Trends in Unwanted Childbearing in the Developing World

John Bongaarts

This study analyzes trends in unwanted fertility in 20 developing countries, based on data from the World Fertility Surveys and the Demographic and Health Surveys. Although wanted childbearing almost invariably declines as countries move through the fertility transition, the trend in unwanted fertility was found to have an inverted U shape. During the first half of the transition, unwanted fertility tends to rise, and it does not decline until near the end of the transition. This pattern is attributed to the combined effects of an increase in the duration of exposure to the risk of unwanted pregnancy and a rise in contraceptive use as desired family size declines. The substantial variation in unwanted fertility among countries at the same transition stage is caused by variation in the degree of implementation of preferences, the effectiveness of contraceptive use, the rate of induced abortion, and other proximate determinants, such as age at marriage, duration of breastfeeding, and frequency of sexual relations. The principal policy implication from this analysis is that vigorous efforts to reduce unwanted pregnancies through family planning programs and other measures are needed early in the fertility transition because, in their absence, unwanted fertility and abortion rates are likely to rise to high levels. (STUDIES IN FAMILY PLANNING 1997; 28,4: 267–277)

Over the past three decades, a revolution in reproductive behavior has swept through most of the developing world (the "South"). Fertility was high for centuries until the 1960s and 1970s, when a precipitous decline began in many countries. The average number of births per woman, as measured by the total fertility rate, has since been cut almost in half: from 6.0 in the early 1960s to 3.4 in the mid-1990s. This decline is expected to continue over the next few decades (United Nations, 1995). Of course, these trends have not been uniform, and much variation is found among regions and countries in the timing and speed of the decline. Reductions in fertility since the mid-1960s have been largest in Asia (–42 percent) and Latin America (–43 percent), more modest in the Middle East and North Africa (–25 percent), and very limited in sub-Saharan Africa (–9 percent). In a few of the most developed countries in the South (for example, Hong Kong, Korea, and Singapore), fertility has actually dropped below the replacement fertility level of 2.1 births per woman, which, if maintained in future decades, will lead to negative population growth. In aggregate, the transition to low fertility in the South has occurred at a more rapid pace than in the past in Europe and North America.

The principal proximate cause of this ongoing fertility decline has been the rapid and widespread adoption of contraception. Until the early 1960s, only a small proportion of couples in the South practiced contraception, whereas today, this proportion has risen to 57 percent, on average. Contraceptive prevalence in Asia (63 percent) and Latin America (65 percent) is approaching levels found in the North. Although contraceptive use is more modest in the Middle East (44 percent) and sub-Saharan Africa (17 percent), it is rising in most countries in these regions (UNFPA, 1994).

Clearly, couples in the developing world increasingly are exerting control over their reproductive lives, and the above trends are welcome developments. Unfortunately, couples' control over reproduction is far from perfect, and, as a consequence, the number of undesired reproductive events is substantial. About one in four births in the developing world (excluding China) is unwanted (Bongaarts, 1994). Because unwanted births are defined as births that occur after a woman has

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reached her desired family size, this estimate does not include mistimed or unplanned (but wanted) births. In addition, more than 30 million induced abortions are performed annually in the South (Singh and Henshaw, 1996). Although precise long-range trends in these undesired events are difficult to document, apparently they are on the rise. A recent study of countries for which more than one estimate of unwanted fertility was available found that in a majority of these countries, unwanted fertility had increased over time (Bankole and Westoff, 1995). An analysis of abortion trends by Potts et al. (1977) found that induced abortion rates typically increase early in the fertility transition, at a time when the practice of contraception is also rising.

These statistics summarize the key features of the recent paradoxical situation. The practice of birth control aimed at reducing unwanted pregnancies has risen rapidly, while at the same time, the rate of unwanted childbearing in many countries has increased as well. To explain this paradox, this study analyzes recent trends and differences in unwanted fertility and its proximate determinants.

Trends in Wanted and Unwanted Fertility

The analysis throughout this study is based on data from developing countries for which estimates of reproductive behavior are available from fertility surveys at two points in time. The first of these is always one of the World Fertility Surveys (WFS), which were conducted in several dozen countries between the early 1970s and the early 1980s. The second point in time (around 1990) is represented by the latest available Demographic and Health Survey (DHS). In virtually every country included, the interval between the two surveys was at least a decade. Throughout this study, average wanted and unwanted fertility is measured as the corresponding components of the total fertility rate expressed in births per woman.

Estimates of wanted fertility for the two successive surveys in 20 countries are presented in the first two columns of Table 1.[1] Wanted fertility is generally highest in sub-Saharan Africa at the time of the first survey, with estimates ranging as high as 7.6 births per woman in Kenya and 8.8 births in Rwanda. The lowest wanted fertility rates are found in Asia and Latin America in the second survey, with estimates below 2.5 births per woman in Colombia, Peru, Sri Lanka, Thailand, and Trinidad and Tobago. In all but one case (Nigeria), measured wanted fertility declined over time, and the average wanted births per woman declined from 4.8 to 3.3 in this group of countries.[2]

The observed reductions in wanted childbearing are as expected from conventional fertility transition theory, which predicts that as a country develops, the cost of rearing children rises and benefits from having them fall, thus leading couples to want smaller families. To implement these preferences, couples adopt birth control (primarily contraception), which leads to lower actual fertility. Below, the term "transition" is used to refer to this set of interrelated changes in development, preferences, and reproductive behavior.

