
The World's Population Problem

Possible Interventions to Reduce Fertility

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Introduction

Mr. McNamara's "Address on the Population Problem" was one of a series of lectures at the Massachusetts Institute of Technology on "World Change and World Security." The final portion of his speech, given April 28, 1977, is reprinted in this issue of *Public Health Reports* devoted to international health.

In the first four chapters of his address, the President of the World Bank discusses the background of the population problem and recent demographic trends. He points out that "without additional intervention, the current population in developing countries is going to continue to grow at rates very substantially in excess of those that would facilitate far more economic and social progress. It is these rates which would lead to an ultimate steady-state population in the world of 11 billion. That is clearly undesirable."

THE RANGE of possible interventions to reduce fertility are divided into two broad categories: those designed to encourage couples to desire smaller families and those designed to provide parents with the means to implement that desire.

Both approaches are, of course, necessary. The first sets out to alter the social and economic environment that tends to promote high fertility, and by altering it to create among parents a new and smaller norm

of family size, and therefore a demand for birth control. The second supplies the requisite means that will make that new norm attainable.

Thus, family planning services are essential, but in the end can succeed only to the extent that a demand for lower fertility exists. That demand apparently does not now exist in sufficient strength in most of the developing countries.

There are a number of policy actions that governments can take to help stimulate the demand. None of them is easy to implement. All of them require some reallocation of scarce resources. And some of them are politically sensitive.

But governments must measure those costs against the immeasurably greater costs in store for societies that procrastinate while dangerous population pressures mount.

What, then, are those specific social and economic actions most likely to promote the desire for reduced fertility?

Governments should try to:

- Reduce current infant and child mortality rates sharply.
- Expand basic education and increase the proportion of girls in school.
- Increase the productivity of smallholders in the rural areas, and expand earning opportunities in the cities for low-income groups.
- Put greater stress on more equitable distribution of income and services in the drive for greater economic growth.

□ The full text of the "Address on the Population Problem" is available from the World Bank, 1818 H St., NW., Washington, D.C. 20433.

- And above all else, raise the status of women socially, economically, and politically.

Let me comment briefly on each of these.

Reducing Infant and Child Mortality

We know from the experience of both the developed and developing countries that a decline in fertility rates can be expected to follow a reduction in infant and child mortality. The current rates in the developing world remain up to 20 times higher than they are in the developed nations.

Over half of all the deaths in Egypt, for example, occur before the age of 5. Comparable and even higher rates are common in other developing countries. In Mexico, Cameroon, and Colombia about 30 percent of all deaths occur in the first year, and 15 to 20 percent of all deaths in the second through the fourth year. In contrast, in Sweden, the United States, and Japan the deaths of infants and children below the age of 5 make up less than 5 percent of the total number. Average rates of infant mortality—deaths per 1,000 in the first year—are 142 in Africa, 121 in Asia, and 60 in Latin America. In the developed countries they average about 20.

Why are they so high in the developing world? Largely because of low nutritional standards, poor hygienic conditions, and inadequate health services.

In most developing countries health expenditures have been excessively devoted to supplying a small urban elite with expensive curative health-care systems—highly skilled doctors and elaborate hospitals—that fail to reach 90 percent of the people. What

are required are less sophisticated, but more effective, preventive health delivery systems that reach the mass of the population.

Even quite poor countries can succeed in this, provided sound policies are pursued. Some 20 years ago, for example, Sri Lanka decided to improve rural health facilities. The result over the past two decades has been a decline in infant mortality from 78 per 1,000 to 45 per 1,000, an increase in life expectancy from 56 to 69 years, and an associated decline in the crude birth rate from 39 to 29. Korea has followed a similar policy, with similar results.

Many other countries—countries even with a much higher per capita national income than either Sri Lanka or Korea—have spent as much or more on health, and by failing to stress simple, inexpensive, but effective rural health systems, have reaped much poorer results.

Turkey, for example, had a gross national product per capita of \$860 in 1975, compared to Korea's \$550 and Sri Lanka's \$150, but has concentrated on urban health, with conventional facilities, and today has an infant mortality rate of 119 per 1,000, as compared to Korea's 38 per 1,000; life expectancy of 60 years, compared with Korea's 64 years; and a crude birth rate of 39, as compared with Korea's 28.

Infant and child mortality rates can be brought down relatively simply and inexpensively, if the national health policies are carefully designed. The return in lowered fertility, and healthier children, and more equitably served families is clearly worth the effort.

Expanding Basic Education

Education, like health, has often been a casualty of inappropriate policies, and there is wide debate over what ought best to be done. But there is no question that expanding the educational opportunities of females correlates with lowered fertility.

In Latin America, for example, studies indicate that in districts as diverse as Rio de Janeiro, rural Chile, and Buenos Aires, women who have completed primary school average about two children fewer than those who have not. Schooling tends to delay the age of marriage, for girls, and thus reduces their total possible number of childbearing years.

