Experience has shown that as development progresses fertility falls. Yet, because current rates of population growth are so much greater in the developing world than they were at comparable income levels in today’s developed countries, many developing countries cannot afford to wait for fertility to decline spontaneously. This message is not without hope, however, because some developing countries have already shown that fertility can be brought down significantly. This chapter examines the forces behind their success and considers the role of public policy in strengthening such forces.

It was once assumed that reducing fertility in developing countries would require a typical sequence of economic advance: urbanization, industrialization, a shift from production in the household to factory production, and incomes rising to levels enjoyed by today’s developed countries. This view seemed to be confirmed by the fertility declines of the 1960s, which were largely confined to the industrializing economies of Korea, Singapore, and Hong Kong. But fertility declines beginning in other developing countries in the late 1960s, and spreading to more in the 1970s, have been related to a different kind of development: education, health, and the alleviation of poverty. Birth rate declines have been much more closely associated with adult literacy and life expectancy than with GNP per capita. Despite high average incomes, rapid industrialization, and fast economic growth, birth rates fell less in Brazil and Venezuela between 1965 and 1975 than in Sri Lanka, Thailand, and Turkey, where income gains and social services have been more evenly distributed.

This association is not surprising. When their children have a better chance of surviving and of enjoying a wider range of opportunities, parents are willing to devote more money and time to edu-
cating them. The gap between the private and social costs of children narrows where income gains are widely shared, credit and labor markets are working well, and people are receiving a fair return to effort and skills. Income gains often coincide with an increase in opportunities for women outside the home and for the poor, and associated changes substitute for the benefits of having many children.

But such changes come only gradually. Education, for example, cannot be transformed overnight. Nationally, literacy rates today are strongly influenced by their level in the past; in households, children are more likely to attend school if their mothers did, regardless of family income level. Expanding opportunities for women relies in part on educating women—but this occurs more slowly where parents see only limited opportunities for their daughters. In rural areas, credit and labor markets cannot be transformed overnight. All the more reason, therefore, to act now—especially because some of these changes also take time to lower fertility.

Other complementary policies can have more immediate effects. Promotion of later marriage and longer breastfeeding can reduce the birth rate at the same time it raises welfare. And the experience of many developing countries shows that public support for family planning programs, by narrowing the gap between actual family size and what couples would want if they could more easily choose, can lower fertility quickly. Where family planning services are widespread and affordable, fertility has declined more rapidly than social and economic progress alone would predict. Some examples are Colombia, Costa Rica, India, Thailand, Tunisia, and, more recently, Indonesia and Mexico.

By taxing and spending in ways that provide couples with specific incentives and disincentives to limit their fertility, government policy can also affect fertility in the short run. Government can offer "rewards" for women who defer pregnancy; it can compensate people who undergo sterilization for loss of work and travel costs; and it can provide insurance and old-age security schemes for parents who restrict the size of their families.

Each of these public policies works through signals which influence individual and family decisions—when to marry, whether to use contraception, how long to send children to school, and whether and how much family members work. The level and pattern of government expenditure—for example, for health and education—has great potential for affecting such decisions. Education and primary health care account for between a fifth (Malawi) and a third (Tunisia) of public budgets in low-income and middle-income countries. Taxes similarly affect behavior through, for example, tax-free allowances for children and fees or subsidies on services that children use. The effects of taxes and subsidies can differ depending on the situation. Tuition and book charges might discourage parents from sending children to school and so indirectly contribute to higher fertility. But once it is clear that education is valuable, such charges are likely to encourage people to have fewer children in order to give them a better education.

Some of the ways in which government can influence family decisions are illustrated in Figure 6.1. The influence can be direct—government can make laws and issue proclamations, for example, that clarify social goals about marriage age and children's schooling. But government influence is likely to be stronger and more enduring when it is indirect; for example, through various entitlement programs and other development programs. Such indirect effects are so powerful because fertility itself is but one of a set of interrelated household decisions: saving, consuming, working, raising children, and sending them to school. Many of the signals sent out by government affect fertility by altering the decisions about children's education, mother's work, and the relative attractiveness of spending now or saving for one's old age. Figure 6.1 also shows that all these influences alter fertility through what demographers call the proximate determinants of fertility—breastfeeding, age at marriage, contraceptive use, and abortion.

The complexity of these relationships is both a virtue and a drawback. It is a virtue because specific government programs can have multiple effects that enhance their overall impact on family behavior. This is clearly true of family planning programs and other development programs. Such efforts work best in concert; they work only haltingly when they work alone. When various programs all work together, they make possible the steep declines in fertility achieved by countries that have simultaneously benefited from rapid economic growth, improvements in education, rising life expectancy, and expanding family planning programs. But the complexity is also a disadvantage; no one program or policy is enough to reduce
fertility; nor is it easy to judge the importance of one program compared with another.

**Socioeconomic factors and fertility**

One possible remedy for population growth can be ruled out at the start: accepting a rise in death rates, or even a slower decline than is possible. High death rates do slow population growth. But the main reason for wanting slower growth is to improve people's well-being—to move quickly toward a balance of low death and birth rates, thus completing the demographic transition.

**Reducing infant and child mortality**

High infant mortality is part of the setting that promotes high fertility (Chapter 4). Parents who expect some children to die may insure themselves by giving birth to more babies than they want or expect to survive. High infant mortality can cause high fertility for biological reasons as well: breastfeeding delays the return of regular ovulation, so the interval between a birth and the next conception may be shortened if a baby dies.

In the short term, the prevention of ten infant deaths yields one to five fewer births, depending on the setting. Thus lower infant and child mortality leads to somewhat larger families and faster rates of population growth than otherwise. But effects in the long term are more important. With improved chances of survival, children receive more attention from their parents, and parents are willing to spend more on their children's health and education. Lower mortality not only helps parents to achieve their desired family size with fewer births, it leads them to want a smaller family as well.

The 1980 *World Development Report* reviewed policies and programs to improve health and reduce mortality. This Report focuses on measures to speed the decline in fertility for three reasons:

- Fertility will henceforth have a much stronger influence than mortality on population size; this was discussed in Chapter 4. A rapid fall in fertility is all the more urgent to ensure slower population growth without compromising efforts to reduce mortality.
- High fertility and unplanned births contribute to high infant (and child) mortality. Many children, born close together, weaken the mother and the baby and make it harder for the family to afford health care and food.
- The policies and programs that reduce fertility are more than ever those which will also reduce mortality. As shown in Chapter 4, many of the less difficult ways to reduce mortality—through antimalarial campaigns, for example—have already been exploited; further progress against mortality requires changes in people's behavior. Family planning services are an obvious example. Though primarily seen as a way to reduce fertility, family planning can be a major contributor to lower mortality—both of infants and of mothers (see Box 7.1 in the next chapter). The same is true for the education of women; women's education can lower fertility by delaying marriage, by increasing the effectiveness of contraceptive use, and by giving women ideas and opportunities beyond childbearing alone. Women's education is also a major contributor to lower mortality.

**Raising income**

Since children are a source of satisfaction, one might expect richer parents to have more of them. Within the same socioeconomic group, this is often so: among small farmers, for example, those with more land often have higher fertility (although their fertility is lower than the fertility of the landless—see Box 6.1). Rising incomes are also associated with decreased breastfeeding, which raises fertility unless contraceptives are used. Where marriages are delayed by the need for a dowry, or by the costs of setting up a household, rising incomes permit earlier marriage and earlier childbearing—and thus higher fertility. But these effects are transitory and may be avoided altogether. They can be offset by the social changes that accompany economic growth—such as education and family planning programs—and that work to lower fertility.

