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On the End of the Population Explosion

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ABSTRACT

A set of recently released projections of the world population assumes a somewhat more rapid decline of fertility in the developing countries than has been anticipated by other forecasters, such as the United Nations. The paper examines the implications of these projections as to population size and growth rates at or around the year 2000, the nature of the arguments underlying the assumptions on fertility behavior during the coming decades, and the propositions concerning policy implications advanced by the authors of the projections. The methodology of analyzing the determinants of recent fertility declines is challenged as inappropriate for establishing causality. It is concluded that the expectation of a generalized and precipitous fertility decline in the developing world is unsubstantiated, as is the claim that family planning programs provide a ready policy tool for triggering and sustaining such a decline.

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In an age of national planning bureaus, world plans of action, and global targets, predicting future population is apt to be a thriving industry. Indeed, population projections have proliferated in the last decade or two, well beyond the degree that would be reasonably explained by ordinary human curiosity, increased scientific ability to fathom the future, or the requirements of old-fashioned social policymaking--an activity that concerns itself more with the right rules of the game that ought to govern human affairs than with particular aggregate outcomes, such as population size, that result from play according to those rules. The interested customer nowadays can choose among an impressive variety of population forecasts, national, regional, and global, and the number of such forecasts seems to increase from year to year.

It would not be surprising if the very proliferation of alternative population futures--available off the shelf in any shape and color, as it were--had by now eroded the credit accorded to any particular projection and, to a degree, devalued interest even in the genre itself. After all, no matter how unexpected the future course of events may turn out to be, any small gathering of forecasters can guarantee among their numbers a reasonably correct predictor of population size at some future date simply by making sure that their forecasts are judiciously spread over the entire range of feasible outcomes.

Yet, judging by all evidence, the public's fascination with population projections and the policymakers' demand for them remain unabated. Perhaps multiplicity of choice, at least insofar as the public is concerned, is effectively counteracted by selectivity of perception. Owing to the ministrations of the communications media, certain visions of the demographic future tend to capture disproportionate attention and, at any given time, tend to dominate public discussion of population issues. Unhappily, such selectivity appears to

be governed more by the search for novelty than by the solidity of the arguments on which particular projections rest. Since interpretations of recent demographic experience and their use for tracing expected future trends seldom receive the careful critical scrutiny they deserve, the public's trust in the validity of those projections that reach the limelight may be quite out of proportion to their scientific standing. The problem acquires an added dimension when interpretation and prediction in turn are invoked to support particular approaches to population policy.

A new entry in the forecasting sweepstakes by Donald J. Bogue and Amy Ong Tsui[1] has this broad ambition, claiming to trace the future course of a transition to zero world population growth, interpret its causes, and prescribe policy. Its publication offers an opportunity to take a close look at a set of population projections clearly designed to capture the widest attention; to examine the quality of reasoning supporting the numerical results presented; and to discuss the validity of the policy conclusions they are presumed to imply. The views of Bogue and Tsui merit special note on several scores. Their work has already elicited unusually strong amplification in the popular media, echoes of which are likely to reverberate for some time to come in public discussions of population trends and in considerations of needed population policy responses. As to the authors' professional credentials, Bogue and Tsui are, respectively, Director and Assistant Director of the Community and Family Study Center, a well-known research and training organization at the University of Chicago. Professor Bogue, an eminent demographer, is also the author of an earlier set of population forecasts that in the mid-1960s was given wide currency. As the introduction by the publisher, the Population Reference Bureau, to the Tsui-Bogue study points out: "Dr. Bogue was one of the first demographers to predict 'the end of the population explosion' in

an article published under that title in the journal The Public Interest, Spring 1967." Return by an expert to an earlier research theme with the benefit of hindsight and new experience should provide added depth of vision to his updated analysis, hence should enhance the interest of the reader in the findings.

But it is their findings, the nature of the supporting arguments, and their policy conclusions that single out the work of Tsui and Bogue for more than routine attention. First, Tsui and Bogue present their results as being sharply at variance with results derived from the prevailing conventional wisdom as to the expected course of growth rates, fertility rates, and resulting population totals for the rest of the century, particularly for the developing world. Their revision of the conventional wisdom is toward a more optimistic vision of the future, purportedly "contrary to demographic predictions and official population forecasts," or, in the more colorful language of the Population Reference Bureau's press release that accompanied publication of the Tsui-Bogue study, contrary to "population explosion watchers" who "just a few years ago . . . were predicting doom and gloom for 1984 and beyond."

Secondly, Tsui and Bogue present a forceful interpretation of the causal mechanism underlying the fertility declines they anticipate. They claim that their analysis "leads to the prediction that the future course of world fertility may be determined in large part by the size, quality, and spread of the family planning campaign."

Thirdly, based on that interpretation, Tsui and Bogue spell out policy conclusions that seem to provide a clear-cut guide for action in a policy field long noted for hesitancy and hedging.

> Our optimistic prediction is premised upon a big "IF"--if family planning continues. It remains imperative that all of the developed

> nations of the world continue their contribution to this program undiminished and that their professional resources be dedicated to collaborating with the professional resources of the developing nations in a team effort to make the demographic transition take place as quickly as possible with the least possible economic and social disruption.[2]

The comments that follow aim briefly to examine Tsui and Bogue's forecasts of demographic trends, their interpretation of the causes of these trends, and the policy implications they derive from them. Besides the intrinsic interest of these topics, the discussion by Bogue and Tsui merits special attention because their writing exemplifies some problems in methods and interpretations that are also prevalent elsewhere in the contemporary population literature, if generally in a less-exposed and less controversial fashion.

Demographic Forecasts

How substantial is the revision of prospective world demographic trends proposed by Tsui and Bogue? To what extent were earlier views on expected demographic trends for the rest of the century overly pessimistic, or just plain wrong? How rapidly are fertility trends approaching a level that would result in zero world population growth? An answer to such questions may be sought by a brief comparative look at various key demographic indicators and their evolution and predicted magnitudes for the rest of the century, according to alternative population projections, both current and from the recent past. Among the convenient, yet important measures that offer themselves for simple comparisons are total population size, rates of population growth, and onset of fertility decline.

Population Size. In the plethora of world population projections available to the general public, for some time now the projections prepared by the United Nations have been the best known and most influential.[3] In the

mid-1960s, UN orthodoxy in the matter of future population was a set of calculations reflecting an assessment carried out in 1963.[4] Twice revised since, the most current form of these projections is as assessed in 1973.[5] It should be of interest to compare the medium versions of UN 1963 and 1973 projections with the new Bogue-Tsui medium forecasts, although, in so doing it should be kept in mind that the latter set reflects some four years of observations that were not available to the UN experts in 1973. For further comparisons, the UN's 1973 "low" projections are also of some interest. As for an earlier view that contrasted with the UN's in the 1960s, in the present context the earlier--1966--projections by Bogue (referred to above) are the logical choice.[6] The following figures are projected populations for the year 2000, in millions:

Region	UN 1963 (medium)	Bogue 1966	UN 1973 (medium)	UN 1973 (low)	Bogue-Tsui 1978 (medium)
Africa	768	473	814	747	782
Asia (excl. USSR)	3,458	2,524	3,637	3,390	3,411
Latin America	638	388	620	569	552
North America	354	284	296	279	274
Europe	527	525	540	519	537
Oceania	32	26	33	30	28
USSR	353	305	315	305	306
World total	6,130	4,527	6,254	5,840	5,883

The comparisons afforded by the five columns of figures are highly instructive and largely speak for themselves. A few comments may be useful, however. If the most influential projections of the 1960s--those shown in

the first column--which a decade ago dominated much of the discussion of the population problem in the developing world, were overly "gloomy," these gloomy forecasts receive a remarkable if belated confirmation in Bogue-Tsui's vintage-1978 outlook. Indeed, the figures in the first and fifth columns are virtually identical for Africa and Asia, although in the 1978 version substantially smaller for Latin America. With the end of the century barely 22 years away, Bogue and Tsui now see a total world population smaller by only 1/4 billion--that is, 4 percent--than what the United Nations forecasted from a 37-year distance 15 years ago. More than half even of that modest difference is accounted for by Bogue and Tsui's lower estimates, in comparison to the earlier UN forecasts, for North America (80 million less) and the USSR (47 million less).