Further, education facilitates, for both men and women, the acquisition of information on family planning. It increases their exposure to mass media and printed material, and enables them to learn about modern contraceptives and their use.

Schooling, too, clearly enhances a girl's prospects of finding employment outside the home that may compete with raising a large family. In a comparative study of 49 countries, the level of female education in each nation demonstrated a significant impact on the proportion of women earning wages or salaries, which in turn had a strong association with lowered fertility.

While children are in school, they do not contribute much to the support of the family, and thus parents tend to perceive them as having less immediate economic utility, but more long-term earning capacity. Both these factors are likely to lead parents towards a more compact family norm, since a large family is more expensive to educate, and a small, well-educated one will be in a better position to aid parents in later life. Fertility rates are substantially higher in those countries in which children under 15 are economically active, rather than in school.

Parents with an education themselves typically desire an even better education for their children, and realize that if these aspirations are to be achieved, family size will have to be limited.

Education leads to lowered fertility, too, by reducing infant and child mortality. In Northeast Brazil one of the chief motivations for school attendance was found to be the nutritious school lunch program. Further, a parent who has had some schooling is likely to be more careful about basic sanitation, and the value of inoculations and antibiotics. Such a mother is more confident that her own children will survive and is less likely to want additional children merely as insurance against some dying.

Finally, perhaps the greatest benefit of education to both men and women in heavily traditional en-

vironments is that it broadens their view of the opportunities and potential of life, inclines them to think more for themselves, and reduces their suspicion of social change. This creates an intellectual environment in which important questions such as family size and contraceptive practice can be discussed more openly.

There is little likelihood that governments in developing countries—or for that matter, in developed countries—will soon agree over the competing strategies for more effective school systems. But one principle is beyond dispute: in the face of perennial budgetary pressures, it is far better to try to provide a basic minimum of practical and development-oriented education for many, than to opt for an expensive, formal, and overly academic education for a few.

A basic learning package, for both men and women, including functional literacy and numeracy, some choice of relevant vocational skills for productive activity, family planning and health, child care, nutrition, sanitation, and the knowledge required for active civic participation is an investment no nation can afford not to make. The very nature of the educational process imposes a relatively long time lag for the economic return on that investment. But if the basic package is right, the return will be huge, and not the least component of that return will be the benefit of reduced fertility.

Increasing Rural Productivity and Urban Earning

As a generality, small farmers in developing countries are among the lowest income groups in the society. Their agricultural productivity is often at bare subsistence levels. Perhaps the only poorer individuals in the countryside are the landless, whose sole source of income is seasonal on-farm employment. The fertility of both groups is characteristically high.

Typically the smallholders are reluctant to sell their land, but their holdings tend to become even smaller and more fragmented as the land passes through the inheritance process to surviving sons.

The landless are the most likely candidates for migration to the squatter settlements of the city, since they have no tangible assets to hold them in the rural areas. But, increasingly, the dwindling size of the redivided holdings forces the inheriting sons as well to sell their uneconomic parcels of land, and join the procession to the urban slums in search of a job.

For the small farmers who remain on their land their only hope to escape poverty—with its poverty-related fertility levels—is government policy de-

liberately designed to assist them to increase their productivity.

There is, in fact, great potential for this, but it requires a comprehensive program of fundamental elements such as land and tenancy reform; better access to credit; assured availability of water; expanded extension of facilities; greater participation in public services; and new forms of rural institutions that can act as effective intermediaries between the appropriate government ministries and the individual subsistence farmers.

I discussed in detail the essential components of such a program in an address to the Board of the World Bank in Nairobi in 1973 and need not repeat them here, except to point out that our early experience with such rural development projects in the World Bank confirms their feasibility. We have over the last 3 years initiated 210 such projects, calculated to at least double the income of 8 million farm families, or about 50 million individuals.

It is through this increase in income that such farm families will almost certainly experience a beneficial decline in their traditionally high fertility. For the income will give them access to better health and education and living standards, which in turn are likely to lead to smaller families.

There is, then, a sound policy formula that governments can implement for the poor farmer that reduce both poverty and its attendant fertility.

But what of the growing millions of poor who migrate to the cities and take their propensity for large families with them? This is a considerably more complex policy problem since urban socioeconomic relationships are by their nature both more varied and more complicated than traditional rural situations.

But the basic principle remains the same. Policies must be shaped that will assist the urban poor to increase their productivity. In practice this means a comprehensive program designed to increase earning opportunities in both the traditional and the modern sectors; provide equitable access to public utilities, transport, education, and health services; and establish realistic housing policies.

Again, I have dealt with this subject at length in another context, the Board of Governors of the World Bank in Washington, D.C., in 1975, and I need not reiterate the issues here. What is clear is that urbanization has usually been associated with low fertility.

In Latin America, for example, studies have indicated that family size in rural areas and small towns is nearly twice as large as those in major urban cities.

The correlation has been found in countries as diverse as India, Lebanon, Hungary, the Soviet Union, and Japan.