This relation adds up to a well-established fact: in the long run, people with more income want fewer children. Alternative uses of time—earning money, developing and using skills, enjoying leisure—become more attractive, particularly to women who are primarily responsible for bringing up children. Parents start to want healthier and better-educated but fewer children. Education of children becomes more attractive as job opportunities depend less on traditional factors—class origin or family background—and more on education and associated skills. And children's work becomes less important to family welfare. Higher income means an increased surplus to invest in land or other assets, a greater awareness of alternative investments, and the spread of social security and pension schemes that guard against destitution in emergencies or in old age. In short, it is not higher
Box 6.1 Landholding and fertility

Land reform provides farmers with greater security, improves income distribution in rural areas, and lays the base for subsequent agricultural progress. But careful studies of fertility behavior in rural areas suggest land reform can have two contradictory effects on fertility.

- With more land, farmers need more labor to work it, so the contribution of children becomes more valuable. With higher incomes, farmers are also able to afford larger families. Studies in Bangladesh, India, Iran, Nepal, the Philippines, and Thailand all show that fertility rises as farms get bigger. In an anthropological study in Guatemala, farmers with irrigated land—who were usually engaged in multiple cropping, with high labor demands—had higher fertility than farmers with rainfed land. In a survey in Thailand, 50 percent of families with large landholdings cited children’s help as an advantage of having many children, compared with only 4 percent of families with no farm or business.

- A tenant who becomes a landowner gains extra income from ownership that is not dependent on his being able to work or manage the farm. This gives him some security for old age, making him less dependent on his children. One study in northwestern Iran found that landowners wanted smaller families and had had fewer children than villagers who owned no land. Wives of landowners had married earlier, but they were also more inclined to use contraceptives, so on balance their fertility was lower. The same conclusion was reached by studies in Thailand and the Philippines. But arrangements short of ownership do not have the same effect. In some of the Mexican agricultural communities called ejidos, farmers were granted usufruct rights instead of ownership. This led to higher fertility, not only because their landholdings increased, but also because of the uncertainty over future use of the land and the advantages of having a large family in order to retain control.

A study in southern Egypt showed the conflicting effects of land reform. The number of children was estimated by ownership status and farm size, making allowance for wife’s age (the mean was thirty-five), age at marriage, education, and employment. The number of children was high for all groups (at least five per family) and increased with farm size. But it was lower, at each level of farm size, among those who owned their land than among tenants.

income itself, but the changes it brings to people’s lives, that lowers fertility.

The association of income and fertility varies according to absolute levels of income. Below some minimum income, increases in income are associated with higher fertility (see Figure 6.2). In the poorest countries of Africa and South Asia, many families are below that threshold. Above that threshold, further increases in income are associated with lower fertility—for a given increase in income, the reduction is greater for low-income groups. Raising the incomes of the rich (be it of rich countries or of rich groups within countries) reduces fertility less than does raising the incomes of the poor. There is, however, no good evidence that the distribution of income has an independent effect on fertility; it is influential only to the extent that poor households usually have higher absolute incomes if their share of the total is higher.

Educating parents

More education for women is one of the strongest factors in reducing fertility. It is true that, in poorer countries, women with a few years of primary schooling have slightly higher fertility than do women with no education at all, especially in rural areas. Some education may be associated with a lower rate of sterility, and it often leads to a decline in breastfeeding not offset by greater use of contraceptives.

In time, however, the effect of education in reducing fertility becomes increasingly clear. In all countries, women who have completed primary school have fewer children than women with no education, and everywhere the number of children declines regularly (and usually substantially) as

![Figure 6.2](image-url)
the education of mothers increases above the pri-
mary-school level. The differences can be large—
about four children between the highest and low-
est educational groups in Colombia, for example
(see Figure 6.3).

Studies also show that educating women makes
a greater difference than does educating men in
reducing family size. There are several plausible
reasons for this. Children cost women more than
they do men, in time and energy (see Box 6.2). The
more educated the woman, the more opportuni-
ties she gives up if she chooses to stay at home to
raise children. Education delays marriage for
women, either because marriage is put off during
schooling or because educated women are more
likely to work or to take more time to find suitable
husbands. In ten out of fourteen developing coun-
tries studied, a woman with seven or more years of
education marries at least 3.5 years later than a
woman who has never been to school.

Educated women are also more likely to know
about and adopt new methods of birth control. In
Kenya 22 percent of those with nine or more years
of education use contraception, as opposed to only
7 percent of those with five or fewer years of edu-
cation. In Mexico the comparable figures are 72
percent and 31 percent. Such differences among
education groups are only slightly reduced when
other socioeconomic characteristics are taken into
account. The contrast between these countries is
due to other factors, including access to family
planning methods. The differences in contracep-
tive use among education groups tend to be small
in countries where average use is either very low
(Bangladesh, Kenya, Nepal, and Pakistan) or very
high (Costa Rica, Fiji, and Korea).

Women’s employment and status

To women in developed countries it may seem that
employment leaves little time for childcare. This is
seldom true for peasant women in developing
countries. Family agriculture and cottage indus-
tries keep women close to the home and allow con-
siderable flexibility in working arrangements. In
addition, village life often ensures that there are
many other people, young and old, who can look
after babies while mothers are working. But these
conveniences do little to modernize a woman’s
outlook or to develop a commitment to continued
employment that would discourage high fertility.

In towns and cities women have less scope for
resolving the conflict between childcare and work.
Although there are many exceptions, research
tends to show that urban women who work full
time, particularly in “modern” jobs, have fewer
children. They restrict fertility in part by using con-
traceptives. But of equal significance is that they
delay marriage—by one and a half to two years,
according to one study of five Asian countries.
Delay seems to affect even informal unions: a
study of Jamaica confirmed that women who expe-
rienced no prolonged unemployment on leaving
school entered informal unions later than did other
women. Even if they eventually end up with the
same number of children (which is generally not
the case), the delay in the start of childbearing
reduces population growth by extending the inter-
val between generations.

Although employment seems to have an inde-
pendent effect on fertility only for women in well-
paid, modern jobs, more job opportunities should
affect the fertility of all women indirectly, by
Women with young children face considerable demands on their time. In one village in Bangladesh, women spend nine to ten hours every day of the week doing housework or market work. Having to care for a young child reduces the time available to earn income, particularly among poorer women. The first baby is an especially heavy burden. Once children reach the age of nine or so (and particularly if they are daughters), they free a woman from some responsibilities at home and increase the time she can work in the market.

The greatest demands are made by children under one. Women in rural Laguna in the Philippines average an hour a day of market work if they have a child under one at home, as opposed to two hours a day among all other women. The chart shows how women in Laguna divide the twenty-four hours in their day. Childcare does not cut into other household work and reduces market work only when the child is under one. What it does do is reduce the time a woman has to herself, by three to four hours a day, as long as the child is under seven. Similarly, when a woman works outside the home, the time required does not come out of housework or child care, but out of her leisure time. The average working woman in this sample had four hours less leisure time than the average nonworking woman.

Increasing the incentive to educate girls. The proportion of girls enrolled in school is low in many countries of the Middle East, where employment and other activities outside the home are extremely limited for women. In other Muslim countries—for example, Indonesia—female education and female employment tend to rise together. Once they are able to earn an income, women may acquire higher status in the home, thus enabling them to talk more openly about birth control with their husbands. Although a significant number of women use contraception without the knowledge of their husbands, open discussion leads to longer and more effective contraceptive use.

