0.1 x abortion rate+ 0.2 x GFR).

The authors assume that the proportion of the total fertility rate that is unwanted, obtained from the national 2000-2001 PRHFPS survey, applies to 2002.

The unwanted pregnancy rate is calculated as including unwanted live births, all abortions as well as a proportion of miscarriages (TFR that is unwanted x (GFR+ 0.2 x GFR)) + (Abortion Rate) + (0.1 x abortion rate).

The percentage of pregnancies that is unwanted is calculated as: (unwanted pregnancy rate/pregnancy rate) x 100.

A recent study carried out by the Population Council and the Alan Guttmacher Institute estimated that 890,000 induced abortions were conducted in 2002 (Population Council, 2004). The abortion rate is 29 per 1,000 women aged 15-49. These abortions are mainly taking place among married women with more than three children (Population Council, 2004). A notable proportion of the

women who have induced abortions are those who have used contraceptives and some even say they were using contraceptives (albeit ineffectively) when they became pregnant.

Measures of total pregnancy and unwanted pregnancy have been estimated to portray the broader context within which induced abortion is occurring and to measure both the absolute level of unwanted pregnancy and the probability that women who experience an unwanted pregnancy will seek an abortion (Sathar, Singh and Fikree, 2007). These measures are relevant for guiding the provision of family planning information, counseling and services to reduce unwanted pregnancies through contraception. Combining our abortion estimates with survey-based estimates of the proportion of recent births that are unwanted, the overall pregnancy rate, the proportion of pregnancies that are unwanted, and proportions of unwanted pregnancies ending as births or abortions have been estimated and are shown in table 4. The 2001 PRHFPS provides estimates of a “Wanted TFR” and of the “Actual TFR”, permitting an estimate of the proportion of the total fertility rates that is not wanted. Nationally, this proportion is approximately 25 per cent. The number of unwanted births was estimated by applying these proportions to the total annual number of births, and combined with the number of abortions to provide an estimate of the total number of unintended pregnancies. The unwanted pregnancy rate was 77 per 1000 women in 2002, which was almost two fifths of all pregnancies. Abortions account for about two fifths of these pregnancies.

### **The role of social factors**

An interesting feature of Pakistan’s demographic situation is the much more rapid rate of urbanization, compared with India. In the 1981 census, 28 per cent of the population resided in urban areas. This proportion had risen to 32 per cent in the 1998 census. This increasing share of urban population is largely a result of migration from rural to urban areas. But to a large extent urban fertility in the earlier years also continued to be high with hardly any differential between urban and rural areas (Yusuf and Retherford, 1981; Sathar, 1979).

The rapid rate of urbanization in recent decades must be singled out as an instance of social change of serious magnitude. As more and more Pakistanis move from rural to urban areas, even though many might move to squatter settlements and slums, they are exposed to the “urban influence”. This mainly consists of greater exposure to the media and a modern way of life, greater non-agricultural work opportunities, weakening of ties with rural roots. The proportion of Pakistanis living in urban areas has risen from 18 per cent in 1951 to

28 per cent in 1981 and to 32 per cent in 1998. Unlike the case of other developing countries, urban fertility was only very recently recorded to be lower than rural fertility. In fact the change in the 1990s is because urban fertility has departed from national trends and demonstrated that urban values are reflective of greater contraceptive adoption and in favour of smaller families. While certainly social change in urban areas has always preceded that in rural areas, the difference was not as drastic as found in many African societies. This is because even when rural Pakistanis move to cities and towns they may do so without their extended and even sometimes their nuclear families. Ties with natal kinsmen and feudal linkages remain strong despite changes in residence. Certainly social patronage and control continue to influence values and family size norms though to a much lesser extent. However, this might have started to change in the 1990s with the increasing proportion of nuclear families (almost half of all households).

