Comment: Population Programs and Fertility

Luis Rosero-Bixby

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THIS COMMENT ADDRESSES two key aspects of family planning programs: their rationale and their indirect impact on fertility.

Program rationale

Understanding the rationale and sources of support for population programs is crucial for assessing their impact and chances of survival. One of the most notable features of population agencies and programs is that not long ago—in the 1950s—they were unthinkable. "To govern is to populate" was the unquestioned principle of good government attributed to Juan Bautista Alberdi, the nineteenth-century statesman and philosopher from Argentina. How did governments come to abandon this principle and establish birth control programs (later called euphemistically "family planning" and "reproductive health" programs)? The answer "rapid population growth" or "high demographic density" may seem obvious to demographers but it is not so obvious for politicians, especially considering the opposition to birth control by religious authorities and other powerful interest groups and the nationalist pride associated with large populations.

One may distinguish two rationales behind the adoption and implementation of family planning programs: the macro-level, or Malthusian rationale and the micro-level thinking represented by activism of the kind associated with Margaret Sanger. High-level government officials are more likely to be moved by macro-level consideration of the problems associated with rapid population growth, particularly the drag on economic development and the burden that demographic (that is, capital-widening) investments represent for public services. In turn, those directly involved in the provision of services support family planning because of micro-level concern with the benefits for health and well-being that it brings, especially to women. Economists and men tend to support family planning because of macro considerations, whereas women, health practitioners, and

social workers tend to support it because of its micro effects. I have observed this gender division in focus groups with ordinary people discussing the causes of fertility transition in Costa Rica: men cite socioeconomic considerations, while women explain the adoption of birth control in terms of health, sexuality, their bodies, and the availability of information and services (Rosero-Bixby and Casterline 1995).

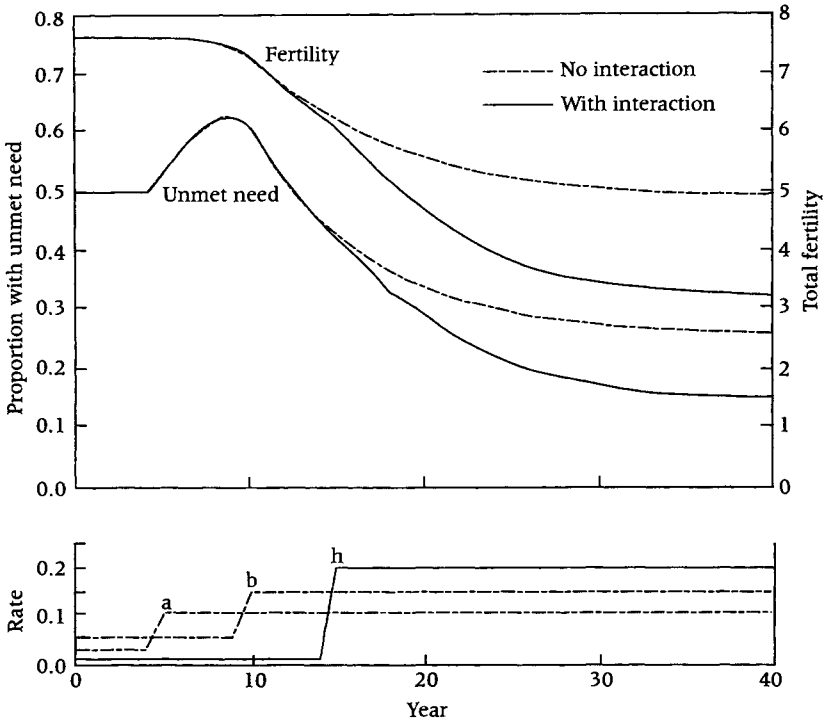
A reason to revisit the matter of the rationale behind family planning programs is the dramatic shift that took place in 1994 at the International Conference on Population and Development, held in Cairo. The Program of Action approved by consensus at this conference moved away from demographic rationales and justified population programs in terms of reproductive health and reproductive rights. Given this shift, we may ask whether the rationale of family planning agencies has implications for their political and public support, their funding, their effectiveness, and their chances of survival. If politicians and taxpayers were willing to support population activities only because they thought these were good investments to promote development and to prevent social unrest, environmental degradation, migration to cities, and the like, then the Cairo shift to a reproductive health rationale might be the beginning of the end of population programs. This shift could also be, however, a clever *aggiornamento* that will increase the chances of survival of these programs in times when social engineering is discredited, the "laissez-faire, laissez-passer" is glorified, and the perception spreads that the population bomb has been defused.