The differences are greater when Bogue and Tsui '78 and the UN '73 projection are compared, since between 1963 and 1973 the UN adjusted its projection upward in the aggregate by about 2 percent. They amount to some 371 million as to world total, a difference of roughly 6 percent, almost all of which is concentrated in the developing countries. A good description of Bogue and Tsui's '78 (medium) forecast for 2000 is that it is an endorsement of the UN's '73 low variant projection (shown in the fourth column), both in its year 2000 estimate of the world population total of 5.84 billion and in its geographic detail. While that agreement between "medium" and "low" in two sets of projections does amount to a notable difference in outlook, quantitatively it is dwarfed by the differences between Bogue-Tsu '78 and Bogue '66 and, per force, between either of the UN projections and Bogue's '66 projection. The drastic contrast, in effect, is not between Bogue-Tsui '78 and more conservative views on world population prospects put out by the United Nations and others for 2000, but between Bogue's current views and Bogue's earlier views on

those prospects. In fact, it appears that the world total projected by Bogue for 2000 twelve years ago will be surpassed by 1982, about three years from now. Between that date and 2000, Bogue and Tsui now predict an absolute growth of almost 1.4 billion, no trifling revision.[7]

Rates of Population Growth. Not surprisingly, a very similar picture emerges if one compares projected growth rates. In his 1967 article on the end of the population explosion cited above, Bogue predicted that

> From 1965 onward . . . the rate of world population growth may be expected to decline with each passing year. The rate of growth will slacken at such a pace that it will be zero or near zero at about the year 2000. (p. 19)

This prediction is in sharp contrast to Bogue and Tsui's 1978 views on growth rates around the turn of the century. Such rates are given (or can be calculated from the projections) for the five-year period 1995-2000--a close enough approximation of century's end. Bogue and Tsui forecast average annual growth rates during the quinquennium immediately preceding 2000 as 2.51 percent for Africa, 1.92 percent for Latin America, and 1.36 for less developed Asia.[8] These rates are lower than either the UN's '63 or '73 medium estimates[9] but, to say the least, not what one would call zero or near zero. In fact these continental rates neatly bracket what Tsui and Bogue colorfully, if somewhat mystifyingly, call "the 'red danger' circle of explosive population growth--2.1 percent or more annually."[10] Thus, in sharp revision of Bogue '66, what Tsui and Bogue are now saying about growth rates around 2000 is what has been quintessential conventional wisdom for the last 20 years or so: that at the end of the century the "population explosion" will be still in full swing as far as the developing world is concerned.

Onset of Fertility Decline. But perhaps Bogue, although apparently grossly off the mark in 1966 as to quantitative estimates on absolute population size and rates of growth for the rest of the century, correctly foresaw a qualitative change that others failed to see, namely, a generalized decline in fertility in the developing countries well before the century's end? Not so. Population forecasts that assume sustained high fertility have been long considered as outside the range of uncertainty within which reasonable world population forecasts are likely to be located. Thus, for example, when the United Nations published its 1963 medium estimate of 6.1 billion as the world total for 2000, it also published an illustrative calculation indicating that if fertility remained constant, world population in 2000 would exceed 7.5 billion.[11] The difference between that figure and the UN medium estimate, a difference of 1.4 billion, was entirely due to projected fertility declines. Neither was it assumed that such declines would tend to start only toward the century's end. Quite the contrary, not only have the UN (and many other) projections on record anticipated an early and general decline of world birth rates--in effect identifying only the quantitative question of the tempo of the decline, rather than its existence as the issue to be debated--but in most instances, such declines have been considered to be already in process, that is in part a matter of historical record, as indeed they were according to common demographic knowledge. Thus, when the United Nations made its 1963 medium projections, it was assumed that out of 23 separately identified world regions 17 had their highest birth rate at the beginning of the projection period--that is, in 1960-65.[12] When the '73 UN projections were prepared, the UN published not only future estimates but also comparable time series of the birth rates back to 1950. It estimated that among the same 23 world regions the peak birth rate was reached in not less than 16 regions in 1950-55, and in 3 in

1955-60. In 3 of the remaining 4 regions--in Western Europe, Northern Europe, and Western Africa--the peak was also seen as a matter of history, having occurred in 1960-65. Only in one region--Southern Africa--was the peak birth rate assumed to be still a future event.[13] Although the declines envisaged for developing regions in the 1960s and 1970s were modest, and although the UN estimates did not command complete and unqualified acceptance among demographers, it is clear that the 1978 claims advanced by Tsui and Bogue according to which "birth rates in the LDCs have begun to decline and may be declining more universally . . . than had been anticipated," or that "the decline in birth rates has come earlier than predicted just a few years ago," or that "widespread fertility reduction in LDCs has only just been acknowledged as a real phenomenon" are based on a rather peculiar reading of the informed demographic literature bearing on this subject.

In sum, the most notable numerical aspect of the demographic projections presented in the Bogue-Tsui paper turns out to be that, Bogue's earlier views to the contrary, he and Tsui now endorse what has been in the last 15 years the standard "gloomy" demographic forecast for the rest of the century, or something very near to it. In line with the practice of other hopeful forecasters, they have now safely transferred the end of the population explosion to the cares of the 21st century. There is a certain news value in this for the demographic community in which ability and willingness to reexamine and revise one's earlier erroneous views has long been a prerequisite for membership, or at least a respected prerogative. Such academic niceties, however, are hardly the stuff press releases are made of. As so often before, the desire to make demographic news for mass consumption when none really exists, or when what news there is has no shock value, is apt only to mislead the uninformed public. Its expectations having been nurtured on the strained imagery of the population explosion, the public is now suddenly told--in an onslaught of confused

metaphors--that "the population bomb is rapidly becoming a dud." Ironically, the announcement is somehow contrived at the very occasion when the only noted demographer heretofore on public record with such a view, Donald Bogue, in effect has just recanted.[14]

Recent and Prospective Fertility Declines. It should be noted, however, that there are other demographic findings in the Tsui-Bogue analysis that deserve less jaundiced comment. In a detailed set of country and regional estimates of actual fertility declines in the most recent period, notably between 1968 and 1975, Tsui and Bogue find significant declines in most developing countries and in all large regional aggregates. Thus, they find that in terms of total fertility rates the decline during that seven-year period was 5.5 percent in Africa, 15.8 percent in Asia (excluding Japan and the USSR), and 11.2 percent in Latin America. The declines for the individual countries that underlie those estimates in most instances are not only appreciably greater than was forecast earlier, but also greater than estimated by other analysts.[15] Ascertaining the existence of such declines and their exact magnitudes is a task of considerable significance. Unfortunately, for most developing countries the available data base is extremely poor for reliable estimates of fertility levels at a given point in time, let alone for pinpointing the size of relatively small shifts over time. In the absence of access to the unpublished raw statistics that underlie the calculations by Tsui and Bogue, it is not possible to judge how they arrived at estimates that other analysts were unable to make--how, for example, they discerned fertility declines in as many as 43 African countries (countries characterized by extremely poor statistical systems) or in such key Asian countries as Bangladesh or Pakistan (countries concerning which numerous analysts have found no basis for such a

finding). In other instances the magnitude of the estimates is suspect: what is the statistical basis, for example, for their claim that Indonesian fertility has declined by 29 percent between 1968 and 1975? Comparing Tsui and Bogue's results with those obtained by other analysts, one gets the impression that from among the alternative estimates that various available techniques yield, Tsui and Bogue have had a systematic preference for selecting those that suggested the most "optimistic" picture, that is, the largest fertility decline.

