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INTERRELATIONSHIPS AMONG NUTRITION, HEALTH, POPULATION, AND DEVELOPMENT

The decision to publish a special issue of *Food Research Institute Studies* devoted to nutrition, health, and population in developing countries reflects a growing awareness of the central importance of these three problem areas. A number of international conferences and several recent publications have contributed to the increased recognition that malnutrition and ill health are widespread manifestations of poverty and are, at the same time, obstacles to national development.[1] In addition, rapid population growth accentuates the problems of poverty because it increases the difficulty of raising the miserably low returns to labor, of reducing inequalities in the distribution of income, and of achieving fuller coverage in the provision of social services.

The unprecedented reduction of mortality in developing countries during the past twenty-five years is an impressive achievement, but it is not an unmixed blessing. Lower death rates among infants and children account for much of the decline in mortality, and this reduction means that parents do not experience the tragic loss of children as frequently as in the past. Nevertheless, in many of the developing countries infant and child mortality rates remain so high that frequently one in four children does not survive until his fifth birthday. Furthermore, in many situations "there is no corresponding improvement in health of the children who survive." Hence the gains represented by reduced mortality "are illusory" because "the health and well-being of many of the survivors is at an appallingly low level . . ."(3, p. 8).

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[1] Particularly relevant are the World Food Conference held in Rome in 1974, the 1971 MIT Conference on Nutrition, National Development and Planning and the proceedings volume for that conference (2), Berg's book on *The Nutrition Factor*(1), and the World Bank volume, *The Assault on World Poverty* (14). (The latter volume includes an excellent essay on health that also deals with the nutritional problems of the less developed countries.) It is also noteworthy that the 1974 World Population Conference at Bucharest gave major emphasis to the interrelationships among population policy and economic and social development. The World Population Plan of Action adopted at the Conference stated that "The principal aim of social, economic and cultural development, of which population goals and policies are integral parts, is to improve levels of living and the quality of life of the people" (as quoted in 11, p. 5).

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Many attempts have been made to estimate the prevalence of malnutrition.[2] The number of persons in developing countries thought to have less than a "critical minimum energy intake" increased from 400 million in 1969-71 to just over 450 million in 1972-74 according to the latest estimate by the Food and Agriculture Organization of the United Nations (FAO) (5, p. 53). Reutlinger and Selowsky, on the other hand, have estimated that 56 percent of the population in developing countries or some 840 million persons "had calorie deficit diets" (*13*, p. 2).[3] The differences between these two estimates illustrate the difficulties of quantification. However, those difficulties should not be allowed to obscure the basic fact that protein-calorie malnutrition and deficiencies of vitamin A, iron, and other essential nutrients are widespread problems which adversely affect the quality of life of many individuals and often impair their ability to learn and to work productively.

