

The Population Explosion: A Bomb, or a Dud?

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"The Population Explosion: A Bomb, or a Dud?" In one sense, the answer to this question is straightforward; in another, it is complex and unclear. Let me outline the issues.

We are living in an unusual era in world history. For thousands of years world population growth has increased slowly—so slowly that more than 1 million years passed before earth's population reached 1 billion souls—and that was about 200 years ago. But things changed, the pace quickened, and in the short span of 120 years, the population doubled to 2 billion. The next billion inhabitants arrived in only 35 years, the fourth in 15 years. Presently the earth's population exceeds 5 billion. Looking to the future, demographers tell us the numbers won't stabilize until a figure of somewhat over 10 billion is reached. By historical standards this expansion in world population can, without exaggeration, be described as an "explosion."

But is it a bomb, or is it a dud? It is here that the analogy to the explosion gets interesting because we are, by the use of these words, asking whether the consequences of this unusual event—the population explosion—are good, bad, or neutral.

This is a difficult topic to discuss, because almost everyone has arrived at a conclusion: Namely, population growth is unequivocally bad—especially in the Third World. Scores of articles and books have been written in support of this position, and indeed, 15 years or so ago, a scientific report issued by the National Academy of Sciences found virtually no good in increased population numbers and identified about 16 reasons why smaller numbers would benefit mankind (8). This is in spite of the fact that there is absolutely no convincing correlation between the rate of economic growth per capita and the pace of population change. But as in many debates about goods and bads of events that involve major change, extremism has dominated reasoned discourse, pessimism has attracted attention and the press, and minds have been made up. As scientists, however, we should be wary of simple answers to complex problems. Particularly in respect to the problem of weighing the extreme positions of the goods and bads of population growth, the true answer likely lies somewhere in between.

I bring you a simple message: The good news about population growth is that the bad news is not as bad as we thought. I won't go as far as Ben Wattenberg did in his book "The Good News is the Bad News is Wrong," although he convincingly showed that many of the reasons we have been concerned about population growth are unfounded in the face of empirical reality. Rather, the turf has shifted; although many of the traditional concerns are indeed rather unimportant and should be downplayed, new ones have emerged. Moreover, some notable benefits of larger population numbers are now entering the public debate. The result is that, at least from an assessment of the economic impacts of population numbers, most economic experts would hold that the impact is moderate, although this varies from country to country.

In short, we have recently witnessed an amazing turnaround in the analysis of population matters: A revisionist assessment of population's role in economic development has emerged, and it has been established on the basis of a large body of scientific evidence.

I will trace the evolution of that revisionist interpretation by first indicating, and then examining, some of the key economic

arguments that have in the past dominated the population debate, and then share with you the main conclusions, as well as the basis of these conclusions, of a recent revisionist interpretation of population as found in a report issued by the National Academy of Sciences (9).

Let me begin with the pessimistic view of population.

For almost 200 years, scholars and policymakers have been concerned about population and development. Seldom has an issue of scientific inquiry been charged with such emotion. Numerous scholars have adopted antinatalist positions, maintaining that many problems of underdevelopment will be solved largely by slowing population growth through limiting the number of births. A value-laden vocabulary has emerged—"the population bomb," "the population problem," "the Malthusian Devil, or crisis," and the "burden of dependency" of children and the aged.

The origin of this pessimism was the writings of the Reverend Thomas Malthus, the 18th century English clergyman who predicted dire consequences for world order, given projected population growth rates. To quote from his famous book, "Essay on the Principle of Population" (4):

Population, when unchecked, increases in a geometrical ratio. Subsistence increases only in an arithmetical ratio. A slight acquaintance with numbers will shew the immensity of the first power in comparison to the second.

He asserted that economic systems, particularly agriculture, cannot be expected to keep pace with population's natural proclivity to grow in an unchecked fashion. Malthus' book unfortunately resulted in the christening of economics as the "dismal science."

