

Chapter 1

Fertility Trends in the Developing World, 1950–2020



1.1 Background

Fertility rates in the world’s “more developed regions” and “less developed regions” stood in sharp contrast at mid-twentieth century. These two regional categories were created by the United Nation’s Population Division in recognition of the distinct population patterns, especially with respect to fertility, evident in countries with substantial levels of industrialization and urbanization compared with those countries that were largely non-industrialized and non-urbanized. At mid-century the “more developed regions” already had completed an historic transition from high to low levels of fertility, many having reached replacement levels earlier in the century. The “less developed regions” had yet to see a decline in their fertility levels. In this book we explain what happened to the high fertility level of the “less developed regions” over the past seventy years.

The bifurcation of the world that the UN made was a simple one. The “more developed regions” were Europe, the United States, Canada, Australia, New Zealand, and Japan. The “less developed regions” were Asia excluding Japan, Latin America and the Caribbean, Africa, and Oceania excluding Australia and New Zealand.¹ When presenting aggregate demographic data, the UN has kept this simple “development” division in place even to this day. Of course, as the decades passed the “less developed” label has become inappropriate for an increasing number of countries that started out in the category. We will use the phrases “the developing world” and “the developed world” in lieu of “less developed regions” and “more developed regions” in this work. Preserving these two groupings unchanged over time, while subject to increasing imprecision as much of the “developing world” experienced significant economic growth, is well suited for our purpose. We want to present an

¹ Oceania (excluding Australia and New Zealand) never constituted more than 0.2% of the developing world’s population during the period 1950 to 2020 and therefore has never affected the developing world’s population trends. We will not analyze its population trends.

overview of how 1.72 billion people (68% of the world's 1950 population) with a total fertility rate of 6 births per woman, grew into 6.5 billion people (84% of the world's 2020 population) with a total fertility rate of 2.6 births per woman. The total fertility rate (TFR) is the number of children that each woman would bear if she gave birth in accordance with current age-specific fertility rates. The story of the developing world's fertility transition is a notable one, especially when viewed from its mid-century starting point. At that time no one knew if such a transition would be possible, considering the varied situations of the developing world, and the volatility of its political, economic, and health conditions.

While it is straightforward to paint a general picture of the developed world at mid-century by focusing on the nature of their economies, it is not so easy to do the same for the developing world which had quite diverse economies, politics, societies and cultures. At the time probably the most significant divide had to do with the very different political situations that existed among them. In 1950 half the population of the developing world either lived in colonies with mother countries that controlled their economies and politics or in newly independent former colonies. Notestein had noted (1944: 146–147) that mother countries had colonies “primarily as sources of agricultural and mineral materials, and as markets for manufactured goods,” and they failed to foster in their colonies industrialization and urbanization and “that part of their culture out of which the rational control of fertility and the small-family pattern develop.” At mid-century decolonization was just starting. From 1945 to 1950 the Dutch East Indies transformed into an independent Indonesia after a four-and-a-half-year struggle with Dutch forces, and in 1947 the British Raj ended on the Indian subcontinent, quickly followed by partition into an independent India and Pakistan. France was still attempting to re-exert control over French Indochina, only giving up that struggle in 1954. African decolonization, sometimes by force and sometimes peacefully, would not end until 1975 when Mozambique and Angola gained independence from Portugal. In the non-colonial developing world internal conflict was also common place. For example, in 1949 the Chinese civil war was ending as the Communist Party forced the Kuomintang off the mainland to Taiwan.

The collapse of the colonial system coincided with a highly consequential sharp postwar drop in mortality. Stolnitz (1955: 53) noted at the time that the factors responsible for the dramatic downturn in the mortality of “the world's impoverished nations” were “all of recent origin” and not the same as those that had lowered mortality in Western industrialized nations: “The primary role of international rather than national health agencies, the use of antibiotics, the development of cheap yet effective methods for combating malaria—each of these is very nearly a mid-century innovation.”

