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# Asia's recent fertility decline and prospects for future demographic change

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This Research Report is based on a lecture that Professor Freedman presented as part of the Distinguished Lecturer Series commemorating the Program on Population's Twenty-Fifth Summer Seminar on Population, held in Honolulu and Taipei during June–July 1994. The seminar provided an opportunity for 80 population professionals from 25 countries to share their experience, increase their knowledge, and develop plans for collaborative research.

*This report surveys fertility trends in Asia since the mid-1960s, focusing on 24 countries that together account for 3.1 billion, or 56 percent, of the world's population. Asian fertility has declined overall by 39 percent, or 62 percent of the decline necessary for reaching the population-replacement level of 2.1 children per woman, and contraceptive use has risen sharply throughout much of the region. By 1990 nine out of 10 Asians were living in countries where fertility had fallen by at least 25 percent. Although fertility rates and contraceptive use vary widely within the region, three out of four Asians today live in six countries where, despite low levels of economic development, fertility rates range from 4.5 to 2.1 children per woman and nearly two-thirds of married couples, on average, practice contraception. The report considers three factors usually believed to account for these astonishingly rapid changes in reproductive behavior: mortality decline, broad social and economic development, and effective national family planning programs. An assessment follows of the current demographic situation, the role of those three factors and of alternative plausible pathways for reducing fertility, and likely future fertility levels in individual countries and subregions.*

During the two decades between the late 1960s and the late 1980s, Asian fertility fell by 39 percent (Table 1).<sup>1</sup> This represents a 62 percent decline toward the population replacement level of 2.1 children per woman. Although every region of Asia participated in the decline, the amount varied greatly, ranging from 20 percent in West Asia to 57 percent in East Asia. United Nations (1993) esti-

mates of the total fertility rate (TFR), combined with recent estimates for

1. For comparability I rely mainly on fertility estimates prepared in 1992 by the United Nations (1993) unless recent surveys indicate significant changes. For further discussion of the UN data, see the box on page 4. The data for Taiwan are from the *Taiwan-Fukien Demographic Fact Book* (Taiwan, Ministry of the Interior, various years).

Table 1. Total fertility rates, percentage change in rates, and percentage decline toward replacement level, by region: developing world, 1965-70 to 1985-90

	Total fertility rate						% change						% decline toward replacement					
	1965-70		1970-75		1975-80		1980-85		1985-90		1965-70		1970-75		1975-80		1980-85	
	to	from	to	from	to	from	to	from	to	from	to	from	to	from	to	from	to	from
All regions	6.01	5.42	4.55	4.23	3.90	3.45	3.77	3.45	3.90	3.45	-35	-10	-16	-7	-7	-8	54	15
Asia	5.69	5.07	4.07	3.77	3.45	3.77	3.45	3.90	3.45	3.90	-39	-11	-20	-7	-7	-8	62	17
East Asia	5.40	4.40	2.79	2.44	2.30	2.44	2.30	2.44	2.30	2.44	-57	-19	-37	-13	-13	-6	94	30
Southeast Asia	5.81	5.32	4.82	4.20	3.73	4.20	3.73	4.20	3.73	4.20	-36	-8	-9	-13	-11	-11	56	13
South Asia	5.96	5.76	5.28	5.16	4.66	5.16	4.66	5.16	4.66	5.16	-22	-3	-8	-2	-2	-10	34	5
West Asia	6.32	5.98	5.88	5.33	5.04	5.33	5.04	5.33	5.04	5.33	-20	-5	-7	-4	-4	-5	30	8
Latin America	5.52	4.98	4.37	3.92	3.40	3.92	3.40	3.92	3.40	3.92	-38	-10	-12	-10	-10	-13	62	16
The Caribbean	5.01	4.37	3.49	3.18	2.96	3.18	2.96	3.18	2.96	3.18	-41	-13	-20	-9	-9	-7	70	22
Central America	6.68	6.33	5.21	4.55	3.92	4.55	3.92	4.55	3.92	4.55	-41	-5	-18	-13	-14	-14	60	8
South America	5.21	4.61	4.20	3.78	3.27	3.78	3.27	3.78	3.27	3.78	-37	-12	-9	-10	-10	-13	62	19
Africa	6.73	6.62	6.55	6.40	6.25	6.40	6.25	6.40	6.25	6.40	-7	-2	-1	-2	-2	-2	10	2
East Africa	6.93	6.97	7.03	6.81	6.86	6.81	6.86	6.81	6.86	6.81	-1	1	1	-3	1	1	1	-1
Middle Africa	6.09	6.25	6.40	6.53	6.53	6.53	6.53	6.53	6.53	6.53	7	3	2	2	2	0	-11	-4
North Africa	6.86	6.36	6.02	5.66	5.10	5.66	5.10	5.66	5.10	5.66	-26	-7	-5	-6	-6	-10	37	11
Southern Africa	5.93	5.57	5.22	4.92	4.50	4.92	4.50	4.92	4.50	4.92	-24	-6	-6	-6	-6	-9	37	9
West Africa	6.88	6.88	6.87	6.87	6.85	6.87	6.85	6.87	6.85	6.87	0	0	0	0	0	0	1	0

Source: United Nations (1993, table A.18).

China (Kristoff 1993) and Japan (Atoh 1993), suggest that East Asian fertility fell from 5.7 children per woman in 1965-70 to below the 2.1 replacement level by 1992. Even the smallest regional decline, in West Asia, moved that region 30 percent of the way toward a TFR of 2.1.

It is often said that, once marital fertility has fallen by 10 percent, a continuing decline is highly probable (Watkins 1986, 433). Thirty-eight of the 41 countries in Asia had fertility declines during the recent 20-year period, and 31 of those countries had declines of at least 10 percent (Table 2).

If one considers the distribution of Asian countries and populations by the proportion of the fertility decline toward the replacement level achieved over the 20-year period (Table 3), the results are truly impressive: Forty-four percent of Asia's total population of 3.1 billion in 1985-90 lived in countries that had achieved 90-100 percent of the fertility reduction to reach the replacement level, 36 percent of Asians inhabited countries that had achieved 25-49 percent of the decline, 11 percent lived in countries that had gone 50-89 percent of the way toward replacement-level fertility, and only 9 percent were in countries that had achieved less than 25 percent of the reduction needed to complete their fertility transition. Thus 91 percent of Asians lived in countries that had experienced fertility declines of at least 25 percent. The onset of the transition from high to low fertility rates was clearly a widespread phenomenon in Asia by 1990.

It is especially noteworthy that major fertility declines in Asia have occurred in populations that are poor, with large rural and illiterate strata (Caldwell 1993). The six countries of the world with annual per capita incomes of less than US \$450 and that have TFRs of



under 4.6—Bangladesh,<sup>2</sup> China, India, Indonesia, Sri Lanka, and Vietnam—are all in Asia. Together, their populations amount to 2.3 billion, or 76 percent of the population of Asia and 60 percent of the population of all developing countries. Seen in historical perspective, it is astonishing that their collective contraceptive prevalence is 64 percent. When I first began studying Asia's fertility and family planning efforts 33 years ago, neither I nor other serious observers expected such rapid fertility declines to occur on that continent—certainly not in populations with such large, poor, and illiterate strata.

## CAUSES OF THE FERTILITY DECLINE

Essentially three explanatory variables were considered likely to affect fertility rates at that time: mortality decline, broad social and economic development, and family planning programs. While insufficient to explain everything that has happened since then, they proved to be, and remain, powerful determinants.

2. Considerable disagreement exists about the current, exact TFR for Bangladesh. I have relied on the discussion in Cleland et al. (1994, p. 1 and chap. 2) because I regard those authors to be exceptionally well-informed observers of the Bangladesh fertility transition. Although they discuss the reasons for uncertainty, the following statement (p. 25) led me to settle on 4.5 as a reasonable level: "What is undeniable is that a radical transformation of reproductive behavior is in progress. The sociological significance of this process, and its implication for the medium- to long-term future for this country, transcends quibbles about whether the total fertility rate in 1990 was 4.3 or 4.7."

Table 2. Total fertility rates, percentage change in rates, and percentage decline toward the replacement level, by region and country: Asia, 1965–70 to 1985–90

Region/country	Total fertility rate		% change in TFR (1965–70 to 1985–90)	% decline toward replacement
	1965–70	1985–90		
Asia	5.69	3.45	-39	62
East Asia	5.40	2.30	-57	94
China	5.99	2.38	-60	93
Hong Kong	4.01	1.36	-66	100
Japan	2.00	1.68	-16	100 <sup>a</sup>
Korea, Dem. People's Rep. (North)	7.00	2.50	-64	92
Korea, Rep. (South)	4.52	1.73	-62	100
Mongolia	5.90	5.00	-15	24
Taiwan <sup>b</sup>	4.22	1.68	-60	100
Southeast Asia	5.81	3.73	-36	56
Brunei Darussalam	5.94	3.40	-43	66
Cambodia	6.22	4.60	-26	39
East Timor	6.16	5.41	-12	18
Indonesia	5.57	3.48	-38	60
Lao People's Dem. Rep.	6.15	6.69	+9	-13
Malaysia	5.94	4.00	-33	50
Myanmar	6.00	4.50	-25	38
Philippines	6.04	4.30	-29	44
Singapore	3.46	1.69	-51	100
Thailand	6.14	2.57	-58	88
Vietnam	5.94	4.22	-29	45
South Asia	5.96	4.66	-22	34
Afghanistan	7.13	6.90	-3	5
Bangladesh	6.91	5.10	-26	38
Bhutan	5.95	5.89	-1	2
India	5.69	4.20	-26	42
Iran	6.97	6.50	-7	10
Maldives	7.00	6.50	-7	10
Nepal	6.17	5.95	-4	5
Pakistan	7.00	6.75	-4	5
Sri Lanka	4.68	2.67	-43	78
West Asia	6.32	5.04	-20	30
Bahrain	6.97	4.08	-41	59
Cyprus	2.78	2.36	-15	62
Iraq	7.17	6.15	-14	20
Israel	3.79	3.05	-20	44
Jordan	7.99	6.15	-23	31
Kuwait	7.41	3.94	-47	65
Lebanon	6.05	3.42	-43	67
Oman	7.17	7.17	0	0
Qatar	6.97	4.80	-31	45
Saudi Arabia	7.26	6.80	-6	9
Syria	7.79	6.66	-15	20
Turkey	5.62	3.79	-33	52
United Arab Emirates	6.76	4.82	-29	42
Yemen	7.77	7.69	-1	1

a. 100 percent decline to 2.1 had already been achieved by Japan in 1965–70.

b. Taiwan is treated as a separate country for statistical purposes.

Sources: All countries except Taiwan: United Nations (1993, table A.19); Taiwan: Freedman, Chang, and Sun (1994).

**Table 3.** Distribution of Asian countries and populations by the percentage of fertility reduction toward replacement-level TFR achieved between 1965-70 and 1985-90 (replacement-level TFR = 2.1 children per woman)

% of fertility decline toward 2.1 <sup>a</sup>	% of Asian countries	% of Asian populations
< 25	34	9
25-49	24	36
50-89	25	11
90-100	17	44
Total %	100	100
Total N	41	3,117,842,000

a. Measured by dividing the TFR decline between 1965-70 and 1985-90 by the difference between the 1965-70 TFR and 2.1. This is equivalent to:

$$\frac{\text{TFR}(1965-70) - \text{TFR}(1985-90)}{\text{TFR}(1965-70) - 2.1}$$

Mortality declines everywhere preceded fertility declines. Improved survival rates for children meant that when women were in their 30s they increasingly had alive the number of children they wanted. Formerly, much larger numbers of births had been required to achieve desired family size. Lower mortality also resulted in the high rates of population growth, which made political leaders and development planners concerned about reducing fertility and

consequently interested in family planning programs. In the early 1960s, when there was still little evidence of economic and social development in Asia and no really functioning national family planning programs, studies of pilot programs in Taiwan, South Korea, and Thailand nevertheless found considerable latent demand for contraceptive services among poor, rural, illiterate population strata, presumably because of the prior mortality declines (Bang

1968; Freedman and Takeshita 1969; Rosenfield, Asavasena, and Mikhonorn 1973).