In the post-World War II era, there has been increased urgency lent to Malthus' early concerns, especially given the rapid rate of population growth in the Third World countries. Although futurologists have added other major concerns to the inventory of potential catastrophies for world civilization, the population problem seems to be on every list. As early as 1969, Secretary U Thant of the United Nations stated:

I can only conclude that the United Nations have perhaps ten years left in which to subordinate ancient quarrels and launch a global partnership to curb the arms race, to improve the human environment, to diffuse the population explosion, and to supply the required momentum to develop.

In the early 1970s, pessimistic and alarmist treatises attracted enormous attention in their portrayal of world needs in relation to the future of world population. Jay Forrester in his book "World Dynamics" (2) and Meadows et al in "Limits to Growth" (7) predicted that, given foreseeable trends, the earth has only about 100 years left before economic, political, social, and biosystems collapse. Population pressures were important to this scenario. And the scary prognosis of the Forrester/Meadows scenario is that there is almost nothing that can be done to avert the incipient crises. This theme is nicely reflected in a French riddle quoted at the beginning of their book (7):

Suppose you own a pond on which a water lily is growing. The lily plant doubles in size each day. If the lily were allowed to grow unchecked, it would completely cover the pond in 30 days, choking off the other forms of life in the water. For a long time the plant seems small, and so you decide not to worry about cutting it back

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until it covers half the pond. On what day will that be? The 29th day, of course. . . . You have one day to save the pond.

A similar rendering of the urgency in coping with the consequences of population's impact on development is provided by Robert S. McNamara, former secretary of Defense and president of the World Bank. He compared population growth with nuclear conflict (5). I quote:

[T]he greatest single obstacle to the economic and social advancement of the majority of peoples in the underdeveloped world is rampant population growth. . . . The threat of unmanageable population pressures is much like the threat of nuclear war. . . . Both threats can and will have catastrophic consequences unless they are dealt with rapidly and rationally.

It seems that the population debate was largely closed in the statements and writings of prominent statesmen and some scientists in the 1960s and 1970s. Research thus focused on the *causes*, not the *consequences* of population change. Government programs emphasized family planning. And scholars who were accumulating evidence and expressing views that the consequences of population on development are not nearly as serious as the alarmists were saying were viewed as radicals to be tolerated possibly, but certainly not to be believed.

To the surprise of many, the population debate was "reopened" in the early 1980s, culminating in a near-reversal of the U.S. policy position at the U.N.'s International Conference on Population in Mexico City during August 1984.

What explains this reversal? According to Timothy King, senior economist at the World Bank (3), two reasons are important. First, there had been a tendency of many of those most concerned with the problems of rapid population growth to exaggerate its significance. In other words, the antinatalist case had been overstated and the present resurgence of interest represented a backlash.

Second, Dr. King demonstrated that some of the most important arguments and evidence that formed the basis of the antinatalist positions must be qualified.

Three other reports, recently issued, appear to confirm his assessment. The first is the "World Development Report" issued by the World Bank (11). This study uses the figure of 2% as the rate of population growth below which population can be accommodated. Another report (6) is by Dr. Geoffrey McNicoll, a research scholar at the Population Council in New York City, who, based on his reading of the accumulating scientific evidence, strongly downplays many of the previous antinatalist arguments about the adverse consequences of population. And most recently, a report (9) issued by the National Academy of Sciences, authored by some of the most prominent economic demographers in the world including a past president and the president-elect of the Population Association of America, provided a relatively moderate and nonalarmist picture of the population/development linkages in the Third World.

Taken together, these recent studies provide a status report for what I term a "revisionist" interpretation of the role of population in development. Each study concludes that the net impact of rapid population growth is detrimental to economic development. However, the intensity of this conclusion and the reasons for it vary dramatically from the traditional antinatalist approach. The revisionist position argues that: 1) the negative impact of population growth is not nearly as great as the alarmist statements claimed, 2) population growth is not the primary *direct* cause of the major constraints on Third World development, 3) some of the previous antinatalist arguments are not empirically sound, and 4) an analysis of the economic impact of rapid population growth should not ignore its previously de-emphasized *indirect* impacts in the form of a country's adoption of new technologies or its ability to educate its citizens.