The rapid population growth in the developing world that ensued following the mortality decline took on Cold War implications and threatened to thwart the industrialization plans of “Third World” nations, many of them newly independent. Retrograde or stagnant economic conditions were thought to be a breeding ground for communism. For many in the “Free World” this coalescing of historical conditions gave added urgency to limiting rapid population growth, especially in Asia (Taeuber, 1965: 79): “Given the delayed modernization, the synchronization of nationalist

awakening and communist political advance, and the coincidence of both these with the scientific and technological advances in mortality control, Asia's problems of population, development, and war become hazards not alone to Asia but to the whole world." Rapid population growth became an important concern for policy makers everywhere.

In Chap. 5 ("Controversies Surrounding Fertility Policies") we will examine a variety of controversies that came to surround policies and programs aimed at lowering fertility in the developing world. Early on the "crisis" atmosphere surrounding rapid population growth motivated specialists and advocates in governments and the private sector in many developed and developing countries to debate the best method of reducing high fertility. This debate took place at bilateral meetings between governments, at a variety of international organizations and NGOs, and at three international United Nations' conferences in 1974, 1984, and 1994. There were also more technical arguments on this topic taking place among demographers. And finally, there was an ongoing controversy surrounding all attempts to influence women's reproductive decisions. Questions of coercion and agency were primary topics at the 1994 UN Population Conference in Cairo when women's organizations challenged "population controllers" on these issues. Knowing the profile that the developing world's fertility transition actually took, will provide insight into the origins of these controversies.

We will trace this transition by using UN data on the total fertility rate (TFR) for the developing world as a whole and for its major regions (United Nations, 2019). These TFR estimates are weighted for the population size of each country. For example, in calculating the 1950 average TFR of the developing world or of Asia, India's average TFR is weighted about ten times more than Pakistan's TFR because its 1950 population (376,325,000) was about ten times larger than Pakistan's population (37,542,000). The resulting fertility levels estimate the number of live births of the average woman living in the developing world and in each of its regions.

1.2 Fertility Trends

Figure 1.1 shows that the developing world's fertility transition passed through three distinct phases from 1950 to 2020. The pre-transition period lasted from 1950 until the end of the 1960s, with high fertility levels remaining near 6 over these years. A rapid decline phase began in the late 1960s and lasted until the end of the century, with the TFR being cut in half from 6.0 in 1965–1970 to 3.0 in 1995–2000. The last phase started around 2000 and continues to this day with the TFR declining only slowly from 2.9 in 2000–2005 to 2.6 in 2015–2020 as increasing numbers of countries reach the end of their transitions.

The pre-transition phase was notable for a number of reasons. It was when widespread concern developed around rapid population growth that was believed to be forestalling the very changes, industrialization and urbanization, that "naturally" induced fertility declines in the then developed world during the nineteenth and