As a second major determinant, broadly based economic and social development proved to be sufficient, if not essential, for fertility decline. Clearly, a fertility decline to replacement levels would have been possible in Asia without family planning programs. Japan's fertility decline to replacement levels, like that of Western Europe, followed considerable socioeconomic development and occurred without a national family planning program or even the use of widely available modern contraceptives. Hong Kong's rapid fertility decline also occurred with broadly based socioeconomic development and with only a minor assist from its excellent non-governmental Family Planning Association.<sup>3</sup>

Although Singapore, South Korea, Taiwan, and Sri Lanka all eventually introduced effective family planning programs, their fertility declines began before those programs got under way. During the period preceding the establishment of the government-run programs, all four countries were characterized by significant progress in health and education, and all but Sri Lanka experienced economic development as well.

Some have argued (e.g., Hernandez 1984) that fertility would have fallen in these four countries even without national family planning programs, as it did in Japan and Hong Kong. It seems unlikely, however, that the decline would have occurred as quickly as it did among illiterate, low-status women without the effective programs that

#### THE UNITED NATIONS FERTILITY RATES

In the 1993 edition of *World Population Prospects* (United Nations 1993), as in previous reports in this series, the UN demographic staff does an admirable job of providing plausible estimates for every country in the world for a considerable number of indicators over five-year periods going back to 1955-59. Inevitably, some, perhaps many, of the estimates for developing countries were necessarily based on incomplete or deficient data, speculation, and models.

It may therefore have been rather foolhardy to undertake a review of the fertility transition for all of Asia and its major regions. Nevertheless, I have limited most of my analysis to 24 of the 41 Asian coun-

tries. Among those, I concentrate mainly on eight poor countries in South and Southeast Asia and six well-off East Asian countries, which comprise 90 percent of Asia's population. For all of these countries there are good survey data on fertility to supplement the UN data, which are often based on such surveys. From previous work I am sufficiently well-acquainted with the data for these 14 countries to be satisfied that any deficiencies in my interpretations would arise from faulty analysis rather than from major errors in the basic data.

I am less confident about West Asia. There, for example, TFR declines from 7.0-plus to 6.0-plus for Iraq and Syria may reflect exuberant estimates, which I am unable to evaluate at this time.

3. The private Hong Kong program had a significant population effect at one stage of the decline (Freedman et al. 1970) and since then has ably served special needs and sectors.

were in place during most of the period of fertility decline. For example, in Taiwan contraceptive prevalence among illiterate women rose from 11 to 78 percent in just 11 years (1965–76) and fertility fell by 31 percent in just eight years, heralding a rapid decline to replacement levels among poorly educated women (Freedman, Chang, and Sun 1994).

In Asian countries with both considerable socioeconomic development and effective family planning programs, it is undoubtedly true that development contributed to fertility decline by increasing the cost of children to couples and decreasing the economic benefits derived from them. Beyond reducing the demand for children, development provided the infrastructure through which effective family planning programs could operate. Most of the countries that still have ineffective programs rank low on socioeconomic development (Mauldin and Ross 1991). Declining fertility can also improve development prospects. A recent World Bank report on the Asian “economic miracle” suggests that the demographic transition may be the cause as well as the effect of important elements of economic growth (World Bank 1993, 15, 203).

In any case, the important question is not whether across-the-board socioeconomic development was often instrumental to the Asian fertility decline, but rather what were the circumstances under which fertility declined with little or with less than broadly based socioeconomic development. Today, three-quarters of all Asians live in the six poor countries mentioned earlier, all of which have strong family planning programs and high contraceptive use

rates. All six have experienced significant fertility declines in recent years.

We have learned that, apart from the effect of family planning programs, three aspects of development and culture influence fertility declines:

- First, broad-based macrolevel development is not always necessary for major fertility declines. Limited, specific development variables, especially improved health, the education of women, and advances in their status, are sufficient.
- Second, ideas are a potential agent of change. This is the so-called ideational hypothesis—that reproductive behavior is affected by ideas, not only about family planning but also and just as importantly about lifestyles, and that such ideas are carried by the world communication, transportation, and trade networks, to which increasing segments of the world’s population are linked.<sup>4</sup> We in the population field did not anticipate the increasingly pervasive strength and influence of that network, in itself an important aspect of development.
- Third, we learned first from the Princeton Study for Europe (Coale and Watkins 1986) and then from studies in Asia that culture, as defined by linguistic and ethnic commonalities, has influenced the course of reproductive change in major ways independently of socioeconomic structural variables and family planning programs. Neither socioeconomic development, however defined, nor family planning programs tell the whole story. Cultural factors not covered by conventional development indicators also make a difference.

*Broad-based macrolevel development is not always necessary for major fertility declines. Specific development variables, especially improved health, the education of women, and advances in their status, are sufficient.*

4. Cleland and Wilson (1987) provide a cogent argument for important aspects of this hypothesis.



## THE ROLE OF FAMILY PLANNING PROGRAMS

Having given socioeconomic development and culture their unquestionable, due weight, I turn now to the role of organized family planning programs. Most of the world's major programs began in Asia, and those programs have played an important role in the fertility decline there.

It is significant that, at every level of development, a large proportion of Asia's population lives in countries with strong family planning program-effort levels—a much higher proportion than in either Latin America or Africa (Table 4). A comparison of Latin America and Asia illustrates the important point that a varying mixture of socioeconomic development and family planning program effort can produce similar fertil-

**Table 4.** Percentage distribution of regional populations at various levels of program effort, by social-setting levels: Asia, Latin America, and Africa, recent years

Social-setting level (1985)	% of population, by program-effort level (1989)				
	Strong	Moderate	Weak	Very weak	Total
High					
Asia	68	26	4	2	100
Latin America	26	27	47	0	100
Africa	*	*	*	*	*
Upper middle					
Asia	86	9	4	1	100
Latin America	9	84	7	0	100
Africa	10	74	16	0	100
Lower middle					
Asia	84	11	0	5	100
Latin America	*	*	*	*	*
Africa	0	14	86	0	100
Low					
Asia	76	13	11	0	100
Latin America	*	*	*	*	*
Africa	0	0	70	30	100
Total					
Asia	85	10	3	2	100
Latin America	24	35	41	*	100
Africa	1	9	76	14	100

Source: Classifications by social setting and program effort: Mauldin and Ross (1991, table 3).

\* Fewer than two countries of this region are at this social-setting level.



GRIFITH FEENEY

*In the early 1960s, fewer than 10 percent of women in developing countries used contraception. Today about 55 percent do, and most of the increase has occurred in low-income countries. An overwhelming majority of the women in developing countries served by family planning programs live in Asia.*

ity declines. Both Asia and Latin America have moved 62 percent of the way toward the 2.1 replacement fertility level; but Asia has done so with much stronger family planning programs, whereas Latin America ranks much higher in socioeconomic development.

With minor exceptions, the basic ideas and operational elements of family planning programs were developed in Asia, and an overwhelming majority of the women in developing countries served by family planning programs live in Asia. A large proportion of these Asian populations are rural, poor, and illiterate.

In the early 1960s, developing countries had no examples of successful, national-level family planning programs. At the first international confer-

ence on family planning programs in 1965, I predicted the emergence of national programs (Freedman 1966). My prediction was based largely on the pilot programs in Taiwan, South Korea, and Thailand, which had demonstrated the existence of considerable latent demand for family planning and the readiness of poor, illiterate, rural women in traditional societies to start using contraception when it was made available. I had no idea, however, that national programs would develop as rapidly as they did. Moreover, I incorrectly predicted success for family planning efforts in Pakistan because I was misled by the government's ambitious plans for a national program that were never implemented. There was no indication at the conference that China, which was not even represented at international



meetings on population, would soon mount a program of awesome and unique effectiveness.

We certainly did not envision that national family planning programs, just getting under way in a few countries during the 1960s, would grow to serve hundreds of millions of couples in a few decades. The proportion of developing-country women using contraception has grown from fewer than 10 percent in the early 1960s to about 55 percent today, with an amazing 75–80 percent of women living in East Asia. Most of this change has occurred in countries that the World Bank in 1990 classified as “low-income” (World Bank 1992b).

## THE CURRENT SITUATION

The fertility transition is completed or under way in all the regions of Asia. In 1992, 95 percent of Asia's population was living in just 24 of Asia's countries, which can be classified into four distinct groupings:

1. Eight poor countries with 81 percent of Asia's population, which collectively have a contraceptive use rate of 62 percent and TFRs ranging from 2.1 to 6.0.
2. Two countries of Southeast Asia (Malaysia and the Philippines) containing 2.6 percent of Asia's population, where family planning efforts have been either ineffective or pronatalist in distinctive ways.
3. Eight countries of West Asia, the region in Asia with the highest fertility rates and the lowest contraceptive use rates, but with indications that the fertility transition is under way. These countries contain 4 percent of Asia's population.
4. Six wealthy or moderately wealthy

**Table 5.** GNP per capita, life expectancy, female literacy, and percentage of fertility decline toward replacement level: eight poor Asian countries with 81 percent of Asia's population

Country groupings	GNP per capita, 1990 (US \$)	Life expectancy, 1990	% of adult females literate, 1990	% of fertility decline, 1965–70 to 1985–90
Strong programs and low mortality and illiteracy				
China	370	70	62	60
Indonesia	570	62	68	38
Sri Lanka	470	71	83	43
Vietnam	low	67	84	29
Moderately strong program but high mortality and illiteracy				
India	350	59	44	26
Strong program but very high mortality and illiteracy				
Bangladesh	210	52	22	26
Less than strong program and very high mortality and illiteracy				
Nepal	170	52	13	4
Pakistan	380	56	21	4

Sources: Data on income, life expectancy, and female literacy: World Bank (1992b, table 1); program rankings: Mauldin and Ross (1991, table 1).

countries of East and Southeast Asia, with 8 percent of Asia's population, almost universal contraceptive use, and TFRs of 2.1 or below.

The eight poor Asian countries (those classified by the World Bank as “low-income” in 1990), all of which have national family planning programs, account for 65 percent of the population of all developing countries. Because this group includes so much of Asia's population, I shall discuss it at greater length than the other two groups. Table 5 categorizes these countries by the strength of their family planning programs and their positions on two other important development indicators—life expectancy and adult female literacy.

China, Indonesia, Sri Lanka, and Vietnam all have strong family planning programs together with relatively low

mortality and high female literacy. They have had the largest fertility decline among the eight countries. India, with a moderately strong program but high mortality and low female literacy, ranks next in fertility decline. Bangladesh, an important anomaly, is unique in combining a strong program with extremely high mortality and very low female literacy. As I noted earlier, these six poor countries, all of which have experienced significant fertility declines, accounted for 76 percent of the population of Asia and 60 percent of the population of all developing countries in 1990. Collectively, their contraceptive prevalence rate in 1990 was 64 percent.