In the urban setting there are fewer opportunities for children to do useful work, and hence more rationale for them to be in school. In general, cities offer relatively better access to the modern socioeconomic system and its attendant attitudes.

Moreover, migration from the countryside tends to loosen some links with the extended family. If parents cannot expect to dwell with their adult children, there is less incentive for them to have large families for the purpose of support in their old age. Finally, the very act of leaving the traditional family home may lead to other breaks with tradition, such as the age of marriage and family size.

But one must enter a word of caution. From a policy point of view, most governments in the developing world have little practical capacity either to regulate urbanization or to retard it. It simply happens, and it is happening far more rapidly than almost any major city can possibly cope with in an orderly way.

Populations in the countries themselves are doubling every 25 to 30 years, but their large cities are doubling every 10 to 15 years, and the urban slums and shanty towns in these cities every 5 to 7 years. By 1990 Lima, Peru, is expected to have 6 million inhabitants, 75 percent of whom will live in what were originally squatter settlements.

Fertility may or may not decrease in such potentially huge and squalid surroundings. And if it does decrease, it may decrease for the wrong reasons: inhuman crowding, unbearable stress, or dysfunctional family relationships. What must be countered in exploding cities is the desperate poverty that fuels them, which is itself, in part, the tragic legacy of rampant population growth in the countryside and city alike.

Equitable Distribution of Economic Growth

While economic growth is a necessary condition of development in a modernizing society, it is not in itself a sufficient condition. The reason is clear. Economic growth cannot change the lives of the mass of the people unless it reaches the mass of the people. It is not doing so with sufficient impact in most of the developing countries of the world today. Typically, the upper 20 percent of the population receives 55 percent of the national income, and the lowest 20 percent receives 5 percent.

In the rural areas, this is reflected in the concentration of land ownership. According to a Food and

Agriculture Organization survey, the wealthiest 20 percent of the landowners in most developing countries own between 50 and 60 percent of the cropland. In Venezuela they own 82 percent; in Columbia 56 percent; in Brazil 53 percent; in the Philippines, India, and Pakistan about 50 percent. The roughly 100 million small farms in the developing world—those less than 5 hectares—are concentrated on only 20 percent of the cropland.

What this means is that the lower 40 percent of the income strata is neither contributing significantly to economic growth nor sharing equitably in its benefits. They are the poor, and they are virtually outside the entire development process. It largely passes them by.

It is little wonder, then, that national economic growth in itself has had less than optimum effect on the fertility patterns of the vast mass of the population. Their nations have been progressing, but large numbers of the people have advanced at rates far below the average.

Even the conventional measurements that governments have at hand to trace economic progress can be misleading. The growth of the gross national product, for example, is generally regarded as a key index. And it is, for it measures the total value of the goods and services of the economy. But it does not, and cannot, serve as a measure of their distribution.

Since the upper 40 percent of the population in a developing country typically receives 75 percent of all income, the growth of the GNP is primarily an index of the progress of these upper-income groups. It tells one very little about what is happening to the poorest 40 percent, who collectively receive only about 10 or 15 percent of the total national income.

The implication of much of what was said at the World Population Conference in Bucharest in 1974 was that a sufficient rate of development will solve any population problem in time. But what precisely is a "sufficient rate of development?" It clearly is not overall average economic growth, which so frequently benefits the few and bypasses the many.

Most countries in Latin America, for example, have considerably higher per capita income than countries in Asia and Africa. And yet fertility rates are not proportionately lower. That, in part, is a function of the serious inequalities in income distribution in the Latin American region.

A study of various characteristics in 64 countries from both the developed and developing areas of the world, for which data are available, confirmed that more equitable income distribution, with the result-

ant broader distribution of social service, is strongly associated with lower fertility. The analysis suggested that each additional percentage point of total income received by the poorest 40 percent reduces the general fertility rate by about 3 points.

Governments everywhere in the developing world are, of course, striving to accelerate economic growth. Excessive fertility is itself a serious obstacle to this growth. But unless the benefits of the growth are directed more equitably to the lower 40 percent of the income groups, where in fact fertility rates are likely to be the highest, then economic growth as such will not move the society forward at an optimum rate of progress.

Enhancing the Status of Women

The importance of enhancing the status of women is critical, and there is a great deal that governments can do in this matter. In some societies even simple legislative changes—such as establishing the legal right of a woman to refuse to marry the mate picked out for her by her parents, or the right to own property herself—are important first steps in improving her position in society.

Of all the aspects of social development, the educational level appears most consistently associated with lower fertility. And it is significant that an increase in the education of women tends to lower fertility to a greater extent than a similar increase in the education of men.

But in most developing societies women do not have equitable access to education. The number of illiterate females is growing faster than illiterate males. Nearly two-thirds of the world's 800 million illiterates are women, and virtually everywhere males are given preference for both general education and vocational training.

