

Comments on the Presentation

Let me discuss the papers in reverse order to their presentation.

James Phillips and coauthors describe an analysis of the social experiment in Navrongo, in Northern Ghana, which started in 1994, covering 48,036 women. About one fourth of this population was offered convenient access to family planning services delivered by a field worker-nurse, another fourth received a culturally designed intervention (Zurugela) which was oriented toward the social network of men in support of family planning, another fourth received both interventions, and the final fourth received neither intervention. The effects of the combined treatment is to reduce birth rates 10 percent among the uneducated women who constitute the bulk of the population, whereas the Zurugela intervention alone contributed to a decrease of 9 percent, but only among the small group of educated women. Phillips emphasizes the need to focus on fertility and not contraceptive use, because they are first poorly reported, and second modern contraception substitutes for traditional birth control practices, such as abstinence, especially as a means for spacing births. But he stresses that the decline in fertility is motivated by birth spacing and not birth limiting, and concludes that the fragile effect of the program on fertility is because the demand for family planning is not yet strong and is not yet accumulating as observed in more developed regions in Latin America and Asia. Increasing the control of birth spacing is not necessarily any less important than increasing birth limiting, because as Phillips knows, papers were written about the initial effects of the Matlab Bangladesh social experiment that raised doubts about the sustainability of the program's impact

on fertility because many couples adopted birth control to space births, but in that case spacing led to limiting family size. I suspect he assigns too much weight to the lack of decline in desired fertility, which I regard as an unreliable variable in a traditional subsistence society. There may also be real welfare gains when traditional practices of abstinence are replaced by contraception, that encourage continuing use of modern birth control and ultimately limiting family size.

In my opinion, this social experiment is the most reliable basis on which to set population policy priorities in sub-Saharan Africa, and to my knowledge it is the only such social experiment in the continent. However, the Navrongo experiment has not to my knowledge been followed up by a comprehensive socioeconomic survey to document secondary consequences of fertility decline on the welfare of women and children. This fortunately occurred with NIH funding in Matlab Bangladesh 19 years after a innovative social experiment in family planning and child and maternal health was initiated in 1977. Population assistance needs to be evaluated in many different African contexts, because the Sahelian area of Navrongo has experienced few of the benefits of development seen in many other parts of Africa. Where the demand for family planning is indeed weak and most fragile, policy makers may decide to concentrate their social program resources on the precursors to the demand for family planning, or in other words, female schooling and preventive maternal and child health. It is also critical that the data collected on such an path-breaking social experiment as Navrongo be deposited in a useable form in a public repository, such as ICPSR at the University of Michigan. Perhaps this has already occurred or could be encouraged.

Baschieri, Cleland, and coauthors consider the causal association between fertility and women's employment as recorded in 18 African DHS, a relatively neglected relationship in development. However, I do not know how to interpret the national, or regional or individual correlation between fertility and female employment as reported in the paper, because as they note there is a problem of potential circularity, and I would add because both variables have a component of choice of women in their families, and both could therefore be affected by many of the same endowments or constraints on families. In other words, this correlation cannot be thought of as causal in either direction, regardless of additional control variables the researcher may include. If they find an independent variable that shocks only one of these two variables, then they might be able to shed some light on the causal effect of the affected variable on the remaining variable. For example, family planning program outreach activity if independently allocated by locality might reduce fertility, as in Navrongo, and not directly affect employment opportunities for women. This might allow them to estimate the causal effect of program-induced variation in fertility on subsequent female employment. Conversely, they might find a local irrigation or industrialization project that enhanced the employment opportunities of women in different regions, and affected female employment, that would possibly impact fertility. As they proceed toward an analysis of individuals, I would also ask them to exclude aggregate variables for the community level employment or fertility, because introducing aggregations of choice variables at the community level is likely to distort the remaining estimates, due to unobservables affecting both individual and local outcomes, as described by Charles Manski in various social science research.

John Casterline's paper is a rich presentation of how African age specific fertility is evolving, as recorded in the DHS. He then turns his attention to the fraction of women wanting no more births by age and parity, and how it has increased in the large majority of African countries between surveys, and then he decomposes total fertility rates into wanted and unwanted components. He reveals many fascinating developments, but I am uncertain how he interprets changes in subjective wantedness of births and desired fertility, and I feel more comfortable if I stay focused on the objective measure of age specific fertility. Caldwell's birth spacing hypothesis receives intriguing support, as it did in Phillip's study of Navrongo. I have the same doubts as in Navrongo that changes in birth spacing may usher in birth limiting behavior. Has Casterline tested the power of "unwantedness" to predict subsequent adoption of family planning, or conversely has he estimated whether regional measures of access to family planning program are associated with women in the future having a smaller fraction of their births unwanted? What is the evidence that family planning programs are effective where the unwanted fraction of a woman's births is greater?

Regardless of how the risk of unwantedness is defined, I hope he will explore how community proxies for access to schooling, child and maternal health, and family planning are associated with the individual variation in actual age specific fertility and the share of these births which he calls unwanted.¹ I would include individual control variables only if they are independent and

¹ Since Louis Henry conditioned fertility rates on women stratified by parity, and used this parity progression ratio as a indicator of onset of family planning in Geneva, demographers have conditioned fertility on parity. The problem with this formulation is that parity is itself a choice and conditioning on a choice complicates somewhat the interpretation of this descriptive association as a causal relationship. Caldwell is challenging this procedure as inappropriate in

not choice variables, such as age, birthplace, and the woman's schooling, and not control for lifecycle choices such as age at marriage, age at first birth, employment, or prior fertility.

Finally, I would ask Casterline to construct evidence of external validity over time between cycles of the DHS, and show whether unwantedness in one period predicts subsequent fertility rate declines, but by a different magnitude with or without access to family planning services.

This would help me validate this forecasting tool and extract from it more insights into the effectiveness of policy interventions.

Finally, The paper by John Bongaarts decomposes fertility and mortality trends in Africa by country to frame his discussion of policy options to slow population growth in the continent. I will focus my discussion his decomposition of fertility into wanted and unwanted fertility, which he then uses to simulate the effects of how family planning activities might reduce some fraction of unwanted childbearing. But rather than arbitrarily attribute some share of unwanted births to the lack of accessible family planning services and supplies, I would urge him to explain the changing levels of wanted and unwanted fertility, as with Casterline, by the country specific access to family planning services (not adoption of contraception). Assuming that this access of family planning is independent of demand for fertility and demand for birth control, changes in fertility explained by changes in access to family planning services might begin to capture the contribution of policy to the pace of the wanted and unwanted fertility transition. This assumption that local program access is independent of demands for fertility and family planning is probably invalid, and therefore one needs to conduct social experiments in the form of

the African context.

Navrango and Matlab in order to evaluate local health and family planning. In my opinion, analysis of the DHS at the individual level of the woman is more likely to shed light on the determinants of wanted and unwanted fertility than will analysis at the aggregate level of the country, or even region of the country, as Cleland has reported. Most important, a consensus is needed on what causal framework is generating the variation in fertility outcomes, and what is embodied in the errors in both explanatory and dependent variables. Then it might be possible to estimate parallel relationships at the individual, cluster, region, and national level, and infer how independent variation in local family planning, reproductive health, child health, and schooling policies are affecting fertility outcomes in sub-Saharan Africa.