We failed to anticipate what has happened in some of these poor countries, partly because we did not realize how important the role of government could

*A government's effectiveness in lowering fertility depends significantly on whether it has a bureaucratic structure enabling it to mobilize village populations. China and Indonesia are prime examples of success, whereas Pakistan and Nepal are prime examples of almost complete failure when this kind of bureaucratic structure is absent.*

be in making family planning programs effective. A government can be especially effective if it has a bureaucratic structure that enables it to reach and mobilize village populations. China and Indonesia are prime examples of success in this direction, whereas Pakistan and Nepal are prime examples of almost complete failure when this kind of bureaucratic structure is absent. India's now-considerable fertility decline might have been much greater if the government had implemented the national family planning program more effectively.

To clarify how fertility declines have varied in these eight countries, it is useful to examine the experience of each. The following review considers not only their varying cultures and levels of socioeconomic development, but also the strength of their family planning programs.

## CHINA

China merits attention first, not only because its 1.2 billion people represent 39 percent of Asia's population, but also because its passage from high to replacement-level fertility has been extraordinarily and unexpectedly rapid. The pace of the decline and its penetration to hundreds of millions of poor, uneducated, rural inhabitants is unprecedented in human history apart from periods of famine, epidemics, or war. That the decline occurred simultaneously with the government's implementation of a massive family planning program makes it possible to assert that the program has had a major impact. This is not to deny the role of economic and social development and China's political structure in reducing fertility.

In 1970, when the government launched its national birth-control program and the precipitous decline began, 52 percent of all Chinese women and 61 percent of rural women were illiter-

ate. By 1982, just 12 years later, the TFR had fallen by 54 percent—86 percent of the way toward the replacement level (Coale and Chen 1987); and in the following decade China reached replacement-level fertility.

The case of Sichuan Province is particularly striking. With a population of 100 million, Sichuan was 80 percent rural just before 1970, and 67 percent of the rural women were illiterate (Lavelly and Freedman 1990). Nevertheless, between 1967–70 and 1979–82 the TFR fell from 6.5 to slightly more than 2.1 for all women, or 99 percent of the way toward replacement, and from 6.9 to 2.6 for rural women, or 92 percent of the way toward the replacement level (Table 6). The declines for illiterate women were as great as those for better-educated women.

I know of no social or economic change other than the government's extremely effective family planning program that could explain such declines. Although education levels were improving in Sichuan during that period, a decomposition of the decline in TFR has revealed that only 7 percent was attributable to improved education levels, whereas 93 percent was due to changes within education strata in the percentage of women married and in the fertility rates specific for age and marital status (Freedman et al. 1988b).

To a substantial degree, these profound changes in China's fertility were the result of the government's program, unprecedented not just in its massive size, but also in its effective use of the government's bureaucratic apparatus to change the reproductive behavior of the village populations. The important role of the government program is evident in a rise and then a fall in the TFR since the early 1980s, which were associated with an initial relaxation and subsequent massive strengthening of the fam-



**Table 6.** Changes in total fertility rates, by rural-urban status: Sichuan, 1967–70 to 1979–82

Period	All women	Rural women	Urban women
1967–70	6,470	6,980	3,970
1979–82	2,135	2,505	1,187
% of change	-67	-64	-70
% of change toward TFR of 2.1	-99	-92	-100

Source: Freedman et al. (1988a).

Note: All rates expressed per 1,000 women.

ily planning program. These program shifts led, first, to an increase in the TFR from 2.27 in mid-1985 to 2.46 in mid-1987 (Luther, Feeney, and Zhang 1990) and then to a TFR decrease to 1.90 by 1992 (Kristoff 1993, reporting on information from China's State Family Planning Commission). Greenhalgh, Zhu, and Li (1994, 389) conclude a penetrating illustrative study of how this most recent decline happened in three Shaanxi villages:

The preeminent force for demographic change was the intensification of the birth control program. In the late 1980s China's leaders grew increasingly worried that excessive population growth was threatening the country's future by sabotaging achievement of cherished economic goals. Their fears were translated into instructions to strengthen implementation of the birth policy in the provinces; these demands, in turn, were translated into greater political pressure on and economic resources for policy enforcement at the grassroots level. This microstudy of three ordinary and remote villages provides dramatic testimony to the changes that can be wrought all the way to the bottom of the administrative hierarchy when leaders in Beijing decide that rapid population growth must be brought under control. Even in an era of market reform and political loosening, the demographic reach of the Chinese state can be formidable indeed.

The international community did not anticipate the magnitude and rapidity of China's fertility decline, in part

because it failed to appreciate China's significant progress in health and education. A more important reason is that no one anticipated that the Chinese political system could mobilize family planning services in such a short time for the more than 300 million women of childbearing age scattered over a vast territory and believed to be resistant to radically new ideas about reproduction.

While giving China's family planning program its due, it is important to stress that the fertility decline was also to a significant extent facilitated by forces other than the government program. There is little doubt that nonprogram factors accounted for much of the fertility decline in urban areas. That decline began before the establishment of the national program, but it was greatly accelerated by an intensive urban family planning program during 1964–67. Among the significant nonprogram factors were prior declines in child and adult mortality, rapidly rising education levels, the employment of wives as well as husbands outside the family, a severe housing shortage, the existence of old-age pensions in urban areas, urban parents' strong aspirations for their children's education, and, more recently, rising consumerism. I also believe that China's fertility decline, like that of other East Asian countries, was facilitated by a cultural pragmatism that makes people open to new ideas, though I cannot provide quantitative evidence of this effect.

*The international community did not anticipate the magnitude and rapidity of China's fertility decline, in part because it failed to appreciate China's significant progress in health and education.*

Important as these factors probably were to urban fertility decline, without the government program it seems unlikely that they could have resulted so quickly in fertility levels as low as the TFR of 1.2 reported for urban China in 1980 (Coale and Chen 1987) or the amazing 0.7 currently estimated for Beijing (Ma 1994).

In the rural areas, important non-program factors contributing to fertility decline have been undoubtedly the considerable reduction in mortality and the smaller but significant gains in female education. To an unknown extent the recurrent government campaigns against traditional familial values and institutions, derided as "feudal," presumably have also had some effect, reinforced now by the economic liberalization and rising education levels.

While gender equality still has a long way to go in China, there is little question that the significant gains women have made have facilitated the country's fertility decline. For example, the proportion of secondary-school graduates going on to higher education is about the same for men and women. A recent study in Beijing (Feng and Chen 1994) found that in most respects the status of women of childbearing age is equal to that of their husbands. It is also noteworthy that for China as a whole the proportion of all births occurring in the first five years of marriage rose from 24 to 55 percent in rural areas and from 34 to 88 percent in urban areas between 1964 and 1981 (Coale and Chen 1987, table 30). This means that much less of a woman's married life is devoted to childbearing and childrearing than in the past.

Even so, social conditions have been far from ideal for contemporary Chinese women. During much of the fertility decline, government officials have dictated whether and when most women had a child and which contraceptive

methods they used. The Chinese program undoubtedly has been coercive, with severe consequences for the health and autonomy of many women (Banister 1987; Kaufman et al. 1992; Greenhalgh 1994).

Despite the power of a massive, centrally directed program and the magnitude of the overall fertility decline, the fertility decline in China has not been monolithically uniform. The political apparatus was not that strong. Changes in reproductive behavior have varied by region, province, and rural production brigade (Freedman et al. 1988b). Similar evidence of regional variations has emerged from Indonesia (Freedman, Khoo, and Supraptih 1981) and Europe (Coale and Watkins 1986), reflecting linguistic, ethnic, and other cultural and environmental differences.

## INDONESIA

Indonesia presents an example of rapid fertility decline occurring within the context of significant social and economic development and an effective family planning program, neither of which was anticipated before the fertility decline began. Between the late 1960s and 1990 fertility fell by 46 percent—75 percent of the way toward replacement (data for 1990 from Demographic and Health Surveys 1992a).

Like China, Indonesia has been distinctive in having an administrative structure that facilitates action at the grass-roots level for a wide range of development activities, including family planning (World Bank 1992a; Warwick 1986). In 1976, when social and economic development was still uncertain, disadvantaged villages far from cities and without health facilities, electricity, TV, or other amenities already had contraceptive prevalence rates little different from those in better-off villages

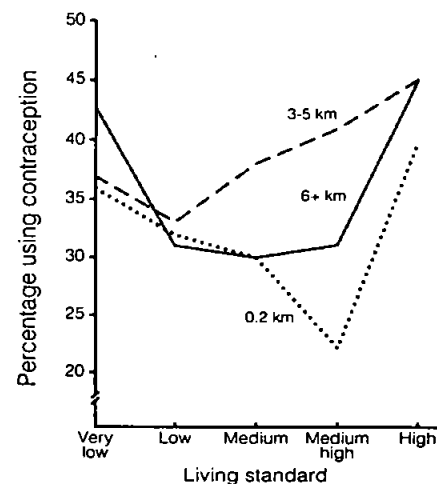


Figure 1. Percentage of rural women at risk of pregnancy and using modern contraception, by household living standard and distance to the nearest city: Indonesia, 1976

Source: Freedman, Khoo, and Supraptih (1981, table 16).

(Freedman, Khoo, and Supraptih 1981). The family planning program was able to reach into those remote, backward communities. Unexpectedly and contrary to conventional wisdom of that time, the result was a curvilinear relationship between contraceptive use and a standard-of-living index, so that the highest use rates were for those with the lowest and highest standards of living (Figure 1).

In commenting on Indonesia's outreach to remote, poor villages and to the poor population generally, several of us wrote at that time:

We speculate that such results on either the individual or community level are linked to the character of the Indonesian programme in the context of Malthusian pressures. . . . The Indonesian programme has a strong administrative structure reaching down to the village level where it is capable of bringing the pressure and sanctions of recognized authority and peer pressure to bear on individuals. A large number of those on whom pressure is brought are very poor, predominantly in agriculture with holdings too small for

adequate subsistence. Under such circumstances the poor have adopted contraception in sizable numbers. We believe that the motivation arises from the convergence of need and forceful presentation of contraception as a potential solution. The poor may be powerless to resist the pressures of constituted authority, and their very limited resources for supporting additional children may make the arguments of the authorities seem plausible. At the higher end of the status hierarchy, individuals who are better off are led to contraceptive use in part by programme pressure but with the different motivation flowing from modernization. (Freedman, Khoo, and Supraptilah 1981, 30)

Indonesia also illustrated in 1976 the fact that regional effects can be powerful, with their influence transcending socioeconomic variables or program efforts. As in Thailand at that time, the most powerful variable in multivariate analyses of the determinants of contraceptive use was geographic region (Cleland, Little, and Pitaketsombati 1979). Since 1976 the situation in Indonesia has changed considerably, as the pace of social and economic development has quickened and ties to the outside world have grown through modern communications and transportation.

## PAKISTAN

At the opposite extreme from China and Indonesia in program implementation, Pakistan, which had an organized national family planning program at an early date, has made no significant progress on fertility reduction. The 1990–91 Demographic and Health Surveys' report (1992c) of a decline in Pakistan's TFR to 5.4 from levels of 6.0–6.5 found in earlier surveys is open to serious question, as the report itself indicates, because large declines at ages 30–49 are unlikely to have occurred in

view of the small increases in contraceptive use at those ages. It is likely, however, that some fertility decline has occurred at the younger ages as a result of the steady increase in mean age at marriage for females, from 16.7 in 1961 to 21.7 in 1990–91.