The "status of women" is a phrase covering numerous social and economic characteristics that affect a woman's life. In northern India, Pakistan, Bangladesh, and many countries of the Middle East, a woman is separated from her own family at marriage and required to develop new allegiances to her husband’s family. This ensures that she will not become a liability to her own family. Her personal contacts and relations with strangers are limited. Typically, she cannot inherit property from her husband’s family, nor can she pass it on. Often, her chief role is to produce sons; in that way she most effectively secures her own position in her new family.

Economic dependence on men entails special risks for these women, risks that go beyond the natural disasters or the process of aging to which both men and women are exposed. Widowhood, divorce, separation, incapacitating illness of the husband—these are serious threats when women have few ways to provide for themselves. The most obvious insurance against the risk of losing the economic support of a husband is to have several sons. Such a preference is likely to raise fertility, particularly if a target number of sons is considered essential.

In addition to encouraging better education and work opportunities for women, each government can lay the groundwork for improvements in women’s status by guaranteeing women certain rights—of inheritance, marriage, divorce, litigation, and property. In other areas, too—such as the right to participate in the choice of a husband—much remains to be done to reshape deep cultural beliefs so that women can play their full part in the economic and social life of their countries. In the process, much will be done to reduce fertility.

Urban residence

Urban dwellers generally enjoy many advantages over their rural counterparts. They have access to
better education and health services, a wider range of jobs, and more avenues for self-improvement and social mobility. They also face higher costs in raising children. As a result, urban fertility is lower than rural fertility, on average by between one and two births per mother. This is true of migrants from rural areas as well as of long-term urban residents. Indeed, recent evidence shows that migrants in Colombia, Korea, and Thailand (and immigrants in the United States) often have even lower fertility than that of their urban counterparts of comparable education, perhaps because they are particularly interested in providing education for their children.

Apart from these advantages, is there a purely urban effect on fertility? One feature of urban life is wider and more varied personal contacts. These encourage people to search more widely before opting for a marriage partner. In ten out of fourteen developing countries studied, the urban woman marries on average at least one and a half years later than the rural woman; the gap is shortened, but not eliminated, when socioeconomic differences between urban and rural women are taken into account. In addition, in urban areas the idea of controlling fertility and the means of doing so is spread more quickly. And, by being exposed to new consumer goods, urban people are encouraged to delay or limit their childrearing to increase their incomes.

But living in towns and cities is certainly not a sufficient condition for lower fertility. Nor is it even necessary, to judge by the declines in fertility in rural areas of China, Colombia, Indonesia, and Sri Lanka. The changes that do lower fertility—increased education, better opportunities for children, and so forth—can occur just as well in the countryside. In largely agricultural countries, differences in fertility between urban and rural areas are small anyway. In much of Africa and South Asia, which are largely rural, it is clearly futile to wait for urbanization alone to reduce fertility. It is only in the already more urbanized societies of Latin America and East Asia that further urbanization will lower fertility quickly.

Markets, security, and fertility

One feature of development is that markets become more efficient. Markets for labor, for capital, for land, and for many goods enlarge and diversify. Better transport helps this process along, as does the increasing scale and interpenetration of rural and urban life. Local moneylenders who charge exorbitant rates are undersold by banks and credit unions so that the price of credit comes down. Trustworthy institutions gradually establish themselves and offer means to save and borrow. The benefits of education in leading to higher income emerge; contacts and kin matter less as guarantors of jobs and of help with the harvest.

Greater market efficiency affects fertility in several ways. First, the logic of investing in children, especially in their education, becomes clearer. Second, children become less important as safeguards in times of disaster and as old-age security. Their greater regional mobility makes them less dependable as a source of support, and other instruments for old-age security, such as provident funds and social insurance, come into the picture. A study of a rural area of southern Mexico where a social security program was extended to cover sugarcane workers demonstrated that program coverage of half the working population led to a 10 percent decline in fertility. In India participation in a provident fund is associated with later marriage and, in nuclear households, with lower fertility. In both India and Malaysia, women more so than men look to children for support in old age. Information about programs to provide insurance and security should probably be directed more to women than it is currently.

There is little question that socioeconomic change in the long run lowers fertility and slows population growth. At the same time, the evidence is that socioeconomic gains from a low level do not slow population growth much—and can even raise it. A small drop in infant and child mortality results in more mouths to be fed. In some settings, a couple of years of primary education lead to slightly larger families. Employment of women in cottage industries or in other low-paying part-time jobs permits households to support additional children. Living in small towns does less to reduce fertility than does living in larger cities. That many of these changes take time to have an effect only underlines the need to begin them now. At the same time, other measures that complement and speed socioeconomic change can hasten a decline in fertility.

Marriage, breastfeeding, and contraception

Where fertility has fallen significantly, it has been regulated significantly—by methods that have included contraception and abortion. In the early stages of falling fertility, however, marriage timing and breastfeeding practices can reduce fertility.
Figure 6.4 illustrates how the childbearing span is affected by age at marriage, breastfeeding, and fertility regulation. Traditional developing societies achieve high fertility through marriage that is relatively early and waiting times to conception that are mostly short. Fertility would be even higher except for lengthy breastfeeding, complemented in some instances by sexual abstinence. Today's developed economies achieve low fertility by later marriage and long periods between births, made possible by contraception and abortion.

All these factors have played some part in reducing the number of babies per mother from the theoretical maximum of seventeen. Their respective contributions have been calculated for twenty-nine countries covered by the World Fertility Survey (see Table 6.1). In the five African countries, where total fertility is high, breastfeeding accounts for the bulk of forgone fertility (sexual abstinence was not measured), delayed marriage contributes little, and contraception virtually nothing. In Bangladesh, Pakistan, and Nepal the pattern is similar. Bangladesh has the longest period of breastfeeding (twenty-nine months) and the youngest average age at marriage for women (sixteen years). In other countries, such as Thailand, Korea, and Mexico, breastfeeding does not last so long, but later marriage partly compensates. In Costa Rica and Sri Lanka delayed marriage accounts for a substantial part of the low fertility rates, which are below four; in Sri Lanka breastfeeding is also important.

Over time, reductions in breastfeeding have slowed the decline in fertility in India, Indonesia, Korea, and Thailand. Delays in marriage have contributed to the decline, roughly offsetting the effect of less breastfeeding. The major factor in fertility decline in all four countries, however, has been an increase in contraceptive use. Averaging indices for many countries provides a composite picture of change over a long period (see Figure 6.5). Of the reduction in total fertility of almost 5 children over the whole period, delay in marriage contributes a reduction of about 1.4 children; reduced breastfeeding works in the opposite direction, raising fertility by about 1.5 children. Increased use of contraception contributes the most, about 4.5, and increased abortion contributes about 0.5.

Raising age at marriage

The younger women marry, the earlier they start childbearing and the longer they are exposed to the risk of conception. They lose the chance of longer schooling and of employment, and they enter marriage with less motivation and fewer personal resources to plan their families successfully. In addition, early marriage means a shorter gap between successive generations, significantly increasing the birth rate.