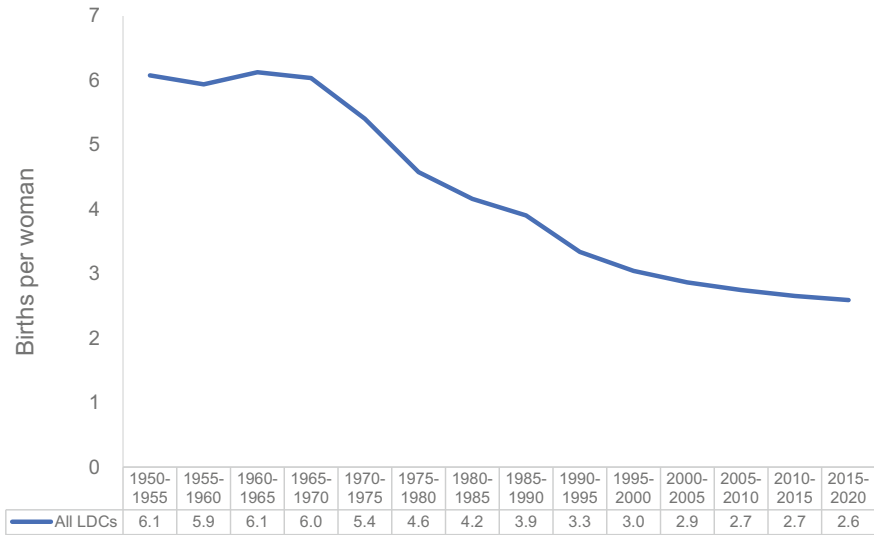


Fig. 1.1 Total fertility rate of the developing world 1950–2020 (UN Population Division, 2019)

early twentieth centuries. Some NGOs and later some governments began launching voluntary family planning programs with the hope of inducing fertility decline in still agrarian societies. These efforts were successful in a number of smaller countries and city states in Asia (Hong Kong, Korea, Singapore, Taiwan) and Latin America (Colombia, Costa Rica, Dominican Republic) during the 1960s, but little happened in the largest countries. As a result, the average TFR of the developing world remained nearly unchanged during these years as shown in Fig. 1.1. Ongoing rapid declines in mortality combined with little or no fertility decline resulted in rapid population growth. Between 1950–1955 and 1965–1970 the average life expectancy of countries in the developing world increased from 42 to 52, their infant mortality fell from 159 to 117, and their under 5 mortality fell from 245 to 177. Absent fertility decline, the developing world’s annual rate of population growth went from 2% to 2.5%, and its doubling time fell to 28 years from 34 years. Most economists during this time emphasized the role played by capital accumulation in the development process. The high dependency ratios produced by this rapid population growth increased the need for “demographic investments” for schooling and health care and was seen as limiting the capital available for more directly productive investments (Coale & Hoover, 1958; Enke, 1963). Questions arose over whether there would be enough food, schools, infrastructure, and jobs for the developing world’s rapidly expanding populations.

Figure 1.2 shows that the fertility transition did not unfold in a similar fashion throughout the developing world. Both “Asia” and “Latin America and the Caribbean” had rapid declines, and both currently have replacement levels of fertility. They can be considered to have completed their fertility transitions. Figure 1.2 shows that in Latin American and the Caribbean fertility fell earliest, in the late 1960s, and

then declined by about 10% during each decade thereafter. The story of Asia’s fertility transition is somewhat more complicated because of the very large role played by China. In 1950 China’s 554,419 people made up 42% of the “Asia” population and 32% of the “All” population. China’s pre-transition period was normal: a high 1950–1955 TFR of 6.1 and a high 1965–1970 TFR of 6.3. In 1970, however, it introduced its “later, longer, fewer” program: a mandatory later age of marriage, 23 for women and 25 for men; a mandatory birth interval of more than three years; and a limit of two children per couple. Fines and other penalties were used to enforce these rules. During the 1970s China’s total fertility rate dropped 38%. In 1979 China adopted its “one-child” policy which further lower its TFR to 1.6 by 1995. The early sharp declines for “Asia” and “All” in Fig. 1.2 are largely due to China’s introduction of coercive antinatalist policies beginning in 1970.

In 1950 India, too, contributed a significant percentage to both the Asia (28%) and the “All” (22%) populations. It, too, flirted with coercion during the mid-1970s when Prime Minister Indira Gandhi declared a national emergency and her son Sanjay oversaw a forced sterilization campaign. The program, which was short lived, generated significant opposition and contributed to Indira Gandhi’s loss in the 1977 general election. Overall, India experienced a smooth transition with fertility declining between 8 and 11% during each decade from the 1970s through the 2000s, ending with near replacement fertility (2.2) in 2015–2020. It is clear that China and India, which in 1950 together constituted 70% of Asia’s population and 54% of the