One reason for this is that the prevailing image of women distorts their full contribution to society. Women are esteemed—and are encouraged to esteem themselves—predominantly in their roles as mothers. Their economic contribution, though it is substantial in a number of developing societies, is almost always understated.

The fact is that in subsistence societies women generally do at least 50 percent of the work connected with agricultural production and processing, as well as take care of the children, and the housekeeping. They rise earlier and retire later than anyone else in the family, often working 18 hours a day.

But despite this contribution, women generally suffer the most malnutrition in poor families. Men are given first claim on such food as is available;

children second; and the mother last. This, in itself, tends to lead to high fertility through a self-perpetuating cycle of events.

Malnourished mothers give birth to weak and unhealthy infants, and have problems nursing them adequately. Such infants often die. This leads to frequent pregnancies. The mothers, constantly pregnant or nursing infants, are unable to play a larger role in the outside-the-home work force. This diminishes their occupational and economic status, which in turn reinforces the concept that males are more important. This makes sons more desirable than daughters. When only daughters are born, another pregnancy must ensue in order to try again for a son. Repeated pregnancy not only increases the family size, but exhausts the mother, weakens her health—and thus the whole cycle begins again.

Though governments sometimes recognize that encouraging women to enter the off-farm and urban work force reduces fertility—since it tends to delay the age of marriage, and increase the interval between children—policymakers are often tempted to conclude that this would only exacerbate unemployment among men, and hence diminish family income.

But that objection is a short-term view of the matter. In the longer run, a family with two wage earners, and a smaller number of dependents—due to the related decreased fertility—can contribute more to public revenues through taxes, and more to capital formation through increased savings.

In contrast with a large and poor one-wage-earner family, the smaller two-wage-earner family helps accelerate economic growth, and thus increases the demand for labor, male and female.

The truth is that greater economic opportunity for women—and the greater educational opportunity that undergirds it—would substantially reduce fertility. And in societies in which rapid population growth is draining away resources, expenditure on education and training for boys that is not matched by comparable expenditure for girls will very likely be diminished in the end by the girls' continued high fertility. More education for women in developing countries is a very good buy.

Instruction on nutrition, child care, family planning, and home economics are all, of course, important. But women need market-oriented training and services as well: access to credit, extension services, the skills necessary for participating in a cash economy.

Schools must make the point to young women that the ideal role of a girl is not to be the mother of a

large and poor family, but rather to have a double role as mother of a small family, and as a wage earner who contributes to the well-being of her family by economic employment.

Women represent a seriously undervalued potential in the development process. And to prolong inequitable practices that relegate them exclusively to narrow traditional roles not only denies both them and society the benefits of that potential, but very seriously compounds the problem of reducing fertility.

Public Information Programs

Those, then, are the specific socioeconomic interventions calculated to encourage smaller families. They must, of course, be paralleled and supported by a continuing public information program.

There is a need to inform, educate, and persuade people of the benefits of a more compact and manageable family size. This is essential, but it has not been an easy task. The significance of the population problem dawned slowly on an unprepared world. There was not only ignorance and skepticism, but in many instances strong opposition against even discussing the subject. That is not surprising.

Since reproduction is essential for the survival of society, it is understandable that every society has had strong views about family size. Norms in this matter have always existed, and there has always been strong group pressure to see that they were followed. Until very recently, childless women in some societies have been regarded with open scorn. And for males not to father a large family has tended to be a reflection on their masculinity.

Norms are patterns of expected behavior, rules of what is appropriate and what is not. And we know, from surveys on desired family size, what those norms are today in various societies. In the developed world the average desired number of children ranges from 2 to 3. In the developing world the average is between 4 and 6, with a majority wanting at least four children.

This is a critical point, since one of the main objects of intervention in population is to create a set of circumstances in which people will change their norm of desired family size. And there is simply no hope of succeeding at that unless one first clearly understands the reasoning behind their present norms.

To design an effective public information program, to set up a persuasive person-to-person communication scheme, to draft and establish a success-

ful population education plan, it is imperative to comprehend the mind-set that you are attempting to change.

And the reasons for fertility reduction that may be persuasive to planners sitting in distant capitals may not be persuasive at all to parents sitting in remote villages.

Village couples rarely worry about the progress of the gross national product.

What they may well worry about is the progress of a sick child, or how they are going to accumulate enough savings to secure their old age, and whether the signs are auspicious that the next pregnancy will finally give them a second son, rather than a third daughter.

As we have said, it is the poor, as a generality, who have the most children. And it is the poorest countries, as a generality, that have the highest birth rates.

But it is a mistake to think that the poor have children mindlessly, or without purpose, or—in the light of their own personal value systems—irresponsibly. Quite the contrary.

The poor, by the very fact of their poverty, have little margin for error. The very precariousness of their existence habituates them to be cautious. They may be illiterate. They are seldom foolhardy. To survive at all, they are forced to be shrewd.

What we must grasp is that poverty does not make people unreasonable. What it does do is severely reduce their range of choice. They often do what they do because there is little real opportunity to do otherwise.