**Table 5. Trends in fertility by place of residence:  
total fertility rates, by survey**

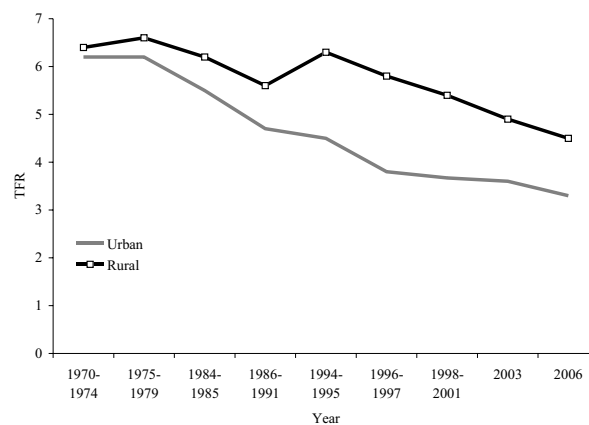
Survey	Period	Urban	Rural
Pakistan Fertility Survey (1975)	1970-1974	6.2	6.4
Pakistan Labour Force and Migration Survey (1979)	1975-1979	6.2	6.6
Pakistan Contraceptive Prevalence Survey (1984-1985)	1984-1985	5.5/6.1 <sup>a</sup>	6.2
Pakistan Demographic and Health Survey (1991)	1986-1991	4.7/5.2 <sup>a</sup>	5.6
Pakistan Contraceptive Prevalence Survey (1994-1995)	1994-1995	4.5	6.3
Pakistan Fertility and Family Planning Survey (1996-1997)	1996-1997	3.8	5.8
Pakistan Reproductive Health and Family Planning Survey (2000-2001)	1998-2001	3.67	5.4
Pakistan Status of Women and Fertility Survey (2003)	2003	3.6	4.9
Pakistan Demographic and Health Survey (2006-2007)	2006	3.3	4.5

<sup>a</sup> The PCPS and the PDHS divided areas into major urban areas and "other" urban areas; TFRs were higher in the latter category.

The pattern of urban-rural fertility differentials has been changing since 1985 when the PCPS 1984-1985 found considerably lower fertility rates in the major urban areas of Karachi, Lahore etc. (Population Welfare Division, 1986). Data from the 1980s showed urban total fertility rates to be between 0.7 and 1.2 points

below rural levels (Juarez and Sathar, 2003). The rural-urban fertility differential widened since the 1980s to about two children when fertility began its decline in urban areas. Fertility had only just begun to decline in rural areas in the early or mid-1990s and the change appears to be more gradual than in urban areas (figure 3). For instance the total fertility rate in major cities according to the PFFPS is 3.9 compared with 5.9 in rural areas. In 2001, the urban-rural gap had narrowed to 1.8 children per woman, reflecting the real beginnings of fertility transition in rural Pakistan and in 2006 it was even narrower at 1.2. This reduction in the differential reflects that rural fertility may have begun to fall more rapidly than that seen in urban areas more than a decade earlier. Interestingly, provincial fertility differentials have been small, despite considerable differences in levels of development across the regions. Sindh Province emerged as having the lowest fertility, but this is primarily owing to the large population of Karachi (data not shown).

**Figure 3. Total fertility rates for urban and rural areas, 1970-2006**



A strong counter argument can be made that the sociocultural and economic conditions of Pakistan are quite distinctly different from its neighbours and have hindered fertility decline. The economy has prospered in the 1980s and now again since the last seven years with acceptable rates of growth, leading to rises in per capita income and even a slight recorded decline in poverty incidence. However, it became increasingly apparent that social change had not been commensurate with economic progress in those years.

The lack of progress in education and health has obvious direct implications for fertility. The majority of the population (above 70 per cent) continues to be

illiterate and resides in rural areas where illiteracy is even more severe. Education has been a largely neglected sector in the past decades and few resources have been allocated to it until recently. Also, the demand for schooling has been weak in the largely uneducated, rural population which is engaged mostly in agriculture. The situation is finally improving and the Government is paying direct attention to primary schooling for girls. However, it will be several years before this affects cohorts of married women who continue to be mostly uneducated.

The cultural milieu has changed but only slightly in the last two decades. In most respects, Pakistan remains a feudal and agricultural society with strong bonds of caste and family. In particular, the position of women has begun to change slowly in terms of both their educational opportunities and enhancement of remunerated work outside of the family farm or enterprise. In certain respects, particularly legal rights, their position may have even deteriorated. Thus, the combination of low educational expansion, lingeringly high infant mortality, and weak women's power within households and society are all factors which would impede rapid changes in fertility desires and in women's motivation to control their fertility.

