

**GLOBAL FERTILITY  
TRANSITION**

**Rodolfo A. Bulatao**  
**John B. Casterline**  
*Editors*

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## Comment: Globalization and Theories of Fertility Decline

CHARLES HIRSCHMAN

BEGINNING WITH THE pioneering works of Warren Thompson (1929), Kingsley Davis (1945), and Frank Notestein (1953), demographers have been tinkering with demographic transition theory for the better part of the last century. Relative to most of what passes for theory in the social sciences, transition theory is a remarkable achievement. The fundamental thesis that modernization and declining mortality lead, after some lag, to a decline in fertility is the working axiom of most empirical researchers in the field. At the same time, many students and members of the educated public are acquainted with the general idea of demographic transition theory, if not with the theoretical details or empirical applications.

Within the field of demography, however, the status of demographic transition theory is fiercely contested. The many shortcomings of the theory have given rise to a variety of alternative perspectives on both historical and contemporary fertility declines (Cleland and Wilson 1987; Knodel and van de Walle 1979; McDonald 1993). A new theoretical synthesis is likely to emerge in the coming years, but the scope and content of a new theory remain on the distant horizon. In the meantime, researchers continue to study the fertility transitions in many parts of the world that are still incomplete and the others that are just beginning. Considerable work is necessary to examine the many novel ideas and hypotheses from alternative theoretical perspectives that have not been subjected to empirical tests.

In his chapter in this volume, John Caldwell asks whether commonalities might explain the global fertility declines that began in the 1960s and 1970s. The beginnings of sustained fertility declines in Asia and Latin America coincided with the rapid reduction of childbearing in many countries of the industrialized West from the baby boom highs in the 1950s to below-replacement levels by the 1970s. Caldwell also notes the parallel

with contemporaneous rapid reduction in fertility among indigenous minorities in the United States, Canada, Australia, and New Zealand. He suggests that the spread of new contraceptive technology (the pill in particular) and ideological shifts contributed to the global declines in fertility during this period.

Without diminishing the value of Caldwell's critical insights, the dilemma for the field is how to move from post hoc interpretations based on selected observations to tests of rival hypotheses. Bivariate correlations or selected associations cannot make or break demographic transition theory, nor can case studies reveal broad-scale historical patterns. The current research literature tells us that many factors, including socioeconomic conditions, cultural receptivity, new technology, ideology, and organized family planning programs, can influence fertility levels and fertility decline in particular situations. The discovery of the relative importance of these factors and how they interact in different times and places will require a less polemical assessment of the strengths and weaknesses of demographic transition theory and a different analytical framework than has guided the field in the past.

### Explaining fertility transitions

The classical model of the demographic transition emphasizes socioeconomic development and modernization as causal forces. When only modest correlations between socioeconomic variables and the timing of fertility declines were initially reported, some researchers immediately concluded that demographic transition theory had been proven false. The absence of common socioeconomic thresholds for the onset of fertility declines across societies and the occasional evidence of cultural diffusion of fertility behavior within and across countries are important findings (Cleland 1985; Cleland and Wilson 1987; Lesthaeghe 1983; Lesthaeghe and Surkyn 1988). These results, however, do not necessarily mean that socioeconomic change has no causal role in fertility declines, only that bivariate associations of socioeconomic variables and indicators of fertility can be very low.

Much of the controversy over the appropriate theoretical framework for fertility change arises from assumptions that all fertility transitions follow a similar path and that the same causal variables are present everywhere. The research literature shows, however, that initial fertility levels and the mechanisms of fertility decline have varied widely. Fertility in late-nineteenth-century Europe was already at moderate levels. The European marriage system ensured that average family size was only about 4 to 5 births per couple even without control of marital fertility. Further fertility decline required the adoption of birth control within marriage. This type of fertility transition exemplifies the model in which knowledge of birth control and legitimation for its adoption were the primary prerequisites for

sustained fertility declines. Once the demand for smaller family size was present in many European societies, the new information and change in values spread first along paths of cultural and linguistic homogeneity (Anderson 1986; Watkins 1987).