Mauldin and Ross (1991) classify Pakistan's family planning program as "moderately strong," presumably because their panel of raters was impressed by the program's policy rhetoric and formal bureaucratic structure. I would classify it as weak because the program is not carried out in the field. In a 1980 survey, for example, 83 percent of married women of childbearing age reported never having been visited by a family planning worker and 75 percent had never heard a government message about family planning (Mahmood 1990, table 5.1). As recently as 1992 the Pakistan National Institute of Family Planning reported that, "after many years of effort, the coverage of family planning services does not exceed one-third of the population" (Demographic and Health Surveys 1992c, 6). In May 1993 the workers in 65 percent of a national sample of Pakistan's Family Welfare Centres made none of the home visits that were central to their mission (Cernada et al. 1993, iii).

## INDIA

India, with its 850 million people and young age structure, is an intermediate case whose fertility transition is critical to global population stability. Fertility has declined steadily since the late 1950s, according to United Nations estimates. The reduction in TFR from the United Nations' 1965–70 estimate of 5.7 children per woman (Table 2) to the 3.6 estimate for 1991 made by India's Office of the Registrar-General (1993, 20) represents a 37 percent decline in fer-

*Many observers have been disappointed that India's fertility decline has not been greater. Despite an impressive commitment in the form of training programs, infrastructure, and number of workers, there have been recurrent reports of poor implementation in the field.*





MARK EDWARDS/STILL PICTURES

*Improved health and progress in education, particularly of females, are key factors in lowering fertility rates. Here Indian children are bundled into their jitney school bus.*

tility—58 percent of the decline necessary to reach the replacement level. Contraceptive prevalence had risen to 45 percent by 1988–89 (Operations Research Group 1990, table 7.31).

Since the 1960s, India generally has had a strong political commitment to its massive family planning program. Although the Indian fertility decline has been considerable, many observers, including myself, have been disappointed that it has not been even greater. The central government has made an impressive commitment in the form of training programs, infrastructure, and number of workers; but over the years there have been recurrent reports of poor implementation in the field. As recently as 1989, then-Prime Minister Rajiv Gandhi, addressing a meeting of the International Union for the Scientific Study of Population in New Delhi, stated that the Indian program had fallen short of aspirations because of bureaucratic bungling and inflexibility in the face of large social differences among localities.

In Uttar Pradesh in 1982 only a small proportion of married women of childbearing age canvassed in selected villages had ever been visited by a family planning worker, although the program called for visits to all (Misra et al. 1982). In a study of local areas conducted in Gujarat in 1989, Shariff and Visaria (1991) reported lesser but still significant shortfalls in worker performance and information dissemination. They found, however, that the subcenters, which provided better-quality services, also had higher acceptance rates.

When in 1976–77 India made a special “emergency” effort to put great pressure and even coercion behind its program, the effort backfired and the government fell. This sudden act of political will, which was inconsistent with the underlying political structure, did not work.

Apart from the question of program efficacy, India has great cultural, social, and economic heterogeneity among its 18 states. Urban India has much lower total fertility rates than rural India—2.7 versus 3.9 children per woman on average,

according to the Office of the Registrar General (1993, 20). In 1991, 11 states had urban TFRs below 3.0 and five had rates at or below 2.1. Kerala and Tamil Nadu, states that have made considerable progress in health and education, had overall TFRs of 1.8 and 2.2, respectively.

In fact, Kerala and Tamil Nadu, both in southern India, have often been cited as cases par excellence of low-fertility societies with excellent progress in health and education in the absence of substantial economic development. Kerala is clearly India’s leader in health and education. Tamil Nadu has also made impressive gains in public health; but its female literacy level, though high by Indian standards, is no higher than that of several other Indian states.

In contrast to northern India, an important factor in the South that is often cited as contributing to low fertility is the distinctively higher status of women, defined by “the extent of women’s exposure to the world outside the home, the extent of their active (especially economic) interaction with this extra-domestic world, and the extent of their autonomy in decision-making” (Basu 1992, 5). Dyson and Moore (1983, 195) compare the northern and southern Indian states as follows:

The main states of India are broadly grouped into two demographic regimes. In contrast to states in the north, southern states are characterized by lower marital fertility, later age at marriage, lower infant and child mortality. . . . The division between the two regimes broadly coincides with the division between areas of northern kinship/low female autonomy and southern kinship/high female autonomy. The analysis suggests that female social status is probably the most important element in comprehending India’s demographic situation.

Basu’s (1992) micro-level study lends support to Dyson and Moore’s analysis

by showing that in New Delhi, female migrants from Tamil Nadu (in the South) had both greater autonomy and education and lower fertility and mortality than migrants from Uttar Pradesh (in the North).

The hypothesis that the higher and more autonomous status of women in southern India accounts for their lower fertility is plausible and appealing. In another important study, however, Visaria (1993) reports results rather inconsistent with this hypothesis. The study is distinctive in attempting to measure the autonomous status of women directly rather than simply through the usual proxies of education and labor-force participation.

In selected districts of Kerala (in the South) and Gujarat (in the North), married women of childbearing age were interviewed in detail, not only about their reproductive behavior and socioeconomic situation but also to learn how they ranked on three measures of female autonomy, which Visaria (1993, 1) defines as "the ability to make one's own decisions about what to do rather than being . . . told what to do." The measures covered income autonomy, personal autonomy, and degree of contact with the wife's natal kin. The study found that the indices of female autonomy had only weak to very weak correlations with either fertility or contraceptive use, in both states. Visaria also found that the distribution of women on these indices in Kerala was little different from that in Gujarat, contrary to what it should have been if the greater autonomy of Kerala's women were indeed responsible for their lower fertility.

Despite the problems cited in the Indian family planning program and the continuing lag in social and economic development in some large states, the fertility transition is well under way

throughout India. In 1991 only one major state (Uttar Pradesh) had a TFR higher than 4.6, and in 12 of the 17 states TFRs were at 4.0 or less.

## BANGLADESH

Bangladesh is a particularly important case because it is the best example we have of the idea that a strong family planning program effort can lead to significant fertility decline even when social and economic development is at a very low level and not improving much. Bangladesh ranks low on almost every social and economic development indicator, including health, education, and the status of women. Nevertheless, first in a quasi-experimental pilot project in the rural district of Matlab and then in Bangladesh as a whole, an intensive family planning program effort was followed by a substantial increase in the use of contraception and a decline in fertility. The rapidity with which reproductive behavior changed and the absence of much parallel change in social and economic development make it highly plausible that the program has had a substantial influence on reproductive behavior.

Between 1975 and 1990 the level of fertility fell from 7.0 to about 4.5 children per woman. This represents a 40 percent decline, 55 percent of the way toward a TFR of 2.1 (Cleland et al. 1994). It is notable that Bangladesh's fertility fell from higher levels than India's to a present level not much higher than India's, although India has had a longer-standing family planning program, significantly higher socioeconomic levels, and lower mortality in many of its states. The Bangladesh case is particularly important because this is a country in which most of the factors favorable to fertility decline—improving socioeconomic development and improving sta-

*The rapidity with which reproductive behavior has changed in Bangladesh and the absence of much parallel change in social and economic development make it highly plausible that the family planning program has had a substantial influence on behavior.*

tus of women—are hardly visible. Yet fertility has declined, despite predictions by distinguished social demographers (Demeny 1975; Arthur and McNicoll 1978) that it could not happen.

To quote the comprehensive review of the Bangladesh case by Cleland et al. (1994, 131): "One remarkable feature of the Bangladesh fertility transition is that it has been synchronous for all large socioeconomic groups. Broadly speaking, the poor, the landless, and the illiterate have modified their reproductive behavior at the same time and to the same extent as the less poor, the landed, and the literate." After a detailed and convincing review of the evidence on social change, they conclude that social and economic development involving urbanization, mechanization, growing prosperity, and literacy does not explain the fertility decline in Bangladesh (p. 133).

They go on to provide this synthesis:

In most theories of fertility decline, the main underlying cause is identified as falling demand for children, in response to economic and social change. Acceptability of and access to birth control may influence the timing and the speed of decline, but the effect of these supply-side factors is contingent upon and subordinate to the demand factors. . . . The evidence for Bangladesh suggests that the relative importance and primacy of the demand and supply side factors should be reversed. The crucial change that has taken place concerns acceptability of and access to birth control and not structural change that has driven down the demand for children. Economic and social change, with concomitant shifts in ideas and outlook, may have been an important facilitating factor, just as contraceptive availability is seen as a facilitating factor in demand theories (p. 134).

Cleland and his colleagues stress the point that there was significant prior latent demand for contraception because of earlier declines in child mor-

tality and because Bangladeshis were "never emphatically pronatalist" (p. 135). The barriers to ready adoption of contraception included some suspicion of and ignorance about birth control, some religious opposition, and female seclusion.

Starting about 1975, these barriers were substantially overcome by a well-organized and well-executed government program, carried out with "unremitting tenacity" to reach the rural populations, mainly through a comprehensive system of household visits to eligible women combined with other program supports. There is convincing evidence from the Matlab study in Bangladesh that such routine household visits by well-supported family planning workers can have a lasting effect on reproductive behavior (Cleland et al. 1994, 92-96).

While emphasizing the role of the supply-side government effort, Cleland and his colleagues acknowledge that social changes also played a role. "Though these changes have not yet brought growing prosperity," they state (p. 133), "their collective impact represents an element of modernization,

with unknown, but perhaps profound, effects on outlooks and expectations. It is unlikely that family planning would have flourished in the absence of all these other changes."

Why did the Bangladesh government's program induce a fertility decline while the Pakistan government's did not? My earlier conclusion, that Pakistan did not implement the plan it had on paper, is supported by Cleland and his colleagues. They speculate that the more powerful fundamentalist Muslim establishment in Pakistan may be responsible for the government's failure to implement the program there with a major commitment of its prestige and funds, in contrast with the actions taken by the government of Bangladesh.

## SRI LANKA AND VIETNAM

Sri Lanka has long been known as a poor country whose significant fertility decline resulted from the combination of a well-organized, noncoercive family planning program with low mortality and high female literacy. In this respect Sri Lanka resembles the states of Kerala and Tamil Nadu in India. The same



*Vietnam's fertility decline, like Sri Lanka's, has resulted from low mortality and high female literacy, combined with a well-organized family planning program.*



combination of factors is moving Vietnam in a similar direction.

## NEPAL

Nepal, like Pakistan, has experienced little fertility decline, presumably because of its weak program and its high mortality and female illiteracy.

## MALAYSIA AND THE PHILIPPINES: ILLUSTRATING SPECIAL EFFECTS

The foregoing discussion of the eight poor countries in Asia has stressed how the use of political power can energize the implementation of a family planning program for antinatalist objectives. The case of economically well-off Malaysia illustrates the point that political power, building on pronatalist religious and cultural values, can have pronatalist behavioral effects despite the existence of considerable economic and social development. Because of rapid development, many observers expected early fertility declines to continue among all three of Malaysia's major ethnic groups—Malay, Chinese, and Indian (Leete and Tan 1993). All three groups participated in Malaysia's modernization between 1965 and 1978, but among the Malays fertility declined by only 19 percent, compared with 39 percent among the Chinese and 48 percent among the Indians (Table 7). Since most Malays were rural and less exposed to modernization forces than the other two ethnic groups, this was not surprising. But even the 19 percent decline among the Malays was nearly twice the 10 percent decline supposed to signal the onset of a continuing reduction in fertility (Watkins 1986).