Whether or not such a bias is present, Tsui and Bogue themselves emphasize that the data with which they deal are crude, and that the facts they cite are "apparent facts" rather than certainties. In many instances, more nearly satisfactory assessment of fertility change prior to 1975 will be possible only after tabulations from the 1980 round of censuses become available. In the meantime, or at least pending a stronger convergence of the various country estimates made by independent analysts, Tsui and Bogue's quantitative assessment of recent fertility declines in the developing world must be viewed with a good degree of skepticism. That birth rates have been declining in countries comprising the large majority of the world population is a fact established beyond reasonable doubt. In contrast, that the declines in key developing countries--e.g., in China, Indonesia, and Egypt--were as large or even nearly as large as Tsui and Bogue claim is anything but established scientific truth. The same applies to the notion that key South Asian countries--India, Pakistan, Bangladesh--may have entered a stage of accelerating fertility decline, or that the majority of African countries have experienced any appreciable recent fertility decrease.

The same need for caution applies, but with even greater force, to Tsui and Bogue's estimates of future fertility trends--as it would, of course, to

anybody else's prediction on that matter. Whether, for instance, total fertility will be 1.9 in China and 2.569 in Egypt in the year 2000, as Tsui and Bogue "estimate," or some other figures, higher or lower, only the future can tell. Respect for and interest in such forecasts necessarily depends not on the plausibility of the forecasts themselves but rather on the soundness of the theory on which they rest. The theory, in turn, is apt to reflect the theorist's interpretation of observed events. We now turn to a brief examination of the position put forth by Tsui and Bogue concerning these matters.

Causes of Fertility Decline

The central thesis of Tsui and Bogue is that the prime explanation of already observed (1968-1975) fertility declines and, by inference, the prime mover of future declines is family planning effort. A good deal of lofty scholarly discussion is presented to support this assertion, but the main prop is multiple regression analysis designed to elucidate the causes of the 1968-1975 fertility change in developing countries. For the sake of argument it may be worthwhile to take this analysis, if only provisionally, at face value. Tsui and Bogue have assembled a number of socioeconomic indicators for individual countries of the developing world--indicators representing measurable conditions in 1968 that are commonly presumed to be among the most important in affecting fertility behavior--and, in addition, an index representing "family planning effort" around 1972.[16] Using these indexes plus the 1968 level of total fertility rate as independent variables, Tsui and Bogue seek an explanation for the 1975 level of fertility. They find that 75.8 percent of the variance of fertility in 1975 is explained by the 1968 fertility level, 5.5 percent by "socioeconomic factors," 4.7 percent by "family planning effort," and 14 percent is "unexplained."[17] Whatever factors the 1968 fertility level reflects, they can include only marginally organized family planning,

whose effects, even according to Tsui and Bogue, came largely after 1968. Thus, readers are offered a factor, "family planning effort," explaining 4.7 percent of the total variance, yet on this basis are asked to accept the proposition that the key explanation of the recent fertility declines is "family planning effort" and that future fertility declines, for the rest of the century and beyond, will be governed by that factor.

But, irrespective of the particular numerical strength claimed for the explanatory power of program effort, the analytical construct employed by Tsui and Bogue to test the effectiveness of such efforts is based on questionable assumptions. The validity of a causal interpretation of numerical findings in a regression analysis is wholly dependent on the validity of the initial specification of the relationship between the variables in question. Unless that specification is, or can be, adequately defended, the numerical results--notably proportions of the variance "explained"--are artifacts of no particular interest. This applies equally to tests of "statistical significance" as presumed indicators of the reliability of numerical findings in general. Such tests are relevant to judging the stability of any stipulated relationship that can be expected in repeated observations, but they have no bearing whatsoever on the level of confidence that a relationship deserves qua causal relationship.

These elementary propositions to the contrary, Tsui and Bogue waste no time discussing the validity of the relationship posited in their model but proceed directly to computing the regressions and interpreting the results. This is acceptable practice if the computation in question rests on well-established theory or if the direction of the causal relationships incorporated in the calculations is sufficiently evident without further argument. To give a simple illustration from economic analysis, in a sample of countries as units, the relationship of the ratio of imports to domestic product (as a

dependent variable) to, say, income per capita and population size (as independent variables) can be profitably studied without elaborate prior defense of the specified direction of causality: the exercise of spelling out the requisite supporting theory can be confidently left to the informed reader.

Arguably, the relationship between aggregate indexes of development status and fertility dynamics in the contemporary developing world--part of the model investigated by Tsui and Bogue--falls into the same category. Indeed, although linkages such as those between proportion urban or young females enrolled in school on the one hand and level of fertility on the other are patently crude and opaque, there exists a more or less satisfactory theory that explicates the deeper structure of the posited linkages: a theory that explains what, say, "proportion urban" is a "proxy" for. The existence of such a theory lends a degree of interest to numerical findings of a regression analysis in which variables representing socioeconomic characteristics are entered as "independent" variables, while fertility is entered as the "dependent" variable.[18]

Emphatically, the same proposition does not hold with respect to an index representing family planning effort. There, the logical independence of the stipulated independent variable--program effort--from the conditions characterizing any particular country with respect to the dependent variable--fertility behavior--cannot be taken for granted. Putting forth an argument that would adequately establish such independence is a crucial first step in the analysis: without it, calculating regression coefficients is quite pointless or, worse, positively misleading.

Was program effort--as measured in the countries that constitute Tsui and Bogue's sample--independent from the prior state of the conditions that determine fertility, or was the effort, at least in part, an effect of those very conditions? The issue, it should be clearly understood, is not the obvious

partial dependence of measured program effort on the other independent variables, that is, on the "development indicators" entered in the analysis. That problem can be handled by sophisticated multivariate techniques. The problem, instead, is that to a significant degree program effort (as measured in an observed historical sample) may be a reflection of underlying fertility determinants not grasped by the available socioeconomic indicators. If so, program effort becomes as much an explicand as is fertility itself, hence the validity of program effort as an independent explanatory variable is lost. This uncomfortable but all too evident possibility Bogue and Tsui failed to consider.

While the present discussion is not the place to remedy that omission, some comments about the matter may be advanced here. They are offered primarily as amplification of the preceding critical comments on Tsui and Bogue's methodological approach rather than as a systematic discussion of the complex issues involved. Leaving aside the formal framework of the regression analysis, what is a common sense interpretation of the role of family planning effort in explaining the fertility declines discussed by Tsui and Bogue?