Trends in unwanted childbearing shown in the middle two columns of Table 1 are neither as clear cut nor as easily explained. Average unwanted fertility rose from 0.82 to 1.02 births per woman between the two surveys in this group of 20 countries. These averages correspond to trends in a majority of countries included in this table, but declines did occur in eight of the 20 countries. All six sub-Saharan countries experienced an increase, as did Ecuador, Paraguay, the Philippines, Morocco, Trinidad and Tobago, and Jordan. In contrast, other countries in Asia, North Africa, and Latin America saw declines in unwanted childbearing. This finding suggests that the trend in unwanted childbearing is affected by the level of development (or variables related to development), because sub-Saharan African countries, for which the trend is upward, are typically less developed than countries in Asia and Latin America, where

Table 1 Estimates of wanted and unwanted fertility for 20 countries with at least two comparable surveys

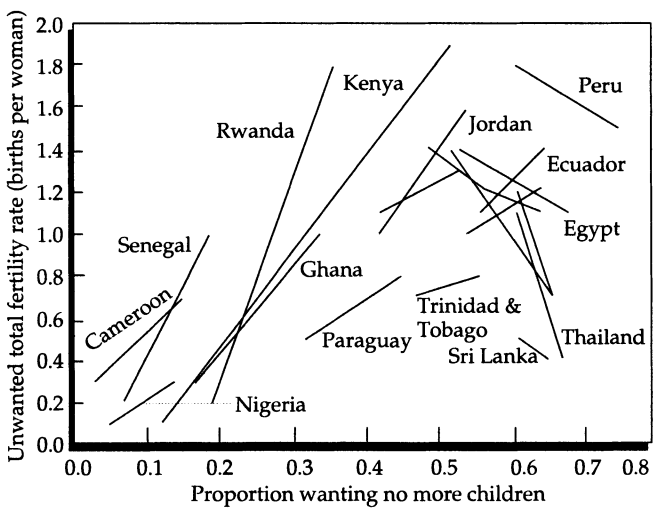
	Wanted fertility		Unwanted fertility		Total fertility	
Country	Survey 1[a]	Survey 2[b]	Survey 1	Survey 2	Survey 1	Survey 2
Sub-Saharan Africa						
Cameroon	6.1	5.2	0.3	0.7	6.4	5.9
Ghana	6.0	4.2	0.1	1.0	6.1	5.2
Kenya	7.6	3.4	0.3	1.9	7.9	5.3
Nigeria	5.8	5.8	0.1	0.3	5.9	6.1
Rwanda	8.8	4.3	0.2	1.8	9.0	6.1
Senegal	6.9	5.0	0.2	1.0	7.1	6.0
Middle East and North Africa						
Egypt	3.6	2.7	1.4	1.1	5.0	3.8
Jordan	6.0	3.8	1.0	1.6	7.0	5.4
Morocco	4.4	2.7	1.1	1.3	5.5	4.0
Tunisia	4.1	2.9	1.4	1.2	5.5	4.1
Asia						
Philippines	4.1	2.8	1.0	1.2	5.1	4.0
Sri Lanka	2.9	2.2	0.5	0.4	3.4	2.6
Thailand	3.2	1.8	1.1	0.4	4.3	2.2
Latin America and the Caribbean						
Colombia	3.4	2.1	1.2	0.7	4.6	2.8
Dominican Republic	3.8	2.7	1.4	0.7	5.2	3.4
Ecuador	4.1	2.9	1.1	1.4	5.2	4.3
Mexico	4.5	2.9	1.2	1.1	5.7	4.0
Paraguay	4.5	3.9	0.5	0.8	5.0	4.7
Peru	3.5	2.0	1.8	1.5	5.3	3.5
Trinidad and Tobago	2.5	2.2	0.7	0.8	3.2	3.0

[a]World Fertility Survey. [b]Latest available Demographic and Health Survey.
Sources: Bankole and Westoff (1995); Westoff (1991).

the trend is mostly downward. Ideally, to pursue this idea, a full analysis would be undertaken of the chain of causation that runs from the development process to changes in the cost and benefits of bearing and rearing children to fertility preferences and, finally, to the implementation of these preferences through contraceptive use, and fertility itself. This complex task is beyond the scope of this study. Instead, the explanatory variable used below is one fertility-preference indicator that provides a simple summary of the underlying reproductive cost-benefit calculations undertaken by couples. The indicator chosen is the proportion of fecund women in union who want no more children, because it is readily available, easily interpreted, and generally considered least subject to measurement error, compared with other preference indicators. For our purpose, this indicator has the additional advantage of being a direct measure of the proportion of women who are potentially at risk of having unwanted pregnancies. As expected, a strong positive correlation is found between development indicators and the proportion of women wanting no more children. In the subsequent analysis, this proportion will serve as an indicator of progress throughout the transition.

Figure 1 plots the trend in unwanted fertility by the proportion of women wanting no more children for each of 20 countries. Each line in this figure represents one country; the first point gives the earliest estimate (from the WFS), the end point the latest (from the DHS). Although considerable variation exists among countries, the general relationship has an inverted U shape. In countries for which the proportion of women wanting no more children is between 0 and about 50 percent, the trend in unwanted childbearing is upward, whereas in the last part of the transition, unwanted fertility turns downward in most countries. This pattern of change raises three questions: (1) Why does unwanted childbearing rise in the early phases of the transition in fertility preferences? (2) Why does it typically decline when countries reach proportions wanting no more children above about 50 percent? (3) What explains the substantial variation in levels of unwanted childbearing at a given level of fertility preferences?