From 1978 to 1986, however, while Chinese and Indian fertility continued to decline rapidly, the TFR among

Malays rose by 12 percent. This increase followed a strong pronatalist policy initiative and political movement orchestrated by Muslim religious forces, which was backed by the governing authority of the United Malay National Party. The pronatalist policy set a population target of 70 million for Malaysia by the year 2100 (Leete and Tan 1993, 145).

A series of government-sponsored media campaigns had a powerful effect on the attitudes and behavior of the majority Malay group. In response to a 1984–85 survey, a substantial proportion of Malay women said that they had revised their fertility expectations upward in response to the campaigns. This upward revision is evident in comparisons of expected family size in 1974 and 1985. There was also a significant upward shift in the proportions of Malay women using less effective, traditional contraceptive methods rather than the modern contraceptives used by the two other ethnic groups. The same effects were found in Malay areas varying greatly in education and other modernization variables.

After the Malays' fertility rise of 1978–86, their fertility fell again by 15 percent during 1986–92 as Chinese and Indian women experienced further declines of 12–13 percent. The net result of all these trends over 1965–92 was a 23 percent decline for the Malays compared with 62–63 percent for the two other groups (Table 7).

The case of the Philippines, which ranks just above the World Bank's boundary between poor and lower-middle-income countries, is anomalous because the rate of fertility decline and that of contraceptive prevalence have been considerably lower than in the neighboring countries of Indonesia and Thailand, which are comparable in socioeconomic development. From 1965–70 to 1985–90 the TFR fell by at least 21 percent

*Malaysia illustrates the point that political power, building on religious and cultural values, can have pronatalist behavioral effects despite the existence of considerable economic and social development.*

**Table 7. Levels and trends in total fertility rates, by ethnicity: Peninsular Malaysia, 1965-92**

Level/trend	Malays	Chinese	Indians	Total
<b>Total fertility rates</b>				
1965	5.3	5.6	6.7	5.6
1970	5.1	4.6	4.8	4.9
1978	4.3	3.4	3.5	
1982	4.6	2.9	3.2	
1986	4.8	2.4	2.9	
1989	4.1	2.0	2.5	
1992	4.1	2.1	2.5	3.3
<b>% of decline in TFR</b>				
1965-78	19	39	48	
1978-86	-12	29	17	
1986-92	15	12	13	
1965-92	23	62	63	
<b>Ratio of fertility rates (base = 100)</b>				
1965	100	106	126	
1992	100	51	61	

Sources: Data for 1970-92: Leete and Tan (1993, tables 8.3 and 8.7); data for 1965: DaVanzo and Haaga (1982, table 2).

(Palmore et al. 1993, table 1) and perhaps by as much as 29 percent (United Nations 1993, table A.19), compared with 38 percent in Indonesia and 58 percent in Thailand (Table 2). Recent estimates of contraceptive prevalence are 40 percent in the Philippines compared with 50 percent in Indonesia and 66 percent in Thailand (United Nations 1994).

Why does the Philippines lag so far behind Indonesia and Thailand in its fertility transition? It is not because the Philippines trails these neighbors in social and economic development. Nor is it because there is little unmet need for contraception in the Philippines. The answer, I believe, is that the Philippine family planning program is relatively ineffective, possibly in part because the Roman Catholic Church, unique to the Philippines in Asia, has strongly opposed the program. If this is so, the Philippines is an important case because it demonstrates that an ineffective family planning program can sub-

stantially retard fertility decline even where socioeconomic development and the demand situation are favorable to rapid decline. To make a convincing case that the government's ineffective program has been responsible for the much lower rate of fertility decline in the Philippines than in Indonesia or Thailand, it is necessary first to show that a lower level of social and economic development and lesser demand for family planning do not explain the difference.

The Philippines is not substantially disadvantaged with respect to health and female education, which appear to be the minimal development indicators responsible for low fertility in such places as Kerala, Tamil Nadu, and Sri Lanka (World Bank 1990, tables 1 and 28). Economic development as measured by income is probably an asset, even if it is not essential for lower fertility; and in this respect the Philippines has not been obviously disadvantaged.

In 1965 its gross national product (GNP) per capita was much higher than that of Indonesia and about equal to that of Thailand. In 1988, GNP per capita was still substantially higher in the Philippines than in Indonesia but lower than in Thailand (World Bank 1990, table 1). One economic indicator in which the Philippines has lagged considerably behind its two neighbors, however, is the average annual growth rate of per capita GNP. On the basis of this indicator, one could argue that Indonesia and Thailand have had the more dynamic economies and that growth of income may be more important than actual income level.

If the lower levels of contraceptive prevalence and fertility decline in the Philippines are due to lack of demand for family planning, then unmet need, as measured by the percentage of married women who say they want to space or limit births but are not using contraception, should be less there than in Indonesia or Thailand. However, Casterline, Domingo, and Zablan (1988, 6-8) estimated the level of unmet need in the Philippines at 21 percent in 1988, whereas Bongaarts estimated the levels for Indonesia and Thailand in 1987 at 13 and 8 percent, respectively (World Bank 1991, 49). In 1988-91 the "wanted" TFR was 29 percent below the actual TFR in the Philippines, whereas it was only 24 percent below actual TFR in Indonesia and 17 percent below it in Thailand in 1984-87 (DHS reports for Philippines 1994; Indonesia 1991; Thailand 1988).

Given the comparable social and economic settings of the three countries and the considerable level of unmet need for family planning in the Philippines, the third possibility—that the Philippines has lagged behind its two neighbors in fertility decline because of the problems and ineffectiveness of its family planning program—

warrants examination. Several studies support this hypothesis.

The Philippine program scored lower in 1989 on Mauldin and Ross's overall ranking of program effort, in which possible scores ranged from zero to 100 percent (Mauldin and Ross 1991, 354):

Indonesia	78
Thailand	77
Philippines	48

This disparity in scores has grown considerably since the 1982 rankings, although the Philippines ranked lowest then, too.

Entwisle (1989, table 7) also developed a scoring scheme based on Lapham and Mauldin's 1982 scores of the degree to which a family planning program's organization, support, supervision, and the activities of program personnel facilitated delivery of services (Lapham and Mauldin 1984). Her scores range from zero to 29.8. The scores for the three countries were:

Indonesia	29.5
Thailand	25.1
Philippines	15.6

The 1988 Annual Report of the Philippine Department of Health's Family Planning Service states that the program made little headway in 1986 and 1987 because of "serious political, religious, and legislative problems on policy debates" and "institutional, financial, manpower, and logistical constraints within the program" (quoted in World Bank 1991, 40). According to the World Bank report (1991, 48), whereas the Indonesian government has had a strong policy commitment to its family planning program and little religious opposition, in the Philippines "policy commitment has wavered and has faced strong opposition by religious authorities."

Finally, Palmore and colleagues (1993, 1-2) summarize the Philippine situation as follows:

Clearly, the fertility transition in the Philippines has not been as rapid as in the other major Southeast Asian countries and the family planning program has struggled. . . . In fact, the government's commitment to promoting family planning has been ambiguous until recently . . . and, as recently as 1990, family planning accessibility remained problematic for many contraceptive methods. . . . the government has now taken a stronger position in support of family planning, so strong that debates between the Catholic church and the government are receiving conspicuous media coverage (with President Fidel Ramos, Secretary of Health Juan Flavio, and Cardinal Jaime Sin being major protagonists).

I conclude that the role of the Roman Catholic Church, in opposing many aspects of the family planning program in the Philippines, is unique in Asia. I conclude further that although the Philippines has been going through what is surely an irreversible and continuing fertility transition, the pace of its transition is so much slower than it could be with a much more effective program that this retardation is notable and important.

The situation may be changing, however. In 1989 the government promulgated a major reorganization that may bode well for the program. Responsibility for rendering and supervising family planning services was transferred from the Commission on Population (POPCOM) to the Department of Health, which was charged with placing new emphasis on responding to the needs and desires of families in meeting their health and fertility aspirations without reference to demographic objectives. POPCOM assumed responsibility for articulating macrodemographic goals and policies for reducing population growth by relating population dynamics to various aspects of economic development. With service activities no longer the re-

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*The powerful sweep of ideas and messages across the world by means of communication and transportation networks may be increasingly at work in West Asia, penetrating even the secluded lives of Islamic women.*

sponsibility of POPCOM, the plan clearly separated macro- and micro-level goals and activities. This reorganization was surprisingly prescient of the major new emphasis on a two-track approach to (1) macrolevel population policy and (2) family planning-reproductive health services that emerged at the United Nations International Conference on Population and Development held in Cairo in September 1994.

I have devoted considerable attention to the Philippines because it provides an unusual opportunity to make a plausible case that whether family planning programs are well or poorly implemented affects fertility levels, even when the other basic determinants are reasonably favorable. Usually it is difficult to separate poor program effects from the effects of poor social and economic development (for example, in Pakistan and some African countries). If the Philippine government carries through the reorganization of its family planning program effectively, observers will be fascinated to see whether the lagging decline in fertility is corrected by an upsurge of contraceptive use consistent with the high unmet need. The situation approximates an experimental test.

#### WEST ASIA: ON THE WAY TO LOWER FERTILITY

A group of eight countries of West Asia, containing 92 percent of that region's population, is of special interest because West Asia has the highest fertility in Asia. The West Asian countries rated by Mauldin and Ross (1991) have either weak (or very weak) programs or no programs at all. Nevertheless, West Asia's fertility decline of more than 20 percent overall between the late 1960s and the late 1980s indicates that this region too is now on the fertility-transition path.

The four countries with fertility de-

clines of 23–55 percent—Jordan, Kuwait, Lebanon, and Turkey—have moderately low mortality and moderately high female literacy. The other four West Asian countries considered here—Iraq, Saudi Arabia, Syria, and Yemen—have lower rates of female literacy, possibly linked to greater female seclusion. In Saudi Arabia and Yemen, fertility has remained virtually unchanged at very high levels (6.8 and 7.7 children per woman, respectively). Even in this high-fertility group, however, the 15 percent fertility decline reported for both Syria and Iraq may indicate that, here too, a fertility transition is in progress. The powerful sweep of ideas and messages across the world by means of communication and transportation networks may be increasingly at work in West Asia, penetrating even the secluded lives of Islamic women.

Turkey, West Asia's major non-Arab country, provides another illustration of an unexpectedly rapid fertility decline. According to the Demographic and Health Survey there (Demographic and Health Surveys 1994), by 1993 the TFR had fallen to 2.5 children per woman from estimated levels of 3.0 in 1988 and 4.3 in 1978. This represents a decline in just 15 years of 42 percent—or 82 percent of the way toward replacement-level fertility. Mauldin and Ross (1991) classify Turkey among those countries with weak programs but upper-middle social settings. In not having a significant family planning program effort and in the reliance of couples on withdrawal as the modal method of contraception, along with the considerable use of abortion, Turkey resembles Western Europe at the beginning of its fertility transition.

Jordan, with a fairly well-educated Palestinian population and low mortality, has also experienced a significant fertility decline since the late 1970s. According to several surveys, TFR fell

from 7.4 to 5.6 children per woman between 1976 and 1990 (Demographic and Health Surveys 1992b, table 3.1). This represents a 24 percent decline—34 percent of the way toward replacement-level fertility. Contraceptive prevalence reached 40 percent in 1990, despite a weak program effort (Mauldin and Ross 1991, table 4). Other results from the survey—a mean preferred family size of only 3.9 children and an expressed intention by 40 percent of noncontraceptors to begin contraceptive use—suggest that fertility in Jordan will continue to decline.