The position and status of women vis-à-vis mobility remains an obstacle to participation in politics, economic life and basic access to services. When women do engage in economic work, they do this much less so than men, and are even less likely to be remunerated for it. Women's economic work is hardly acknowledged in official statistics. Though an increasing proportion of women are entering the labour force especially in the informal sector, it is questionable whether this is likely to lead to an increase in their status within the household and within society. Research has shown strong linkages between lower fertility and post-primary education and formal sector employment (Sathar and Kazi, 1990). In rural areas the link is stronger between women's autonomy and paid employment outside the home than that with educational attainment (Sathar and Kazi, 2001). However, the proportion of women who are educated and engaged in economic activity remains small, and therefore this is not likely to have an important influence on fertility change. Recent expansion in waged work for educated women in rural areas such as the lady health worker scheme and the hiring of female teachers and paramedics on contract basis may be a pivotal factor for further change.

Another way in which the low status of women in Pakistan impacts directly on fertility is through the strong preference for male progeny. It could be argued that in a low contraceptive use society, parents are hardly making choices about the number of children they want to have and therefore are unlikely to be vastly influenced by the gender of children in making decisions about fertility control. However, the majority of current contraceptive users do have two living sons, and

the number of living sons is strongly positively associated with the desire not to have any more children (Ali, 1989). Thus the strong preference for male children is likely to influence the adoption of fertility control and may become a more contentious factor as fertility does begin to decline more notably and parents make more confined choices about numbers of children. This is the case in other Asian societies with strong son preference like India, Republic of Korea, and Taiwan Province of China, and of course China.

### **The role of public policy**

Pakistan recognized several decades ago that its population growth was extremely rapid and that it would soon be faced with a doubling and trebling of its population. It has had an official antinatalist population policy since 1965. However, official efforts at reducing population growth have met with little success. Again this is in contrast with Bangladesh, which was in fact a part of Pakistan until 1971 and has since then managed to curb its rapid population growth rate much more effectively despite its dire economic circumstances. India too has achieved relatively more success in recent years. Though not all success in bringing about fertility decline is due to public efforts, certainly with the exception of four large states in Northern India, fertility rates have experienced sharp declines.

Pakistan has had an official policy to curb population growth from 1965 until the present day. The content of the population programme, which is almost the sole organ through which population policy is expressed and executed, has taken many turns in this period. Several approaches have been utilized towards extending service delivery. By and large the population programme has only changed in the specifics about how it ought to deliver services but has remained focused on women, based on the model from which women themselves are expected to seek services. The programme has lacked firm political commitment and has lacked funds, being even shelved under the regime of General Muhammad Ziaul Haq for two or three years. Its checkered history and rather fragile base have rendered it a practically non-effective status.

There has been a distinct revival of interest in population policy starting from the mid-1990s. The last four Prime Ministers of Pakistan have addressed the issue of population growth as a national priority in important public platforms. Benazir Bhutto also attended the International Conference on Population and Development (ICPD, Cairo, 1994) despite fear of religious backlash. But more importantly, funding for the programme has been rising, albeit slightly. In the 1980s the focus of the programme was on providing a multi-sectoral approach to

family planning by combining it with other forms of information and advice through the 1250 Family Welfare Centres set up by the Government. Though these are to be supplemented by NGO efforts, by hospitals and clinic-based services, through doctors and hakims, the coverage remained very limited especially in rural areas. In preparing for the Eighth Five Year Development Plan, a new scheme was proposed for community-based delivery of family planning services and advice under the aegis of the Village Based Family Planning Worker Scheme. Several thousands of these workers were recruited, trained and put in place to provide services in their own villages by the end of the Plan period in 1998.

Since 2000, health outlets have also been asked to provide family planning services and the Ministry of Health has launched a scheme of its own, a national programme of primary health care and family planning administered by 40,000 Lady Health Workers. The number of workers has increased to 90,000 in the recent past.