Figure 1 Trends in unwanted fertility between the World Fertility Surveys and the latest Demographic and Health Surveys, by proportion of women wanting no more children, 20 developing countries



The Initial Rise in Unwanted Childbearing

The principal cause of the increase in unwanted fertility during the first phase of the transition is readily identified: It is a decline in desired family size over time that leads to a rise in the proportion of women who are at risk of having unwanted pregnancies. In traditional pretransitional societies, relatively few women are exposed to this risk, because they want large numbers of children and few attempt to stop childbearing. Nearly all of the childbe aring years are needed to bear enough children to achieve the large families desired, and little reproductive time is left to bear unwanted children. As a society develops, however, desired family size declines, resulting in a corresponding rise in the proportion of women who wish to stop childbearing. Women complete their desired childbearing at earlier ages, thus leaving increasing proportions of the potential childbearing years during which unwanted pregnancies can occur. At the end of the transition, desired family size is typically near two children. Therefore, except for the few years required to have two children, sexually active women are at risk of unwanted childbearing for the majority of their reproductive lives. If effective birth control is not practiced in such societies, women can have several unwanted pregnancies over their lifetimes.

The actual level of unwanted fertility in a population depends not only on the proportion of women who want no more children but also and equally on the proportion of these women who are successful in averting births by practicing contraception and/or induced abortion. Here, discussion focuses on contraceptive use, because estimates of its levels are much more readily available and more accurate than those for induced abortion. Table 2 and Figure 2 present trends in the proportion using contraceptives among married women who want no more children for the 20 populations. This proportion is an index of the degree of implementation of preferences for limiting childbearing (it is preferred over the term "satisfaction of preferences" used by DHS, because not all users are satisfied with their current method).

Table 2 Trends in the proportion of married women who want no more children ("limiters") and in the proportion of limiters using contraceptives, by country, according to survey

Country	Proportion who want no more children		Proportion of limiters using contraceptives	
	Survey 1[a]	Survey 2[b]	Survey 1	Survey 2
Sub-Saharan Africa				
Cameroon	0.03	0.15	0.07	0.33
Ghana	0.12	0.34	0.18	0.29
Kenya	0.17	0.52	0.15	0.44
Nigeria	0.05	0.14	0.11	0.18
Rwanda	0.19	0.36	0.10	0.30
Senegal	0.07	0.19	0.03	0.16
Middle East and North Africa				
Egypt	0.53	0.68	0.37	0.58
Jordan	0.42	0.54	0.39	0.53
Morocco	0.42	0.53	0.34	0.52
Tunisia	0.49	0.57	0.40	0.64
Asia				
Philippines	0.54	0.64	0.46	0.48
Sri Lanka	0.61	0.65	0.42	0.75
Thailand	0.61	0.67	0.41	0.74
Latin America and the Caribbean				
Colombia	0.61	0.66	0.47	0.70
Dominican Republic	0.52	0.66	0.44	0.69
Ecuador	0.56	0.65	0.41	0.50
Mexico	0.57	0.64	0.34	0.61
Paraguay	0.32	0.45	0.41	0.55
Peru	0.61	0.75	0.35	0.60
Trinidad and Tobago	0.47	0.56	0.56	0.60

[a]World Fertility Survey. [b]Latest available Demographic and Health Survey.
Sources: Bankole and Westoff (1995); United Nations (1987); Westoff (1991); Westoff and Bankole (1995); Westoff and Ochoa (1991).

This implementation index increases over time in all 20 countries: It is typically very low—less than 0.4—in the early part of the transition, but it rises to 0.6 to 0.8 toward the end of the transition. The low level of implementation early in the transition may be due in part to weakly held fertility preferences. With such a large proportion of women at risk of pregnancy who are not practicing contraception in the first half of the transition, the finding that unwanted childbearing rises as the proportion wanting no more births increases (shown in Figure 1) is not surprising.

There has been much discussion in the literature about why substantial proportions of women do not practice contraception after reaching their desired family size. (These women are considered to have an unmet need for contraception.) No attempt is made here to review or synthesize this literature, except to note that a decision as to whether to practice contraception is based on a weighing of its direct and indirect costs and benefits. Adopting contraception can entail substantial costs. These include not only the particular cost of the method itself, travel time, and any payments to service providers, but also, and often more important, women's fears of adverse health effects and disapproval of their husbands or other family members (Bongaarts and Bruce, 1995). On the benefit side are the avoidance of expenses for additional children, including food, clothing, housing, schooling, and parents' time and avoidance of health risks associated with pregnancy and delivery. The rise over time in the implementation of limiting preferences observed in Figure 3 is the net result of reductions in costs and increases in benefits of practicing contraception as countries move through the transition.

Not all married women who appear to be at risk of unwanted childbearing because they want no more children and are not practicing contraception are, in fact, at risk. Although married and fecund, some of these women may not be having sexual relations because of absence of spouse, illness, lack of interest, or other reasons. Because accurate data on these issues are lacking, they are not analyzed separately.