Pretransition fertility levels in the rest of the world were typically much higher than those in Europe, ranging from 6 to 8 births per woman. In contrast to the situation in premodern Europe, there was simply more room in the fertility regimes of Asia, Africa, and Latin America for a wider range of forces to shape reproductive behavior in the early stages of contemporary fertility declines. In these societies, reproduction was also regulated by cultural patterns, but by different means such as infanticide, taboos on sexual intercourse at certain periods, and terminal abstinence from intercourse after becoming a grandparent. The early signs of fertility transition in these societies might result from changes in marriage patterns or spousal separation, and not necessarily from determined efforts to control fertility within marriage. Changes in other proximate determinants of fertility, such as breastfeeding, could also produce sizable fluctuations in fertility prior to the sustained declines that identify a clear case of fertility transition.

Much of the recent empirical and theoretical literature has sought to present a more balanced assessment of causal factors, including socioeconomic development, that can explain fertility declines (Friedlander, Schellekens, and Ben-Moshe 1991; Kirk 1996; Lee, Galloway, and Hammel 1994). In their survey of modern fertility transitions, Bongaarts and Watkins show a very strong relationship between a summary measure of socioeconomic development and fertility declines from the 1960s to the 1980s, although there was no single threshold (1996: Figure 2). Indeed, there was evidence of an increasingly lower socioeconomic threshold for declining fertility in the 1980s relative to the 1960s (*ibid.*: Figure 3). One of their most intriguing findings is that the level of socioeconomic development is strongly related to the pace of fertility decline even when it is unrelated to the onset of fertility declines (*ibid.*: Figure 7). Karen Mason (1997) cogently argued that much of the debate on the causes of fertility transitions is over variations in the proximate conditions that influence the timing of fertility declines, and that there is considerable agreement over the long-term historical factors, especially mortality decline, that have led to fertility transitions.

I have previously argued (1994) that the portrayal of demographic transition theory as a universal, unilinear, ahistorical model of modernization and fertility decline is too simplistic. Fertility, and population growth more generally, respond to societal pressures that threaten the survival and well-being of human communities (Davis 1963; Wilson and Airey 1999). Socioeconomic development is surely a major force influencing demographic processes in modern times, but it is not the only source of pressures that may generate demographic, technological, and social change.

## Toward a new analytical framework of fertility decline

The study of fertility transitions typically excludes much of the temporal variance in fertility behavior. Fertility transition is identified as a decline from a plateau of "natural fertility" leading to replacement-level fertility within a relatively short time.<sup>1</sup> This framework excludes the declines in fertility that are not sustained and that do not culminate in replacement-level fertility. Because natural fertility levels during the pretransition era can vary by a factor of two (from 4 to 8 births per woman), this ignores a considerable range of variation between and within societies. The logic is, however, that these variations from moderately high to very high fertility are caused by culture and customs that are unrelated to motivations to control fertility.

This peculiar definition originated with specific conditions that prevailed in Western Europe in the late nineteenth century. In this setting, fertility, and population growth more generally, were limited by delayed marriage, moderate levels of celibacy, patterns of overseas migration, and child abandonment in foundling homes (Davis 1963). One of the few intermediate variables not controlled was marital fertility (but, see Friedlander and Okun 1995). As population pressure continued to increase on households striving for upward mobility, a momentous change occurred in the popular *mentalité*, leading to the rejection of traditional and religious authority that circumscribed family limitation within marriage. Given the historical significance of this shift, and given that it led to replacement-level fertility within a short time, it is understandable why other societal efforts to limit population growth were not considered elements of fertility control, but only fluctuations associated with natural fertility.

