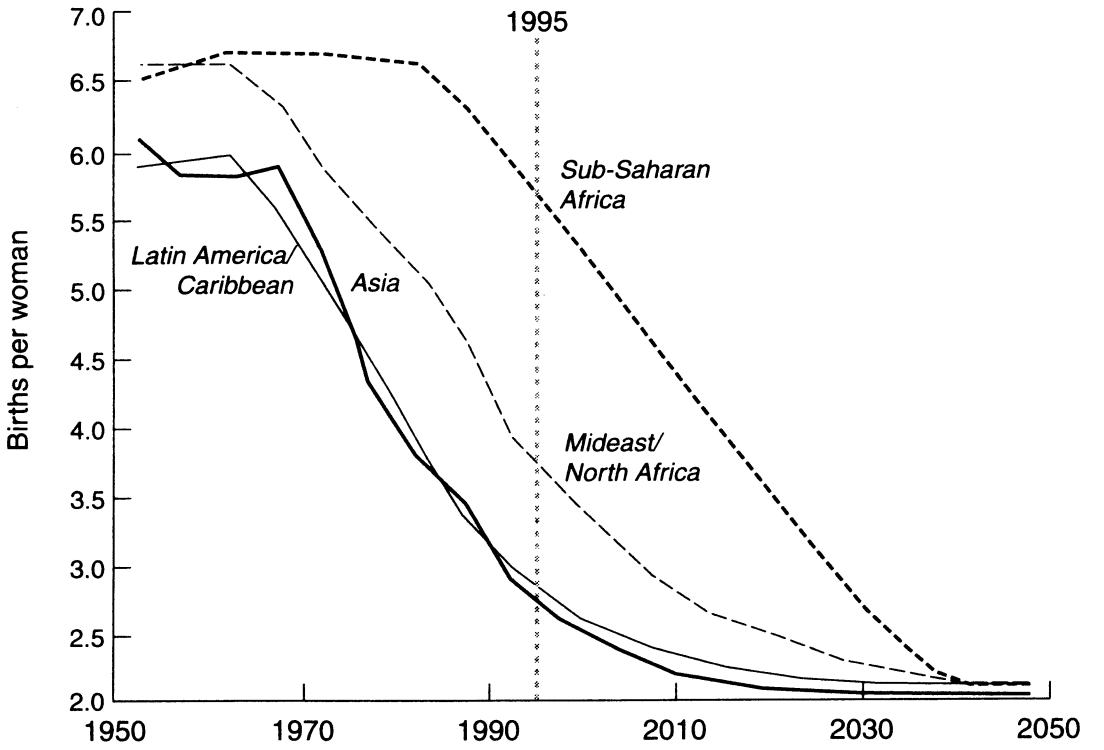

FIGURE 3-2 Estimated and projected total fertility rates by region: 1950-2050.
SOURCE: Data from United Nations (1999).

REASONS FOR FERTILITY DECLINE

Behavioral Mechanisms

Despite these variations in the timing and pace of fertility transitions over the past 50 years, country transitions have been remarkably similar in their underlying behavioral mechanisms. The dominant proximal force has been a change in reproductive habits: the use by married couples of recently developed and highly effective methods of contraception to limit family size.[2] Typically, these methods have been adopted by couples in their late 20s or 30s who have several children and wish to cease further childbearing. Family-size limitation has been the dominant motive, although in Sub-Saharan Africa the use of contraception for child spacing has been relatively more common. The rise in contraceptive use has been facilitated by a massive international effort to implement family planning

[2]In this regard, the experience of developing countries is quite different from the earlier European and North American transitions, which occurred without the benefit of highly effective modern methods and often in a context of religious, medical, and political opposition to contraception.

programs. These programs, many of them government run or subsidized, but others also directed by private organizations, have reached millions of couples with informational materials and contraceptive supplies.

Although overshadowed by the impact of contraception, induced abortion has also played an appreciable role in fertility reduction. A recent estimate is that 35.5 million abortions took place in 1995 in developing regions (Alan Guttmacher Institute, 1999) and that between 10 and 30 percent of overall falls in fertility are attributable to induced abortion (Frejka, 1993).