Poor people have large families for many reasons. But the point is they do have reasons. Reasons of security for their old age. Reasons about additional help on the land. Reasons concerning the cultural preference for sons. Reasons related to the laws of inheritance. Reasons dictated by traditional religious behavior. And reasons of personal pride.

Demography measures people. It cannot always measure their inner feelings. And yet understanding poor people—and the narrow range of options that poverty offers them—is the key to assisting them to broaden their choices.

In a good public information program, that is precisely what happens. Alternative choices become evident. The mass media can be helpful, particularly radio, television, and film since they do not depend exclusively on literacy for comprehension. But all the media can be creatively utilized: newspapers, signboards, leaflets, exhibits, village posters, songs, and plays.

Communication research concludes that the mass media, while influential with people who are already in general agreement, or at least neutral, can rarely—through direct messages—persuade people to reverse deep-seated convictions, or long-standing behavior.

But what the media can do, and do very well, is help people to change their views indirectly by putting them in contact with another world, expanding their horizons, stimulating their curiosity, and introducing them to new ideas, including the idea of attractive alternative lifestyles, with fewer, but more advantaged children.

But in the end, no form of media information is as effective as person-to-person communication. Messages can be sent electronically thousands of miles, but it is ultimately people talking to one another in a classroom, on the street, at the village market, or in the village home where the essential questions are discussed, and the essential answers are explored.

Door-to-door fieldwork, discussion groups, study clubs, civic organizations, town and village meetings: all of these are important, and all of them can be made stimulating, informative, and persuasive.

There is a whole spectrum of formal and informal learning situations that can be utilized. Population education as a component of the school curriculum is obvious and essential. Mobile vans visiting villages with films, exhibits, and talks can combine entertainment with instruction. Political leaders, national celebrities, and religious authorities can endorse national population goals in their speeches and public appearances. All of this is possible, given leadership, imagination, and drive. And all of it is very worthwhile.

But beyond these information and educational efforts, there is a whole range of additional measures available to governments that can serve as incentives to postpone the age of marriage, undertake family planning, or adopt new norms of family size and disincentives to retaining inappropriate norms.

Incentives and Disincentives

Housing and job opportunities, maternity benefits, tax deductions, dependency allowances, pension provisions, school admission priorities: these and similar government benefits and policies can be redesigned to encourage parents to have small families, and to dissuade them from having large ones.

Incentives can range from immediate cash payments to family planning acceptors to elaborate programs for future payment, at the end of the childbearing

years, for fertility restraint. Disincentives can limit the allocation of various public services on a graduated scale: more to parents with few children, less—or none at all—to parents with many children.

One scheme proposed for Malaysia would make public assistance for the elderly available only for those parents with less than three children. Taiwan is experimenting with a bond system that will provide support for higher education of students in families with no more than three children. Singapore—a high-density island community—has designed a whole series of measures. In 1970, Prime Minister Lee Kuan Yew pointed out: "Beyond three children, the costs of subsidized housing, socialized medicine, and free education should be transferred to the parent."

Incentives, of course, widen rather than restrict choice, and are less likely to penalize children who, through no fault of their own, happen to get born into large families. But the fact is, of course, that disincentives or not, children born into large families in the developing world today are likely to be penalized in any case, simply by the pressures of poverty that the population problem has exacerbated in developing societies.

From a child's point of view there can be few benefits in having many siblings. The close spacing of children and large numbers of children are likely to increase infant and maternal mortality and to worsen nutritional deficiencies and related health problems. This may, in turn, reduce a child's opportunity to benefit from whatever educational opportunities he has received. And in matters of inheritance, which in rural areas of some of the land-scarce countries is likely to be of critical importance even among very poor families, children from large families are at an obvious disadvantage.

Experimenting with incentives is still relatively limited, but the prospects are promising. Deferred payment schemes, which would reward parents financially at the time of retirement, or at the end of the childbearing age, for their fertility restraint are particularly worth exploring.

Such schemes attempt to provide parents with an alternative source of financial security for their old age, in place of the traditional one of large families. And they encourage the creation of a society in which parents can put their resources and energies into providing a small number of children with the best possible start in life, rather than merely hoping to find security in a large number of children—each one of whom must face a proportionately precarious future.

Promoting a Social Consensus

Governments have considerable capacity, as well, to help create a generalized atmosphere of social consensus in an antinatalist direction. Villages and local communities, just as individual families, can be rewarded by government policies for good performance in fertility restraint. Allocations of central government funds for community improvements—roads, electrification, public works—can be conditioned on evidence of community commitment to new-style family norms.

India, for example, recently adopted a measure which provides that both the political representation of local areas, and their allocation of national financial resources, will no longer increase simply as a function of their population growth. In the future, additional numbers will not automatically mean additional votes or additional claims on tax revenues.

But it is not only the central government in a society that can apply disincentives to high fertility. Community authorities can do the same.