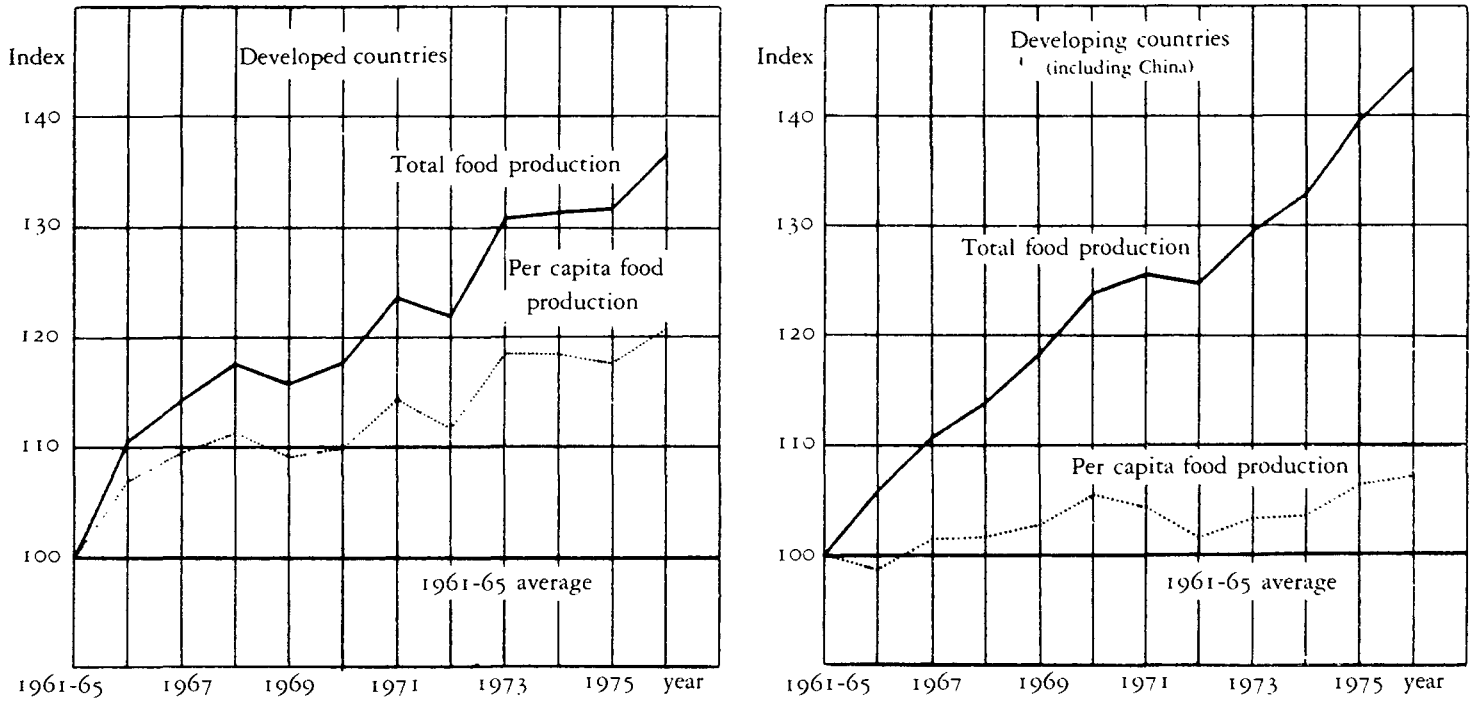
The food situation in the developing countries continues to be precarious, and progress in improving per capita food supplies during the 1970s has been disappointing. Since 1961-65 total food production has increased more rapidly in developing than in developed countries (Chart 1). During the decade of the 1960s, the 3.3 percent rate of increase in food production in the developing market economies was substantially higher than the 2.2 percent growth of food production in the developed countries. The former rate was also appreciably higher than the 2.6 percent annual growth in population in the developing countries so that per capita output increased by 0.7 percent a year. During the years 1970-76, however, the average rate of increase in food production was only marginally higher than the 2.6 percent rate of population growth so that per capita output increased by only 0.2 percent. Moreover, in the "most seriously affected" countries, i.e., those identified by the United Nations system as having been affected most adversely by the food shortages and sharp increases in agricultural and petroleum prices during the 1972-74 period, there was an annual average *decrease* in per capita food production estimated at 0.4 percent (5, p. 4).

The six papers included in this issue focus on the implications of these quantitative patterns. They direct attention to several crucial problems and also to some unresolved issues. The latter fit into two broad categories. The first set of unresolved issues relates to the problem of resource allocation between investment and other development expenditures required to raise productivity and output versus expanded government outlays for social services and measures to redistribute income. The second set concerns the identification of the most

[2] The term malnutrition is used to refer to the physical effects on the human body of dietary intakes that are inadequate in quantity and/or quality. In addition, the high prevalence of infection in developing nations exacerbates malnutrition by decreasing nutrient utilization and enhancing disease susceptibility. Deficiencies in quantity and quality often cannot be clearly distinguished. Indeed, the major nutritional program in developing countries is commonly referred to as protein-calorie malnutrition (PCM) or protein-energy malnutrition (PEM), because protein deficiency is so often induced by inadequate energy intake rather than being a direct result of insufficient protein intake (*4*). (Malnutrition also embraces "overnutrition" contributing to obesity, diabetes, and heart disease, but that is a problem associated with affluence rather than poverty.)

[3] It has been pointed out, however, that their methodology probably leads to an overestimate because they fail to take account of the fact that there is individual variation in calorie requirements. Srinivasan's paper discusses this issue (pp. 19-20).

CHART 1.—TOTAL AND PER CAPITA FOOD PRODUCTION IN DEVELOPED AND DEVELOPING COUNTRIES, 1961-65 TO 1976*



*Reproduced from Food and Agriculture Organization of the United Nations, *The Fourth World Food Survey*, Rome, 1977, p. 5.

effective means of utilizing the limited resources that can be made available for redistribution or for the expansion of social services. The choices to be made are difficult because the need for expanding health or other social services greatly exceeds the level of resources available for such activities, and conventional investment criteria provide only limited guidance in choosing among alternative programs.

DEVELOPMENT VERSUS SOCIAL SERVICES

The problem of trade-offs between development and social services is one that cannot be ignored. Uma Lele has emphasized that "substantial allocation of central resources to social services frequently occurs at the cost of more immediately productive investments in rural areas and, therefore, may prove self-defeating in the long run" (8, p. 123).