A third factor in reproductive change has been postponement of marriage and motherhood. While marriage ages have remained relatively stable in Latin America in recent decades, other developing regions have experienced appreciable rises in the ages at which women marry. Fifty years ago, the majority of Asian women married before age 20. By the 1980s, their average age at first marriage was in the range of 20 to 25 (United Nations, 1990).

The facts of fertility change over the past 50 years, and role of the behavioral changes that have produced it, are well established. However, less agreement exists about the underlying reasons why use of contraception and abortion has risen and marriage and motherhood have been increasingly postponed. A better understanding of the determinants of these behaviors is the key to more accurate projections.

Mortality Decline and Improved Survival

The broad context in which fertility decisions are made has clearly changed worldwide. One of the profound changes has been broad and extensive mortality decline (National Research Council, 1998a). By midcentury, life expectancy at birth had risen from historical levels of 25-30 years to over 40 years. The proportion of children dying in infancy had fallen from 25-30 percent to an estimated 18 percent. Of the six births for an average couple in the 1950s, nearly four would survive to adulthood, nearly double the number required for long-term stability of population size.

For some early theorists (e.g., Notestein, 1953), this improved survival was one among a multiplicity of factors that eroded high-fertility motives. For others, however (Davis, 1963), these steep declines in mortality constituted a sufficiently powerful stimulus by themselves, regardless of other socioeconomic transformations, to force some fertility decline (if not alternative demographic adjustments such as outmigration), both in low-income agrarian settings and in urban, industrialized societies.

The effects of improving child survival could show up as couples adjust their childbearing, without necessarily reducing the number of

children they want. Such a pattern has been observed in Taiwan, Thailand, South Korea, and Costa Rica (Freedman et al., 1994; Knodel et al., 1987; Cho et al., 1982; Rosero-Bixby and Casterline, 1994), where, in the early stages of transition, fertility fell for 10 or 15 years with no change in desired number of children.[3] For populations with such a pattern of initial change in fertility behavior followed by delayed reductions in fertility desires, the subsequent substantial fertility declines may be largely a delayed response to the large mortality declines that preceded them (Cleland, 2000).

Changing Demand for Children

Fertility desires do fall eventually, contributing to fertility decline. The dominant explanation for falling desires, sometimes called demand theory, runs as follows.[4] In traditional societies, children represent a substantial economic asset. They are useful as sources of child labor and, later on, as insurance for old age and ill health. At the same time, they are inexpensive to rear. Eventually, households' demand for large numbers of children is driven down by the modernization of economies and improvements in living standards. The advent of mass schooling raises the cost of childrearing and removes children from productive activities. Parents can and have to invest in their offspring, substituting quality for quantity. New openings for the employment of women outside the home and new options for leisure and consumption arise, increasing the opportunity costs of childrearing. Alternative forms of security erode dependence on children. Thus in a myriad of ways, children are transformed

[3]While this pattern of relative stable family-size desires in the early phases of fertility transition appears to characterize most Asian and Latin American countries for which relevant data are available, it does not apply in Sub-Saharan Africa. In this region, desired family sizes are much higher than elsewhere, and they fall prior to, or at the same time as, declines in childbearing.

[4]Many of the ideas that follow are captured in Caldwell's (1982) wealth flows theory. Other formulations are not necessarily entirely consistent. An influential early formulation of demand theory in economic terms was produced by Becker (1960). That households choose numbers of children to maximize utility is central in this formulation, as it is generally in economic models. Among many later formulations, that of Easterlin (1978) was important in attempting to incorporate, with the costs and benefits of children, the costs and benefits of fertility regulation, which are touched on below. The discussion here is not meant to provide an adequate account of these theories but focuses instead on how the general approach—rather than the specific formulations—accounts, or fails to account, for broad historical trends. In the same spirit, the references provided here are not meant as a complete list of the evidence but provide signposts to the literature.

from economic assets to liabilities—a fundamental shift that is the root cause of fertility decline.

