

On the Quantum and Tempo of Fertility

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Conclusion

For half a century demographers have known that standard measures of period fertility, such as the widely used total fertility rate, are distorted by changes in the timing of childbearing. The fertility rates we are accustomed to using frequently give an inaccurate indication of the level of completed fertility implicit in current reproductive behavior because numbers and rates of births are depressed during years in which women delay childbearing and inflated in years when childbearing is accelerated. Ryder has argued persuasively that the tempo distortion inherent in the conventional period fertility measures is a serious problem that deserves more attention. In practice, however, most uses of the total fertility rate effectively ignore the problem because there has been no generally accepted method for solving it.

The method proposed here has been shown both by theoretical argument and by empirical example to be an effective solution to the problem of adjusting total fertility rates for distortions attributable to changes in the tempo of childbearing. This approach is feasible, of course, only by maintaining certain assumptions about patterns of fertility change, and there will always be particular circumstances, such as the disruptions of World War II, in which these assumptions break down. No methodology can avoid the necessity for intelligent application. The essential assumption of the method proposed here is that period effects, rather than cohort effects, are the primary force in fertility change, an assumption supported by past research.

In some circumstances, of course, the conventional, unadjusted TFR will be the measure of choice despite tempo effects. If we are concerned with changes in numbers of births and the implications for future age distribution, for example, no tempo adjustment is called for. For most purposes, however, we are interested in the quantum component of the total fertility rate because it provides a better indication of the level of completed fertility implied by current fertility behavior, and hence a better answer to the question of how many births women will have if current childbearing behavior continues into the future.⁸

We have seen that tempo distortions are substantial and prolonged in both the United States and Taiwan. In general, tempo distortions exist as long as the timing of childbearing is changing. The issue of whether and to what extent fertility is depressed by tempo effects is a crucial one in many other countries. For example, by the mid-1990s the TFR in virtually every developed country had dropped below the replacement level of 2.1 births per woman and in some cases even below 1.5 (e.g., in Italy, Spain, and Germany). If such low levels of fertility are maintained, they will eventually lead to declining population size and extreme population aging. Declining population size would be salutary from some points of view, but rapid population aging is likely to pose profound social and economic problems. By extrapolating current low levels of fertility into the future, analysts often unwittingly ignore the fact that these rates are temporarily depressed by a rising age at childbearing. Eventually, the age at childbearing will stop rising and the removal of this fertility-depressing effect might well result in a rise in the TFR, as in fact happened in the United States in the late 1980s.

Our analysis shows that concern over below-replacement fertility in the United States in the past has been largely misplaced. The appearance of below-replacement fertility throughout much of the 1970s and 1980s was largely due to an increasing age at

childbearing. Adjusting for the distortion induced by this change shows that the underlying level of fertility was in fact essentially constant at close to two children per woman throughout this period.

The new tool provided here affords analysts a better measure of women's true propensity to bear children in various countries. The distorting effects of a changing tempo of childbearing on fertility measures are too important and widespread to continue to ignore them in assessments of fertility behavior and its implications for future population growth. Tempo-adjusted total fertility rates should be added to the existing set of fertility measures used to assess fertility trends. In many if not all circumstances they will do a better job of doing what conventional total fertility rates do poorly in the presence of tempo changes: reveal the level of completed fertility implied by current childbearing behavior.

To be sure, practical matters need to be addressed before such measures can be widely produced. Substantial tempo effects may exist in populations with high as well as low fertility, but the majority of the world's population is not covered by vital registration systems that generate the detailed data needed to compute the new measures. The fertility surveys from which statistics for developing countries are increasingly derived do not involve sufficiently large samples to be an effective surrogate. It is perhaps possible to develop census-based methods to assess tempo effects.

Surprisingly, data availability is a problem for some developed countries as well. In much of Western Europe, in particular, vital registration systems collect information on birth order within marriage, rather than for women. This was perhaps appropriate when most births occurred within marriage, but the large rise in births outside of marriage that began in a number of developed countries during the 1970s has rendered it increasingly inappropriate. When births are not firmly anchored to marriages, the woman, not the marriage, is the appropriate entity to which to attribute order of birth. Fortunately, national statistical offices are aware of this issue, and fertility statistics by true birth order are becoming increasingly available. Once fertility rates by true birth order are available, the calculations required to estimate a tempo-adjusted TFR are straightforward, though admittedly more cumbersome than for the conventional TFR.

It might be objected that tempo-adjusted total fertility rates are excessively "hypothetical" to be used as a routine addition to the demographer's repertoire of fertility measures. It is true that the rationale of their calculation involves assumptions about the patterns of fertility change that will never hold exactly, and we do not suggest that conventional total fertility rates (or other measures) be abandoned. There is a good dose of the hypothetical in the conventional total fertility rate, however, and we see the difference as one of degree rather than one of kind. The tempo-adjusted total fertility rate proposed here represents a technical result that can advance understanding of the level and trend of past fertility, and provides a firmer basis for projecting trends in future fertility.

⁸ A statistic that provides a good indication of the average number of births per woman implicit in current childbearing behavior will also be a good indication of future cohort fertility if current childbearing behavior continues into the future. We do not necessarily expect current behavior to continue, however, and the objective is not to predict future completed cohort fertility, but to arrive at a period fertility measure that gives a demonstrably better indication of the level of completed fertility implicit in current behavior.

(Excerpt)

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