If the services are effectively accessible to women in terms of distance and costs, and are in fact of acceptable quality, presumably a large proportion of them will begin to adopt contraception. This assumption is based on the large percentage of unmet needs as expressed by women themselves. Forty-four per cent of currently married women aged 15-49 wanted no more children and the estimated figure for those who experienced an unmet need for family planning services to space or curtail their families was 33 per cent (NIPS, 2001). Family planning awareness has increased substantially in recent years and the majority of men and women of reproductive age know of some method of controlling fertility. Fewer of them know of a source for obtaining family planning services. Also encouraging is the acceptability of family planning in Pakistan. However, unmet need remains high despite this approval, indicating a continuing rise in the proportion of women wishing to space or limit births but who continue to face obstacles adopting contraceptive use (NIPS, 2001).

While the shift in focus attempts to target women who are especially secluded from family planning services through community-based delivery, up to now the majority of women who are using or have ever used contraception are located in urban areas, mostly in large cities. They are also likely to be educated and working in the formal sector. Thus the impact of population policy or related efforts to curb fertility, which have met with any success, are greatly influenced by the location where educated women reside and their individual characteristics. Unmet need for family planning services is certainly more insurmountable in rural areas where large parts of Pakistan remain under served, as compared with urban areas.

The post-ICPD period marks an even greater active interest in population policies and issues of reproductive health. While reducing population growth rates remains the primary concern of the Government of Pakistan, there is greater emphasis on providing accessible and better quality services to meet the needs of individuals. Furthermore, the need to collaborate with other public institutions on the part of the Ministry of Population Welfare, and with the private sector and NGOs now appears in all documents such as the Ninth Five Year Plan (1998-2003) and the population policies formulated in 2000. In an atmosphere where major donors such as the United States Agency for International Development (USAID) were not operating in Pakistan for several years, the Government still committed scarce resources to family planning and reproductive health. The ministries of Population Welfare and Health have jointly evolved a Reproductive Health Package which is supposedly administered in public facilities. By the end of 2007, the Ministry of Health will be taking over most of the service delivery functions in this area. Increasingly the private sector, through social marketing, is assuming the responsibility for dispensing, advertising and training in reproductive health.

The most recent public policy in the area of Population is the Population Policy 2002, which has several notable targets of broadening responsibility for service delivery, for amassing resources and for reducing the fertility rate to replacement levels of 2.2 by 2020. While the Millennium Development Goals (MDGS) do not carry a significant indicator on reproductive health, the MTRF report of the Government of Pakistan does actually state reproductive health as one of its areas of priority. Certainly the turn of the century marks a rosy period in the history of population ministry, as it is achieving a higher status within the Government. With outstanding leadership, it is flushed with funds and most recently became the support of a National Population Commission announced in 2005.

### **Prospects for replacement fertility**

The final section of this article explores prospects for fertility decline post the transition. There is considerable conflict among various data sources and subsequently in the projections based on varying sources of information. Differences in population projections for the year 2020 range from 219 (high variant) and 204 million (low variant) according to the United Nations to just over 200 million according to the Government of Pakistan (Ministry of Population Welfare, 1999; United Nations, 2005). To some extent, the difference in the projections is based on when each of the agencies dates the beginning of fertility transition in Pakistan and subsequently to the levels of fertility used for the projections. Undoubtedly, the most important factor in determining which trajectory of projections emerges as realistic for Pakistan will depend on the actual



speed of fertility decline in the next two decades. In particular, for fertility to decline from its current levels of 4 to 2 in the next decades will be possible only when the fertility transition diffuses to the rural areas. At the moment, fertility has just begun its transition in rural areas, which is not surprising given the vast differences in service delivery and in social development between urban and rural areas.

The fertility transition is argued to have occurred largely as a result of “crystallization of existing desires for smaller families along with a decline in family size desires and a reduction in the social, cultural and psychic costs of contraception” (Sathar and Casterline, 1998). However, a large proportion of fertility was unwanted even in the 1990s. In theory reducing fertility in the immediate future depends very much on an existing unmet need for contraception to be satisfied because of the large proportion of currently married women whose needs are unmet. These levels are notably high in both urban and rural areas i.e., 38 per cent in 1996-1997 as reported by the PFFPS and 33 per cent in 2001.