In preindustrial Japan, for example, a strong tradition of social cooperation and consensus at the village level maintained severe constraints on the number of households in the village, often permitting no increase at all. These social pressures were transmitted to heads of households, who in turn exerted authority over individual household members in matters of marriage, divorce, and adoption. This tradition appears to have been a significant influence in holding population increase during the last 150 years of Tokukawa Japan to less than 0.2 percent a year.

It is obvious that the interest of a local community in the fertility of its membership will be proportional to the social costs of population increase that it is called upon to bear. If schools and other public services are in part locally financed; if pressures on the land lead to local deforestation and erosion; and if local unemployment becomes serious, then communities may well become conscious of the adverse social effects of excessive population growth.

It is clear that there are many different approaches to the task of promoting a new social consensus on population problems within a society, and the choice of one over another—or any particular mix of actions—must of course, be guided by the cultural context of the society in question. But the truth is that most of the approaches and all of the actions, are difficult to implement. And we must face the reality that if these approaches fail, and population pressures become too great, nations will be driven to more coercive methods.

Coercion

A number of governments are moving in the direction of coercion already. Some have introduced legal sanctions to raise the age of marriage. A few are considering direct legal limitations on family size, and sanctions to enforce them.

No government really wants to resort to coercion in this matter. But neither can any government afford to let population pressures grow so dangerously large that social frustrations finally erupt into irrational violence and civil disintegration. That would be coercion of a very different order. In effect, it would be nature's response to our own indifference.

Now let me underscore what we have been analyzing here. We have been discussing those kinds of interventions that governments can make to help stimulate the desire among parents for a smaller family size. But those efforts must, of course, be accompanied by corresponding interventions that provide parents with readily available means to do so.

Family Planning Services

Governments must improve the access to the modern means of fertility control both qualitatively and quantitatively: more and better services to greater numbers of people. In practice, that requires:

- Providing a broad selection of the current contraceptives: pills, condoms, IUDs; as well as sterilization and—where the society desires it—abortion.
- Establishing a broad spectrum of delivery services and informational activities utilizing physicians in private practice; paramedical workers; professional fieldworkers; community-based local agents; the commercial sector; widespread distribution of contraceptives; sterilization centers; mobile clinics; postpartum arrangements; and the integration of contraceptive services into the maternal and child-health system, the general health system, and the community development system.
- And, finally, improving the acceptability, continuity, and effectiveness of the means of fertility control by accelerating research on such possibilities as a contraceptive vaccine; a better implant; an IUD free of side effects; a safer and more convenient pill (a once-a-month pill, or a once-a-year pill); a non-surgical means to terminate pregnancy; or a currently unknown “ideal” contraceptive.

To put the matter succinctly, governments need to provide a broad choice of present contraceptive techniques and services to parents; they need to improve the delivery system by which parents can get the services they wish; and they need to support continu-

ing research for better techniques and services.

The majority of the world's population lives in countries with family planning programs that now have as their explicit objective the reduction of fertility. And yet the programs themselves often do not reflect much political conviction that they can and must succeed.

Many of these programs are small, and rely on foreign sources for much of their finance. All governments, of course, have resource constraints. But fertility reduction, as a priority, seldom commands even 1 percent of national budgets. Further, governments have often failed to give the programs the status and national attention that would attract top managerial talent. For these, and related reasons, the world's total family planning acceptors did not measurably increase in the period 1972–75, despite the increase in the number of national programs.

I listed above a number of actions that governments—both developed and developing—can take to strengthen family planning programs.

One of the most urgent needs is a much greater effort in reproductive biological research and contraceptive technology.

Reproductive Biological Research

- ✓ The requirement for a substantial expansion in reproductive research is obvious. Though by the early 1970s some 46 million women throughout the world were using the IUD or the pill, this did not begin to meet the need. Of the approximately 500 million women around the globe in their childbearing years and facing the risk of an unwanted pregnancy, an estimated 70 percent are using no contraceptive method at all.

The current estimate is that for the world as a whole, one of every three or four pregnancies ends in abortion, and the vast majority of the women seeking abortion are married. The fact is that abortion, even though it is still illegal in a number of countries—and remains ethically offensive to millions—appears to be the most widespread means of fertility control there is. That is, in itself, a cogent argument for better contraceptive methods.

Cultural, religious, and personal preferences in contraception differ widely, and must, of course, be taken into account if adequate levels of acceptability and continuity are to be achieved. While it is true that there may never be an “ideal” contraceptive for all circumstances, it is clear that there should be a broader spectrum of methods which are safer, less discomfiting, and more convenient; and which require less complex and costly distribution systems.

Such methods are well within the reach of biomedical science and adaptive technology, but will require sustained investigation and effort. Traditionally, reproductive research has been grossly underfinanced. Worldwide expenditures in 1975 were less than \$130 million. Simply to maintain this wholly inadequate level of funding in the face of current inflation would mean approximately \$200 million in 1980.

