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Fertility Decline in the Developed World: Where Will It End?

By JOHN BONGAARTS*

Conventional theories have little to say about the level at which fertility will stabilize at the end of the demographic transition. It is often assumed or implied that replacement fertility of about 2.1 births per woman will prevail in the long run. This assumption is, for example, incorporated in past population projections of the United Nations and World Bank (medium variants). However, fertility has in fact dropped below the replacement level in virtually every population that has moved through the demographic transition. This trend was not widely anticipated by demographers, and until recently relatively little attention has been given to understanding the causes and consequences of low fertility in post-transitional societies. If future fertility remains at these low levels, populations will decline in size and age more rapidly. Concern about the societal consequences of these demographic developments has led to a recent surge of interest in this topic.

After a brief overview of fertility trends in post-transitional societies, this paper will present reasons why current low fertility is unlikely to decline much further and may even rise somewhat in the future in a number of countries. The first reason is that the total fertility rate (TFR) is a hypothetical measure that can and often does give an inaccurate indication of the actual rate of childbearing of women.¹ This rate is in fact not as low as implied by the TFR in many developed countries. A second reason for expecting fertility not to decline further is that couples in most post-transitional societies plan to have about two children.

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¹ The total fertility rate is defined as the average number of births a woman would have if she were to live through her reproductive years (ages 15–49) and bear children at each age at the rates observed in a particular year or period.

I. Trends in Late-Transitional Fertility

Average fertility in the developed world reached a post-World War II maximum at 2.8 births per woman (bpw) during the peak of the baby boom in the late 1950's. Steep declines in the 1960's and 1970's left fertility below replacement, reaching just 1.7 bpw in 1990–1995 (United Nations, 1996). These broad trends have been observed in Europe, North America, and Australia/New Zealand (see Fig. 1). In Japan, fertility already had reached the replacement level in the late 1950's, and it has declined further over the past quarter century. In the late 1950's regional fertility levels ranged from a high of 3.7 bpw in North America to a low of 2.1 in Japan, but they converged by 1980 to approximately 1.8 bpw. Since 1980, fertility levels have diverged again, with North America's fertility rising to 2.0 bpw while Japan and Europe have continued to drop further to about 1.5 bpw.

Below-replacement fertility is now the norm in the developed world, but it is also observed in a small but growing number of populations elsewhere, in particular in the Asian countries where, in recent decades, economic development has been extremely rapid. Steep declines since 1960 have left fertility at 1.79 in Singapore, 1.65 in Korea, 1.32 in Hong Kong, and 1.94 in Thailand over the 1990–1995 period. Outside Asia, fertility was also below replacement in the Bahamas, Barbados, and Cuba (United Nations, 1996).

II. Distortions in Fertility Measures

The total fertility rate is by far the most widely used indicator of period fertility, and it is therefore used throughout this paper to measure levels and trends in the fertility of populations. Despite the apparent simplicity and wide availability of this indicator, it is a complex measure that is potentially subject to misinterpretation. The main problem is that the fertility level measured in a given year or pe-

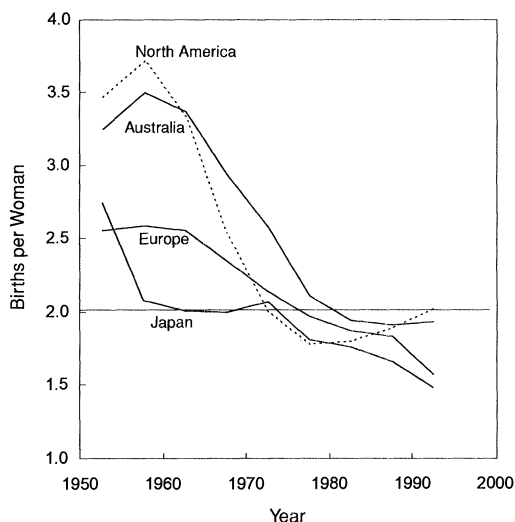


FIGURE 1. TRENDS IN TOTAL FERTILITY RATES IN SELECTED POPULATIONS IN THE INDUSTRIALIZED WORLD, 1950-1995

Source: United Nations (1996).

riod is affected by ongoing changes in the timing of childbearing (Norman B. Ryder, 1964, 1983). The best known example of this often unappreciated effect is the "baby boom" in the 1950's in the United States, which was partly attributable to a decline in the mean age at childbearing following World War II. As successive cohorts started bearing children at younger ages, their births overlapped in the same time periods, thus boosting observed period fertility. The opposite effect is less familiar but of special interest for present purposes: increases in the age at childbearing deflate the TFR because births to successive cohorts are spread over a longer time period. The latter distortion has dominated in recent decades, because the age at onset of childbearing has risen sharply in most late-transitional countries since the 1970's (Council of Europe, 1996). This trend implies that recent fertility (as measured by TFR) in these countries has been lower than it would have been without the "tempo" effect.