As a matter of conceptual tidiness, the frequent popular reference to family planning effort as an explanation of fertility change deserves brief comment. If such efforts were understood as, or were measured by, birth control activity of individuals or individual couples, of course changes in "family planning effort" would more or less fully explain any change in fertility.[19] But such an "explanation" is a mere tautology—or more accurately, an explanation in the accounting sense only. It is an "explanation" of about the same order as that barefoot walking is eliminated to the extent that people put on shoes upon rising and wear them until they go to bed. This trivial if unexceptionable invoking of family planning as a "cause" of fertility decline is, of course, common, not only in journalistic practice but also in profes-

sional discussions relating to fertility policy. Clearly, however, this is not the sense in which Tsui and Bogue use the term "family planning effort." They mean organized program effort, as a presumed precondition for individual birth control practice.

Within "organized program effort," as a matter of further classification, it may be useful to make a distinction between two types of programs, even though in particular cases the differences often will be blurred. One type of program effort may be defined with reference to India 1976. It should be obvious to any reasonably observant witness to twentieth-century history that a well-entrenched government, in command of an effective administrative and technical apparatus, with the requisite political will, and in possession of appropriate ideological justifications, can accomplish, at least for brief periods of time, just about anything that, so to speak, is within the bounds of physics. The contemporary history of forced migrations is poorly explained by reference to the "means of transportation," or to "cognitive preparation" offered by the governments that induced them. Similarly, no one would want to explain the spectacular ups and downs of recent Indian family planning program performance in sterilization (from an almost instantaneous rise to the million-per-month level, to a sudden fall to a small fraction of that figure) by looking for concomitant explanatory changes in "development indicators"--say, literacy, proportion urban, or percent of women in the labor force. Obviously, family planning program effort in this sense can be made to "work" just about anywhere, regardless of the level of "development."

Equally clearly, "program effort" in the style of India 1976 is not what Tsui and Bogue have in mind. What they mean is family planning program effort in the sense that the term has been commonly defined: organized efforts to provide family planning information and services plus, if needed, encouragement

and legitimation of low-fertility aspirations and norms in a manner that is nevertheless respectful of the existing needs and values of the persons to whom the program is addressed. In fact, they assume that demand for these services already exists everywhere, or is readily elicited: sufficiently so to assure rapid transition to low fertility wherever services are offered with due "sincerity." But in making that assumption, Bogue and Tsui take generous liberties with the reading of the available evidence. The general pattern of demand for birth control that has emerged in the developing countries appears to find quite ready explanation in the pattern of socioeconomic, cultural, and institutional changes that have taken place in the decades since World War II. Tsui and Bogue complain that socioeconomic change "between 1968 and 1975" was less than could have been "hoped" for. The relevance of their hopes is not entirely clear, nor are the reasons for limiting attention to social change that took place during a particular seven-year period. Even on the level of large territorial units and broad aggregate measures used in their analysis, the extraordinary rapidity of the post World War II transformations that developing countries have undergone is quite evident. It is a tempo of change quite without parallel in economic and social history. The notion entertained by Tsui and Bogue that without organized family planning programs the natural course of events would see fertility declining at a snail's pace, replicating early historical precedents in modernization, is utterly fanciful. It is somewhat like expecting the development of transportation in the industrializing countries to trace the path and exhibit the tempo of change that the pioneer countries experienced from the steam locomotive to the jumbo jet.

But perhaps even more unrealistic is the notion, implicit in Tsui and Bogue's analysis, that governmental decisions whether or not to introduce a family planning program and with what vigor and scope--with what "effort

score," as it were--to pursue them, are quasi-autonomous decisions, decisions somehow independent of the socioeconomic, political, and institutional conditions of the countries concerned. Such a voluntaristic notion of how policies are formed and executed is not entirely unreasonable when one's business is advocacy. An essential part of the policymaking process is to find between narrow constraints on public choice the crevices that provide at least some room for maneuver. But to assume complete or even major governmental autonomy in the domain of population policymaking when assessing decisions already on record is contrary to the common sense rules of historical analysis.

Indeed, that program effort scores in the vast majority of cases on record are strongly dependent on the socioeconomic-institutional configuration of the countries in question is quite obvious,[20] even though, once again, one would not expect that dependency to be fully registered by relating program effort scores to any set of aggregate statistical indicators of "development." As demand for birth control has emerged in the more successfully developing countries on a significant scale, it has been catered to by organized family planning programs. But in case after case--from Malaysia to Mauritius, from Taiwan to Trinidad--it can be shown that successful programs followed, rather than led, rapid expansion of practices aimed at limiting fertility--practices that were either home-produced, including postponement of marriage,[21] or supported by services supplied through the private sector. Many of the successful programs were, in short, more a symptom of fertility change than its cause. There is nothing particularly surprising in this: there are countless parallels to this story, both historical and in the contemporary experience of social service programs in all fields.

In contrast, where the conditions are not right, where motivation is not present, programs do not work. In explaining persistent high fertility in such

situations, Tsui and Bogue would point to the non-existence of successful programs--to low "program effort" scores. But again, the causal connection is likely to be the other way: it is virtually impossible to offer and sustain the high-density and high-quality network of birth control services required for a high score on program effort if the population to which the services cater does not want them. The reasons for this assertion--having to do with organization, motivation, politics, and economics--are too numerous to list; but the point is perhaps sufficiently obvious to require no argument. Thus, where there is no demand, one can find no good program effort. In many instances, looking at the period analyzed by Tsui and Bogue, this was not for lack of trying: for instance, in Pakistan, Bangladesh, or in much of rural India. In other instances, there has been not much trying either. But this illustrates another obvious fact: that is a tendency toward congruence--even in autocratic regimes--between what governments are prepared and able to do, and what their population wants and is prepared to support. Tsui and Bogue interpreted the recent record of fertility change in developing countries by recourse to an analytical framework that permitted them simply to bypass these questions. Their results cannot be accepted as a valid analysis of past events; by the same token, they are unsuited for supporting predictions for future fertility change.

Implications for Policy

Leaving aside their lack of grounding in the analysis, the central policy conclusions advanced by Tsui and Bogue at first glance appear unexceptionable. Their ringing endorsement of continuing family planning efforts, their call for international aid and cooperation in support of such efforts, and their disapproval of "economic and social disruption" squarely place them on the side of the angels. But it takes little reflection to realize that, the admirable

sentiments notwithstanding, such advice is virtually empty of useful content. It leaves open and unanswered all the questions that matter: what kind of programs, international cooperation, and social disruption--organized, financed, defined how, by whom, and for whom? The host of complex issues that lurks behind each of these questions cannot be illuminated by the type of international cross-sectional analysis, even were it rigorously executed, on which the arguments by Tsui and Bogue rest. To get closer to answers would require examination of concrete situations in a frame that permits marshalling of historical, socioeconomic, cultural, and institutional characteristics and processes in sufficient detail to put flesh on the skeletal concepts of "family planning," "team effort between recipient and donor," and "social disruption," and thus set the stage for a realistic consideration of alternatives open to policymakers and for an asessment of the costs and benefits of competing choices. A few closing comments will be made here to suggest the direction such efforts might follow and the nature of the findings that might transpire: more to underscore the vacuity of the policy advice tendered by Bogue and Tsui than to offer an alternative analysis or even an agenda for one.

A sound general principle would be to call for movement toward more narrowly confined, hence more in-depth, analyses. Establishing even a rough typology of developmental configurations and proceeding with separate examination of policy issues within each class would seem to be a step in the right direction.[22] Thorough examination of individual country situations in the developing world where fertility has declined recently and, in particular, examination of the effect of family planning programs on such declines; of the influence of international assistance on the programs; and of the relationship between the family planning programs and development in general would offer an even more attractive prospect.