Figure 2 Trends in the proportion of married women using contraceptives among those who want no more children between the World Fertility Surveys and the latest Demographic and Health Surveys, 20 developing countries

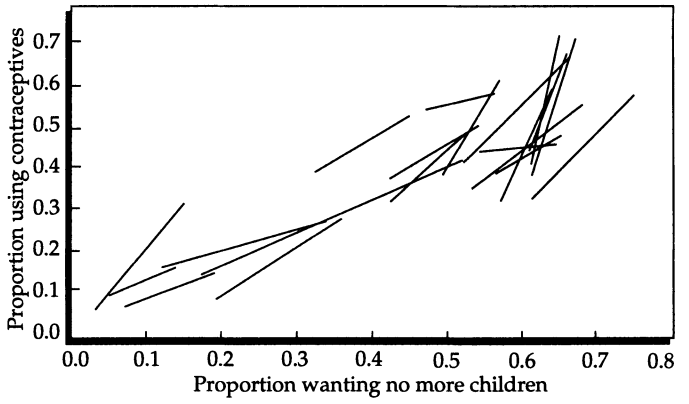
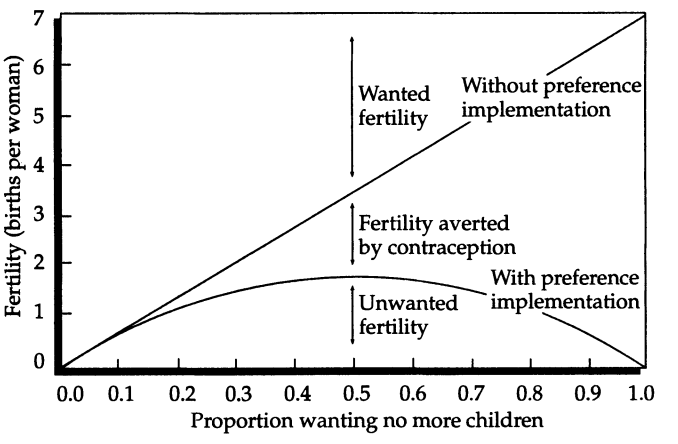


Figure 3 Model estimates of unwanted fertility, by proportion of women wanting no more children, with and without preference implementation



The Ultimate Decline in Unwanted Childbearing

The trends observed in Figure 1 indicated that unwanted fertility tends to rise and then fall as countries move through the transition. The preceding section identified the decline in fertility preferences and the associated increase in exposure as the principal explanation for the initial rise. The subsequent decline in unwanted fertility toward the end of the transition (that is, when higher proportions of women want no more children) is also the result of a simple process, but the outcome is not clearly intuitive. This inverted U-shaped pattern is the consequence of the joint effects of rising proportions wanting no more children and rising levels of preference implementation among those who want no more. To explain how these two more or less linear trends result in a nonlinear outcome, a highly simplified model for a hypothetical population can be used.

Let F_t equal the total fertility rate in year t in the absence of birth control. F_t has two components: wanted fertility (WF_t) and unwanted fertility (UF_t), so that $F_t = WF_t + UF_t$. Married women bear wanted children until they reach their desired family size, and thereafter they are at risk of having unwanted births (extramarital fertility is set at zero). To simplify the analysis, all women are assumed to marry at the same age, to remain fecund and married until the end of their reproductive years, to have the same birth intervals throughout their reproductive years, and to have the same fertility preferences. Let P_t be the proportion of the married reproductive years during which the women want no more children (that is, the proportion of years spent after they reach their desired family size). Then, in the absence of birth control, $UF_t = F_t \times P_t$. If we assume, furthermore, that the age distribution of married women of reproductive age is flat, that is, the number of married women in each age group is the same, then P_t is equal to the proportion of married women of reproductive age who want no more children. The simple linear relationship between UF_t and P_t is plotted as the top line in Figure 3 (labeled "without preference implementation") for F_t = seven births per woman. Without contraception or abortion, fertility would remain at seven births per woman, but at the beginning of the transition, when $P_t = 0$, all births are wanted ($UF_t = 0$ and $WF_t = 7$), while at the end, when $P_t = 1$, all births are unwanted ($UF_t = 7$ and $WF_t = 0$).

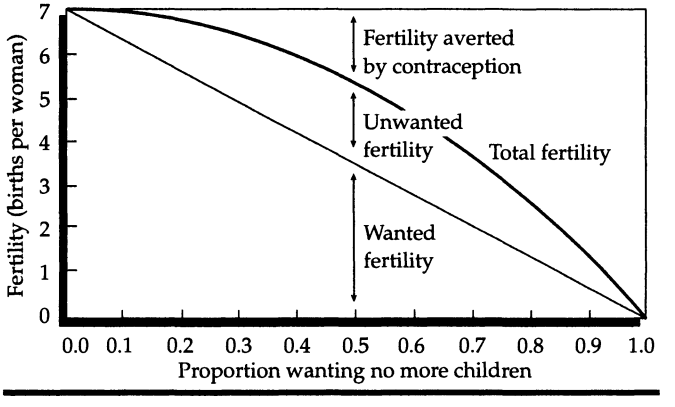
Next, contraception is introduced into this hypothetical model population. Let I_t be the proportion using contraceptives among married women who have reached their desired family size. If contraception is completely effective, potential unwanted fertility will be reduced to a proportion $(1 - I_t)$ of its maximum value, so that the actual unwanted fertility level equals $UF_t' = UF_t \times (1 - I_t)$. Assume, furthermore, that I_t (the preference-implementation index) rises linearly from 0 to 1 as P rises over the course of the transition (that is, assume $I_t = P_t$), which is approximately the trend in implementation observed in Figure 2. Substitution now yields $UF_t' = F_t \times (1 - P_t) \times P_t = F_t \times (P_t - P_t^2)$. This nonlinear relationship between unwanted fertility and P is plotted as the bottom line in Figure 3 (labeled "with preference implementation"). Unwanted fertility is zero when no women want to stop childbearing (all children are wanted) and reaches zero again when all women who want no more children use effective contraception (wanted fertility is also zero, and all F births are averted by contraception). In this hypothetical example, with $F_t = 7$, unwanted fertility reaches a peak of 1.75 births per woman in the middle of the transition when $P = 0.5$. At that point wanted fertility equals 3.5 births per woman ($F_t \times [1 - P_t]$), and the remaining 1.75 births ($F - WF - UF'$) are averted by contraception. The result is an inverted U-shaped relationship between unwanted fertility and the proportion of women wanting no more children that broadly corresponds to the relationship observed in Figure 1.