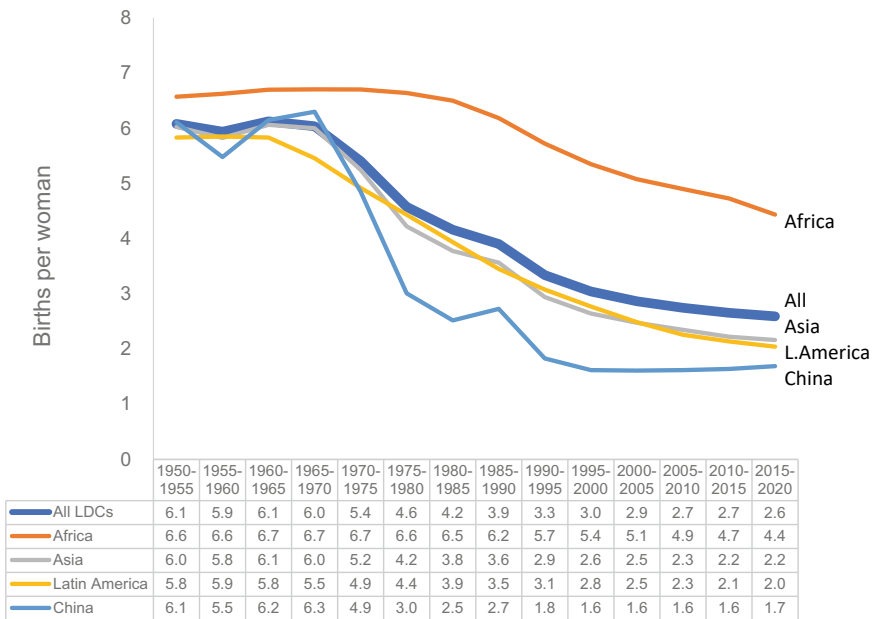


Fig. 1.2 Total fertility rate of the developing world, by region 1950–2020 (UN Population Division, 2019)

“All” population, were largely responsible for the developing world arriving at a low 2.6 TFR by 2015–2020. In fact, the “Asia” fertility trends in Fig. 1.2 are largely a composite of the trends experienced by China and India.

There is more variability among the fertility transitions of the developing world’s many other countries. In Chap. 2 (“Country Fertility Transition Patterns”) we will focus on that variability and examine the wide range that exists among countries with respect to the onset of their transitions, the pace of decline, and the presence of transition “stalls.” Africa illustrates the variability that exists. In Fig. 1.2, it is the obvious outlier. Its pre-transition stage lasted until 1985–1990, and its fertility decline has been modest over the last thirty-five years. Largely as a result of this delay and this modest decline, Africa over time has become a more significant component of the developing world. Its percentage of the developing world’s population has increased from 13% in 1950 to 21% in 2020, largely at the expense of China, whose percentage declined from 32 to 22%. UN population projections expect that Africa will have 40% of the world’s population by the end of this century. The continent warrants closer examination.

Figure 1.3 makes clear that Africa did not have a uniform fertility transition experience. Northern and Southern Africa appear to have experienced somewhat similar fairly rapid transitions. They both had a clear pre-transition phase that lasted until the late 1960s and then fertility began a noticeable decline. Northern Africa’s fertility was at a higher level in its pre-transition phase, and it experienced a sharper rate of decline than Southern Africa. In 2000–2005 its rapid decline phase suddenly ended followed by a unique slight rebound upward between 2005–2010 and 2010–2015, largely as a result of Egypt’s TFR rising from 3.0 to 3.5. Southern Africa experienced a typical decline phase and ended with a TFR of 2.5 in 2015–2020, nearly two children below the average for Africa (4.4). Middle Africa, Western Africa, and Eastern Africa had noticeably different transition experiences. Their pre-transition phase lasted until 1980–1990, with some fertility increases during that phase.² By 2015–2020 Middle and Western Africa were still in the early stages of a fertility transition with TFRs remaining above 5. The pace of decline in East Africa has been slightly more rapid, and this region is now in mid-transition.