The point may be illustrated by a recent study of the impact of family planning programs in two countries--Colombia and Thailand--that are frequently cited nowadays as illustrations of the remarkable success organized programs are capable of achieving in accelerating or even setting into motion a reduction of fertility.[23] In the present context, special interest is imparted to the study in question by the fact that it was coauthored by Professor Bogue.[24]

Not surprisingly, the added detail permitted by the focus on individual country situations leads not only to insights out of reach to cross-sectional correlation analyses of country data, but also to findings that are qualitatively different. Without endorsing the methodology of the study in question and without claiming to give justice to its findings in a brief comment, some salient results may be worth noting here. Analysis of the pattern of fertility change in territorial subdivisions of Colombia has led the authors of the study to claim that of the exceedingly rapid drop of fertility between 1969 and 1973 in Colombia, "organized family planning activities" were responsible for a modest 21 percent, leaving four-fifths of the decline to be explained by other factors (p. 128). For Thailand, a detailed time series of categories of women by source of contraceptive protection, if any, is revealing as to the circumstances of the onset of the Thai fertility transition. The series covers the period 1964 to 1975 during which fertility declined rapidly. In 1964 no women were protected against conception by the National Program; by 1975, 62 percent of those protected from the risk of childbearing were so protected. But the authors of the study estimate that in 1964 over one-half million women were protected outside the National Program, a figure not exceeded by the number of women protected within the National Program until 1974. According to the estimates presented, by the mid-1960s contraception in Thailand was in rapid increase; yet by the end of the 1960s, the share of the National Program in

total contraceptive protection was "conservatively estimated" as still below 10 percent. In essence, expansion of the program was riding a wave of prior and rapidly expanding private birth control activity, not overtaking it until 1974 or 1975. Even if these findings strongly indicate a dynamic substitution process (public programs replacing private activity), in neither case need they imply that the policy case for setting up and promoting the organized national program was less than strong. At the same time, it is clear that the picture that is deduced from a detailed analysis of these two supposedly signal successes of organized family planning efforts is hardly supportive of the dominant role Tsui and Bogue assign to program effort in governing future fertility declines in the developing world.

Even if organized family planning programs may neither make nor break demographic trends, the growing demand for birth-control services in the economically more dynamic countries means that resources can be rapidly and effectively absorbed in government programs offering the modern means for such control to individuals. Given the multiplicity of objectives governments pursue and the variety of human needs they seek to satisfy, the expansion of public sector birth control services is likely to lag behind what would be desired. Thus Bogue and Tsui's exhortation to developed countries concerning foreign assistance to family planning programs would seem to have a solid basis in the type of situations exemplified by Colombia and Thailand. But the capacity of such countries to absorb assistance has no straightforward translation to the foreign aid imperatives perceived by Bogue and Tsui. Since domestic support in the donor countries for aiding social programs in countries that are developing rapidly is unlikely to be long sustained, the design of such programs should be such that they can survive the gradual decrease and eventual withdrawal of foreign assistance. Thus, even in those economically successful

countries that are now receptive to accepting aid for their population programs, the important policy issues revolve around the right balance between government and private sector roles in providing birth control services and the particular ways foreign assistance can help to organize effective and sustainable service. In other "successful" countries, outside aid in this particular field of activity may be neither needed nor sought, and outside pressure to change that state of affairs may be counterproductive or unhelpful in the development of indigenous capacity to organize the national programs or adopt national policy. In such contexts, an effective outside aid role in population matters may be largely limited to providing better access to foreign experience and analysis and access to foreign opportunities for training indigenous technical and scientific personnel. In any event, a useful recipe on what to do cannot be extracted from cross-national analysis a la Bogue and Tsui.

But perhaps Tsui and Bogue's claim that fertility declines for the rest of the century will be determined in the main by the strength of the family planning effort and their assumptions about the need for foreign assistance are better substantiated in situations in which the obstacles to rapid development are particularly great. China, which looms so large in aggregate world demographic indicators, could be an ideal example, and indeed, is often cited as the most impressive country demonstration of family planning's success. But the example, of course, does not fit well into the frame of Bogue and Tsui's analysis. Clearly, foreign assistance played no role whatever in China's population success story, such as it may be. As to the vigor of China's family planning program, it was inseparably part--indeed, an appendage--of comprehensive, not to mention socially "disruptive," institutional restructuring of Chinese society. Without that institutional transformation, the fertility decline that has occurred could hardly have taken place. This is not just

because the institutions created were necessary for organizing and sustaining effective birth control services, but also, and probably primarily, because the institutional restructuring created the basis for programmatically supported group decisions favoring later marriage and lower fertility, as well as the probably indispensable social and administrative pressure to make such decisions stick.

The other demographic giant, India, provides a much closer example of the conscious development by the government of a family planning program as an autonomous sector in its own right, with foreign assistance in an important supporting role. Unhappily, the 27-year history of that program also illustrates the severe limitations of such an approach. Where family planning did respond to demand, as in the Punjab or Kerala, fertility declined; but in most areas of the country the energizing influence that unsatisfied needs would have exerted on sluggish government efforts was plainly missing. The Indian program's hour of glory, in terms of numbers of "acceptors," came with a vengeance and at a time when tangible foreign influence on the program was at its lowest point: through application of governmental power to generate demand for birth control that was not naturally forthcoming. More significantly, in the context of the present discussion, 1976-1977 was a demonstration that the bottleneck in India is not service capacity--at least not as far as sterilization is concerned--but willing customers for services that can be offered. To interpret fertility trends in the various states of the Indian subcontinent in the manner of Bogue and Tsui's cross-sectional analysis, and to derive analogous policy conclusions from them for the future would represent a triumph of hope over experience.

A country whose experience appears to be more in harmony with the theses put forward by Bogue and Tsui is Indonesia. Indeed, Indonesia is now generally

regarded as the most remarkable illustration of a government program effort that succeeded in appreciably reducing fertility under conditions characterized by low scores on most conventional development indicators. Although it is obvious that such indicators poorly capture even the pervasive presence of at least some significant modernizing factors, such as increasing exposure to external cultural and economic influences, it seems well established that the recent Indonesian fertility decline can be linked to the efforts of the organized family planning program, particularly in Bali and in Eastern Java.[25]

Without doubt, better understanding of the Indonesian experience and application of its lessons to improve further Indonesian efforts to speed up and complete that country's transition to low fertility are matters of the greatest importance. So is, mutatis mutandis, applying the Indonesian lessons in the shaping of population policy in other developing countries. It seems unlikely, however, that such understanding would lead to conclusions that have much in common with the single-minded interpretations and policy prescriptions advocated by Bogue and Tsui. For instance, a key element in the Indonesian picture seems to be the extraordinarily strong leadership commitment to a population control program shown by the governing elite. Clearly, to apply the lessons of the Indonesian experience elsewhere it would be necessary to understand how, for what reasons, and under what circumstances such commitment can emerge. If the explanation were to invoke the existence of exceptionally high population densities and population/resource ratios that are found in Java and Bali, that would not be particularly promising in forecasting the emergence of similar leadership commitment in the foreseeable future, say in Zaire or Venezuela or, for that matter, in most developing countries. In a more practical vein, the policy issue (as seen from the point of view of the international community) then becomes not so much a question of trying to cajole a

reluctant leadership to go beyond paying lip service to the need for "more family planning," but rather a question of how to promote analysis and understanding of population problems in particular situations that are sufficiently responsive to specific country needs to foster energetic local responses--if indeed such responses are called for.