The high fertility of West Asian countries often has been attributed to the strong influence of Islam and the secluded status of Muslim women. This explanation, however, has little validity if considered apart from the political and cultural forces that help to define the role of religion in a society (Obermeyer 1994). Indonesia, the most populous Muslim country in the world, has an effective family planning program and rapidly declining fertility. Significant levels of contraceptive use are also found in the West Asian Muslim countries of Egypt and Tunisia. And Turkey, which, as we have seen, has experienced a rapid fertility decline, is also a Muslim country.

#### EAST AND SOUTHEAST ASIA: AT OR BELOW REPLACEMENT-LEVEL FERTILITY

A final group of six well-off countries in East and Southeast Asia are all at or below replacement-level fertility. For Hong Kong and Japan, like Europe during its transition, the explanation is considerable social and economic development, combined with private-sector family planning information and services. For the four others—South

Korea, Singapore, Taiwan, and Thailand—the combination of strong family planning programs and broadly based social and economic development has been responsible for the low fertility.

For all six countries, the ideational hypothesis is also relevant: ideas, not only about family planning but also about familial life-styles, have been carried to these countries by the world communication, transportation, and trade networks to which they are strongly linked. This ideational force is operating to varying degrees in most countries of Asia, although it is difficult to measure.

In some of these Asian countries there is evidence that low fertility does not necessarily require the prior demise of traditional familial values and behaviors. In all of them, however, the recent movement to replacement-level fertility or below has at first been partly and then wholly a result of delayed marriage

and, to a lesser degree, increased singlehood, both linked to the rising status of women. How men and women adjust to their changing roles will determine whether fertility rises again to replacement levels—a change that most governments in the below-replacement countries hope to achieve. Declines in nuptiality and advancing age at marriage are temporarily exaggerating how low fertility has fallen, as measured by the conventional TFR.

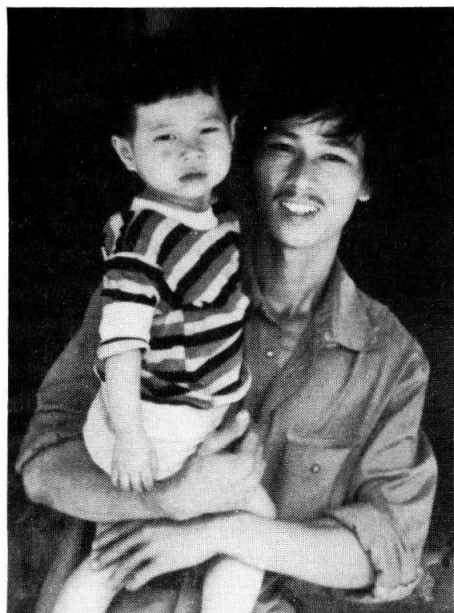
#### TWO CASE STUDIES OF LOW-FERTILITY COUNTRIES

Thailand and Taiwan illustrate the demographic situation in the low-fertility countries of Southeast and East Asia, respectively. Both are of particular interest because their fertility transitions have been quite rapid.



*The high fertility of West Asian countries is often attributed to the influence of Islam and the secluded status of Muslim women. Significant levels of contraceptive use, however, are found in Turkey, Jordan, Egypt, and Tunisia—all Muslim countries.*





*Thailand's rapid transition from high to replacement-level fertility is remarkable because the desire for smaller families characterized broad segments of Thai society even before the country began to undergo major social and economic development. Rural as well as urban Thais were receptive to the government's family planning program.*

## THAILAND

Since the late 1960s, Thailand has moved from high to replacement-level fertility. Estimates of the TFR in 1994 range from 1.95 to 2.1 (Institute for Population and Social Research 1994, 1; United Nations 1994). Considerable development was taking place, as measured by conventional social and economic indicators, during a major part of its fertility decline, especially in the last decade. Even as recently as 1987, however, Knodel, Chamrathirong, and Debavalya (1987, 8) could write that "the fertility transition is taking place while the Thai population is largely rural and agricultural," and that "there seems to be a general receptivity among broad segments of the population, including those with little or modest edu-

cation and living in rural areas, to the changes in reproductive patterns that are now taking place."

Those broad segments of Thailand's population appeared to have considerable latent demand for family planning even before Thailand began to undergo major social and economic changes. This demand was demonstrated by the Potharam project (Rosenfield, Asavasena, and Mikhonorn 1973), a pilot study initiated by some government leaders who were uneasy about the rate of population growth but divided on what to do. Begun in a rural area in 1963 to provide women with family planning services and information, the project revealed that 72 percent of the women of childbearing age wanted no more children but that few knew much about birth control methods. The project was well received. Within a 19-month period, 32 percent of Potharam women of childbearing age had begun using contraception.

The positive reception of this pilot study, and of another in an urban area, encouraged government leaders to develop family planning services on a broader scale. Pilot studies played a similar role in South Korea and Taiwan (Bang 1968; Freedman and Takeshita 1969).

Thailand's program, rated highly by Mauldin and Ross (1991), did not pressure potential clients to accept family planning, unlike the programs in China and Indonesia. According to Knodel, Chamrathirong, and Debavalya (1987), three cultural characteristics of Thailand were distinctively conducive to a fertility decline: (1) the dominant religion, Buddhism, does not address reproductive issues directly but stresses individual rather than group responsibility; (2) prior to the decline, Thai nuclear families had been more or less independent of broader kinship control for several generations; and (3) Thai society is characterized by considerable

female autonomy, not only on reproductive issues but also in other areas of life. Such cultural factors are not usually considered in models of fertility decline that restrict determinants to socioeconomic variables and family planning efforts. According to the analysis by Knodel and his colleagues (1987, 1994), cultural factors have resulted in a situation in which modest social differentials reflect "full participation of the least educated and poorest couples in the move toward smaller families."

## TAIWAN

Taiwan is a good case to illustrate in detail the transition to below-replacement fertility because here the trends and their correlates are so well documented.<sup>5</sup> Taiwan experienced rapid development over the past 35 years, achieving remarkable progress on a broad range of social and economic indicators (Table 8). By 1992 the per capita gross national product of US \$8,788 could have placed it among the "high-income" economies (World Bank 1992b). In mortality and health, education for men and women, transportation and communication, the shift from agriculture to industry, and modern household and consumption amenities, Taiwan's astonishingly rapid changes place it well up on the list of developed countries. Those of us who knew Tai-

5. Although both the People's Republic of China and the Republic of China (Taiwan's name for China) consider Taiwan to be part of China, the society that is generally known as Taiwan operates independently of the People's Republic. Because Taiwan is such an important example of demographic and socioeconomic change, ranking fifteenth in the world in volume of international trade, I have treated it as a "country" for purposes of this report.



Table 8. Indicators of economic and social development: Taiwan, selected years

Indicator	Values					
	1952	1956	1961	1970	1983	1991
<b>Economic development</b>						
Per capita national income index <sup>a</sup>	100	116	134	260	567	1,045
Savings as percentage of national income	5.2	4.8	16.3	23.8	29.9	25.8
Agricultural production index	100	119	148	245	376	452
Total industrial production index	100	150	242	1,106	4,527	7,495
Labor force in agriculture, forestry, and fishing (%)	56	53	49	37	19	13
<b>Education (%)</b>						
Population illiterate, ages 6+	42	37	22	15	9	6
Primary school graduates enrolled in junior high school	34	47	55	80	99	99
<b>Communications and transportation indicators (per 1,000 population)</b>						
Daily newspaper and magazine circulation	u	u	52	98	199	214
Automobiles	1	1	2	8	58	163
Motorcycles	b	b	3	48	299	449
Telephone sets	4	5	12	27	259	449
Television sets <sup>c</sup>	u	u	14	371	1,037	1,171
<b>Household amenities (%)</b>						
Households served with electric lighting	u	u	85	96	100	100
Population served with piped water	u	u	27	39	74	84
<b>Health indicators</b>						
Life expectancy at birth	59	63	67	69	72	74
Population per doctor	1,556 <sup>d</sup>	1,601	1,847	2,240	1,267	831

Sources: Based on data in Taiwan, Director-General of Budget, Accounting, and Statistics (1992); Taiwan, Council for Economic Planning and Development (1993a, 1993b).

u—data unavailable.

a. At 1986 market prices after adjustment for terms of trade.

b. Fewer than 1.

c. Per 1,000 households.

d. 1954.

wan in the early 1960s did not anticipate that such a transformation would occur in just three decades. Taiwan has also had one of the strongest and most effective family planning programs (Freedman, Chang, and Sun 1994; Mauldin and Ross 1991). Similar statements could be made about South Korea, Singapore, and Thailand with respect to both development and program strength and about Japan and Hong Kong with respect to development.

The Taiwan experience illustrates an

important point: traditional family institutions can coexist with high contraceptive use, low fertility levels, an advanced stage of economic development, and other indications of modernity. For example, the traditional preference for sons is still strong in Taiwan despite the achievement of below-replacement fertility. In 1991 among couples with similar numbers of children, the proportions wanting no more children and using contraception increased with the number of sons.

*Traditional family institutions can coexist with low fertility levels, an advanced stage of economic development, and other indications of modernity. The traditional preference for sons is still strong in Taiwan despite the achievement of below-replacement fertility.*

The conflict between wanting only two or three children and wanting at least one son is evident as an increasing number of couples who have no sons resort to amniocentesis and abortion to avoid another female birth. As a result, by 1991 the sex ratio at birth (number of males born per 100 females), normally about 106 for Taiwan, had increased to 110 and was as high as 130 among infants born to couples who already had three children. The same phenomenon has been observed in South Korea, where the sex ratio at birth in 1988 was 115 for all births and 170 for third-order births (Lee and Cho 1991, table 8).

The preference for sons is a result of continuing strong patrilineal and patrilocal familial institutions in Taiwan. Traditional extended families are still prevalent. In 1985, when the TFR was only 1.89, about two-thirds of couples married in the preceding five years had begun married life in the household of the husband's parents and had remained there for a significant period (Weinstein et al. 1994). Improvements in the status of women have not resulted in an increase in the low proportion (only 3–4 percent) of couples residing with the wife's parents, a pattern that has existed for many decades. In contrast, the once-common joint-stem family, in which two or more married brothers and their families live with the brothers' parents, has nearly disappeared. What is still common is the stem family, consisting of one married son, his wife and children, and his parents—a family structure that has proven to be compatible with lower fertility.

Although the extended-family form persists, its internal functioning is changing. Traditionally, the young bride who came into the household of her husband's family deferred to her in-laws, did the hard housework and cooking, and had a subordinate position in

the household for many years. Now she is likely to be well educated and to work outside the household, while her mother-in-law does much of the child care and housework. It will be interesting to see whether today's young wives will be willing to do likewise when they become mothers-in-law.

Between 1956 and 1983 Taiwan's total fertility rate fell to 2.1 and then fell further to 1.8–1.6. In the transition to a TFR of 2.1, about one-third of the decline in Taiwan's crude birth rate, from 44.8 to 20.6 births per 1,000 population, was due to lower nuptiality, mostly delayed marriage, and two-thirds of it were due to a decline in marital fertility. However, the decline in the birth rate was slowed by an increase in the proportion of women entering their childbearing years, a situation typical of the early stage of fertility transition. Without the declines in nuptiality and marital fertility, the rising proportion of women of reproductive age between 1956 and 1983 would have caused the crude birth rate to rise by 7 births per 1,000.