To illustrate the nature of this revisionist interpretation and its specific challenge to the alarmist and pessimistic view of population and development held until the early 1980s, I will consider with you several of the antinatalist propositions that have

been at the heart of the debate and suggest where and how the current scientific evidence has modified these conclusions. I will highlight only four propositions, but I believe these represent the most important components buttressing the pessimistic view of population in the Third World.

Antinatalist proposition I relates to land and water scarcity. It states that food production cannot keep pace with population growth, given the scarcity of land and water. This is because of the importance of the law of diminishing returns. Simply put, additional farmers tilling scarce and marginal land are increasingly less productive, and at a point their productivity will fall so low that they will not be able to provide enough food to feed the population.

This is an empirical proposition. At its heart is the idea that the law of diminishing returns will dominate any offsetting factors. This is the Malthusian argument advanced some 200 years ago.

Counter to that argument is a wealth of empirical evidence that has accumulated over the last two centuries. With respect to Malthus' own writings, his predictions were shown to be false for every country where he undertook empirical analysis. With respect to the Third World, one must be less optimistic. A careful reading of the literature, especially the reports of the World Bank (11) and the Food and Agricultural Organization (1), supports the following conclusions:

- The world will be able to produce sufficient food for future generations well into the 21st century, and we simply cannot foresee much beyond this point.
- Most Third World countries will be able to meet their own minimum needs in the year 2000 and beyond, using moderate levels of technology, although some—especially in sub-Saharan Africa, will not be able to meet their needs and will require outside assistance.
- The availability of potentially arable land will not seriously constrain future agricultural expansion, although the costs of reclaiming that land are rising.
- Possibilities for improving agricultural productivity, the main source of expanding future yields, are substantial.
- The greatest constraints on agricultural expansion are the lack of incentives to expand production caused by misguided government policies, the lack of mechanisms for generating investment resources (e.g., rural credit) to use existing and new technologies, and poor management of land and water resources.

The "agricultural problem" of insufficient food production to meet country and world minimum needs does not appear to be primarily a population problem. If population growth were dramatically slowed, food imbalances would simply emerge later, but these imbalances would not be eliminated. Population growth is probably not the villain in the food balance story, but it is certainly an accomplice.

A problem most of us have in objectively analyzing the food-balance situation is that examples of countries experiencing severe difficulties are vivid in our minds, and these countries are mistakenly taken as either typical of the present situation in the Third World or as prototypes for the future. The simplistic solution of curtailing the number of mouths to feed tends to be emphasized at the expense of the equally and possibly more important strategy of increasing the production of food. On the other hand, for every country experiencing negative food imbalances, there are countries experiencing positive balances, and in some countries food is in abundance. Thus, while Kenya and Ethiopia and Bangladesh indeed represent countries in dire straits, their capacity to feed their populations over time would be questionable even if population growth rates were one-quarter of those they are recording today. Population size and growth, although important to the food-balance situation, are in many cases not the principle problem. Rapid population growth reveals the symptoms of the problem more dramatically and sooner than would otherwise be the case. Lest we dwell solely on the Kenyas, Ethiopias, and Bangladeshes, consider just two counterexamples of some importance.

India. Some decades ago India was considered a basket case: Everyone was pessimistic, and incipient mass starvation was the general prediction. Today India's food-producing capacity is impressive and expanding. And using estimates compiled by the Food and Agricultural Organization of the UN (1), if India used presently known, modern technologies more widely, this country would be able to feed a population in the year 2000 of 2.5 times its projected size.