The definition of controlled fertility—the historic break from natural fertility—relies on conscious planning as evidenced by parity-specific behavior that stopped (or delayed) childbearing after desired family size was reached (Henry 1961). Such behavior is probably necessary to reach replacement-level fertility, but this does not mean that less deliberate means of family-size regulation were not responding to similar pressures. For example, a shortage of agricultural land in densely settled rural areas might have put pressure on families to limit the number of offspring. Initially, families may have responded by out-migration and delayed marriage, and only after these possibilities were exhausted did they adopt parity-specific means to limit births in marriage. Although this last means was distinctive in that it involved conscious planning, a comprehensive analysis of demographic change requires consideration of all means used to reduce population growth in response to social or economic conditions.

This shift in focus is critical for studying the wave of late-twentieth-century fertility transitions, where the plateau of pretransitional fertility

might be 6 to 8 births per woman and not the 4 to 5 births per woman that characterized the European case. In circumstances where most women desire fewer children, the simple availability of birth control may lead to a continuous and rapid change in behavior resulting in low fertility. However, in higher-fertility settings, there are many more possible routes to lower fertility than simple reductions in marital fertility. The reproductive responses to social change in many modernizing societies may be numerous, with possibilities for short-term fluctuations, lags and stalls, and even rises in fertility.

Consider a plausible scenario in which the forces of modernization have multiple and contradictory effects on fertility through different mechanisms. The expansion of schooling may influence more women to postpone marriage and childbearing, thereby lowering fertility among women in their teens and 20s (if the postponement is temporary, there may be a subsequent rise as births are "made up"). A decrease in infant and child mortality may also reduce fertility, but through a different mechanism and at a different stage of the reproductive life course. If families reach their desired number of children at an earlier stage than was common in prior generations and this occurs in a context with limited resources for bequests (such as agricultural land), there may be pressures for "stopping" childbearing. Other aspects of modernization may work in the opposite direction. Increased female employment outside the household economy may lead to a decline in breastfeeding and thus shorter birth intervals. The growth of cities without extensive opportunities for stable employment may lead to increased premarital sexual behavior and births. A rapid rise in real incomes (perhaps caused by movement to a frontier region or a rise in export prices for petty commodity producers) may lead to a relaxation of traditional constraints on fertility such as postponed marriage.

Considering the range of possibilities for change in reproductive behavior in societies experiencing modernization, bivariate associations between socioeconomic status and measures of fertility cannot be considered serious tests of theoretical propositions. At a minimum, it is necessary to decompose changes in fertility by age group and marital status in order to observe the likely intervening mechanisms (Hirschman 1985; Hirschman and Guest 1990a). Much more informative are studies that trace the impact of social change on fertility through proximate determinants, such as contraceptive use and breastfeeding (DaVanzo and Haaga 1982).

Empirical research on fertility transitions should incorporate two additional elements in order to meaningfully test hypotheses from demographic transition theory (and alternative theories). First, historical paths of fertility transitions must be tracked over time, rather than relying on cross-sectional comparisons or aggregate temporal trends. Even with all the investment in demographic data collection over the last generation,

there are relatively few cases (societies) for which we have comparable, high-quality survey data for several time points. The primary data used by Caldwell and by Bongaarts and Watkins (1996) are aggregate estimates compiled from varied sources and adjusted by the United Nations. Although most research on fertility is based on survey data (collected at one point in time), theories of fertility decline postulate that *changes* in social structure and institutions are the primary determinants of change in individual behavior (Smith 1989).

The other important element of an improved analytical framework would be a clearer specification of the hypothesized impact of independent variables on fertility and family planning behavior. In many empirical analyses, any available socioeconomic variable is considered equivalent to (and interchangeable with) any other. As noted earlier, there could be contradictory influences from the many societal and individual changes experienced during an era of modernization. Even a single variable, such as education, can have a variety of potential impacts on fertility depending on the time period, the unit of analysis, and the intervening mechanisms (Cochrane 1979).

In my own research, I have tried to find appropriate indicators for the widely accepted major structural forces that influence family formation and fertility, namely infant and child mortality, the status and roles of women, and the costs and benefits of children (Hirschman and Guest 1990b; Hirschman and Young 2000). Because these forces are elements of social structure and not necessarily embodied in individual characteristics, this research strategy faces enormous empirical challenges (Casterline, this volume).