In South Asia and sub-Saharan Africa about half of all women aged between fifteen and nineteen are, or have been, married; in the Middle East and North Africa the proportion is close to a quarter. It falls to less than 20 percent in Latin America and in East Asia, and to less than 5 percent in Hong Kong and Korea. Still, variations among the countries in each region are considerable. In Tunisia only 5 percent of women aged fifteen to nineteen have been married, in Libya more than 70 percent. In Bangladesh the mean age at marriage for women is sixteen; in Sri Lanka it is twenty-five. If Bangladesh could immediately adopt the Sri Lankan marriage pattern, with no other change in fertility practices,
Marriage practices vary widely from country to country. Parentally arranged child marriages, still common in parts of South Asia, contribute to higher fertility; though consummation is often delayed and fecundity is lower among very young girls, the long-run effect of these arranged marriages is to reduce young women's exposure to opportunities outside the family and to encourage them to have many children. Polygamy, practiced in parts of Africa, has a mixed effect on fertility. Informal unions, common in the Caribbean, are typically transitional stages preceding legal marriage; while in such unions, women tend to have few children.

Among developing regions in the recent past, age at marriage has changed most in Asia. Korea provides a striking example. Between 1925 and 1975 the average age for a woman at marriage rose from 16.6 to 23.7 years. This rise started slowly and gradually picked up speed, especially in the years between 1955 and 1966, when mean age at marriage was rising at a rate exceeding two months a year. In Korea the tradition of early marriage was substantially undermined by considerable migra-

### Table 6.1

<table>
<thead>
<tr>
<th>Country and year</th>
<th>Total fertility rate</th>
<th>Reduction from total fecundity due to</th>
<th>Marriage delay</th>
<th>Breastfeeding</th>
<th>Contraception</th>
<th>All other factors</th>
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<td></td>
<td></td>
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<td>4.31</td>
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<td>0.67</td>
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Source: Computed from WFS data.
tion into and out of the country and from rural to urban areas, as well as by the social unrest connected with World War II, liberation, the partitioning of Korea, and the Korean War. Increasing educational opportunities for both men and women and compulsory military conscription also played a part. Manufacturing has provided more and more jobs for women, in a society where factory work has been considered incompatible with marriage but quite compatible with continuing to live at home to contribute to the support of parents.

Development itself serves to raise the age of marriage, as does improvement in the status of women. Those governments which have tried to raise the legal minimum age for marriage have usually done so in conjunction with other measures that would work in that direction anyway. Tunisia introduced legal minimums of fifteen for women and twenty-one for men in 1956 and raised the minimum age for women to seventeen in 1964.

These changes were accompanied by legal and social measures affecting women: polygamy and repudiation of wives were outlawed, family planning services were gradually provided, and educational opportunities for women were expanded, so that the proportion of girls enrolled in primary and secondary schools rose from 27 to 47 percent during the 1960s. The president was a strong supporter of these reforms and a stern critic of keeping women in seclusion. These and other factors, such as heavy emigration of male workers, contributed to a decline from 42 percent in 1956 to 6 percent in 1975 in the proportion of women married in the age group fifteen to nineteen.

China legislated minimum ages for marriage of eighteen for women and twenty for men in 1950 as part of an overhaul of marriage laws and an attempt to provide equal rights for men and women. The Chinese considered raising the minimums again in 1957 but, recognizing the limited...
effectiveness of existing laws, instead increased institutional and community pressure for later marriage. In 1980 the government raised the legal minimum ages to twenty and twenty-two—less than the widely and officially propounded minimums of twenty-three and twenty-five. This was interpreted as a relaxation of controls on marriage, and it may have contributed to a recent increase in marriage and a spurt in the birth rate.

With the possible exception of China, efforts to raise the age at marriage by persuasion and edict have not been particularly successful. Legislation, however, is a way for governments to encourage social support for later marriage; and governments can link the idea to specific programs, especially schooling for girls, which affect fertility indirectly. In countries where early marriage is common, governments need to go further, giving women more rights and encouraging men and women to support expanded women’s opportunities within the household as well as in society at large.

Providing information about breastfeeding

Full breastfeeding and frequent suckling are good guarantees that resumption of menstruation will be delayed, though protection decreases with each month after childbirth. Failure to menstruate is a good, but not an absolute, guarantee against pregnancy; about 7 percent of women conceive without having resumed menstruation. As a basic form of contraception, breastfeeding has a well-established reputation in developing countries. In one study three-quarters of Guatemalan mothers knew that it could postpone conception; in another, 60 percent of Malaysian women knew it made conception more difficult, and 20 percent thought it made it impossible. Women who breastfeed and who want to avoid pregnancy are 10 percent of all married women in Mexico, 15 percent in Peru, and 16 percent in Honduras. Only ten years ago breastfeeding provided more months of protection against conception in the developing countries than did family planning programs.

Aside from its effect on fecundity, breastfeeding avoids the considerable health risks connected with bottlefeeding—particularly where the powdered milk may be improperly prepared, adequate sterilization is not possible, and families cannot afford an adequate supply of powder. Though after four to six months mother’s milk should be supplemented with other food, continued breastfeeding still benefits a baby’s health. In Malaysia declines in breastfeeding in the last three decades slowed the decline in infant mortality.

At least 70 percent of women in developing countries initially breastfeed their children, although this proportion is falling. How long they continue to do so varies widely, from two months in metropolitan Malaysia to twenty-nine months in rural Bangladesh. The trend is toward less breastfeeding: in Thailand, for example, between 1969 and 1979 mothers reduced the average length of breastfeeding from 22.4 to 17.5 months in rural areas and from 12.9 to 8.4 months in the cities. In Malaysia the percentage of infants initially breastfed dropped from 89 to 74 percent between 1960 and 1974, and the percentage breastfed more than three months dropped from 75 to 53 percent.

Some decline in the duration of breastfeeding is a natural consequence of economic development and may be a reasonable choice—if, for example, a working mother’s income more than compensates in improved health care and nutrition for the family. Studies show that mothers’ employment in itself does not affect whether mothers initiate breastfeeding, but employment may affect how long they continue to breastfeed. Malaysian women who had recently been employed off the farm tended to wean their children completely at an earlier age. Filipino women in a semiurban setting breastfed if they worked close to home, but started mixed feeding earlier if they worked in a different area. In addition, employment may lengthen periods between sucklings, leading to a briefer amenorrheic period. But especially where breastfeeding is being shortened only moderately from long periods, say, of a year or more, the mother’s and infant’s health is unlikely to suffer—as long as families can afford proper nutrition and couples can use contraception to avoid an unwanted immediate pregnancy.

But evidence shows that in many cases breastfeeding is being curtailed simply because mothers do not know how to do it; the chief reason given for stopping breastfeeding is insufficient milk, yet that is biologically implausible for all but a few women. Some mothers switch to bottlefeeding because they lack guidance and information about the health benefits of breastfeeding, and they believe bottlefeeding is more “modern.” In Malaysia women who live with parents, in-laws, or other adult relatives are less likely to abandon breastfeeding.

Evidence that behavior will change in the light of information comes from the industrialized countries, where medical opinion did not clearly favor
breastmilk until the late 1960s. As the advantages of breastfeeding became better known, breastfeeding increased among better-educated women. In the United States, for example, college-educated women are now most likely to start breastfeeding and continue it for the longest periods.

Apart from providing more information on the advantages of breastfeeding, medical authorities in developing countries can restructure hospital and clinic routines that discourage breastfeeding by separating mother and child and offering unnecessary supplementary bottlefeedings. In Malaysia government family planning clinics that encourage breastfeeding have a positive effect; women who give birth in nearby private maternity clinics are less likely to breastfeed, all other things being equal. Legislation to control the promotion of powdered milk can also be effective. In Port Moresby, Papua New Guinea, changes in hospital practices and restrictions on the advertising and distribution of powdered milk increased the proportion of breastfed children under two years old from 65 to 88 percent in just two years, between 1975 and 1977.