Zaire. Zaire has enormous agricultural potential and, according to this same study, has land and water resources sufficient to support 62 times its expected population of 46 million in the year 2000—enough food production, by the way, to feed the entire population of Africa several times over. Even using relatively primitive technologies, Zaire could support six times its population in the year 2000.

What can we learn from the case of India and the projections with respect to Zaire? Or, for that matter, from the cases of Ethiopia, Kenya, and Bangladesh? Let me make three points.

First, I am *not* arguing that there are no food imbalance problems. There are and they are severe. They will become more severe in the future. I am instead arguing that present technology is sufficient to feed the world's population well into the future, that food imbalances will occur even in the face of dramatically slowed population growth rates, and that the role of population is largely to exacerbate a problem, but that it is not the primary cause of it.

Second, I am also cautioning us not to generalize from specific case examples: They are usually selected to represent extreme renderings of a problem, and too often they serve a disservice of diverting our attention from examining the causes of problems by highlighting instead the disastrous consequences. We focus on symptoms, not causes. The debaters who cite crises regions to "establish" their case—the Bangladeshes, Kenyas, and Ethiopias—almost never tout the successes. It is in the countries that have been successful where the important lessons are to be learned.

Finally, we should not be complacent with respect to the food imbalance situation. It will take all the genius that man can amass to head off some of the more serious consequences looming on the horizon—especially in Africa. The science of plant pathology will prove to be absolutely critical in this regard. Simulation models can forecast sufficient food producing potential, but the actual food that ultimately is produced depends on the decisions of millions, indeed billions of farmers: They need knowledge, seed, fertilizers, and *incentives* to produce and adopt appropriate technologies. And, as research has convincingly revealed, the transfer of existing technologies is not universal and without cost. Much research is required for adaptation to be appropriate to local agroclimatic conditions. Unfortunately, this takes time, something that population pressures are robbing us of. On the one hand, population pressures are giving us an incentive to collapse time to solve the food imbalance problem. On the other hand, such pressures are constraining our options in the short run—and herein lies much of the difficulty of population growth in the Third World. I will return to this theme.

Antinatalist proposition II relates to the depletion of natural resources. This proposition is highlighted in almost all major studies of population and development. Briefly, this proposition asserts that rapid depletion of natural resources caused by rapid population growth will substantially limit economic development.

This argument is untenable for several reasons.

First, scientific evidence indicates that natural resource use is related more to rising per capita income than to population size per se. Ironically, if population growth deters the growth of per capita income, then a slowing of population growth could *increase* the rate of resource depletion. Of course, multiplying income per capita by larger population sizes magnifies the demand for resources as well.

Second, scientific evidence indicates that rising natural resource prices (due to scarcity) spurs a search for substitutes, stimulates investment in discovering new sources of natural resources, and causes households and producers to conserve.

Third, estimates of static resource supplies, the primary basis of "resource pessimism," have always been substantially in error—

and they are always biased toward significantly overstating scarcity.

Finally, natural resources per se represent a relatively small fraction of the economic product of the world: The main sources of economic prosperity are labor, capital, and human ingenuity.

Almost no economist worries about natural resource scarcity as a major population-development problem. For all practical purposes, the availability of resources (including energy) well into the future—especially given the possibilities for substitution and technological advances on the horizon—represents a blow to the antinatalist arguments imbedded in many of the simulation models that predict doom and gloom as the planet uses up its resource reserves.

But why have these ideas and models commanded such attention and popularity? The answer is simple: Their conclusions are intuitively believable, and the apparently complex computer models have lent credibility to these intuitive ideas. However, one does not need a high-powered computer to arrive at the doom-and-gloom predictions. All you have to do is to assume that resources are finite, that when they become scarce people do not conserve, that people continue consuming without letup until the last ounce is used, that technology is unchanged over time and does not respond to resource scarcity, and that there is no substitution possible in the use of various resources.