Another, and arguably even more important, factor for explaining the success of the Indonesian program appears to be the ability of the program to rely upon and to operate through an exceptionally strong administrative hierarchy, reaching down to administrative villages and even, in the case of Bali, to smaller hamlet groupings (banjars) that have long served as the centers of mutual aid and cooperative work. If analysis of the Indonesian program identifies this ability as a crucial element in the program, it may well be that the key lesson for its would-be imitators in impoverished rural areas is to strenghthen or, if necessary, create a social and administrative organization capable of playing such a role. It is unlikely that such a task can be executed if centered on, let alone limited to, the programmatic objective of promoting "family planning." Under conditions of rapid population growth and increasing population pressures, family planning would be likely to become a logical and important concern of such an organization, particularly if reinforced from above through moral, political, and financial-technical support. But the development policy that embraces such support is ineptly characterized, in words or deeds, as an agenda for "family planning," and a description of future population trends as dependent on "family planning programs" is considerably short of accurate.

A third crucial issue on which an examination of the Indonesian program success should shed light and which necessarily eludes the type of analysis relied upon by Bogue and Tsui concerns the degree of pressure exercised by the

center upon local units in the pursuit of demographic targets, and the assessment of that pressure against the values of the society in question and against the accepted rules of its political decision-making process. The matter has obvious relevance to the transferability of a national experience to different country situations. Such assessment is also indispensable in judging what kind of "team effort," if any, between indigenous leadership and foreign donors is feasible, acceptable, or desirable, as seen from the differing vantage points of donor and recipient. Without intending to pass judgment on the strategy of the Indonesian program--a task for which the present writer is not qualified--it is reasonably clear that the penchant of many Western commentators, including Bogue and Tsui, to think of or at least refer to the Indonesian birth control campaign as if it were a garden variety family planning program--offering services to those who want them, plus gentle encouragement--exhibits a notable degree of linguistic license.[26]

The comments in the preceding paragraphs are not intended to summarize the policy issues relating to fertility trends in the five countries touched upon. They do not discuss the range of choices governments face in the domain of population policy, the expected payoffs of various programmatic options, and their chances for success. But even such cursory comments should suffice to underscore the utter inappropriateness of deriving from a multi-country, cross-sectional analysis general propositions as to what governments or the international community ought to do to induce more desirable patterns of fertility than those currently prevailing.

This brings us back to the question of expected demographic evolution for the rest of the century and beyond, or, to use the Boguean phrase, to assessing the prospect for "the end of the population explosion." It should be clear from the preceding discussion that the present state of fertility theory

dictates humility and caution in prophesying. The not infrequent need to undertake drastic revisions of one's forecasts--vide the fate of Professor Bogue's look into the demographic future in 1966--sufficiently illustrates the point.

The problem, it should be observed, is compounded by the massive uncertainties about future world trends of general economic and social development, an issue not discussed in this note, because it is outside the narrow demographic scope of the projections we have examined. On the assumption that the severe economic disturbance that began in the early 1970s will prove temporary, and the world economy will soon resume the rapid expansion witnessed by the immediate postwar decades, it is not difficult to envisage a fairly optimistic, if still guarded demographic scenario for the rest of the century. But the validity of that assumption is by no means assured, and indeed, for significant segments of the population of the developing world, is patently tenuous. Although no one can be certain about the nature of the demographic responses that may be elicited by economic hardship--absolute as well as relative--in the developing world, the lessons of history would hardly justify great expectations under conditions of faltering development for the early and smooth transition to low fertility foreseen by Bogue and Tsui. Heroic efforts by governments, involving the exercise of political and administrative muscle, may hold out greater if more ominous programmatic promise, but substantial detachment of fertility trends from their "natural," institutionally consolidated behavioral base would render demographic prediction possibly even more hazardous. Quite literally, fertility forecasts predicting signal programmatic successes become subject to instantaneous revocation upon tomorrow's news headlines.

In any event, our review of the most optimistic current world population forecast shows that the expectation of a generalized and precipitous fertility

decline in the developing world during the rest of the century remains unsubstantiated, as is the claim that family planning programs provide a ready tool for triggering and sustaining such a decline. Considering further that even the highly optimistic extrapolations of present fertility trends underlying that forecast would leave the developing world in a state of rapid demographic expansion around the turn of the century, it is difficult not to conclude also that talk about the end of the population explosion is rather premature.

As to the prospects for the twenty-first century, demographic growth, of course, cannot continue indefinitely. But the belief that achievement of zero population growth can be expected as a natural consequence of increased availability and perfection of birth control methods is naive in the extreme or banks unwisely on sheer good luck. To discourage such belief, it should be enough to recall that replacement-level fertility in the United States was first achieved when population size stood at 125 million. It would be difficult to argue that availability, efficiency, or knowledge about contraception has deteriorated in the United States since 1933 as a consequence of conscious public choice. Whether one takes the short view or the long, the demographic prospects of the developing world remain perplexing, and the need to find policies that would measure up to the implied challenge remains unmet.

NOTES

[1]The projections are presented in two papers, with overlapping contents. One paper, Amy Ong Tsui and Donald J. Bogue, "Declining world fertility: Trends, causes, implications," Population Bulletin 33, no. 4 (Population Reference Bureau, Inc., Washington, D.C. 1978) focuses on discussing fertility and growth trends up to the year 2000. A companion paper, Donald J. Bogue and Amy Ong Tsui, "Zero world population growth," provides population projections in absolute numbers up to and beyond 2000, as well as interpretation that is somewhat at variance with the PRB article, it being much less hedged and cautious as to the causes of the projected trends. Although the latter article is in the public domain (it is repeatedly referred to in the PRB article and apparently has received wide cirulation), it is still unpublished. Thus, citation from that paper will be limited to a few numerical results of the projections. The projections simply spell out the implications of the fertility and growth trends presented in detail in the PRB article, hence presumably are not subject to possible editorial changes or revisions by the authors in future publication. The former of these two articles will be referred to below as "Tsui and Bogue," the latter as "Bogue and Tsui."

[2]Tsui and Bogue. The quotations are from pp. 3, 4, 5, and 6.

[3]The UN's work owes its reputation primarily to its access to and critical use of the best available current population data and the meticulous detail and well-explained articulation of the projections. The UN prepares three sets of estimates, labeled "low," "medium," and "high." The medium estimates aim at presenting what in the jargon of futurology is referred to as a "surprise-free" projection (although that terminology is not used by the UN). In contrast, the high and low estimates bracket the medium by introducing fertility (and, to a much less consequential degree, mortality and migration) assumptions that deviate from what is considered the most likely course over time. Not surprisingly, among users of the UN projections, the medium projections have been always the favorite. Since with the passage of time the available data base shifts--a slice of what used to be future becomes recorded history--and, also, since with accumulating observations on relevant developments the image of what is seen as a surprise-free projection tends to change, projections become gradually out of date. The UN copes with this problem by undertaking frequent revisions. Since the early 1960s, these revisions have been both relatively modest and also largely nonsystematic as to direction. Unless the UN changes its well-established practice of cautious conservatism in assessing the best available evidence, this characterization is also likely to apply to the forthcoming revised set of UN projections expected to be released in early 1979.

[4]United Nations Department of Economic and Social Affairs, World Population Prospects as Assessed in 1963 (New York: United Nations, 1966).

[5]United Nations Department of Economic and Social Affairs, World Population Prospects as Assessed in 1973 (New York: United Nations, 1977).