Indirect effects and nonlinearities

The fertility theory most commonly used to frame the debate on program impact is that of Easterlin and the US National Academy of Sciences (Bulatao and Lee 1983). This is the demand–supply paradigm that distinguishes the motivational forces favoring small families—that is, the demand for family planning—from the costs or barriers to contraception as determined by the supply of family planning services and information. Theoretical work on ideational change and social interaction (e.g., Cleland and Wilson 1986; Bongaarts and Watkins 1996) identifies innovation diffusion as a third force driving the fertility decline. This third causal pathway opens the possibility of indirect or multiplicative effects of program impact, which are more difficult to observe and measure, and it may imply nonlinear effects, which are difficult to capture in conventional quantitative analyses.

Figure 1 simulates a fertility transition with a simple mathematical model that helps to clarify the meaning and potential role of the three sets of factors in fertility decline: diffusion, supply of birth control methods, and demand for such methods (Rosero-Bixby and Casterline 1993). The figure shows the evolution over time of the total fertility rate and "unmet

FIGURE 1 Simulation of a fertility transition with and without interaction effects



need" (the proportion of couples who are not using contraception among those motivated to control their fertility). Dashed lines represent outputs from a simulation with no diffusion effects. The difference between dashed and solid lines represents the diffusion effect on fertility transition. The inputs of the model are "rates" of demand (or motivation) for and supply (or costs) of birth control, as well as a rate of ideational diffusion due to interaction. These rates denote the proportion of a population that becomes birth controllers in a year due to the respective factor (details in the original article). The impact of programs is usually taken as working through shifts in the supply, although it can also occur through induced changes in demand and the multiplier effect of diffusion.

The simulation in the figure starts from an equilibrium situation with very low rates of demand, supply, and interaction. Then, it is fueled with increases in demand (point *a* in the chart) in year 5, supply (point *b*) in year 10, and interaction (point *h*) in year 15. In response to the increase in demand in year 5, there is a surge in unmet need, but there is no noticeable effect on fertility because of the low level of supply. When supply increases in year 10, a substantial decline in both unmet need and fertility

starts. This development provides the first lesson for the assessment of program impact. Demand and supply effects are very difficult to separate. In this case one might be tempted to attribute the entire fertility decline that starts in year 10 to the increase in supply that year. In truth, however, such an effect was possible only because there was an increase in motivation 5 years earlier. What one actually has, therefore, is a synergistic or concurrent effect of supply and demand.

In the final stage a substantial increase in the rate of interaction (and, consequently, of spread of information and diffusion of ideas and *mentalités*) is introduced into the simulation in year 15, which results in acceleration of the fertility decline. The difference between the curves with and without interaction suggests a potentially large independent effect of diffusion in both the pace of fertility decline and the post-transition level of equilibrium. In this simulation, diffusion accounts for a reduction in the total fertility rate of almost two births at the new equilibrium level. But, again, in this situation one can argue that this diffusion effect is actually dependent on the earlier demand and supply improvements.

Another feature of this simulation model is that in order to simulate a pretransition equilibrium at high fertility levels, one must also assume that diffusion was nil in the past. In other words, the diffusion hypothesis is not compatible with the coexistence of high fertility and pockets of forerunners with reduced fertility. Why did the birth control movement not spread from the pockets of the upper classes in Latin America that started using contraception in the 1920s and 1930s? The model suggests that the diffusion hypothesis requires additional assumptions of a change in the interaction rate. That change could be, for example, that family planning and sexual matters stopped being taboo topics, people started talking about them, and ideational diffusion took place. It can also be that a critical mass is needed for the innovation to take off. A report explaining the recent drop in crime in New York City (Gladwell 2000) graphically illustrates nonlinear effects with what one could call the "ketchup effect," as stated in the ditty:

> Tomato ketchup in a bottle—
> None will come and then the lot'll.

The point is that family planning programs can be the key factor in opening up taboo areas, or creating a critical mass, which makes possible the diffusion process, and that this kind of nonlinearity is quite difficult to capture in conventional quantitative analyses and regression models.

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