1.3 Analytic Framework for the Determinants of Fertility

The fertility transition in the developing world was accompanied by many important socio-economic changes. In 1950 18% of its population lived in urban places, and in 2020 that figure was 52% (United Nations, 2018). In 1950–1955 its life expectancy was 42 years and in 2015–2020 it was 73 years. Over this same period its infant mortality rate fell from 159 to 32, and its under 5 mortality rate fell from 245 to 44 (United Nations, 2019). Years of school completed also increased rapidly. In Peru the

² Middle Africa’s increase in fertility from 1950 to 1990 could be due to greater control of STD and a corresponding decline in sterility.

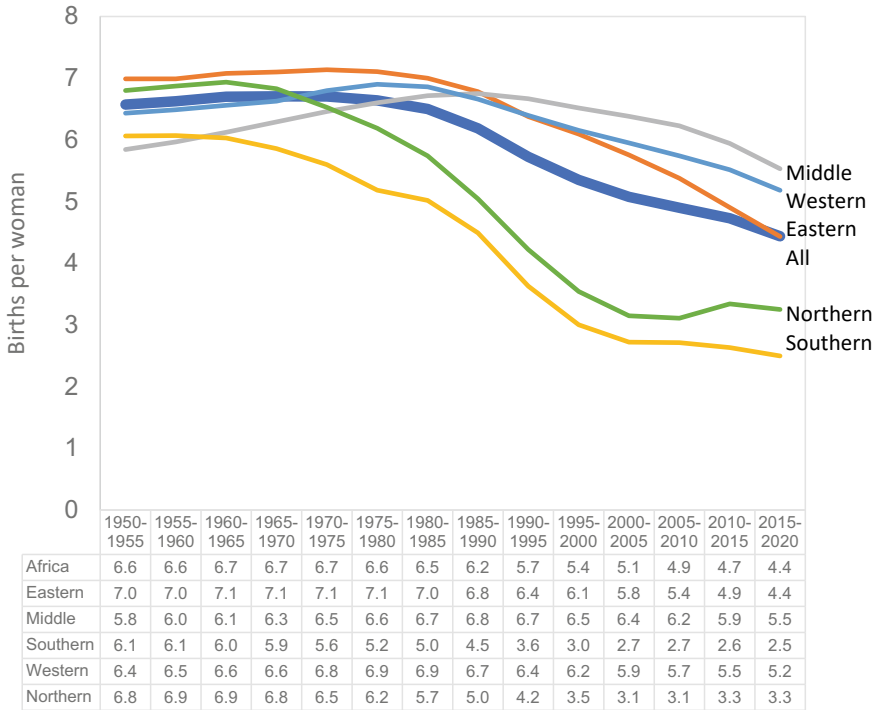


Fig. 1.3 Total fertility rate of Africa, by region 1950–2020 (UN Population Division, 2019)

percent of the population over age 25 that completed lower secondary education was 18% in 1972; in 2015 it was 62%. In Thailand it was 6% in 1970, and 45% in 2017 (World Bank EdStats, 2021). There have been massive economic changes as well. As recently as 1991 70% of all employment in Bangladesh was in the agriculture sector, in 2019 it had fallen to 38%. Over the same years in China the rate of agricultural employment fell from 60 to 25%; in India from 63 to 43%; and in Egypt from 39 to 21% (International Labour Organization IOSTAT database, 2021). Gross National Income per capita has risen throughout the developing world. In constant 2010 dollars the GNI per capita increased in Sub-Saharan Africa from \$340 in 1960 to \$1,764 in 2020, and in Latin America and the Caribbean from \$4,758 in 1970 to \$8,681 in 2020 (World Bank National Accounts Data, 2021).