The trajectory of total fertility over the course of the transition is the sum of its wanted and unwanted components (that is, WF and UF'). The resulting fertility trend is plotted as the top line in Figure 4. As expected, early in the transition, fertility does not decline as rapidly as wanted fertility, because of a rise in unwanted childbearing; the reverse is true later in the transition.

Causes of Variations in Unwanted Fertility

The model described above captured the key forces shaping trends in unwanted childbearing over the course of the transition, but in order to keep the model

Figure 4 Model estimates of total, wanted, and unwanted fertility, by proportion of women wanting no more children



manageable, several simplifying assumptions were made in its application. The most important of these were: (1) that the index of implementation rises linearly with the proportion of women wanting no more children; (2) that contraception is 100 percent effective; (3) that no induced abortions are performed; and (4) that fertility in the absence of contraception and abortion equaled seven births per woman and that fertility did not vary with age. These assumptions are only approximations of reality, and, as a consequence, actual levels and trends in unwanted fertility in Figure 1 deviate significantly from the model pattern shown in Figure 3. A brief discussion of each of these four factors or proximate determinants contributing to variations in unwanted fertility follows.

Implementation of Preferences

The use of contraceptives among women who want no more children rises over the course of the transition in all populations included in Figure 2. These trends are the outcome of a complex process of evaluating the changing costs and benefits of contraception and unwanted childbearing that couples undertake. This topic is not covered in detail here; instead, a brief comment is made on two key factors (education and family planning programs) that are important determinants of levels and trends in preference implementation.

The higher their education level, the more likely women are to be knowledgeable about contraceptive methods, to be independent decisionmakers regarding reproduction and other aspects of their lives, and to be innovators of new behaviors such as the adoption of birth control. Therefore, preference implementation would be expected to be positively correlated with level of education. This correlation, indeed, is observed in countries participating in DHS surveys (as shown in Table 3). The proportion using contraceptives among women not wanting more children averaged 36 percent, 53 percent, and 67 percent, respectively, for women with no, primary, and secondary education in this group of countries. Interestingly, this relationship itself varies among countries. The smallest differences between groups by level of education were found in Colombia, Sri Lanka, Thailand, and Tunisia, where the level of implementation differed by around 20 percentage points or fewer between women with no education and those with a secondary education or more. In contrast, these differences exceeded 35 percentage points in Cameroon, Ecuador, Ghana, Nigeria, Paraguay, the Philippines, Senegal, and Trinidad and Tobago. The causes of this difference are not immediately obvious.

Family planning programs, which are now implemented in many developing countries, represent another factor influencing preference implementation. The aim of these programs is to assist couples in achieving their reproductive objectives. To the extent that these efforts are successful, levels of contraceptive use and preference implementation rise and unwanted fertility declines. The main emphasis of existing programs is to provide access to contraceptive services through clinics and community-based distribution systems. The programs' impact on reproductive behavior can be strengthened by additional efforts to provide education, information, and counseling to clients, because such efforts increase knowledge about the reproductive process and birth-control methods, and they can reduce fears concerning the health effects of methods. In general, high-quality family planning programs influence reproductive behavior by reducing monetary, social, and psychological obstacles to the adoption and continued practice of contraception. Previous studies have documented the substantial reduction in unwanted fertility achieved by these programs (Bongaarts, 1997). Programs may have had some additional effect on fertility and contraceptive use by reducing desired family size, but the evidence on this relationship is weak and controversial (Freedman, 1997). According to program effort scores obtained by Mauldin and Ross (1991), Colombia, Sri Lanka, Thailand, and Tunisia have stronger family planning programs than do

Table 3 Percentage using contraceptives among currently married women who want no more children, by level of education, Demographic and Health Surveys

Country	Level of education		
	None	Primary	Secondary
Sub-Saharan Africa			
Cameroon	18	35	65
Ghana	13	34	65
Kenya	30	44	61
Nigeria	7	28	46
Rwanda	26	32	50
Senegal	9	31	47
Middle East and North Africa			
Egypt	49	66	71
Morocco	46	72	75
Tunisia	55	67	76
Asia			
Philippines	19	41	57
Sri Lanka	68	75	76
Thailand	64	76	81
Latin America and the Caribbean			
Colombia	66	76	84
Dominican Republic	50	70	78
Ecuador	24	47	66
Paraguay	35	51	73
Peru	40	56	72
Trinidad and Tobago	29	60	69
Average (rounded)	36	53	67

Source: Latest Demographic and Health survey available for each country.

Cameroon, Ecuador, Ghana, Nigeria, Peru, the Philippines, and Senegal. This disparity probably explains part of the substantial differences in educational differentials between these two groups of countries evident in Table 3.