Fortunately, all of the evidence flies in the face of these assumptions. Indeed, one author has posed a natural-resource paradox; the more we use, the more we have, not in a physical-sense sense, but in an economic sense. The more we use, the higher the price; but this, in turn, has historically engendered so much response in the forms of supply expansion, conservation, and substitution, that economically recoverable resources relative to existing demand tend to expand over time as resources are used. This relationship may not hold into the infinite future, but it certainly commands support based on historical evidence, and there is reason to believe it will hold for a long time to come.

I do not want to overstate my point on natural resources. The above generalizations apply to the world as a whole. But the world is divided into nation states, and resources are not equally divided up among them. Parenthetically, and happily, much of the resource wealth is in the Third World. Thus, selected countries are relatively impoverished in resources and must rely on their own labor, capital, and other forms of production to produce and trade for lacking resources. But note that even if population growth in these countries were zero, as their incomes rose, their demands for resources would increase dramatically. Indeed, all the evidence shows that resource demand is much more sensitive to income growth than to anything else—witnessed by the fact that most natural resources are consumed by the high income countries, some of which have population growth rates that are below replacement. Economic prosperity, not population growth, is the culprit in causing natural resource pressures.

On the other hand, in countries where population growth is rapid, incomes are low, and resources are critically short, then population pressures, although not the primary cause of resource scarcity, certainly exacerbate the "development" problem.

Antinatalist propositions III and IV. These are much newer than the land and resource scarcity arguments. They relate to the availability of capital and tools with which laborers can work and to the availability of investments in health and education needed to augment the capabilities of the Third World workforce.

Proposition III states that rapid population growth leads to a high ratio of children to working adults. This diverts household income away from saving and toward consumption. This argument requires substantial qualification on theoretical grounds, and its predictions have not been generally established.

At the level of the individual household, characterizing children solely as consumers and not as producers is excessively narrow. The real issue is how the family in fact "finances" the goods and services needed by children. It is implausible to assume that all, or even most, of this financing will be at the expense of savings. Indeed, in very poor households such an option may not exist. Moreover, children may in part substitute for other forms of

consumption, may contribute directly to household market and nonmarket income, may stimulate parents to work more (or less) and/or harder, may encourage the accumulation of certain types of assets (e.g., education), and may stimulate the amassing (or reduction) of estates.

Three decades of scientific research on this age-dependency thesis reveal that the impact of children on household saving is uncertain and weak. Indeed, according to Timothy King of the World Bank, "In the litany of antinatalist arguments, this one bears little weight" (3). A similar statement is found in the "World Development Report" and in the Population Council article by Geoffrey McNicoll.

This is an ironic finding and a fairly important one viewed in historical perspective, since the above proposition—the adverse age-dependency effect on saving and accumulation—was frequently cited as the basis for U.S. population policy in the Third World. According to population specialist Phyllis Pietrow (10), the argument that ". . . a reduced rate of population growth would always mean additional funds for capital investment because it would produce fewer dependents and smaller expenditures for consumption and social needs . . . eventually provided the justification for birth control as a part of U.S. foreign policy." That justification is now absent, based on the best scientific evidence. Fortunately, over the years, U.S. government population policy has been developed on a much stronger and convincing basis, but I offer this historical vignette as just one example of how the population debate has changed over time.

Proposition IV relates to the availability of human resources, such as education. It states that a rapidly growing population generates a strong demand for government expenditures in areas such as education and health, thereby diverting funds from other relatively productive, growth-oriented public and private investments. This argument also merits theoretical modification, and relevant evidence to substantiate it is generally lacking.

First, there is very little scientific evidence on the impact of demographic change on the total share of government spending in the Third World. One recent study suggests that the government's share in economy-wide spending is relatively insensitive to the youthful age of the population and is more sensitive to the location of the population.

Second, even if a rapidly growing population does generate demand for youth-oriented expenditures, it is also true that a slowly growing population exerts demands for expenditures on the elderly. It is by no means clear which composition of spending is more growth-oriented.