An important determinate of fertility declines in developing countries was the increasing availability and use of new methods of contraception. They made it much easier for women to control their reproductive lives and greatly facilitated the implementation of family planning programs. In 1950 only barrier methods of contraception existed along with traditional methods such as withdrawal. Over the past seventy years many highly effective methods of contraception have been developed, from birth control pills to long-acting hormonal methods to highly effective IUDs, and many women in the developing world began using them. In Colombia in 1969

only 9% of women used a modern method; 76% used them in 2016. In Indonesia in 1973 only 7% used a modern method; 54% used them in 2018. In Rwanda in 1983 only 1% used a modern method; 48% used them in 2015 (United Nations, 2021). Increases in modern contraceptive use were in part driven by voluntary family planning programs implemented by governments and non-governmental organizations in many countries. These programs provide information and access to contraceptives and reduce financial and social barriers to the acceptance of contraception.

Fertility declines were also facilitated by the growing availability of induced abortion, which became legal for an increasing portion of the developing world's women of reproductive age after the 1970s. By 2017 29% of women in developing countries could obtain an abortion without restriction as to reason, and 22% could obtain one on socio-economic grounds. As of 2010–2014 an estimated 49 million induced abortions, legal and illegal, occurred in developing regions each year, a level that indicates each woman having on average one abortion in her lifetime (Singh et al., 2018: 15, 8).

Why has fertility declined in the developing world? The large number of concurrent changes make offering a definitive answer difficult. We will offer detailed explanations in later chapters. Here we provide a brief introduction to the topic and present an analytic framework for the determinants of fertility that summarizes the multiple factors to be examined in these chapters.

The causes of declines in fertility are the subject of continuing debate. Over time, several theories and their variants have been developed, each with important new insights that are crucial to understanding reproductive change and to the design of policies aimed lowering fertility and slowing population growth. Our framework is summarized in Fig. 1.4. Fertility is determined directly by a set of behaviors such as contraceptive use and abortion. These behaviors are in turn determined by a set of intermediate variables such as desired family size, demand for contraception and the implementation of preferences. The final causal layer consists of the background or underlying variables such as socio-economic change, voluntary family planning programs and coercive anti-natalist policies.

To explain fertility change we propose three causal pathways as presented in Fig. 1.4. The layers of causal determinants are applicable in each of the three causal pathways which represent different drivers of fertility decline.

1.3.1 Path 1: Conventional Theories

Demographic transition theory, first proposed in the 1940s, focused on possible causes of the fertility declines that occurred in the West from the late nineteenth century through the 1930s (Davis, 1945; Notestein, 1945). In traditional rural agricultural societies, high fertility was assumed to be necessary to offset the prevailing high mortality and to ensure population survival. This high fertility was achieved by a near universal absence of conscious contraceptive practices. As societies modernized, economic and social changes such as industrialization, urbanization, increases in