Contraceptive Failure

Couples practice contraception in order to avoid pregnancies, but the risk of failing to achieve this objective is significant except for those who rely on sterilization. Annual failure rates range from a few percent for methods such as the pill and the intrauterine device to more than 20 percent for traditional methods such as periodic abstinence (Hatcher et al., 1990). In the absence of induced abortion, these failures lead to unwanted births (except for a small proportion that ends in spontaneous abortion or stillbirth). To examine the role of contraceptive failure as a determinant of unwanted fertility, the simple model described above is now extended to permit contraceptive failures. Figure 5 plots the estimated unwanted fertility rates for various levels of contraceptive effectiveness, by proportion of women wanting no more children—estimated as $F_t \times P_t \times (1 - e_t P_t)$, where e_t represents the effectiveness level. As expected, the number of unwanted births resulting from contraceptive failure rises as effectiveness declines. For example, when 80 percent of women want no more births, unwanted fertility would be 1.12 births per woman practicing contraception that is 100 percent effective (assuming $F = 7$). Unwanted fertility rises to 1.57 births per woman whose contraception is 90 percent effective, and to 2.46 births when effectiveness is only 70 percent.

Another important factor that influences the role of contraceptive failure in unwanted childbearing is the transition stage as measured by the proportion of women wanting no more children. Figure 6 presents model estimates of the proportion of unwanted fertility due to contraceptive failure by the proportion of women wanting no more children for different levels of contraceptive effectiveness, in the absence of abortion. The higher the proportion wanting no more children, the larger the percentage of unwanted fertility due to contraceptive failure. For example, with 90 percent effectiveness, this percentage rises from 2 to 29 as P increases from 0.2 to 0.8. This trend is caused by a rise in the ratio of contraceptive users to nonusers as countries progress through the transition. At the end of the transition, with proportions wanting no more children at around 0.8, about half of the unwanted pregnancies are the result of contraceptive failure if contraceptive effectiveness is below 80 percent, according to these model estimates that assume no induced abortion.

These results indicate that contraceptive failure can make a substantial contribution to unwanted childbearing. This conclusion is consistent with observations from a few countries for which relevant information is available. Figure 7 presents the proportion of recent unwanted pregnancies that resulted from contraceptive

Figure 5 Model estimates of unwanted fertility, by contraceptive effectiveness and proportion of women wanting no more children

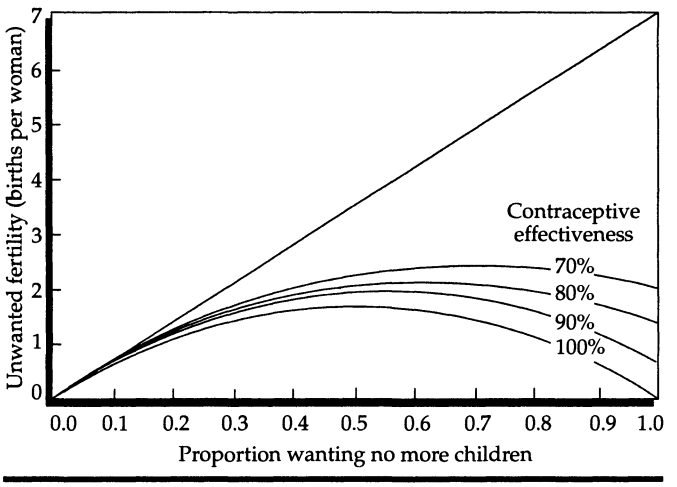


Figure 6 Percentage of unwanted births resulting from contraceptive failure, by contraceptive effectiveness and proportion of women wanting no more children

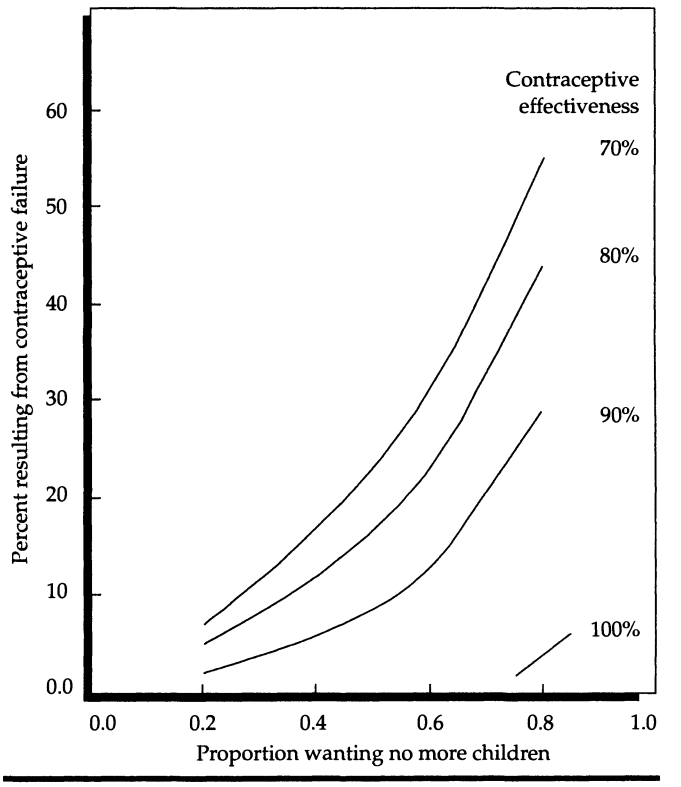
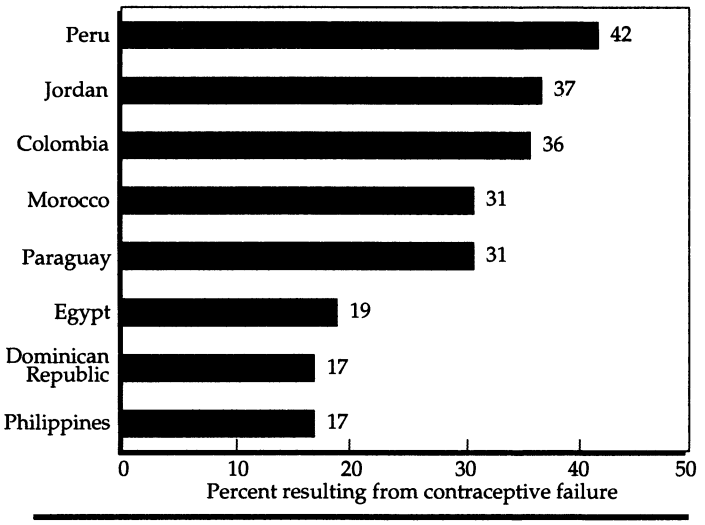