In short, the impact of rapid population growth on government spending and investment is unclear, and there is no convincing evidence that it has strong negative impacts. If anything, population pressures have forced hard but productive economizing of investment resources, but even this proposition cannot be convincingly sustained with hard evidence.

Let me stop and take stock of what I have said. Basically, I have suggested that many of the key arguments that have been used to support a pessimistic, indeed somewhat alarmist, picture of the impact of population on development have been substantially modified as a result of three decades of social science research. Second, population should be viewed not as the primary villain in the story of economic development but rather as an important accomplice in a complex plot: Population can exacerbate problems, but it is often not the primary cause of them. I gave four examples relating to food imbalances, resource scarcity, availability of savings, and availability of human resources. With each example I made generalizations since space precludes detailed documentation. For this documentation, let me consider briefly the most important document to appear on population and economic-development relationships in the last two decades: the National Academy of Sciences Report issued this spring (9).

This report, compiled by highly distinguished scholars, has generated considerable controversy. Among serious and knowledgeable scholars in the area of economic demography, the Academy report is considered abundantly reasonable and quite moderate; population activists considered the report a serious

threat.

Like many reports of this type, there is some good news and some bad news. There are six areas of good news.

Exhaustible-resource use. The report concludes that the concern about population growth resulting in resource exhaustion appears to be misplaced: The relationship between population and global resource use is not all that strong. Only if we value more highly the relative merits of future generations over the present one can a strong case be made for improper use of our exhaustible resources over time due to population growth.

Pollution. The report concludes that pollution problems are solved largely by government policies correcting market weaknesses and are not caused significantly by population growth per se, although slower population growth gives governments more time to react.

Savings and investment. The report concludes that the traditional concern about a substantial reduction of saving due to rapid population growth does not appear to be sustained in the data.

Human capital. The report concludes that the concern that population growth will shift resources from productive physical capital formation into areas such as education is not sustained by the data. Educational enrollments have expanded dramatically in the face of population pressures. This has been financed not by diverting funds from other areas, but by reducing expenditures per pupil. Although such an allocation will reduce the quality of education, the quantitative importance of this impact is uncertain.

City growth and urbanization. The report concludes that problems associated with city growth are to be solved primarily by modifying government policies that encourage people to live in or move to cities. Reduction of population growth does not represent the primary means for solving locational imbalances.

Adjustments to urban growth. The report concludes that there is little evidence that urban unemployment is caused primarily by rapid population growth. Moreover, the deterioration of urban services is not the result of diseconomies in the provision of these services, and slower population growth per se would not significantly improve the quality of the services provided. Rapid population growth exacerbates urban problems but does not appear to be the primary cause of them.

There are also three areas of bad news in the report.

Resource degradation. The report concludes that adverse impacts of population growth in the form of renewable resource degradation where property rights are difficult to assign or maintain—rain forests, fishing areas, and so forth—is a serious problem.

Health and education of children. The report concludes that large families implied by rapid population growth result in households spending less on health, nutrition, and education of individual children. The quantitative impact of this expenditure allocation is difficult to assess, but the qualitative impact is adverse to the welfare of children.

Offsetting effects. The report concludes that positive impacts of population in the form of scale economies and changes in the economic system, resource use, and technology induced by population change are not sufficient to offset the negative direct impacts of population change.

I conclude that the conclusions of the National Academy's report are dramatically revisionist compared with the somewhat alarmist and possibly reactionary interpretations held by many in the 1960s and 1970s. The Academy report concludes:

On balance, we reach the qualitative conclusion that slower population growth would be beneficial to economic development of most developing countries.

The report writers agonized over this statement. Note three important features of the summary assessment.

First, the reference to the "on balance" effects of population is the result of the finding that there are several positive impacts of population growth on development. This is a dramatic departure from previous writings that emphasized unequivocal and strong negative impacts.