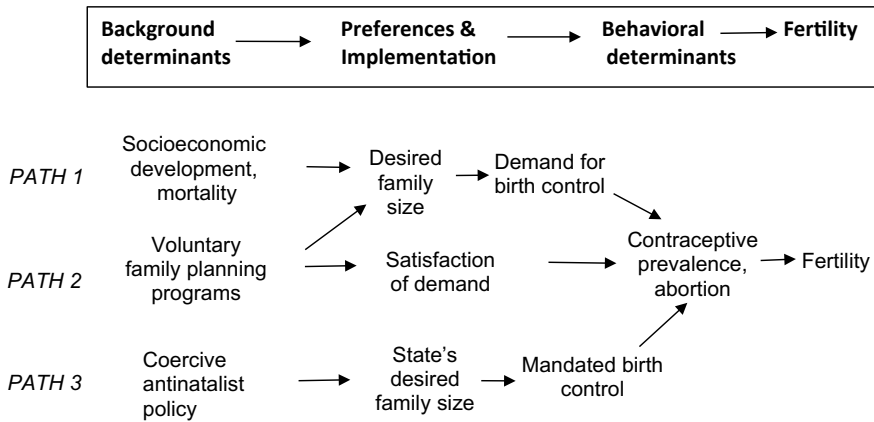


Fig. 1.4 Analytic framework for the determinants of fertility

education, income growth, and declining mortality led to the onset of the fertility transition. The rising costs of children (e.g., for schooling) and their declining economic value (e.g., for labor and old-age security) were the central forces believed to be driving the decline in desired family size. This in turn increased the demand for and adoption of birth control to implement changing reproductive preferences.

This conventional framework, still regarded as broadly valid, has been elaborated by economists, sociologists, and demographers. Contributions by economists to fertility theories have focused on the micro-economics of reproductive decision-making (Becker, 1960, 1965, 1981; Lee & Bulatao, 1983; Schultz, 1976, 2002; Willis, 1974). Parents are assumed to be rational actors who aim to maximize the utility derived from various choices they make, given time and resource constraints. This decision-making includes choices related to conventional goods and services as well as to children. In choosing a family size, parents have preferences not only for the number of children but also for their “quality” (i.e., their education and economic opportunities). As countries develop and incomes rise, parents increasingly want higher-quality children which raises their cost, thus leading parents to want smaller families. This school of thought is usually referred to as “demand theory.”

1.3.2 Path 2: Revisionist Theories and Family Planning Programs

Since the 1970s the fertility component of conventional demographic transition theory has been found incomplete in several respects, and questions have been raised about demand theories of fertility. First, a crucial assumption of early demand theories was that the cost of contraception is so low that it can be ignored. This assumption

came into question in the late 1960s and early 1970s when evidence documented the frequent use of induced abortion in both developed and developing countries, making it clear that unintended pregnancies were common (Rochat et al., 1980; Tietze, 1981). These findings contributed to an influential revision of the earlier economic theories of fertility by Easterlin (1975, 1978), Easterlin and Crimmins (1985). His framework for the determinants of fertility recognized that the cost of birth control (broadly defined to include economic, health, psychological, and social obstacles) could be substantial, thus leading to significant numbers of unplanned pregnancies. In addition, the new framework acknowledged the role of biology in childbearing outcomes, specifically that without efforts to control conception, women who are sexually active will bear large numbers of children because their reproductive years last decades. Thus, to avoid having “excess” children, parents must practice birth control, a fact that makes the “acquisition” of children fundamentally different from the purchase of durable goods.

A second fundamental challenge to demand theories came in the 1980s when empirical tests of conventional theories using historical and contemporary data failed to find the tight link between development indicators and fertility expected from conventional theories. For example, a massive study of province-level data from European countries for the period 1870–1960 (Coale & Watkins, 1986; Knodel & van de Walle, 1979; Watkins, 1986, 1987) yielded two surprising conclusions: (1) socio-economic conditions were only weakly predictive of fertility declines, and transitions started at widely varying levels of development; and (2) once a region in a country had begun a decline, neighboring regions sharing the same language or culture followed after short delays, even when they were less developed. Likewise, results from numerous fertility surveys of women in developing countries in the 1970s and early 1980s failed to find the expected dominant influence of economic characteristics on fertility (Cleland, 1985; Cleland & Wilson, 1987). Moreover, levels and trends in fertility in the developing world since the 1950s deviated widely from expectations (Bongaarts & Watkins, 1996). For example, Hong Kong and Singapore started their fertility transitions when they had much higher levels of income, literacy, and urbanization than Bangladesh, where fertility decline began when the country was still largely rural and agricultural. Thus, although most traditional societies do have high fertility when compared to modern industrial societies, the fertility transition itself is poorly predicted by customary measures of development.