Without such efforts, breastfeeding seems likely to go on declining. In this case—unless contraceptives are used more widely—fertility will rise. As an example, reducing the duration of breastfeeding from an average of three years to one month could double a mother’s fertility from five to ten children. In the mid-1970s, if all mothers in Thailand had started menstruating three months after each baby was born, contraceptive use there would have had to double to prevent fertility from rising. In Indonesia, contraceptive use would have had to more than double; in Bangladesh it would have had to increase sixfold, and in Pakistan eightfold.

Making contraception easier

As shown in Figure 6.5, fertility declines everywhere have been eventually tied to increasing use of contraception. Use of contraception is partly a function of a couple’s wish to avoid (or to postpone) additional children; the number of children desired is related to the social and economic factors discussed above. But use of contraception is also related to its costs, that is, to the costs of limiting or postponing births. People have regulated family size for centuries—through abortion, withdrawal, sexual abstinence, and even infanticide. But these methods are all costly in terms of reduced emotional, psychological, and, in the case of traditional abortion, physical well-being. Moreover, except for complete abstinence and infanticide, they do not always work. Under these circumstances, risking an additional child may seem less costly than preventing a birth, and even the stated “desired family size” may be higher than it would be if birth control were easier.

It follows that programs to provide publicly subsidized information and access to modern methods of contraception can reduce fertility. They do so in several ways: by making it easier for couples to have only the children they want; by spreading the idea of birth control as something individuals can do; and by providing information about the private and social benefits of smaller families, which may itself alter desired family size. The next chapter looks at how family planning programs can be run to best meet people’s needs for safer and more effective contraception. The rest of this chapter examines the evidence that support for family planning services (delivered by both public and private agencies) has helped to reduce fertility.

Effects of family planning programs on fertility. Measuring the impact of family planning programs is less straightforward than it seems. To distinguish the specific impact of a program, analysts must estimate how fertility would have changed in its absence. That requires systematically eliminating other possible causes of a country’s fertility decline—such as increases in income, education, and life expectancy in the same period. In addition, information on the change in the availability of family planning services is needed (not on change in the use of services, since use is related to people’s fertility goals and does not indicate the difference services alone would make to people who now have no access to them). Such information has, until recently, been patchy and inadequate.

Given these analytical difficulties and the lack of good information, it was not surprising that a decade ago policymakers and planners could not completely agree on the relative importance to a fertility decline of the supply of family planning services versus the “demand” factors—increasing education, lower infant mortality, and the like. Early family planning programs in Korea, Hong Kong, and other areas of East Asia had been established in countries where a marked fall in fertility was already in progress; some of the continued decline might have occurred even without official programs. In other countries (such as India and Pakistan), where programs were also established
in the 1950s and 1960s, fertility was changing little during the late 1960s.

But family planning programs spread rapidly in the late 1960s and early 1970s, and more systematic information on them is now available.

- A country-level family planning index was developed in the mid-1970s. It was based on countries' performance in 1972 on fifteen criteria, such as the availability of many contraceptive methods, either through government programs or commercially; inclusion of fertility reduction in official policy; adequacy of the family planning administrative structure; and use of mass media and fieldworkers. The index has been updated for this Report to 1982; countries are classified into groups by this index as of 1972 and 1982 in Table 6 of the Population Data Supplement.

- Household and community surveys conducted within countries during the 1970s provided information on the distance and travel time to services for household members. Those carried out as part of the World Fertility Survey (WFS) project in over forty countries, and of the Contraceptive Prevalence Survey (CPS) project in about fifteen countries, have several advantages: most are representative, nationwide samples and, because similar questions were asked everywhere, are largely comparable among countries.

These two sources, supplemented by the results of small experimental field studies, have provided the basis for careful analyses of the effects of family planning programs. They leave little doubt that the programs work.

CROSS-COUNTRY STUDIES. Using the family planning index, along with indicators such as literacy, life expectancy, and GNP per capita in about 1970, research in the late 1970s found that birth rates declined most (29 to 40 percent) between 1965 and 1975 in countries such as Costa Rica, Korea, and Singapore, where socioeconomic development was relatively advanced and family planning programs were strong. There was a modest decline in birth rates (10 to 16 percent) where development was relatively strong but the family planning index was weak, as in Brazil and Turkey. There was also a modest decline where development levels were low but the family planning index was moderately strong, as in India and Indonesia. (Indonesia's family planning program, now one of the world's strongest, had been operating for only two years by 1972, the reference year for the family planning index.) The same results emerged from using measurements of socioeconomic change from 1970 to 1977 rather than levels at one point in time during the period.

One objection to this type of study is that the family planning index may itself be the result of a demand for contraception that already existed as a byproduct of development. In this case, family planning services provided by the government may simply displace traditional methods of contraception or modern methods already available through the private sector. Indeed, analysis does show that in the early 1970s family planning programs were more likely to be instituted and were more successful where demand for contraception already existed: Korea, Hong Kong, and Singapore. The existence and strength of early programs is closely related to the proportion of educated women (itself a measure of demand for services), and to the degree to which fertility had declined in the late 1960s. But these factors do not completely explain differences in the family planning index; to some extent, indices were stronger or weaker because of other factors—political leadership, for example. And the change in country effort between 1972 and 1982 is not at all related to earlier declines in fertility or to levels of development; it has been more clearly the result of government initiatives.

Furthermore, although family planning programs are in part a response to preexisting demand, recent studies show that such programs do have an independent effect on fertility. Cross-country analysis shows that, for the average country, previous fertility decline accounted for 33 percent of the total fall in fertility between 1965 and 1975; socioeconomic change accounted for 27 percent; the family planning index accounted for more than either: 40 percent.

STUDIES WITHIN COUNTRIES. The cross-country studies are complemented by several examples of apparent family planning success in individual countries. In China and Indonesia, per capita income is low and the population still overwhelmingly rural, but governments have made a concerted effort to bring family planning services to the villages. In China the birth rate at the end of 1982 was estimated to be nineteen per 1,000 people, down from forty in the 1960s. The current figure, based on birth registrations rather than on a census, may slightly underestimate the actual birth rate; but it would still be well below current rates in South Asia, Africa, and most of Latin America. Up to 70 percent of Chinese couples of childbearing age are estimated to be using modern contraceptives. The government believes that its family
planning program is critical to reducing fertility.

Indonesia's current birth rate is estimated at thirty-four per 1,000 people, which is a notable drop from an estimated forty-four in 1960. In Java and Bali, the two most densely populated islands of the country, the percentage of married women of reproductive age currently using modern contraception more than doubled between 1974 and 1976 (11 to 24 percent), nearly doubled again to 42 percent by 1980, and by 1983 had reached an estimated 53 percent.

Other developing countries and regions have also had remarkable increases in contraceptive use and rapid fertility declines, even among women with little or no education. In Colombia a strong private family planning program was under way by the late 1960s, and the government began supporting family planning in 1969. In urban areas the proportion of married women using contraception increased from 43 to 53 percent between 1969 and 1976, with a big switch from less effective methods, such as rhythm and withdrawal, to pills and IUDs (although the increase since then has slowed); in rural areas the proportion doubled, from 15 to 30 percent. As Figure 6.6 shows, the drop in fertility for Colombian women with little schooling has paralleled that of better-educated women, although fertility levels are still higher among those with less education. Fertility had begun to fall by 1965, before family planning services became widely available, but it declined faster in Colombia in the early 1970s than it did in Brazil or Mexico, where family planning services were less widely available. (Colombia has a somewhat lower per capita income than does Brazil or Mexico, and similar literacy and urbanization rates.)