Second, the choice of the word "slower" instead of "slow" population growth suggests that the report writers were unwilling to make quantitative statements on an appropriate growth rate: Only that slower is better than faster. They do not talk about zero population growth. Their conclusion is consistent with an optimal population growth of 2, 1, 0, or minus 2%—all rates slower than those of most Third World countries today.

Third, the report writers recognize that, for some countries, faster population growth could well enhance the pace of economic development, although for most countries this would not be the case.

This is an astonishing turnabout in the assessment of population's impact on the economy, and given the authority from which it comes, one wonders the reason for this about-face. I believe there are two main reasons—one theoretical, the other, empirical.

First, consider the theoretical reason. In the National Academy report, individual and institutional responses to *initial* effects of population change are recognized and indeed emphasized. For example, the report highlights conservation in response to scarcity, substitution of abundant for scarce factors of production, expansion of output when resource scarcity triggers price increases, innovation as well as adaptation and adoption of technologies to exploit profitable opportunities, and the like. These responses to initial impacts of population are pervasive, and they are important. In the judgment of the report writers, these responses largely explain the absence of any apparent correlation between per capita output growth and population growth in the aggregate. If there is an analytical novelty to the National Academy report, and a single factor that most explains its revisionist findings, it is this emphasis on feedbacks, largely market-induced, in response to population change.

The second reason for the revisionist interpretation is empirical. Simply stated, the facts do not support many of the previously held hypotheses about the links between population and development. This is true of the studies on saving, on the impacts of population on government spending, on resource scarcity, on educational enrollments and government spending, and others.

In short, the revisionist interpretation in the National Academy of Sciences report is based on a realistic assessment and tenable formulation of the development process where feedbacks are taken into account, as well as a careful and objective assessment of hundreds of books and articles that have accumulated over the last several years. The "bottom line" is that better theory and an expanded base of knowledge has resulted in a substantially modified assessment of the role of population in development.

I wish to conclude with two observations. The first relates to the implication of the revisionist interpretation on U.S. government family planning policy; the second relates to the broader role the revisionist interpretation will hopefully play in the assessment of population in development.

Consider U.S. policy of promoting family planning in the Third World. Clearly the National Academy report weakens the justification of this policy to the extent that this policy is based on the traditional concerns that population growth exerts a strong negative impact on economic development. I would argue, however, that family planning programs need not rely on the alarmist economic justifications used in the past; there are two alternative arguments that can and should be used. First, research shows that there are tens of millions of families in the Third World that, if given knowledge about and possibly some assistance in

acquiring family planning technologies, would seek to have fewer children. Desired family size is for many households considerably smaller than actual family size. Programs that assist families to meet their goals—programs that are voluntary and noncoercive—can only improve individual family welfare. Second, there is also considerable evidence that wider child spacing benefits both mothers and children. Programs that facilitate such spacing can convey substantial benefits in the form of improved health and human welfare.

Finally, what role should the revisionist interpretation play in analyzing the role of population in Third World development? The revisionist interpretation has clearly shown that many of the so-called economic-development problems previously associated with population are not primarily demographic problems. They are largely caused by other factors, and population growth serves largely to reveal their symptoms sooner and more dramatically. Thus, for the "food problem," emphasis should be directed toward expanding agricultural resources and production by strengthening rural credit markets and eliminating price distortions in the marketplace. For the problem of "imbalanced urban growth," the level of subsidies provided to urban residents needs to be reassessed. For the "unemployment problem," countries should reduce their emphasis on capital-intensive production, particularly with a revision of overvalued exchange rates and import-substitution policies. For the "resource-degradation" problem, immediate attention must be paid to direct government controls where markets are unable to adequately allocate resources over time.

Slower population growth will buy time, but it will not solve most development problems. We must take seriously what we have learned in recent decades about the underlying causes of underdevelopment and must place population growth in a balanced perspective to address the causes and not the symptoms of poverty.

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