Because its age distribution is still young, Taiwan's population is continuing to grow at the rate of 1.0 percent per annum despite the fact that fertility is below the replacement level. Even if Taiwan's TFR remains at 1.6, not until the year 2029 will its age distribution have shifted upward enough to produce zero, followed by negative, growth. A similar lag of decades between reaching a TFR of 2.1 and achieving actual zero growth is characteristic of other countries completing the fertility transition.

In the transition to replacement fertility in Taiwan and elsewhere, falls in marital fertility were the dominant force, with later age at marriage playing a significant but secondary role. Later age at marriage was associated with increasing gender equity in education and greater labor-force participa-

tion and higher status for women, albeit far from enough improvement to put them on an equal level with men.

In the post-transition period, when fertility is substantially below replacement, as in many Western countries, variables associated with the status of women have become the dominant force. In Taiwan, for example, in the eight years following the attainment of a TFR of 2.1, all of the further decline to 1.8–1.6 children per woman was due to rising age at marriage and none to declines in marital fertility. Hong Kong recently followed a similar course between 1986 and 1991, when marital fertility actually increased. In Japan the recent further decline in TFR to 1.5—described in the Japanese media as “1.5 Shocku”—similarly was entirely a result of declining nuptiality, offset by a slight rise in marital fertility (Atoh 1993). These demographic patterns are associated with continuing gains by women in the labor force and in education, linked to their greater interest in careers and increased independence from traditional family obligations (Tsuya and Choe 1991; Thornton and Lin 1994).

The continuing decline in nuptiality becomes particularly important when fertility falls to replacement level or below because marital fertility approaches a lower limit and the pronatal effect of the age distribution is likely to be declining. The rise in the age at marriage has the effect of postponing births. This means that such period measures as the TFR are likely to exaggerate the fertility decline, which is made up when postponed births occur at a later age. This “catching up” could mean that the below-replacement fertility that has concerned policymakers in Taiwan and elsewhere is not so serious as has been indicated by the conventional measure of TFR.

Feeney (1991) has illustrated this idea for Taiwan with an analysis using an alternative TFR based on period-parity-progression rates. His parity-progression-based TFR for Taiwan in 1987 is 2.14 instead of the conventional TFR of 1.70.<sup>6</sup>

Several pieces of evidence support the "catching-up" hypothesis for Taiwan. First, between 1983 and 1991 marital fertility contributed nothing to the fertility decline and actually rose at older childbearing ages. Second, as Feeney (1991, 475) observes, "the birth order decomposition of the conventional total fertility rate . . . shows that the below-replacement values in the 1980s are due largely to the low contributions of first and second births. . . . because of increasing age at childbearing . . . rather than because of any behavioral shift toward childlessness or only children." In other words, many first and second births are only temporarily postponed. Third, the "catching-up" is disproportionately concentrated among better-educated women who delay marriage and childbearing. In 1991 Taiwan's fertility rates were negatively correlated with education below age 30 but positively correlated at older ages, when the catching-up occurs.

An analysis of South Korean data by Han and Feeney (1993) supports the idea that conventional TFRs exaggerate the overall fertility decline. The Census and Statistics Department (CSD) of Hong Kong (1992, 32) calls attention to a similar situation there: "Catching-up of postponed births is highly probable and this would most likely lead to a temporary reversal of the declining trend."

The CSD notes that similar catching up has occurred in Denmark, Germany, the Netherlands, and Sweden.

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## POLICY CONCERNS ABOUT BELOW- REPLACEMENT FERTILITY

Apart from China, which seeks below-replacement fertility levels because of its huge population, governments in the other low-fertility countries of East Asia, as well as some in Southeast Asia, are anxious to raise fertility at least to replacement levels. After working for decades to reduce fertility, they now meet to discuss ways to restore replacement-level fertility because they are concerned about the aging of their populations and the shrinking of their entry-level labor forces. As we have just seen, this concern of policymakers may be based to some extent on conventional TFRs whose declines are exaggerated by the temporary postponement of births.

It is questionable whether social policy can be effective in making the small increases in fertility generally being sought. Demeny (1986) and Gauthier (1991) conclude that pronatalist policies in Europe have had little effect. East Germany did have at least a temporary increase in fertility following the introduction of a strong incentive program, but the reunification of the two Germanys changed the East German situation radically, so that we do not know whether the higher levels would have been maintained (Büttner and Lutz 1990). As we have seen, however, the Malaysian government, led by Muslim religious leaders, appears to have been successful in its deliberate policy of stemming and even reversing the fertility decline of the majority

*Policymakers' concern about below-replacement fertility may be based to some extent on conventional fertility rates whose declines are exaggerated by the temporary postponement of births.*

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6. Even when adjusted to take into account possibly higher proportions of women marrying, the parity-progression-based TFR is significantly higher than the conventional TFR and close to replacement.



Malay population of Malaysia, while the fertility of the Indian and Chinese ethnic minorities has continued to decline.

Atoh (1993) raises the question, Why do Japan and other countries of East and Southeast Asia and of Southern Europe continue to have below-replacement fertility, while the United States and Sweden have had significant fertility increases? He makes the plausible point that the recent increases in the United States and Sweden may have resulted from new policies and provisions that make having children more consistent with women's aspirations for independence and career-oriented work. Atoh notes that such provisions are absent or weak in East Asia and in Southern Europe, where fertility has not rebounded.

Even if social policy lifts fertility back to 2.1 or even somewhat higher, the basic problems of an older population and a shortage of young labor-force entrants will remain. With such small increases in fertility, a trend to a much older population is inevitable, with fertility near replacement levels.

## SUMMARY AND CONCLUSION

The fertility transition is virtually complete in East Asia, well under way in most of Southeast and South Asia, and beginning in Muslim West Asia. In East Asia total fertility rates are at or below the replacement level of 2.1 children per woman. Except in China, the causes of the East Asian transition are, in retrospect, not surprising. In Japan and Hong Kong broad social and economic development was the driving force, bringing down birth rates in the absence of national family planning programs. In the rest of East Asia, as well as in parts of Southeast Asia, a combination of socio-

economic development and effective family planning programs produced unexpectedly rapid fertility declines even in backward population strata. An unexpected element in these declines, exemplified in Taiwan and South Korea, has been the persistence of traditional familial institutions, initially thought to be serious barriers to fertility decline.

China's fertility decline, whose sweep and rapidity were certainly unexpected at its onset 25 years ago, is attributable in substantial degree to its family planning program, carried out through political institutions capable of mobilizing the population at the village level. As elsewhere in Asia, however, mortality declines and rising education levels were also important factors. China's far-reaching political and social revolution may have contributed to changing perspectives about the family.

The much slower rate of change in India than in China is related to a more limited capacity to implement the family planning program at the village level and to a smaller reduction in mortality and illiteracy. Even in India, however, fertility has fallen to replacement levels in several poor states, with their traditionally greater female autonomy and their progress in mortality reduction and literacy.

Fertility has fallen considerably more in India than in Pakistan, where the transition has hardly begun. This is because the Pakistani government has made little progress in implementing its family planning program or in reducing mortality and illiteracy.

The substantial, completely unexpected, fertility decline in Bangladesh is forcing a major revision of theories about fertility decline. An early modest decline in mortality created a latent demand for fertility control. This was crystallized by an effective family planning program, which gained credibility and direction

from the successful Matlab pilot project. The national program's effect on ideas and reproductive behavior may have had support from other modest social changes as suggested by Cleland and colleagues (1994). If so, these changes were certainly far less sweeping than were previously considered necessary to trigger a fertility decline.

Even in West Asia, which has the highest fertility levels in Asia, the fertility transition is under way, without the impetus of significant family planning programs. Jordan, Kuwait, Lebanon, and Turkey have experienced the greatest fertility declines in the region. These countries also have relatively low mortality and illiteracy. Turkey stands out with a recent decline in TFR to 2.5. Iraq and Syria have had modest declines, but fertility remains high in Saudi Arabia and Yemen. Ideas and messages transmitted by the international communication and transportation network may be penetrating the theoretically secluded world of women in Islam. Muslim populations in Indonesia, Turkey, and elsewhere have declining and low fertility.

This survey of Asian experience indicates that there are multiple pathways to low fertility. Ironically, the increasingly voiced alarm about aging populations in the low-fertility countries of East and Southeast Asia indicates that completing the fertility transition does not solve all population problems. The anxiety about such issues among policymakers may be somewhat exaggerated by conventional TFR measures, which are deflated temporarily by the postponement of births in late marriages. But adjusting for that effect does not change the fact that demographic regimes of low fertility and mortality inevitably produce older populations. The changing age distributions that initially retard birth-rate declines eventually accelerate them.



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## REFERENCES

- Arthur, W. Brian, and Geoffrey McNicoll. 1978. An analytical survey of population and development in Bangladesh. *Population and Development Review* 4(1): 23–80.
- Atoh, Makoto. 1993. *The recent fertility decline in Japan: Changes in women's role and status and their policy implications*. Unpublished manuscript, Institute of Population Problems, Ministry of Health and Welfare, Tokyo.
- Bang, Sook. 1968. *A comparative study of the effectiveness of a family planning program in rural Korea*. Doctoral dissertation, School of Public Health, University of Michigan, Ann Arbor.
- Banister, Judith. 1987. *China's changing population*. Stanford, California: Stanford University Press.
- Basu, Alaka Malwade. 1992. *Culture, the status of women, and demographic behaviour*. New York: Oxford University Press.
- Büttner, Thomas, and Wolfgang Lutz. 1990. Estimating fertility responses to policy measures in the German Democratic Republic. *Population and Development Review* 16(3): 539–55.
- Caldwell, John C. 1993. The Asian fertility revolution: Its implications for transition theories. In Richard Leete and Iqbal Alam (eds.), *The revolution in Asian fertility: Dimensions, causes, and implications*. Oxford: Clarendon Press.
- Casterline, John B., Lita J. Domingo, and Zelda Zablan. 1988. *Some determinants of high and low fertility in four Asian countries: Trends in fertility in the Philippines*. Fertility Determinants Research Notes 22. New York: Population Council.
- Cernada, George P., A. K. Ubaidur Rob, Safia I. Ameen, and Muhammad Shafiq Ahmad. 1993. *A situation analysis of family welfare centres in Pakistan*. Operations Research Working Papers, 4. New York: Population Council.
- Cleland, John, R. J. A. Little, and P. Pitaketsombati. 1979. *Illustrative analysis: Socio-economic determinants of contraceptive use in Thailand*. World Fertility Survey Scientific Reports, 5. London: World Fertility Survey.
- Cleland, John, James F. Phillips, Sajeda Amin, and G. M. Kamal. 1994. *The determinants of reproductive change in Bangladesh: Success in a challenging environment*. Washington, D.C.: The World Bank.
- Cleland, John, and Christopher Wilson. 1987. Demand theories of the fertility transition: An iconoclastic view. *Population Studies* 41(1): 5–30.
- Coale, Ansley J., and Chen Sheng Li. 1987. *Basic data on fertility in the provinces of China, 1940–82*. Papers of the East-West Population Institute, 104. Honolulu: East-West Center.
- Coale, Ansley J., and Susan Cotts Watkins (eds.). 1986. *The decline of fertility in Europe*. Princeton: Princeton University Press.
- DaVanzo, Julie, and J. Haaga. 1982. Anatomy of a fertility decline: Peninsular Malaysia, 1950–1976. *Population Studies* 36(3): 373–93.
- Demeny, Paul. 1975. Observations on population policy and population program in Bangladesh. *Population and Development Review* 1(2): 307–21.
- \_\_\_\_\_. 1986. Pronatalist policies in low fertility countries: Patterns, performance, and prospects. *Population and Development Review*, 12 (Supplement): 335–58.
- Demographic and Health Surveys. 1992a. *Indonesia Demographic and Health Survey, 1991*. Columbia, Maryland.: IRD/Macro International.
- \_\_\_\_\_. 1992b. *Jordan Population and Family Health Survey, 1990*. Columbia, Maryland.: IRD/Macro International.
- \_\_\_\_\_. 1992c. *Pakistan Demographic and Health Survey, 1990–91*. Columbia, Maryland.: IRD/Macro International.
- \_\_\_\_\_. 1994. *Turkish Demographic and Health Survey, 1993: Preliminary report*. Calverton, Maryland.: Macro International.
- Demographic and Health Surveys/Institute of Population Studies, Chulalongkorn University and Institute for Resource Development. 1988. *Thailand Demographic and Health Survey, 1987*. Bangkok and Columbia, Maryland.
- Demographic and Health Surveys/Macro International and National Statistics Office of the Philippines. 1994. *Philippines National Demographic Survey, 1993*. Manila and Calverton, Maryland.
- Dyson, Tim, and Mick Moore. 1983. On kinship structure, female autonomy and demographic behavior in India. *Population and Development Review* 9(1): 35–60.
- Entwisle, Barbara. 1989. Measuring components of family planning program effort. *Demography* 26(1): 53–76.
- Feeney, Griffith. 1991. Fertility decline in Taiwan: A study using parity progression ratios. *Demography* 28(3): 467–79.