Another critical issue is the impact of policy—family planning programs in particular—on fertility. It is ironic that demographers are still debating the impact of public intervention on fertility trends even as fertility is beginning to decline in most countries around the world. The assessment of the impact of family planning programs on fertility has advanced only modestly from the pioneering work of Freedman and Berelson (1976), who reported that countries with stronger family planning effort had more rapid fertility declines, net of socioeconomic development. Although the basic methodology of this approach has been refined over the last two decades, two major flaws remain. The first is that the measurement of family planning effort may well be influenced by fertility declines (expert evaluations of family planning may be based on perceptions of success). The second problem is that family planning programs (especially successful ones) may be endogenous to socioeconomic development. Some empirical studies have found a modest impact of family planning programs on fertility (Gertler and Molyneaux 1994; Prichett 1994), though flaws in these studies have been clearly identified (Bongaarts 1994; Knowles, Akin, and Guilkey 1994).

The problems of evaluating family planning programs are those that affect all assessments of public policy. Without conducting experiments, it is impossible to conclude with certainty that the policy—as opposed to other social forces—has affected the outcome. In an influential study conducted more than three decades ago, Freedman and Takeshita (1969) carried out an experiment to assess whether the presence of a family planning program (and the methods used by the program) had an impact on contraceptive behavior.<sup>2</sup> A social experiment, as opposed to those conducted in laboratories, however, cannot be completely controlled. Information can flow from the experimental area to the control area and actors rarely perform in accordance with the script of experimental design. Studies of clinic-based data—the other major source of program evaluation studies—are invariably clouded by the problem of “selectivity.” These problems have led many in the field of program evaluation (not just in family planning assessment) to conclude that little is to be gained from additional refinements in evaluation methodology.

Considerable room exists for advances in the assessment of family planning programs (and other public policies) in research on the fertility declines that have occurred over the last few decades. One possibility for innovative research is to combine population data from censuses and surveys with geo-coded data on the locations, activities, and budgets of institutions, such as health clinics and hospitals. Using statistical techniques that model the patterns of temporal and spatial change, researchers could use these data to measure the diffusion of influence on fertility from clinics and hospitals (and other institutions). Modeling spatial patterns of diffusion presents great methodological and statistical challenges (Rosero-Bixby and Casterline 1993). Since information can spread in a nonlinear fashion and population migration is an alternative means for the geographic spread of social change, it would be necessary to assemble data over very large areas for long time periods. Although the appropriate models of spatial change and diffusion have not yet become part of normal science in demography, there is a high likelihood of payoff from the exploration of the emerging methods of spatial statistics from other disciplines.

As more evidence of emerging fertility transitions is reported from Africa and South Asia, public interest in “population problems” and demographic science is likely to decline. It is tempting to claim that the “crisis” of rapid population growth will persist because of population momentum and that the speed of the transition is still of critical concern. But many other “crises” are competing for attention on the public agenda, and the news of progress in reducing population growth means that attention will shift to other issues.

Even as public attention shifts away from studies of fertility transitions, it is important for demographers to continue with the incomplete

work on our empirical and theoretical studies of fertility decline. The extraordinary efforts in data collection and the development of new methods of measurement over the last generation have brought impressive results. But scientific progress comes slowly, and promising theoretical syntheses are always subject to debate and repeated empirical studies before their acceptance. My guess is that there will be a widely accepted theory of fertility transition before the world reaches zero population growth, but that it will be a close race. We are too close to both goals to allow any slackening of effort.

## Notes

1 Coale (1973: 57) observes that the origin of the European marriage system in the Middle Ages—the shift away from universal and early marriage—could be labeled the Malthusian transition and that the declines in marital fertility in Europe, beginning in the 1870s, could be labeled the neo-Malthusian transition.

2 Other family planning experiments have been conducted in Bangladesh (Phillips et al. 1982), Egypt (Kelley et al. 1982; Sycos et al. 1988), and Ghana (Binka et al. 1995).

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