[6]Donald J. Bogue, "The prospects for world population control," University of Chicago, 1966, mimeographed. This paper is essentially identical to

Bogue's paper, "The end of the population explosion," The Public Interest, No. 7 (Spring 1967), referred to above except that it also includes a table (and brief accompanying text) in which the prediction of zero world population growth by 2000 made in the paper "has been scheduled out" as a set of numerical population estimates 1965-2000 for continents and world regions. These projections were widely available and discussed at that time. See, for example, Milos Macura, "The long-range outlook--Summary of current estimates," in ed. Richard N. Farmer, John D. Long, and George J. Stolnitz, World Population--The View Ahead (Bloomington: Indiana University, Bureau of Business Research, 1968), especially pp. 19-21 and also John D. Durand, Comments on Macura," in the same volume, pp. 43-48.

[7]In the first paper cited in note 6, Bogue hedged his 4.5 billion forecast, suggesting that world population in 2000 will in fact "equal about 5 billion persons" but giving no further numerical specifics for that estimate. The comments on the contrasts between the five sets of projections shown in the text table, however, apply, grosso modo, also for the more moderate Bogue 1966 estimate.

[8]Tsui and Bogue, Table 14 (p. 38). This table also gives comparisons with the 1973 UN estimates. Since the estimate for China is distinctly lower than that for less developed Asia--.74 percent versus 1.36 percent per annum--less developed Asia excluding China registers a growth rate appreciably higher, namely 1.56 percent, than less developed Asia as a whole. Similarly, the growth rate of 1.62 percent per year in 1995-2000 for the developing world as a whole is increased to 1.78 if China is excluded.

[9]But not lower than in the UN's "low" projections. There is numerical agreement between UN '73 "low" and Bogue-Tsui '78 on growth rates in less developed Asia. As to Latin America and Africa, the 1995-2000 annual growth rates are lower in the UN set than in Bogue-Tsui: 2.12 versus 2.51 for Africa, and 1.86 versus 1.92 for Latin America.

[10]Tsui and Bogue, p. 6. Why "red danger" and why 2.1 percent or more is "red danger" (as opposed to, say, 2.0 or 2.2 percent or more) is unexplained by the authors.

[11]United Nations, cited in note 4, pp. 125-126.

[12]United Nations, cited in note 4, Table 7.1, p. 34. The exceptions besides North America and Australia were two African regions, where minor increases of the birth rate were foreseen, plus Melanesia and Southwest Asia. In the latter, the peak birth rate was assumed to occur in 1965-70 at 41.4 per thousand. This contrasted with a rate of 41.2 in 1960-65.

[13]United Nations, cited in note 5, Table 8, p. 20. For full geographic detail giving estimates on the country level, see Table 33, pp. 110-112.

[14]The coverage by the US news media of the Tsui-Bogue article was instantaneous and extensive, at least insofar as that can be judged from an impressionistic check of reports in newspapers and radio and television broadcasts in New York and Washington. The reports seemed to exhibit a combination of correct, if selective, quotes and of misquotes, served up with the

mixture of exaggeration, unwarranted interpretation, and plain misunderstanding so often encountered in journalistic discussions. A few specimens may be worth quoting here as they fairly exhibit an all too common syndrome that serious commentary on population issues has preferred to ignore. While it would be a mistake to attribute high importance to the problem in question, neither is it a matter of indifference in the evolution of the debate on population policy. The brief examples that follow may well forecast the flavor of public beliefs on the "end of the population explosion" and the degree of seriousness accorded to the problem of rapid population growth in public policymaking in the years to come, until, that is, the pendulum swings again and a "population crisis" is rediscovered.

Inauspiciously, the Population Reference Bureau's own press release started out with the erroneous assertion that according to the authors' calculations, "traditionally high fertility rates started crumbling in most developing countries somewhere between 1970 and 1975." In confusing fertility rates and growth rates--admittedly a common penchant of casual commentary--PRB transforms Tsui and Bogue's claim into a truly startling example of fertility decline pessimism. As is pointed out in the text, according to the United Nations (and most demographers), fertility rates in most developing countries "started crumbling" in the 1950s--that is, 15 or 20 years before PRB suggests that Tsui and Bogue saw them as crumbling. PRB goes on to quote--this time correctly--the puzzling statement in the Tsui-Bogue paper (from page 6: the statement is also picked up in the abstract) that "as of the year 2000 . . . most LDCs will be in a phase of fertility decline." This is of course a rather anticlimactic prediction and quite likely a massive understatement. In all probability, by the year 2000 the "phase of fertility decline" in most developing countries will have lasted 40 years or so. But the irony of such inadvertent conservatism was hardly likely to register on the readers of the press release. Indeed, most of them correctly perceived the general intended tone: population news suddenly for the better. Thus Walter Cronkite on the Columbia Broadcasting System's 18 October 1978 evening news telecast commented that "experts have come up with a 'somewhat rosy' or at least not so pessimistic view of the world population explosion." They [the experts] say that "birth control programs . . . may save us all from the mass starvation, world chaos, and even world war that some prophets had predicted for the turn of the century." In a similar "rosy" version, the Associated Press (as quoted at length in the 19 October 1978 Washington Post) brought the news that "according to two sociology professors . . . the world's population time bomb . . . may have been defused." "The key factor behind fertility decline," said the dispatch, "has been family planning movements in developing countries," and it went on to attribute to Tsui and Bogue the proposition that "in 1976 almost $1 billion was provided to developing countries for family planning services by numerous private foundations and national organizations in the developed world" (emphasis added). This latter piece of misinformation is perhaps both a reflection of what the casual reader (including apparently newsmen) expects to read and an illustration of what feeds the public's expectations on what to look for in the news. In fact, the PRB press release simply said that by 1976 "close to a billion dollars was being spent on family planning programs in developing countries annually." Attribution as to the source of these funds was pure adornment, courtesy of the Associated Press. The Tsui-Bogue article itself (p. 25), quoting an International Planned Parenthood Federation survey claimed that in 1976 "$670 million was being spent annually

on family planning program support by LDC governments themselves and another $314 million was provided to developing country programs by the UN, AID, the International Planned Parenthood Federation, and numerous private foundations and national organizations of the developed world" (emphasis added).

Similar "improvements" on the original release cropped up in newspaper columns. Thus, in The New York Post of 23 October 1978 (owing to the long newspaper strike, the only one of New York's daily papers functioning at the time of PRB's press release on the Tsui-Bogue paper), columnist Max Lerner wrote: "It seems the much touted world population pressures were not true trends after all. In developing (Third World) nations the expected birth rate has been scaled down drastically, and the world population projection for the year 2000 has dropped by more than a billion." Thus, having disposed of what even according to Tsui and Bogue is roughly an expected tripling of the population of the developing world in the second half of the twentieth century as "not true trends, after all," Lerner for good measure proceeded to exaggerate the downscaling of the 2000 population estimate by a factor of more than two if the reference is to the UN projections (one of the two comparisons offered by PRB's press release) and by a factor of five if the reference is to the projections of the World Bank, the other comparison cited by PRB. As The Wall Street Journal commented in a thoughtful editorial, "Another Non-Crisis," (24 October 1978) on the Tsui-Bogue article: "it is not pleasant to think that crisismongering has become the necessary adjunct to the making of public policy." The mongering of this latest non-crisis in the media certainly elicits the same sentiment.

[15]The choice by Tsui and Bogue of 1968-75 as the reference period for their discussion of recent demographic changes makes direct comparisons somewhat awkward. A number of excellent discussions are, however, available that cover the period ending in 1975. See especially W. Parker Mauldin, "Patterns of fertility decline in developing countries," Studies in Family Planning 9, no. 4 (April 1978); Robert H. Cassen, "Current trends in population change and their causes," Population and Development Review 4, no. 2 (June 1978); and, for detailed estimates of birth rate changes between 1960 and 1975, World Development Report, 1978, The World Bank, Washington, D.C. (August 1978).