The existence of timing distortions is readily documented when the age at childbearing is declining significantly. In that case, implausible results are often obtained for the birth-

order components of the TFR. For example, the component for births of order 1 (TFR_1) equals the average number of first births women would have by age 50 if they were to bear first births at the age-specific rates observed in a given year or period. In most years during the late 1940's and early 1950's, the TFR_1 in the United States exceeded 1, which would imply that women on average had more than one first birth. This is impossible, and these TFR_1 estimates must therefore be reinterpreted. The main explanation for this finding is that the age at childbearing declined during the post-World War II period, resulting in a temporary inflation of the TFR.

Demonstrating the existence of the fertility-depressing effect caused by delays in childbearing is more difficult, because an examination of the birth-order components of the TFR does not usually produce obvious inconsistencies. However, a comparison of the TFR (a hypothetical indicator for period fertility) with the actual childbearing experience of women who have reached the end of their childbearing years can reveal tempo effects in populations where fertility has been relatively constant and the rise in the timing of childbearing fairly steady. These conditions have prevailed in the European Community since the mid-1970's. The TFR has been below the replacement level since the early 1970's, reaching 1.5 bpw in the early 1990's (Eurostat, 1997). The estimated completed fertility for women in the 1960 cohort equaled 1.80 births per woman.² This cohort completed nearly all of its childbearing between 1980 and 1995. The average TFR for the period 1980-1995 equaled

² The women in this cohort were 35 years old in 1995, and the estimates of their completed fertility include births expected during the remainder of their childbearing years. The procedure used for this extrapolation may not be entirely accurate. The standard approach for estimating fertility during the remainder of the reproductive years is to assume that women will bear future children at the rate observed in the most recent available year. This approach yields satisfactory results if fertility rates in the higher age groups are fairly stable. However, increases in the fertility rates of age groups above 35 have recently been observed in a number of European countries. If this trend continues, then current estimates of completed fertility of cohorts that have not yet reached the end of their childbearing years will have a downward bias.

TABLE 1—TOTAL FERTILITY RATE WITH AND WITHOUT ADJUSTMENT FOR TEMPO EFFECT

Country and period	TFR (observed)	TFR (adjusted)	Tempo effect
<i>Selected countries, 1985–1989:</i>			
France	1.81	2.21	0.40
Netherlands	1.54	1.90	0.36
Norway	1.78	2.05	0.27
Sweden	1.90	2.00	0.10
Taiwan	1.74	2.14	0.40
United Kingdom	1.80	1.92	0.12
United States	1.90	1.98	0.08
Average 1985–1989	1.78	2.03	0.25
<i>United States:</i>			
1975–1979	1.78	1.97	0.19
1980–1984	1.82	2.01	0.19
1985–1989	1.90	1.98	0.08
1990	2.07	2.06	-0.01

Sources: Bongaarts, 1998; Bongaarts and Feeney, 1998.

1.60 births per woman. There is a clear discrepancy between the childbearing rate implied by the TFR and the rate actually experienced by these women. The difference is about 0.2 births per woman, and it is primarily the result of a downward bias in the TFR caused by a rising age at childbearing.

Although demographers have long known of the distortions caused by changes in the timing of childbearing, there has been no agreed-upon methodology for removing tempo effects from the observed TFR. Ryder (1964) proposed “translation” equations to calculate period fertility from corresponding cohort measures, but they have not found wide acceptance, mainly because they do not produce satisfactory results. In a recent study, Griffith Feeney and I propose a new procedure for removing tempo effects from the TFR (Bongaarts and Feeney, 1998). Our approach is an outgrowth of Ryder’s original translation equation, and it produces adjusted or tempo-free estimates of the TFR. Estimates for selected populations of these tempo-free TFR’s for the period 1985–1989 are summarized in Table 1. Eliminating the tempo effect raised fertility in each of the seven countries included in this table; this is as expected from the rising age at childbearing in these populations. The

adjustment for the tempo effect averaged 0.25 bpw with a range from more than 0.35 bpw in the Netherlands, France, and Taiwan to a low of 0.08 in the United States. This estimate for the United States is low because the mean age at first birth stopped rising at the end of the 1980’s.

The implication of these findings is that the TFR gives a misleading estimate of the actual rate of childbearing when the age at childbearing is changing. Women in most post-transitional populations are actually bearing more children than is indicated by the observed TFR’s. This distortion in the TFR will continue as long as the age at childbearing rises, but once the deferment ends the distortion is removed and the TFR rises. This is precisely the pattern observed in the United States in the late 1980’s. The TFR was well below replacement for most of the 1970’s and 1980’s, but it rose quickly in the late 1980’s to about 2 bpw. This rise coincided with the end of the rise in the mean age at first birth. A more detailed analysis by Bongaarts and Feeney (1998) found that fertility-depressing tempo effects existed during the 1970’s and 1980’s, but these disappeared around 1990 (see Table 1).