- Feng Litian and Chen Zaihua. 1994. *Research from a survey of women's status in Beijing*. Paper prepared for the International Conference on the Survey of Marriage, Fertility and Family Planning in Beijing, sponsored by the Demographic Research Center, Ann Arbor, Michigan, and the Economics Institute, Beijing.
- Freedman, Ronald. 1966. Family planning programs today: Major themes of the conference. In Bernard Berelson, Richmond K. Anderson, Oscar Harkavy, John Maier, W. Parker Mauldin, and Sheldon J. Segal (eds.), *Family planning and population programs: A review of world developments*. Chicago: University of Chicago Press.
- Freedman, Ronald, Ming-Cheng Chang, and Te-Hsiung Sun. 1994. Taiwan's transition from high fertility to below-replacement levels. *Studies in Family Planning* 25(6).
- Freedman, Ronald, Siew-Ean Khoo, and Bondan Supraptilah. 1981. *Modern contraceptive use in Indonesia: A challenge to conventional wisdom*. World Fertility Survey Scientific Reports, 20. London: World Fertility Survey.
- Freedman, Ronald, D. N. Namboothiri, A. Adlakha, and K. C. Chan. 1970. Hong Kong's fertility decline, 1961-68. *Population Index* 36(1): 3-18.
- Freedman, Ronald, and John Y. Takeshita. 1969. *Family planning in Taiwan: An experiment in social change*. Princeton, New Jersey: Princeton University Press.
- Freedman, Ronald, Xiao Zhenyu, Li Bohua, and William R. Lively. 1988a. Education and fertility in two Chinese provinces: 1967-1970 to 1979-1982. *Asia-Pacific Population Journal* 3(1): 3-30.
- \_\_\_\_\_. 1988b. "Local area variations in reproductive behaviour in the People's Republic of China, 1973-1982. *Population Studies* 42(1): 39-57.
- Gauthier, Anne H. 1991. *Consequences of fertility decline: Cultural, social and economic implications—the European experience*. Paper prepared for the Seminar on Impact of Fertility Decline on Population Policies and Programme Strategies: Emerging Trends for the 21st Century, Nuffield College, Oxford University.
- Greenhalgh, Susan. 1994. Controlling births and bodies in village China. *American Ethnologist* 21(1): 3-30.
- Greenhalgh, Susan, Zhu Chuzhu, and Li Nan. 1994. Restraining population growth in three Chinese villages: 1988-93. *Population and Development Review* 20(2): 365-95.
- Han, Seung Hyun, and Griffith Feeney. 1993. The emergence of a new pattern of childbearing: Fertility in Korea during the 1980s. *The Journal of the Population Association of Korea* 16(1): 59-67.
- Hernandez, Donald J. 1984. *Success or failure: Family planning programs in the Third World*. Westport, Connecticut: Greenwood Press.
- Hong Kong, Census and Statistics Department. 1992. *Hong Kong population projections, 1992-2011*. Hong Kong: Census and Statistics Department.
- India, Office of the Registrar General. 1993. *Sample registration system: Fertility and mortality indicators, 1991*. New Delhi.
- Institute for Population and Social Research. 1994. *Mahidol Population Gazette* 3(2), October. Bangkok: Mahidol University.
- Kaufman, Joan, Zhang Zhirong, Qiao Xinjian, and Zhang Yang. 1992. The quality of family planning services in rural China. *Studies in Family Planning* 23(2): 73-84.
- Knodel, John, Aphichat Chamratrithirong, and Nibhon Debavalya. 1987. *Thailand's reproductive revolution: Rapid fertility decline in a Third-World setting*. Madison: University of Wisconsin Press.
- Kristoff, Nicholas D. 1993. China's crackdown on births: A stunning and harsh success. *New York Times*, 25 April, p. 1.
- Lapham, Robert J., and W. Parker Mauldin. 1972. National family planning programs: Review and evaluation. *Studies in Family Planning* 3(3): 29-52.
- \_\_\_\_\_. 1984. Family planning program effort and birth rate decline in developing countries. *International Family Planning Perspectives* 10(4): 109-18.
- \_\_\_\_\_. 1985. Contraceptive prevalence: The influence of organized family planning programs. *Studies in Family Planning* 16(3): 117-37.
- Lively, William, and Ronald Freedman. 1990. "The origins of the Chinese fertility decline. *Demography* 27(3): 357-67.
- Lee, Hung-Tak, and Nam-Hoon Cho. 1991. *Consequences of fertility decline: Social, economic and cultural implications in Korea*. Paper presented at the KIHASA/ESCAP Seminar on Impact of Fertility Decline on Population Policies and Programme Analysis: Emerging Trends for the 21st Century, Hankuk University of Foreign Studies, Seoul, December.
- Leete, Richard, and Tan Boon Ann. 1993. Contrasting fertility trends among ethnic groups in Malaysia. In Richard Leete and Iqbal Alam (eds.), *The revolution in Asian fertility: Dimensions, causes, and implications*. Oxford: Clarendon Press.
- Luther, Norman Y., Jr., Griffith Feeney, and Weimin Zhang. 1990. One-child families or a baby boom? Evidence from China's 1987 one-per-hundred survey. *Population Studies* 44(2): 341-57.

- Ma, Shohai. 1994. *Changes in the family life cycle in Beijing*. Paper prepared for the International Conference on the Survey of Marriage, Fertility and Family Planning in Beijing, University of Michigan Population Studies Center, Ann Arbor.
- Mahmood, Naushin. 1990. *The desire for additional children and fertility regulation in Pakistan*. Doctoral dissertation, Department of Sociology, University of Michigan, Ann Arbor.
- Mauldin, W. Parker, and John A. Ross. 1991. Family planning programs: Efforts and results, 1982-89. *Studies in Family Planning* 22(6): 350-67.
- Misra, Bhaskar D., Ali Ashraf, Ruth S. Simmons, and George B. Simmons. 1982. *Organization for change: A systems analysis of family planning in rural India*. Michigan Papers on South and Southeast Asia, 21. Ann Arbor: Center for South and Southeast Asian Studies, University of Michigan.
- Obermeyer, Carla Makhlouf. 1994. Reproductive choice in Islam: Gender and state in Iran and Tunisia. *Studies in Family Planning* 25(1): 41-51.
- Operations Research Group. 1990. *Family planning practices in India: Third All India Survey*. Baroda, India.
- Palmore, James A., Eliseo A. de Guzman, Maria Midea Kabamalam, Elizabeth Go, Marina Fernando Jose, and Jumari Jayatilleke. 1994. *Fertility estimates for the Philippines, its regions, and provinces, 1970, 1980, and 1990*. Manila: Health Finance Development Project, Department of Health, Republic of the Philippines (forthcoming).
- Rosenfield, Allan G., Winich Asavasena, and Jumroon Mikhonorn. 1973. Person-to-person communication in Thailand. *Studies in Family Planning* 4(6): 145-49.
- Shariff, Abusaleh, and Pravin Visaria. 1991. *Family planning programme in Gujarat: A qualitative assessment of inputs and impact*. Ahmedabad, India: The Gujarat Institute of Family Planning.
- Taiwan, Council for Economic Planning and Development, Executive Yuan. 1992. *Taiwan statistical data book, 1992*. Taipei.
- \_\_\_\_\_. 1993a. *Social welfare indicators, Republic of China, 1993*. Taipei.
- \_\_\_\_\_. 1993b. *Taiwan statistical data book, 1993*. Taipei.
- Taiwan, Director-General of Budget, Accounting, and Statistics. 1992. *The social indicators in Taiwan area of the Republic of China*. Taipei.
- Taiwan, Ministry of the Interior. Various years. *Taiwan-Fukien demographic fact book, Republic of China*. Taipei.
- Thornton, Arland, and Hui-Sheng Lin (eds.). 1994. *Social change and the family in Taiwan*. Chicago, Illinois: University of Chicago Press, forthcoming.
- Tsuya, Noriko O., and Minja Kim Choe. 1991. *Changes in intrafamilial relations and the roles of women in Japan and Korea*. Population Research Institute Paper Series, 58. Tokyo: Population Research Institute, Nihon University.
- United Nations, Department for Economic and Social Information and Policy Analysis. 1993. *World population prospects: The 1992 revision*. New York.
- \_\_\_\_\_. 1994. *World contraceptive use, 1994*. Wall chart. New York.
- Visaria, Leela. 1993. *Regional variations in female autonomy and fertility and contraception in India*. Gujarat Institute of Development Research Working Paper Series, 50. Ahmedabad, India: Gujarat Institute of Development Research.
- Warwick, Donald P. 1986. The Indonesian family planning program: Government influence and client choice. *Population and Development Review* 12(3): 453-90.
- Watkins, Susan Cotts. 1986. Conclusions. In Ansley J. Coale and Susan Cotts Watkins (eds.), *The decline of fertility in Europe: The revised proceedings of a conference on the Princeton European fertility project*. Princeton, New Jersey: Princeton University Press.
- Weinstein, Maxine, Te-Hsiung Sun, Ming-Cheng Chang, and Ronald Freedman. 1994. Co-residence and other ties linking couples and their parents. In Arland Thornton and Hui-Sheng Lin (eds.), *Social change and the family in Taiwan*. Chicago, Illinois: University of Chicago Press, forthcoming.
- World Bank. 1990. *World Development Report, 1990*. New York: Oxford University Press.
- \_\_\_\_\_. 1991. *New directions in the Philippines family planning program*. Washington, D.C.
- \_\_\_\_\_. 1992a. The World Bank and Indonesia's population program. In World Bank, *Population and the World Bank: Implications from eight case studies*, Annex 2. Washington, D.C.: Operations Evaluation Department, World Bank.
- \_\_\_\_\_. 1992b. *World development report, 1992*. Washington, D.C.
- \_\_\_\_\_. 1993. *The East Asian miracle: Economic growth and public policy*. New York: Oxford University Press.



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