The situation describing the fairly rampant use of induced abortions, even in dire circumstances of post abortion complications and associated costs, shows that women in particular, but often men too, are very desperate to control their fertility. The tradeoff between using contraception and abortion appears to be a complex set of negotiations and considerations between men and women and dependent of family circumstances, financial costs and services available (Arif and Kamran, 2006). Contraceptive uptake could be fairly rapid since this demand is real and palpable. But many factors will have to change. The distribution of services has to improve: this would require a spread of service delivery networks such as the community-based workers to be sustained and expanded as is currently planned. It would also require the private sector, which is presently concentrated in urban Pakistan to penetrate into rural areas. The health system especially in rural areas has to be responsive to meet the needs for family planning along with dealing with other health needs of men and women.

One of the major reasons behind the unmet need for family planning services goes beyond the availability and quality of services to the issue of men and women’s subordinate status, which is an important obstacle to family planning adoption (Casterline, Sathar and Haque, 2001). For overcoming this obstacle and others such as social disapproval, it is recommended and the Government of Pakistan is proposing to address men, religious leaders and political representatives through advocacy in order to enable women to overcome strong resistance at the family and community levels, which currently inhibits their adoption of contraception.

The Government's own objectives are for the total fertility rate to fall to about 3.5 children in five years and to reach replacement levels by the year 2020. While these levels of fertility are certainly possible, the expected decline of two births in a period of 15 years (2005-2020) is based on the desire of most women to curtail family size much below the current stated ideal of about 4 or even 3 children. It is also based on the expectation that unmet demand for family planning will be bridged by the combined efforts of the private and public sectors initiatives to provide family planning services. However, if reproductive intentions remain stagnant, then, family planning programmes can only reduce fertility to its current wanted levels of about four children.

To expect fertility to decline much below three children would also require the demand for children to change from its fairly constant levels of about three to four. This change would not occur without more profound and rapid changes in Pakistani society, which clearly do not emerge from this appraisal of the current situation. An effort to reduce fertility preferences from their current levels requires strong investments in social and economic development (Bongaarts and Amin, 2001). The demand for radically smaller families requires parents to want to voluntarily make stronger investments in their children. To expect a rapid increase in educational attainment rates (especially of girls), an induction of a huge proportion of women into the paid labour force and rapid improvements in health seem unlikely but will need to occur for such a change in fertility behaviour in Pakistan to unfold. Such changes can of course occur quite rapidly and quite independently from public policies and deliberate efforts to control fertility. Yet their influence can have an immense impact in a short period of time, as seen in Bangladesh in recent years.

To some extent, the dynamic of increasing awareness that marital fertility can be controlled and the increased acceptability of contraception will act as pressure on an increasing number of couples to adopt a smaller family size. Coupled with that dynamic is the response to trends in economic aspirations and increasing constraints of costs of rearing children (particularly schooling and health). The impact of the media, particularly electronic media, will be an important factor in this regard. These factors will certainly ensure the continuation of the fertility transition in Pakistan.

In conclusion, while most of South Asia had similarly high levels of mortality and fertility about four decades ago, few would have predicted the demographic diversity which ensued. Sri Lanka and a large part of Southern India led the fertility transition, while most other areas followed especially surprisingly Bangladesh (previously a part of Pakistan) experiencing fertility declines by the 1980s.

Pakistan was the largest block in South Asia to begin its fertility transition as late as the early 1990s. The burning question for Pakistan's demographic history is whether it will converge rapidly to the lower fertility patterns of neighbouring South Asia or whether it will continue to lag behind by a couple of decades. For Pakistan to "catch up", it will have to experience a major departure from its previous and current trends of low schooling enrollments, low literacy, high infant mortality and weak autonomy of women amounting to fairly major transitions in its social sector record and policies. The demands for this are fairly daunting. However, if this does not occur then its very likely that Pakistan will continue to lag behind its South Asian neighbours.

### **Acknowledgement**

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### **Endnote**

1. Using the Bongaarts's proximate determinants of fertility model (in TARGET programme), the required CPR to produce a TFR of 3.9 is 39.3 and 34.4 for a TFR of 4.1. The model was based mainly on data drawn from the SWRHFP 2003 (NIPS, 2007).

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