III. Childbearing Expectations and Preferences

Since the total fertility rate and other period measures of fertility can give potentially misleading information about levels and trends in the rate of childbearing, it is useful to examine evidence of parents’ childbearing intentions. Data on desired family size and related measures are routinely collected in fertility surveys. Unfortunately, interpreting the results from these surveys is not always straightforward, because responses to preference questions depend significantly on how the relevant questions are phrased. Some surveys inquire in general about a respondent’s ideal family size without specifying any conditions; others ask about the ideal/desired family size for “a family like yours” which presumably leads the respondent to consider constraints on childbearing that may be encountered in implementing preferences. Yet another approach is to calculate the number of children ultimately expected by adding the number of chil-

TABLE 2—NUMBER OF CHILDREN ULTIMATELY EXPECTED BY WOMEN, BY AGE

Country	Age			Average
	20–24	30–34	40–44	
Austria	2.0	2.0	2.7	2.2
Canada	2.3	2.1	2.0	2.1
Finland		2.2		2.2
France	2.1	2.3	2.3	2.3
Germany	1.8	2.0		1.9
Hungary	2.1	2.1	2.0	2.1
Italy	2.1	2.1	2.0	2.1
Latvia	2.1	2.3	2.0	2.1
Lithuania	2.0	2.1	1.9	2.0
Netherlands	2.3	2.1	2.0	2.1
Norway	2.5	2.2	2.3	2.4
Poland	1.7	2.3	2.3	2.2
Slovenia	2.3	2.3	2.1	2.2
Sweden	2.4	2.5	2.2	2.4
United States	2.3	2.3	2.0	2.2

Sources: Linda Peterson, 1995; Katharina Pohl, 1995; Joyce Abma et al., 1997; Dirk Van de Kaa, 1998.

dren a respondent already has to the additional number expected over the remainder of the reproductive years. The latter measure is generally considered most accurate and is therefore the principal indicator used in reports on findings from fertility surveys in developed countries.

Table 2 presents the average number of children ultimately expected by women for 15 countries participating in the Fertility and Families Surveys project undertaken in the European Community in the early 1990's (including the United States and Canada). Average ultimate family size for all women is quite similar in this group of countries, ranging from 1.9 to 2.4 bpw. There is also little variation among age groups. It should be noted that estimates for the youngest women are almost entirely based on expectations about the future, but at higher ages increasing proportions of these expected family sizes have already been realized. For example, most of the women aged 30–34 have already had at least one birth, and they are typically well aware of the cost and benefits of childbearing. These women should therefore be able to forecast fairly accurately what is likely to happen over the next several years as they complete their families. The anticipated ultimate number of

children is near or somewhat above 2 in all these countries, not only for the oldest age groups, but also for younger women who have just begun their childbearing. This finding suggests that fertility is not likely to drop to very low levels, unless circumstances change drastically.

A full assessment of the reliability of women's expectations is beyond the scope of this paper. It requires a comparison of information on birth expectations and actual childbearing from a series of successive surveys in the same country. Such an analysis has been carried out by Linda Peterson (1995) using data from surveys conducted in 1973, 1983, and 1989 in the United States. She concludes that fertility expectations have been stable over this period and that expectations of younger women slightly (<10 percent) exceed the actual rate of subsequent childbearing. Women make minor downward revisions in the expected number of children as they move through their reproductive years. This is not surprising, because over time, women become more familiar with actual and potential obstacles to childbearing such as the cost of rearing children, competing demands from jobs, divorce, medical problems, and so forth. Similar findings are reported for the Netherlands by A. De Graaf (1995). Whether these findings from the United States and the Netherlands also hold true for other countries is unclear at present.

IV. Conclusion

Forecasting fertility is difficult, and many past predictions have proved to be incorrect. However, there is little doubt that women in many developed countries are actually bearing more children than is suggested by the total fertility rates. Furthermore, young women in many of these countries expect to have a sufficient number of births to reach the replacement level. Whether these expectations will be realized remains to be seen; past experience suggests that actual fertility of these women will be slightly below expected levels. It is plausible to assume that this will also hold true in the future, although of course unexpected developments could result in a different outcome. In addition, preferences may fall in the

future even though they have been quite stable in recent decades.

It should be emphasized that, even in countries where women are bearing children at the replacement level, the total fertility rate could remain below 2.1 for a considerable time. The TFR will be distorted by tempo effects as long as the age of childbearing keeps rising. Since this trend has existed in many countries since the mid-1970's it is possible that it will continue for a number of years. This upward trend should end eventually, and at that time the removal of the downward tempo distortion should lead to an increase in the TFR. The fertility level that will prevail in the absence of tempo distortions varies among post-transitional countries and may well remain below the replacement level, even though it is likely to rise above current levels in a number of countries.

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