[16]The socioeconomic indexes are per capita gross national product, percent urban, the infant mortality rate, life expectancy at birth, percent of the employed female population working in agriculture, percent literate, and percent of males and females aged 6 to 23 years enrolled in school. The program effort index, borrowed from a study by W. Parker Mauldin and Bernard Berelson ["Conditions of fertility decline in developing countries, 1965-75," Studies in Family Planning 9, no. 5 (May 1978): 89-147] is a concise description of program strength. The index has been constructed as a summary of scores assigned to individual countries evaluated on their performance with respect to 15 programmatic criteria. These cover such matters as governmental population policy, efforts to provide contraceptive services, availability of abortion, program finance, and evaluation efforts. The numerical values of the indexes and their sources are given in Table 7 of Tsui and Bogue (pp. 50-55).

[17]Tsui and Bogue, p. 32. An analogous calculation presented in Bogue and Tsui takes the 1968-75 fertility decline as the dependent variable.

The protean quality of similar multiple regression analyses is illustrated by the fact that in that alternative calculation, a quite different share of the variance--18.3 percent--is claimed as explained by family planning program effort. That would still leave 81.7 percent unexplained or otherwise explained: an equally weak foundation for the massive edifice of conclusions on the efficacy of program effort erected on it. As to the validity of the modeling effort, the comments in the text apply to both specifications of the regression equations employed by Bogue and Tsui.

[18]Anyone familiar with the state of existing fertility theory and with the history of demographic transitions thus far on record will know what to expect to find if--in any large and diverse cross-section of countries--fertility change is regressed on aggregate socioeconomic indicators. Briefly, the broad inverse relationships between "development" and fertility will be statistically confirmed. On the other hand, the predictive power of "development indicators" will fall far short of perfection, hence be of limited value in applications to any particular country: the crudeness of aggregate socioeconomic measures and their remoteness from the level at which behavioral relationships operate guarantee that no battery of the available socioeconomic indexes can completely explain fertility levels or their dynamics. The most up-to-date and thorough analysis of this subject is found in the study by W. Parker Mauldin and Bernard Berelson referred to in note 16. The authors find that 66 percent of the fertility decline in developing countries between 1965 and 1975 can be "explained" by "social setting" as represented by seven development indicators. Of these indicators, the index of life expectancy alone explains 58 percent, but adding additional development measures does not appreciably increase explanatory power beyond the 66 percent level because of the high degree of intercorrelation between the various indexes. Mauldin and Berelson also show that adding the index of family planning program effort to the indexes of social setting brings the explained variance in the 1965-75 fertility declines to 83 percent, that is, program effort has a net explanatory effect of 17 percent. This analysis of program effect is open to objections similar to those made in the text to the study by Tsui and Bogue.

[19]The formulation assumes that in addition to birth control proper, such fertility-affecting factors as age at marriage and length of lactation are also subsumed under the concept of family planning.

[20]This is effectively shown in the analysis by Mauldin and Berelson referred to in note 16.

[21]It may be objected, of course, that postponement of marriage represents a response to changes unrelated to fertility motives. But at the very least a shift in marriage patterns is prima facie proof that social change is taking place. It is most likely that many of the same factors that affect marriage affect fertility decisions as well.

[22]In an earlier article, "Population policy and the international donor community: A perspective on the next decade," Population and Development Review 3, nos. 1-2 (March and June 1977): 113-122, I elaborated on possible steps in proceeding toward such an analysis.

[23]Taiwan used to be regarded as the paradigmatic success story, but it is now commonly accepted that rapid fertility decline started well before

the inception of Taiwan's organized family planning program and that even the claim that the program has caused an acceleration of the decline is very tenuous. There are no reasons to suppose that, owing to either of these propositions, the program was less than a success qua social policy.

[24]Jay D. Teachman, Dennis P. Hogan, and Donald J. Bogue, "A components method for measuring the impact of a family planning program on birth rates," Demography 15, no. 1 (February 1978): 113-129.

[25]For an analysis of the recent Indonesian experience, see Terence H. Hull, Valerie J. Hull, and Masri Singarimbun, "Indonesia's family planning story: Success and challenge," Population Bulletin 32, no. 6 (Population Reference Bureau, Inc., Washington, D.C., 1977).

[26]A rare glimpse of the Indonesian program that is relevant to the issues involved is afforded by a recent Indonesian study that carried out an in-depth analysis of the "special drive"--an important feature of the East Java family planning program--on a sample of four East Java villages. (Murdijanto Purbangkoro, "The special drive in East Java: An evaluation of an Indonesian family planning program intensive campaign," Jember University, Jember, Indonesia, February 1978, mimeographed). The study presents findings on the special drive acceptors' attitudes concerning the extent to which they felt coercion was employed in encouraging them to become acceptors. "Although only a slightly larger proportion said they were not forced into becoming a new acceptor (53 vs 47 percent), considerable variation exists among villages. . . . Of those who felt coerced, three-quarters of the acceptors (all of whom were IUD acceptors) said that, due to lack of prior information, they were unaware that they were to be given the IUD" (p. 53).

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13 Geoffrey McNicoll, "For and Against Large-Scale Simulation Models in Population and Development: Review of an Exchange," September.

14 W. Parker Mauldin, "The Role of Population Research in Policy Formation and Implementation (A Preliminary Note)," September.

15 Geoffrey McNicoll, "Population and Development: Outlines for a Structuralist Approach," October.

16 Bernard Berelson, "Ethnicity and Fertility: What and So What?" December.

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17 "Center for Policy Studies Program Statement 1978."

18 John Bongaarts, "A Framework for Analyzing the Proximate Determinants of Fertility," January.

19 Willard Cates, Jr. and Christopher Tietze, "Standardized Mortality Rates Associated with Legal Abortion: United States, 1972-1975," January.

20 W. Brian Arthur and Geoffrey McNicoll, "An Analytical Survey of Population and Development in Bangladesh," March.

21 Veena N. Thadani and Michael P. Todaro, "Towards a Theory of Female Migration in Developing Countries," May.

22 W. Parker Mauldin and Bernard Berelson, with a section by Zenas Sykes, "Conditions of Fertility Decline in Developing Countries, 1965-75," May.

23 Dorothy L. Nortman, "India's New Birth Rate Target: An Analysis," June.

24 Michael P. Todaro, "Current Issues in Economic Development," August.

25 Geoffrey McNicoll, "The Demography of Post-Peasant Society," August.

26 Veena N. Thadani, "The Logic of Sentiment: The Family and Social Change," September.

27 Michele Goldzieher Shedlin and Paula E. Hollerbach, "Modern and Traditional Fertility Regulation in a Mexican Community: Factors in the Process of Decision Making," September.

28 Mead T. Cain, "The Household Life Cycle and Economic Mobility in Rural Bangladesh," September.

29 Christopher Tietze and Anrudh Jain, "Repeat Abortion: A Model-Building Approach," October.

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32 John Bongaarts and Robert Sendek, "The Population Council Data Bank System: A User's Guide," November.

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34 Bernard Berelson, "Romania's 1966 Anti-Abortion Decree: The Demographic Experience of the First Decade," December.

35 Geoffrey McNicoll, "Notes on Fertility Policy Research," December.

36 Moni Nag, "Economic Value and Costs of Children in Relation to Human Fertility," December.

37 Paul Demeny, "Country Reports on Population and Development: Why, What, and How? A Selective Outline of Issues," December.

38 Paul Demeny, "Patterns of Population Growth and Structural Change in the World Economy: A North-South Perspective for the 1980s," December.