But this is far below what is required. Two to three times that amount is needed, not merely because of the importance of the population issue itself, but because of the intrinsic time lags involved.

There are a number of promising avenues for improved fertility regulation that have emerged from the basic research of the past 15 years. Among these are better contraceptive methods for use by males. These could substantially improve the ability to regulate childbearing by giving husbands greater responsibility for contraception. Further, it would make it possible for couples to alternate methods, and thus further reduce the risk of cumulative undesirable medical side effects. But even after a potential method has been developed, at least 3 to 5 years are required for testing before the method can be practically applied. And a wholly new discovery requires a full decade to reach the stage of a usable product.

What we must understand is that a variety of safe, effective, and acceptable methods of fertility regulation is not just needed now, and 10 years from now, but in the years 2000, 2010, 2020, and so on. If new methods are to be available then, the research effort must be expanded now.

And yet the field has been so starved for funds in recent years that more than half the approved grant applications for reproductive biological research have simply failed to be financed. Both the pharmaceutical industry and philanthropic foundations have been active in supporting such research, but they cannot be expected to carry the major funding expansion that is now urgently required. Governments must be prepared to direct substantially more effort in that direction.

The fruits of such research will result not only in better methods of contraception, but in the reduction of many other adverse medical and social effects of unwanted or abnormal pregnancy: prematurity, infant mortality, congenital defects, mental retardation, maternal morbidity and mortality—as well as illegitimacy, early marriage, family disruption, educational disadvantage, and the exacerbation of poverty.

The investment in reproductive research is immensely worthwhile. There is simply no question that more of it is needed. The same need exists for additional social science research in the population field. There is a clear requirement to define more precisely those particular elements of social and economic development that most directly affect fertility.

But, as I have indicated, this expanded research will require years of effort before it can be translated into radically different methods of contraception. Governments cannot afford simply to wait for that. Rather they must in the meantime take action to improve present family planning programs and make broader use of current contraceptive technology. Such programs are necessary in all countries with rapidly expanding populations, regardless of the particular stage of economic and social development.

Family Planning and Stages of Development

In some countries, widespread use of contraception precedes a change in desired family size and may help it occur. In others, contraception becomes popular only after other factors have reduced family norms. But in either pattern, family planning is important, and indeed ultimately essential to meet the demand of parents for reduced family size.

In the lower-income developing countries, where absolute poverty is endemic, family planning programs should be shaped to service those parents who already desire to reduce their fertility; to urge others to consider that option; to increase local awareness of the damaging consequences of rampant population growth; and to recognize that by improving the health of the local community—and particularly of mothers and children—the program is in fact laying the foundation for a change in fertility norms.

Such an approach insures that as the demand for family planning service increases, the supply is there to meet it. In the absence of more fundamental social and economic improvements, one cannot, of course, expect such a program to “solve” the population problem. But it would be equally naive to assume that it can have no effect on fertility whatever.

Indonesia, for example, is a particularly interesting case of a country with strong political commitment to fertility decline, and a vigorous family planning program, that appears to be off to a good start in spite of immense development problems.

In any event, the view that development in and by itself can take care of the fertility problem in the

developing world is an unfortunate oversimplification as applied to most of the countries, and a dangerous error as applied to others.

Even for the better-off developing countries, such as a “development-only” strategy would be wasteful. The fall in fertility, without a strong family planning program, is likely to come later in the development process than it need to: per capita income would grow more slowly, and the ultimate size of the population would be larger.

But for the lower-income countries, a “development-only” strategy would be disastrous. In these countries it would take a much longer time to reach the socioeconomic levels that normally correspond with significantly lower birth rates. Indeed in some of them, it is the very magnitude of the population pressures themselves that is retarding that progress. Were the fertility problem not dealt with directly, the program would simply be too slow.

At the rate at which literacy has been increased and infant mortality and fertility reduced during the last decade, it would take India, for example, until the year 2010 to reach the literacy levels that normally correspond with crude birth rates of 30; and it would take until the year 2059 to reach the infant mortality levels that correspond with a crude birth rate (CBR) of 30.

If Nepal were to do nothing about its fertility directly, it would take it 170 years to reach the literacy level associated with a CBR of 30.

India and Nepal—and many other countries—simply do not have that kind of time to experiment with a “development-only” strategy. And, happily, they have no intention of attempting it.

Whatever the rhetoric at Bucharest in 1974, no country has abandoned the antinatalist policies it held then, and several have strengthened them.

Competent observers do argue about the relative importance of social development and family planning efforts in reducing fertility rates. Some say the former is too indirect. Others say the latter is too inefficient.

But the truth is that the latest reviews of the experience of individual countries—reviews completed within the past 12 months—clearly support the conclusion that significant reduction of birth rates depends on both social development and family planning. The reviews suggest that family planning programs have a clear, substantial, and independent effect on country performance. Virtually all of the countries with reductions of 20 percent or more in their crude birth rates during the decade 1965–74 had strong family planning programs.