In Mexico, as in Colombia, fertility began to fall a few years before the establishment of extensive family planning programs, both private and government-sponsored; but as those programs gained momentum, the fall in fertility accelerated. The government adopted a policy to reduce population growth at the end of 1973—an abrupt shift from its earlier pronatalist position. Rates of contraceptive use among married women aged fifteen to forty-nine more than doubled between 1973 and 1976, from 11 to 29 percent; by 1982 they had reached an estimated 48 percent. Public programs accounted for virtually all of the increase. The total fertility rate fell from 6.7 in 1970 to about 4.6 in 1982.

Of course, the availability of family planning services has not been the only reason for falling fertility in these countries. In China the government has exerted considerable social pressure and adopted economic incentives to reduce fertility; family planning services have provided couples with the means to respond. In Colombia and Mexico work opportunities and household incomes of women with little education were probably increasing in the 1960s and 1970s, which also encouraged the use of contraception.

In several low-income countries family planning programs have not been effective in reducing fertility—for example, Ghana, Kenya, and Pakistan. Lack of demand has been a factor, but so has limited availability of services and weak government support for the programs. Comparisons within countries show the difference actual availability can make. In Mexico, Korea, Thailand, and India contraceptive use is higher in communities with more sources of family planning supplies, even when differences in development levels are taken into account. In one district in India a 10 percent increase in the number of clinics per hundred thousand people was associated with a 3 to 4 percent increase in the combined acceptance rates of intrauterine devices (IUDs) and sterilization; similarly, a 10 percent increase in the number of extension workers raised acceptance rates by 4 to 6 percent.

FIELD PROJECTS. Experiments conducted in widely different communities have also revealed numerous examples of the effectiveness of family planning programs.

- In Matlab, a largely inaccessible part of Bangladesh, trained local women provided comprehensive family planning services in seventy villages. For the four years prior to the project, fertility rates for these villages were comparable with those for seventy-nine other Matlab villages; over the two subsequent years, rates were 22 percent lower (see Box 7.6).
- In San Pablo Autopan, Mexico, maternal and child health services and contraceptives were delivered to individual households in 1976-77. Contraceptive use rose from 5 to 9 percent in the surrounding areas, and from 7 to 25 percent in the area covered by the project.
- On the island of Cheju, Korea, family planning staff distributed oral pills and condoms through home visits in 1976-79 and also referred to clinics women who wanted IUDs and subsidized sterilization. Over the period, fertility in the surrounding areas fell by 29 percent; in Cheju it fell by 35 percent, mainly because of sterilization.
- In some parts of the island of Bohol, Philippines, village workers (including midwives and
Fertility decline within female education groups in selected countries

traditional birth attendants) provided maternal and child health care, as well as family planning services in 1974-79. In those areas, fertility declined by 15 percent; elsewhere on the island, it fell by 9 percent.

- A comprehensive rural health program was undertaken in an area in Maharashtra, India, from 1971 to 1978. In a nonprogram area, fewer than 10 percent of eligible couples used contraceptives in 1976, and the crude birth rate was thirty-seven per thousand. In the program area, contraceptive use rose from 3 to 51 percent, and the crude birth rate in 1976 was twenty-three per thousand.

Unfortunately, experiments such as these are difficult to replicate. They often cost more than a government could spend on a nationwide effort; more important, they may work because of the intense involvement of research and other staff. Indeed, not all field projects work well; effects of projects were small in a condom-marketing scheme in Kenya, and nonexistent in one in Rio de Janeiro, Brazil (the only project conducted exclusively in an urban area, where contraceptives were easily available). But the results still suggest that good services reduce fertility significantly, by closing the gap between actual and desired family size.

**COST EFFECTIVENESS OF FAMILY PLANNING PROGRAMS.** By increasing the supply of services, family planning programs reduce the cost of using contraception to potential users. By contrast, increased education, lower mortality, and other social changes increase the demand for contraception. For the single goal of reducing fertility, spending on family planning services turns out to be more cost effective (that is, it leads to the same fertility reduction at lower cost) than does spending on education, health (which reduces fertility by reducing infant mortality), and other programs. Of course, this comparison does not take into account (1) that education and health programs have other objectives in their own right, independent of effects in fertility; (2) that family planning has other benefits—including reducing mortality; and (3) that these different approaches are not really alternatives but complement and reinforce each other. At low levels of education and high levels of mortality, the underlying demand for family planning will be low. The same amount spent on a program in a high-education, low-mortality setting will induce a greater increase in contraceptive use.

One reason family planning is cost effective is that it has an immediate impact—at least where there is underlying demand. Similarly, the effect of reducing infant mortality and of providing more schooling for children can be rapid—but these cost more in most settings to produce the same effect on fertility. With respect to the single goal of reducing fertility, one study concluded that family planning programs were at least seven times as cost effective in reducing fertility as were nutrition programs or education schemes for rural women. In Bangladesh, Korea, and the Philippines family planning programs are estimated to be five times as cost effective as health programs that reduce fertility through reducing mortality. But where mortality is high and demand for family planning is limited, as in Kenya, reducing infant mortality is a more cost-effective way to lower fertility.

Emphasis on the cost effectiveness of family planning should not obscure the third point noted above: that family planning and social development complement each other. Analysis of fertility change across countries done for this Report shows that between 1972 and 1982 family planning programs have had minimal effect where education is low, in part because it is difficult to operate such programs without some educated women to staff them, and in part because of lack of demand for contraception. Equally, female education has had minimal effect where family planning services have been unavailable. However, the effect of the two together has been powerful. The decline in fertility in Kerala, India, provides a good illustration. Education levels have been higher in Kerala than in most other Indian states for many years, and infant and child mortality rates have been lower. Around 1980 the literate proportion of Kerala’s population was twice that of India’s as a whole, and the infant mortality rate less than half the national rate. The fertility rate fell from 4.1 to 2.7 between 1972 and 1978 in Kerala (compared with a fall from 5.8 to 4.9 for India as a whole), in part because investment per capita in family planning in Kerala has been high, at times almost as great as in Hong Kong. But this investment would have had much less impact in less favorable conditions of education and health.

**Incentives and disincentives**

To complement family planning services and social programs that help to reduce fertility, governments may want to consider financial and other incentives and disincentives as additional ways of encouraging parents to have fewer children. Incentives may be defined as payments given to an individual, couple, or group to delay or limit child-
Potential parents trying to estimate the cost of children would need to consider the following:

- Goods and services (food, shelter, clothing, medical care, education, and the like) needed in raising children, and specifically the amount required in each future year, and the expected prices, year by year, for goods and services.
- The amount of time they will put into caring for children, year by year, and the expected wages they will thereby lose.
- The amount of time children would put into earning for the household, and the wages the household can expect to receive.
- The probability that children will survive to any given age, which should be used to weight the probable costs for each year.
- The weight to attach to future costs and benefits from children, such as security for old age, in contrast to immediate costs and benefits.

Few parents explicitly make such calculations, but illustrative examples suggest what the results of such calculations would be.