Figure 7 Percentage of unwanted pregnancies resulting from contraceptive failure, eight countries



Source: Bankole and Westoff (1995).

failure for eight countries. It ranges from a high of 42 percent in Peru to a low of 17 percent in the Dominican Republic and the Philippines. As noted, contraceptive effectiveness is a key factor in explaining this variation. Therefore, to find that the Dominican Republic has the highest level of sterilization among the countries included in Figure 7 and that Peru has the lowest proportion relying on modern methods is not surprising.

Induced Abortion

Significant proportions of women turn to induced abortion to avoid unwanted or unplanned births. This is the case not only in countries where abortion is legal and safe but also where it is illegal and, therefore, often unsafe. Reliable statistics on numbers of abortions are available for only a few countries. Under-reporting is most severe where abortion is illegal, but ethical, moral, and religious values and societal attitudes also make many women reluctant to report legal abortions. To obtain estimates of numbers of abortions by region, demographers and statisticians often resort to indirect techniques to supplement official statistics. The most recent estimates obtained by Singh and Henshaw (1996) are summarized in Table 4.

About 32 million induced abortions per year occurred in the developing world around 1990. Asia accounted for about 24 million of this total (ten million in China alone), while Latin America (about 5 million) and Africa (about 4 million) had fewer. The large majority of induced abortions in Africa and Latin America were illegal, and even in Asia, the proportion that was illegal was more than one-third. The proportion of pregnancies ending in abortion ranged from a low of 13 percent in Africa to 29 percent in Asia and 40 percent in Latin America. The highest proportions are generally found in countries in the later stages of the transition. For the developing world as a whole, about one in four pregnancies ends in abortion.

The estimates reported in Table 4 include all abortions whether they occurred after unplanned pregnancies (for example, among unmarried adolescents) or after unwanted pregnancies among married women who had reached their desired family size. Unfortunately, data on the proportions of abortions in each of these subgroups are lacking. The limited data available to shed light on this issue suggest that in India and Latin America, women older than 20 with one or more children are the main users of abortion (Singh and Henshaw, 1996). The same pattern has been observed in parts of sub-Saharan Africa (Coeytaux, 1988), although studies also report high proportions of unmarried adolescents among women hospitalized for abortion complications in urban areas (Kinoti et al., 1995; Konje and Obisesan, 1991). Further research is needed to identify the groups of women with the highest abortion rates.

Assessing the role of differences in induced abortion rates in causing the observed variation in unwanted fertility is not possible, because reliable statistics on induced abortion rates and characteristics of women using induced abortion are lacking for most developing countries. Where estimates for total numbers of abortions are available, they are often not given separately by preference status of the pregnancy (that is, unwanted versus mistimed). There is no doubt, however, that abortion plays a key role because, other things being equal, the higher the induced abortion rate, the lower the level of unwanted fertility.

Fertility without Contraception and Induced Abortion

Previous research on the proximate determinants of fertility has identified several factors in addition to contraception and abortion that are responsible for varia-

Table 4 Regional estimates of numbers of induced abortions, the percentage legal, and the percentage of pregnancies ending in abortion, about 1990

Region	Number of abortions (millions)	Percent legal	Percent of pregnancies ending in abortion
Africa	3.8	0.8	12.9
Asia[a]	24.4	62.0	28.9
Latin America	4.8	3.2	39.7
Developing world	31.9	44.7	25.6

[a]Includes China and Japan.
Source: Singh and Henshaw (1996).

tions in fertility levels of populations (Bongaarts and Potter, 1983). The most important of these are (1) the marriage pattern, which is the principal determinant of the number of years of exposure to the risk of childbearing; (2) breastfeeding, which lengthens the period of postpartum amenorrhea; and (3) frequency of sexual relations between spouses. Fertility in the absence of contraception and induced abortion is highest in countries with low ages at marriage, short durations of breastfeeding, and high coital frequency, and is lowest when marriage is late, breastfeeding long, and sexual relations infrequent. The effects of these proximate variables are most evident in contemporary pretransitional societies in which only a very small proportion of women report taking deliberate actions to limit fertility. According to United Nations estimates, the fertility of pretransitional populations in 1960 ranged from a high of more than 7.5 births per woman in countries such as Kenya, Rwanda, and Zimbabwe, to a low of fewer than six in India, Indonesia, Nepal, Sri Lanka, and Trinidad and Tobago (United Nations, 1995).