But the research also confirms what common sense itself would suggest: that the effect of family planning programs is greatest when they are joined to efforts designed to promote related social goals.

Raising Population Consciousness

The real problem—for all of us—is to try to grasp the complexity of the population issue.

Population problems are not simple; they are not straightforward; and they are certainly not very clear. They are like man himself: complicated.

If we are to get down to solutions that really work, we have to try to see the problem in all its ramifications, and in all of its tangled interrelationships.

I recently asked a panel of distinguished experts to review our activities in the population field within the World Bank. They took a hard look at everything we have been doing since 1969, and they rightly reproached us for a tendency to treat population too much in isolation from our other activities. They pointed out that we have been prepared to lend for population projects, and were ready to bring specialized analysis to population issues when they were of obvious immediate importance. But too many of us in the Bank had proceeded as if population issues could be left to specialists, rather than considered automatically in all aspects of our investment and development programs.

In short, they asked us to think about the problem in a more comprehensive way—and deal with it accordingly. They were right. And that is exactly what we plan to do.

Let me, now, summarize and conclude the central points I have made.

Summary and Conclusions

The argument I have made is this.

It now appears that a significant decline in fertility may have at last begun in the developing countries. The data are not yet fully conclusive, but the indications are that the crude birth rates have fallen over the past two decades by an average of about 6 points, or nearly 13 percent. By major region, the decline has been 6.5 points in Asia; 5.4 points in Latin America; and 2.3 points in Africa. Further, the decline appears to have been general and widespread. It has occurred in 77 of the 88 countries for which estimates are available.

If these indications are confirmed by the censuses scheduled for 1980, then what we are seeing here is something of historic importance. It would mean that the period of rapid acceleration in the rate of growth of the world's population has finally reached

its peak and is now definitely moving downward towards stabilization.

But as welcome as this is, the fact remains that the current rate of decline in fertility in the developing countries is too slow to avoid their ultimately arriving at stationary populations far in excess of acceptable levels.

Unless governments, through appropriate policy action, can accelerate the reduction in fertility, the global population may not stabilize below 11 billion. That would be a world none of us would want to live in. But governments can take action, and can accelerate the process, given the resolve and determination to do so.

The critical point is this: for every decade of delay in achieving a net reproduction rate of 1.0—replacement-level fertility—the ultimate steady-state world population will be approximately 15 percent greater.

Governments, then, must avoid the severe penalties of procrastination and try to hasten the process forward.

But how?

The causes and determinants of fertility reduction are extremely complex, but it appears likely that there are a number of key linkages between that reduction and certain specific elements of socioeconomic development.

The factors that appear to be the most important are health, education, broadly distributed economic growth, urbanization, and the enhanced status of women. These factors are at work in the developing world today, but their progress is too slow to be fully effective.

Without additional intervention on the part of governments, the current population in the developing world is going to continue to grow at rates very substantially in excess of those that would permit far more economic and social progress.

There are two broad categories of interventions that governments must undertake: those designed to encourage couples to desire smaller families; and those designed to provide parents with the means to implement that desire.

The first set of interventions sets out to alter the social and economic environment that tends to promote fertility, and by altering it to create a demand among parents for a new and smaller family norm.

And the second set of interventions supplies the requisite means that will make that new norm attainable.

To create the demand for a change in family norm, governments should try to:

- Reduce current infant and child mortality rates sharply.
- Expand basic education and substantially increase the proportion of girls in school.
- Increase the productivity of smallholders in the rural areas, and expand earning opportunities in the cities for low-income groups.
- Put greater stress on more equitable distribution of income and services in the drive for greater economic growth.
- And above all else, raise the status of women socially, economically, and politically.

To satisfy the demand for a change in family norms, governments and the international community should:

- Provide a broad choice of the present contraceptive techniques and services to parents.
- Improve the delivery systems by which parents can get the services they wish.
- And expand present levels of research seeking better techniques and services.

Both categories of interventions are necessary.

Recent studies confirm that the effect of family planning programs is greatest when they are joined to efforts designed to promote related social goals.

We know that eventually the world's population will have to stop growing. That is certain.

What is uncertain is how. And when. At what level. And with what result.

We who are alive today can determine the answers to those questions. By our action—or inaction—we will shape the world for all generations to come.

We can avoid a world of 11 billion, and all the misery that such an impoverished and crowded planet would imply. But we cannot avoid it by continuing into the next quarter century the ineffective approach to the problem of population that has characterized the past 25 years.

Man is still young in cosmic terms. He has been on earth for a million years or so. And our modern ancestor, *Homo sapiens*, for a hundred thousand years. But the universe of which he is a part is some 20 billion years old.

And if we represent the history of the universe by a line a mile long, then modern man has appeared on that line for only a fraction of an inch. In that time perspective, he is recent, and tentative, and perhaps even experimental. He makes mistakes. And yet, if he is truly *sapiens*—thinking and wise—then surely there is promise for him.

Problems, yes. But very great promise—if we will but act.