For a rural sample in the Philippines, three-quarters of the costs involved in rearing a third child come from buying goods and services; the other quarter comes from costs in time (or lost wages). But receipts from child earnings, work at home, and old age support offset about 6 percent of the total. The remaining 54 percent, the net cost of a child, is equivalent to about 6 percent of a husband's annual earnings.

By contrast, a study of an urban area of the United States in 1960 showed that almost half of the costs of a third child are time costs. Receipts from the child offset only 4 percent of all costs.

Only economic costs and benefits are taken into account in these calculations. To investigate social and psychological costs, other researchers have examined how individuals perceive children. The figure shows the variety of values and drawbacks of children mentioned by mothers in the Philippines, Korea, and the United States. Economic contributions from children are clearly more important in the Philippines, where fertility is higher than in Korea or the United States; concern with the restrictions children impose on parents, on the other hand, is clearly greatest in the United States.

In all three countries, however, couples demonstrate a progression in the values they emphasize as their families grow. The first child is important to cement the marriage and bring the spouses closer together, as well as to have someone to carry on the family name. Thinking of the first child, couples also stress the desire to have someone to love and care for and the child's bringing play and fun into their lives.

In considering a second child, parents emphasize more the desire for a companion for their first child. They also place weight on the desire for a child of the opposite sex from the first. Similar values are prominent in relation to third, fourth, and fifth children; emphasis is also given to the pleasure derived from watching children grow.

Beyond the fifth child, economic considerations predominate. Parents speak of sixth and later children in terms of their helping around the house, contributing to the support of the household, and providing security in old age. For first to third children, the time taken away from work or other pursuits is the main drawback; for fourth and later children, the direct financial burden is more prominent than the time costs. Like the economic evidence, this account highlights the economic contributions that children in large families make and, once family size has declined somewhat, the significance of time costs in producing one- and two-child families.

These studies focus on the advantages and disadvantages to couples of having one or more children. But society as a whole bears many of the costs of population growth. Do couples limit their own childbearing for essentially altruistic reasons? One small study, conducted a decade ago in the Philippines, suggests they might.

About 300 people from Manila and sur-

bearing or to use contraceptives. They extend further the subsidy governments provide when they use public resources to deliver family planning services. Disincentives are the withholding of social benefits from those whose family size exceeds a desired norm.

Incentives and disincentives serve three main purposes.

- They encourage birth control by calling attention to family planning, spreading information about its availability, motivating individuals to consider it more seriously, and compensating for costs and inconvenience that might discourage potential users.
- They alter the costs and benefits of children and may therefore affect desired family size (see Box 6.3). Incentives offer alternative ways to ensure the benefits children might otherwise provide; disincentives raise the costs of children. Where large families are not in the interests of society as a whole, society may benefit more by providing incentives that lower fertility than by bearing the social costs of high fertility.
- They help inform people about society's population goals and the damaging effects of rapid population growth and large families.

Payments to people who volunteer for sterilization are usually meant to compensate for travel and work time lost; like incentives and free family planning services, they provide a subsidy that
Perceived value of children in selected countries

- Economic, practical assistance; help in housework, in old age
- Family name; religious and social obligations, adult status; social norms
- Companionship, love, happiness, play; marital bond; fulfillment, achievement

Perceived drawbacks of children in selected countries

- Financial costs
- Emotional strain
- Other childrearing demands: more work; discipline; child’s sickness
- Restrictions on parents: tied down; cannot work; marital strains
- Overpopulation

This question was also posed:
Supposing the government determined that the population was growing too fast and there were not enough jobs for the adults, not enough schools for the children, not enough hospitals for everyone, and not enough money to pay for these things. Would you be willing to stop having children (and to stop at two children, if you had no children yet) in order to help solve the problem?

Eighty-four percent of respondents said they would be willing to stop at two children (if they had none to begin with), and 86 percent said they would be willing to stop at the number they had. The social costs of population growth, for this small sample, appeared real enough to generate some sacrifice from almost everybody.

Encourages smaller family size (though they are usually offered to all clients regardless of family size). Some population programs also provide bonus payments as incentives to family planning workers; they are meant not to increase demand for services but to improve supply, and are discussed in the next chapter.

Incentives and disincentives give individuals a choice. They provide direct and voluntary trade-offs between the number of children and possible rewards or penalties. But choice will be preserved only if programs are well designed and carefully implemented. The ethical questions raised by incentives and disincentives are touched on here but discussed more in Chapter 8.

Examples and experience

Although various forms of incentives and disincentives now exist in over thirty countries in the developing world, it is still not possible to estimate exactly how much influence they have had on fertility. In countries in which they have been tried, they have been accompanied by social change, family planning services, and (in the case of China) various social pressures that make it impossible to distinguish their separate effects.

Disincentives built into benefit or tax systems are the most common. Ghana, Malaysia, Pakistan, and the Philippines limit income tax deductions, child allowances, and maternity benefits beyond a
few births; to encourage spacing, Tanzania allows working women paid maternity leave only once every three years. But these policies affect only the small minority who are public employees or who pay taxes. Singapore has disincentives which affect more people because of the country’s higher income, comprehensive health services, urbanized setting, and extensive public housing. Singapore’s disincentives include limitation of income tax relief to the first three children, restriction of paid maternity leave to the first two pregnancies and an increase in childbirth costs after the first two deliveries. Singapore also gives children from smaller families priority in school admission and ignores family size in the allocation of state housing, so smaller families enjoy more space per person. Attitudinal studies suggest that these disincentives, particularly the school admission policy, are much more influential in Singapore than are the more common tax disincentives. Disincentives were introduced gradually in Singapore beginning in 1969, more than a decade after fertility had started to fall. The timing and pattern of the fertility decline thereafter suggests that they have had some impact.

In 1984 the Singapore government shifted the emphasis of its population policy. While it still encourages most women to have only two children, women university graduates are encouraged to have more. If graduates have more than two, the government will now give their children priority admission to state schools. This approach is based on a belief that highly educated parents are more intelligent than those with less education, and that children inherit intelligence from their parents. Were this the case—since better-educated parents have typically had fewer children, at least for the past 100 years—the average intelligence of humankind would be falling. But it does not appear to be. In any event, local newspaper polls indicate that the policy is not popular, even among women who could benefit from it. Many such women have said that priority in school admission is not enough to persuade them to have more than one or two children.

China has the most comprehensive set of incentives and disincentives, designed (most recently) to promote the one-child family. Since the early 1970s women undergoing various types of fertility-related operations have been entitled to paid leave: in urban areas fourteen days for induced abortion; ten days for tubal ligation; two to three days for insertion or removal of an IUD; and in the case of postnatal sterilization, seven extra days over the normal fifty-six days of paid maternity leave. Since 1979 the central government has been encouraging, even requiring, each area and province to draw up its own rewards and penalties. Sichuan, for example, provides for a monthly subsidy to one-child families of five yuan (8 percent of the average worker’s wage) until the child is fourteen years old. The child will have priority in admission to schools and in obtaining a factory job. In rural areas in Hunan, parents of only one child receive annual bonuses until their child is fourteen years old and private plots and housing lots big enough for a two-child family. In some urban areas, a single child is allotted adult food rations. Most factories and other work units give preference in the allocation of scarce housing to single-child families. In some cases, medical and educational entitlements are granted preferentially to parents whose only child is a girl—one way, the government hopes, of overcoming the preference for sons.