Another issue left relatively unexplored by early demand theories of fertility is the key role of social norms. Traditional demand theory focused on the reproductive behavior and decision-making of individuals or couples, but largely ignored how this behavior is affected by social norms about how people ought to behave. Such normative structures can be important obstacles to the introduction of new behaviors, such as contraceptive use, in societies where it has been absent. The pattern of social norms also explains why the fertility of women in a given socio-economic class (e.g., highly educated) varies so much between countries. This finding can be explained in part by the fact that the fertility of a woman depends not only on her own education but also on that of her community (Kravdal, 2002): as the level of education within a community increases over time, norms concerning desired

family size within that community decline, thus contributing to reduced fertility of all women in the community. Traditional norms, including those that encourage high fertility, tend to become less influential as societies develop and education levels rise.

These unexpected findings required a revision of thinking about the fertility transition and led to the development of theories of the “diffusion” of innovations (e.g., Bongaarts & Watkins, 1996; Casterline, 2001; Cleland, 2001; Cleland & Wilson, 1987; Hornik & McAnany, 2001; Kohler, 2001; Knodel & van de Walle, 1979; Montgomery & Casterline, 1993, 1996; Retherford & Palmore, 1983; Rogers, 1973, 2003; Watkins, 1987). Diffusion refers to the process by which new technologies, ideas, behaviors, and attitudes spread within a population through a variety of mechanisms such as social networks, opinion leaders, and the media. This spread is most rapid within linguistically and culturally homogeneous populations and it is often largely independent of social and economic changes. In particular, the diffusion of information about methods of contraception is now considered an important mechanism of fertility change. New ideas about the costs and benefits of children that may lead to a smaller desired family size are also subject to diffusion processes.

While conventional demographic and economic theories emphasize the demand-driven nature of reproductive change and leave little or no role for family planning programs (Pritchett 1994), the now widely accepted revisionist theories assign crucial roles to the cost of birth control and to diffusion mechanisms. These findings provide a strong rationale for family planning programs that can accelerate fertility transitions by providing information that can alter parents’ evaluation of the costs and benefits of children and, more directly, reduce the costs of contraception to those who want to plan or limit childbearing. Family planning programs therefore reduce fertility by assisting couples to satisfy their demand for contraception thus avoiding unplanned births and abortions and reducing fertility (Path 2 in Fig. 1.4). While socio-economic development certainly played a crucial role, it is noteworthy that to date, no fertility decline has been observed in a poor and largely illiterate country in the absence of a strong family planning program. These issues will be examined in greater detail in Chap. 7.

1.3.3 Path 3. Coercive Policies

A third path to lower fertility is for governments to implement coercive birth control policies. China’s one-child policy is a prime example of this approach, which set limits on the number of children women can have and mandates birth control to reach this objective. Another notable instance of coercion is India’s sterilization program in the 1970s. Coercion of any kind is now universally condemned as an abuse of human rights, and the large majority of governments interested in accelerating the fertility transition have therefore opted to implement voluntary family planning programs. China’s experience does have an important lesson to teach us: the three paths to lower fertility in Fig. 1.4 are not necessarily disconnected from one another. In 1970 China definitely started down a coercive antinatalist path to low fertility, but

coercion's necessity has diminished over time, as is clear from the fertility response to the recent policy changes. In 2013 China allowed a couple to have an additional child if only one parent was an only child. In 2015 it simply abolished the one child restriction and allowed all couples to have an additional child. As of May 2021, women are now allowed to have three children. Yet there has been no increase in Chinese fertility. China now has over 60% of its population living in urban places, 75% of employment is in non-agriculture sectors, and education is highly prized. Socio-economic development (Path One) is clearly working to keep China's fertility low. Since 1992 over 80% of Chinese women have been using a modern method of contraception, provided for by the government. Universal access to family planning (Path 2) is also a critical factor keeping China's fertility low. Coercion has stopped being the reason for Chinese low fertility.

The main objective of this book is to assess the impact of these three paths to lower fertility in the developing world over the past seven decades.

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