Variations in these other proximate variables, which tend to persist over time, can contribute to variations in unwanted fertility once preferences decline. Therefore, the finding that Kenya and Rwanda, which both had high pretransitional fertility, now have relatively high unwanted fertility is not surprising. Conversely, low pretransitional fertility should be associated with lower-than-expected unwanted childbearing, and this appears to be the case for Sri Lanka and Trinidad and Tobago.

Previous studies of the age pattern of pretransitional fertility have documented a consistent and large decline in fertility with age of the woman (Coale and Trussell, 1974). Because unwanted births occur at an older age than a woman's wanted births, it follows that the unwanted fertility rate among women who are not practicing contraception is, on average, lower than the wanted fertility rate of women who have not yet achieved their desired family size. The model's estimates of unwanted fertility deviate from observed levels in part because the model ignores age differences in fertility.[3]

Conclusion

The preceding analysis of empirical trends in unwanted fertility over the course of the fertility transition documented a characteristic inverted U-shaped pattern. In the first half of the transition, unwanted fertility typically rises, while overall fertility declines; in the last part of the transition, unwanted fertility declines as well. Because most developing countries are now in mid-transition, the implication of this finding is that unwanted fertility in the South is near its peak, at levels considerably higher than in past decades. In the 1950s, only a few countries in the South had entered the fertility transition, and the average proportion of fertility that was unwanted was small, probably below 10 percent. Today the large majority of countries have entered the fertility transition, and unwanted fertility has risen substantially. In the 20 countries included in the present analysis, the proportion of observed fertility that is unwanted was 22 percent around 1990.

The principal cause of the rise in unwanted childbearing in the early part of the transition is a decline in desired family size and the corresponding increase in exposure to the risk of having unwanted pregnancies. As fertility preferences decline, the number of years between the completion of a woman's desired family size and the end of potential childbearing rises, thus leading to an increase in the time during which unwanted pregnancy can occur. In most countries, the resort to contraception and induced abortion has been insufficiently rapid to prevent an increase in unwanted childbearing.

A key implication of this finding is that trends in unwanted fertility cannot easily be used to assess the impact of family planning programs. Because the main objective of these programs is to assist couples in implementing their reproductive preferences, one might expect them to reduce unwanted childbearing. But family planning programs are often instituted in the early phases of the fertility transition when, as has been demonstrated above, strong upward pressure is placed on unwanted fertility. The net effect of such programs is, therefore, often not the expected decline in unwanted childbearing, but instead either a steady level of unwanted fertility (when the program prevents a rise) or an increase (when the program prevents an even larger rise that would have occurred otherwise). The fact that programs are often not associated with substantial declines in unwanted fertility has been used by critics as strong evidence that these programs are ineffective (Pritchett, 1994). This result and the role of programs are much better understood in light of the expected pattern of change in unwanted fertility documented in this study. A more detailed discussion of this issue and the controversy about the fertility effect of family planning programs can be found in Bongaarts (1994 and 1997).

Not only does unwanted fertility vary by stage of the transition but also large differences in unwanted fertility levels occur among populations at the same transition stage. This variation can be attributed to shifts in four proximate determinants: implementation of preferences, effectiveness of contraceptive use, induced abortion, and other proximate determinants. Reductions in

unwanted fertility can be achieved by changes in one or more of these four factors:

1 *Preference implementation.* Raising the level of contraceptive use among women motivated to avoid childbearing is the most obvious way to limit unwanted fertility. Therefore, this strategy is the main focus of family planning programs, which provide couples with information about and access to contraceptive services.

2 *Contraceptive effectiveness.* The mix of contraceptive methods used by couples varies widely among countries, and this variation is one of the main reasons for differences in average contraceptive effectiveness. Wide availability of effective methods accessible through the public or private sector is required to achieve high levels of effectiveness. Efforts to promote the most effective methods without giving women a wide choice (such as in India's program with its emphasis on sterilization) are counterproductive and should be avoided.

3 *Induced abortion.* Even in the best of circumstances, avoiding all unwanted pregnancies is virtually impossible; in such cases, induced abortion is the only way to prevent unwanted births. Access to safe pregnancy-termination services is available in only a few instances in the developing world.

4 *Other proximate determinants.* Higher age at marriage, longer duration of breastfeeding, and lower frequency of intercourse all lower overall fertility and, other things being equal, they also reduce unwanted fertility. However, a rise in the age at marriage increases the time between menarche and marriage, and thus increases the exposure to unplanned premarital pregnancies among sexually active women.

The trends documented in this study indicate the need for strong efforts to prevent a rise in unwanted fertility and abortion rates in the early phases of a fertility transition. Such efforts are desirable because they provide direct health and socioeconomic benefits to women, children, and their families, and they help reduce rapid population growth.

Notes

1 A few countries were excluded from the present analysis for the following reasons: Indonesia and Sudan, because the coverage of one of the surveys was not national; Pakistan, because the accuracy of fertility estimates in the 1992 DHS has been questioned (Juarez and Sathar, forthcoming); and Bangladesh, because questions on fertility intentions in the WFS and DHS were not comparable.

2 The observed trend in wanted fertility in Nigeria may be the result of a problem with the data in the Nigeria DHS. Wanted fertility in the NDHS is possibly overestimated, compared with the NFS, as a result of an unnecessarily high proportion of respondents giving non-numeric responses to the question on ideal number of children in the NDHS (60 percent versus 30 percent in the NFS). Births to women who gave a non-numeric response were considered wanted.

3 A difference in fecundability between women who want more children and those who want no more probably also contributes to the difference between model and observed unwanted fertility.

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