Penalties for excessive fertility also vary by area in China. In some places, couples who have a second child must return any bonuses obtained for the first child. A couple having a second child may be required to pay for the privilege. (In one brigade in Beijing studied by foreign researchers, several couples have been willing to pay more than twice the annual collective income distributed to each brigade member in order to have a second child.) Parents may have to pay a higher price for grain that they buy for a second child whose birth has not been authorized under the planned-birth program. Some areas and provinces impose taxes, which can be as high as 10 percent of family income, only on third and later-born children. Similarly, mothers may not be entitled to paid maternity leave for a third child, and parents may have to pay all its medical expenses. In 1983 the State Family Planning Commission proposed a tax of 10 percent of family wages on urban dwellers with two or more children, unless one or the other partner is sterilized.

In addition to China and Singapore, Korea is the only other country with a national system of rewards and penalties for individuals to encourage parents to have few children. Korea offers free medical care and education allowances to two-child families provided one of the parents has been sterilized.

Incentives do not have to be provided just by the state. A private group in Thailand offers technical assistance in farm production and marketing to contraceptive users or to those who commit them-
selves to birth control. Rates of contraceptive use have risen to as high as 80 percent in some villages that receive, or hope to receive, the benefits of this program. Qualifiers have been given credits for livestock, feed, and construction materials, and have been offered lower prices for fertilizer, seed, garlic, dressmaking, hairdressing, and medical treatment. Some communities have also been allowed to use a “family planning bull” for servicing their cattle. The scheme also offers pig-rearing contracts: a woman acceptor gets a piglet to fatten over a period of eight to nine months and is given a share of the profits. Should she become pregnant, the pig is not taken away, but she may lose the opportunity to get another one in the future.

In the past decade, a few countries have started offering small-family incentives to communities. The Indonesian program gives prizes and popular recognition for meeting fertility targets or for performing better than other communities. In Thailand the government rewards villages that achieve certain targets with anything from a biogas plant to a cooperative store. Community incentives work where there is a well-organized, community-based family planning system and where the village or hamlet is an important social or political unit.

Several other countries, including Bangladesh, India, and Sri Lanka, have offered rewards to people who volunteer to be sterilized, primarily to compensate them for the cost of travel and loss of work time. These programs are easier to administer than incentive systems tied directly to lower family size. In most cases, volunteers have been carefully screened to avoid any possibility of coercion or of changing their minds when it is too late. In Sri Lanka, for example, the couple must have at least two children, the youngest at least a year old. These facts must be certified by the village head and reviewed by a medical officer at the clinic where the operation will be performed. The volunteer must sign a statement of consent; he or she receives the equivalent of $20. At their peak in 1980–81, sterilization payments cost an amount equal to 3 percent of total government spending on health; that much could easily have been saved in the costs associated with abortion and unwanted births.

Unresolved issues

Payments and penalties raise a host of issues not yet resolved. Some people may be willing to defer pregnancy or to have fewer children even without an incentive, yet they cannot be stopped from claiming it; and they may be those least in need of an incentive. Disincentives that work through tax and benefits systems affect only a few people, yet broader disincentives might unfairly burden the poor, who gain most from children. Disincentives tied to school admissions may affect children who have no control over parental decisions. Verification (was a child born and not reported?) can be administratively difficult, and the money to reward compliance may be improperly used. Payments for sterilization have little impact on fertility if families have already had four or more children.

The cost of incentives is also a consideration in judging their effectiveness. From a national accounting point of view, incentives are transfer payments and in themselves do not use up resources. Their economic impact will depend on the savings and consumption patterns of those who are taxed and those who receive payments. The principal question is likely to be a budgetary one for the government: is money available and might it be better spent in other ways? If conventional incentive schemes absorb funds that might better go to investments, the cost to an economy in terms of long-run investment and growth may also matter. This is clearly a problem in China, where incentives large enough to ensure one-child families would become a heavy burden on the economy, unless those who received them in turn used the incentives for saving, say, for their own old age.

Deferred incentives

Deferred incentive schemes overcome some, though not all, of the difficulties of conventional incentives. They have not been tried on a national level, but two local experiments demonstrate their feasibility. A township in China began a deferred bonus scheme in 1971, offering to pay the high-school education of children of two-child families. No specific family planning service was involved, but parents had to show that they agreed with the terms of the entitlement when their children were ready to enter high school. Two-thirds of families enrolled in the program; its effects on fertility could not, however, be differentiated from a general decline in fertility.

A no-birth bonus scheme developed on three tea estates in India also provided a deferred payment. Each woman worker had an extra day’s pay credited to an account for every month she was not pregnant. Her benefits were suspended for a year
Box 6.4 A deferred incentive scheme in Bangladesh

The government of Bangladesh is considering two new schemes to reduce fertility and simultaneously provide economic assistance to families. The first would be open to those who volunteered for sterilization and had only two or three living children; men would have to be aged forty or less, women aged thirty-five or less. They would be given nonnegotiable bonds worth $80 to $120, depending on the number of children they already had. The bonds would mature, with interest, after twelve years. At any time during this period, the bondholder would be able to obtain a loan for an amount up to 50 percent of the bond’s value, for productive purposes such as purchase of fertilizers, installation or rental of irrigation pumps, poultry farming, fish culture, or small trade. The maturity value of the bonds would be between $275 to $425.

The scheme has several attractive features. It provides for old-age security, the lack of which is one reason the poor have many children. By providing a mortgageable bond, the scheme increases access to credit for the poor. Yet its immediate financial costs are small.

The government is also considering awarding three-year and five-year certificates of about $20 to couples who delay a first birth for three years after marriage, or who delay second and third births for at least five years.

Both schemes would initially be implemented in only a few areas (covering about 2 percent of the country’s population). If 10 percent of all couples of childbearing age in these areas were to join the bond scheme by 1985, the government would have to set aside $3.6 million now to pay out these bonds eventually. If 20 percent of couples of childbearing age in these areas were to join the delayed pregnancy scheme by 1985, the cost would be about $1.5 million. The cost of these schemes together would represent 0.2 percent of 1982-83 government expenditure. It would cost the government roughly fifty times more, or about 10 percent of 1982-83 expenditure, to extend the schemes to cover the entire population. This would clearly require an increase in foreign assistance for the population program.

Deferred incentives have an immediate financial advantage: the payments by government to bondholders come in the future, at the time when the saving to society from fewer births is being reaped. However, they can still be costly. For example, an incentive scheme proposed in Bangladesh would provide a bond for all couples who agreed to sterilization and who had only two or three living children. To fully fund the scheme nationwide, the government would have to set aside a substantial proportion of its budget now (see Box 6.4).

There are also practical arguments in favor of deferred schemes, especially for sterilization. The first, alluded to above, is that a deferred payment avoids the risk of people volunteering simply because they need money immediately. If they later regret their decision, they can do nothing about it. If many people were do this, they might provoke a general reaction against sterilization.

Deferred incentives, however, are not without their own problems. For example, it is not certain that potential recipients would trust the government’s ability and willingness to provide benefits in the future. The administrative requirements of a deferred system are also considerable. For schemes not tied to sterilization, individuals would have to be registered and their births monitored. For many developing countries, keeping track of all births in circumstances where parents may wish to conceal them would require a more effective administrative system than now exists.

Despite these possible shortcomings, deferred incentives have much potential. If they could be made to work, they could provide for a transfer of income to the poor that would reduce fertility. Nepal is trying deferred incentives in a few areas, and Bangladesh is now considering such schemes. They could also be tried in those rural areas of India and Indonesia where family planning services and administrative systems are adequate.