In the light of evidence assembled over recent years, components of classical demand theory are now subject to debate. Perhaps the biggest surprise has been the evidence that structural modernization of national economies, while conducive to fertility decline, is not a necessary precondition. Reproductive change has taken root and flourished in very poor countries: Indonesia and Thailand in the 1970s and Bangladesh and Nepal in the 1980s, for instance. In addition, reduced childbearing has been shown generally to precede rather than follow increased participation of women in paid employment or other forms of public life. Furthermore, fertility has declined in societies without formal systems of old age security, such as pension schemes and sickness and disability allowances. Although fertility has declined in the majority of developing countries, individuals are often still dependent on family and kin for help in adversity or old age.[5]

Perhaps the most striking feature of fertility transition in developing countries is the huge variety of circumstances under which it has occurred. In some countries, the trend toward smaller families has flourished in times of rapid improvement in living standards and access to education (e.g., South Korea and Taiwan). In some East African countries, by contrast, fertility transition has persisted in an era of deteriorating standards of living and falling school enrollments. Family sizes have dropped in countries with strong links to the international community as well as in those apparently sheltered from global capitalism and consumerism (e.g., Vietnam and North Korea).

Nevertheless, some positive evidence does exist for aspects of demand theory. Of all the conventional indicators of modernization, levels of literacy and education (together with life expectancy) are the most persistent and powerful discriminators between high- and low-fertility societies. Yet even this relationship is clearly not mechanical or straightforward. In some highly literate societies, childbearing has fallen rather slowly (e.g., the Philippines), and in others, levels of fertility still remain high (e.g., Jordan). The education-fertility link also has many possible interpretations. The advent of schooling may decrease demand for children in the ways suggested above. In the longer term, it may also make individuals more open to new and initially alien models of family life and new ways of regulating childbearing.

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[5]An even more serious challenge to some aspects of demand theory, in Caldwell's (1982) wealth flows version, is recent evidence that children are a net drain on household assets in traditional societies (e.g., Stecklov, 1999; Lee, 2000).

Levels of national development have been shown to affect fertility decline. More advanced countries on the human development index of the United Nations Development Programme (1992) tend to experience an earlier onset of decline, and the pace of decline, once under way, is strongly related to the level of development at the start of transition (Bongaarts and Watkins, 1996). Yet much variation remains unexplained.[6] Among the Arab states, for instance, fertility decline started earlier and has progressed further in some of the poorer countries, such as Egypt and Tunisia, than in most of the rich and increasingly well-educated oil-producing states.

Diffusion of New Ideas

Once initiated, the transition toward lower fertility tends to spread rather rapidly among countries linked by geography, culture, and trade. This may reflect the processes of economic restructuring and modernization. Typically running in parallel, however, is the spread of new knowledge, ideas, and aspirations, which could be a more important catalyst of reproductive change. To the extent that these new ideas are about the advantages, for parents and children, of smaller families, this diffusionist or ideational explanation for fertility decline might be regarded as a cognitive version of demand theory.

Some diffusionist authors, however, have stressed instead the importance of the means to deliberately regulate births (Cleland and Wilson, 1987), arguing that, as a radically new type of behavior, fertility regulation often encounters considerable resistance. It is unfamiliar, incites moral and social disapproval, and evokes related disquiet about health effects. The spread of information about and messages to counter such concerns, and the degree of resistance they encounter, may explain much variation in the timing and speed of fertility transition.

Several strands in the aggregate evidence support this interpretation: the prevalence of unwanted childbearing, which suggests that the means rather than the motives are critical; the fact that cultural factors, such as religion or language, appear to be strongly linked to reproductive change (e.g., Leete, 1988); the speed with which birth limitation can spread within societies from urban, educated strata to rural, less-privileged sectors (Rodriguez and Aravena, 1991); and the evidence that governments, and other elites, can influence the timing and speed of change by their at-

[6]The inadequacy of narrowly economic theories to provide a totally convincing explanation of fertility trends no doubt partly reflects the difficulty of taking into account preferences and tastes.