There are, however, as Srinivasan notes in his article in this volume, several possible counterarguments. The productivity-raising consequences of social services, for instance, may be sufficient to offset a loss in future production that might otherwise result from reduced investment. (However, Lance Taylor notes that although malnutrition and ill health are serious deprivations that impair human well-being, they may or may not be significant as factors limiting productivity and output depending on specific circumstances.) There is also the possibility, to be noted shortly, that health and nutrition activities can be linked with the delivery of family-planning services in such a way as to accelerate the reduction in birthrates. This linkage may thereby contribute to a slowing of the rapid population growth that is currently making it so difficult to raise per capita incomes and to increase the availability of education, health, and other social services to the rural as well as urban populations.

Srinivasan's paper makes an important distinction between developing countries such as Brazil or Mexico, where a modest redistribution of current income flows would permit meeting the basic needs of those in the lowest income groups, and countries such as Bangladesh or India "where even the most radical redistribution feasible would still leave a large section of the population with deficiencies in their consumption of basic needs" (p. 21). For the latter group of countries, accelerated economic growth is critical. Although expanding food production is not a sufficient condition for eliminating malnutrition, it is certainly a necessary condition given the fact that rapid growth of food production is required simply to prevent deterioration in the present inadequate levels of food consumption.

The priority to be given to strategies to expand output is not simply an issue of growth versus equity. Questions related to the pattern of growth—of the means by which increases in production are achieved—are also crucial. Fortunately, a considerable consensus has emerged on the need to pursue development strategies which assign a higher priority to rural development than in the past and which are concerned with both the *rate* and *pattern* of agricultural development. A country's agricultural development strategy is obviously a critical factor determining whether food production expands in pace with the growth of demand resulting from population increase and rising per capita incomes. It is also of crucial importance in determining the extent to which a country's growing labor force is

able to find productive employment both within and outside the agricultural sector (*3*, pp. 24-30; *7*, chap. 4). Increased productivity in producing food for home consumption or increased purchasing power are the overwhelmingly important means by which poor households can be expected to raise their levels of food consumption and improve their nutritional status.

HEALTH, NUTRITION, AND FAMILY-PLANNING ACTIVITIES

Just as there seems to be general agreement that the long-term solutions to nutrition, health, and population problems lie in the eradication of poverty, there is widespread consensus that one need not wait for social change to take place before solving some types of problems (*12*, pp. 67-68). Unfortunately, decision makers often confront a bewildering variety of alternative courses of action for which they lack the requisite information on costs and the effectiveness of various options. Moreover, there are no agreed-upon criteria to provide guidance in making judgments about the priority to be assigned to alternative programs or even to indicate the types of information that would be of greatest value in facilitating rational decision making.

Because the resources required to deal successfully with health problems are so limited, problems and possible solutions must be ranked so that priority is given to measures that will make a maximum contribution to alleviating human deprivations. Those who have attempted to utilize economic criteria in assigning priorities have found that there are only a few aspects of nutrition, health, and population problems for which the costs and benefits to society can be expressed in easily quantifiable economic terms. More often, the economic implications are so varied, widespread, and yet so subtle as to make quantification an art and not a science. The following pertinent comments by Mellor were related to the goal of improved nutrition, but they also apply to the interrelated problems of health, nutrition, and population (*10*, p. 70):

> as a justification . . . I would give primary place to its direct contribution to national welfare through an enhanced quality of life, including physical and mental well-being. We should not be reluctant to provide a humanistic rationale for what is after all one of the fundamental objectives of economic development. I would thus give little emphasis to measuring the effects . . . on economic output. This is not to say such effects may not be substantial—they are simply subordinate to the ultimate objective.

Although it is exceedingly difficult to quantify the benefits of nutrition or health interventions, the information already available permits some broad generalizations about the cost effectiveness of alternative means of achieving development objectives. The choice among alternative courses of action should be made with reference to the resources the program demands, and the resources that are available, and the benefit in health to be brought about by the program.

Since most health, nutrition, and population problems have multiple causes, combinations of interventions that present a concerted approach will often have interactive or multiplicative effects. Effectiveness will also be enhanced if the program is focused on the high risk groups because the benefit is often greatest in those most affected by the condition. The interrelationships among nutrition,

health, and population factors are demonstrated with exceptional clarity in the paper in this issue on recent food crises in Bangladesh. The analysis by Chowdhury and Chen also documents the extent to which the rise in mortality is concentrated among children and the elderly. The interactions between nutritional status and infection, which are so pronounced during a time of crisis, are also highly significant under the much more widespread and prevalent situation of chronic malnutrition and ill-health in developing countries. Moreover, programs that stress a preventive rather than a curative approach can be expected to achieve much wider coverage and have a greater impact by promoting improved health among rural as well as urban households.

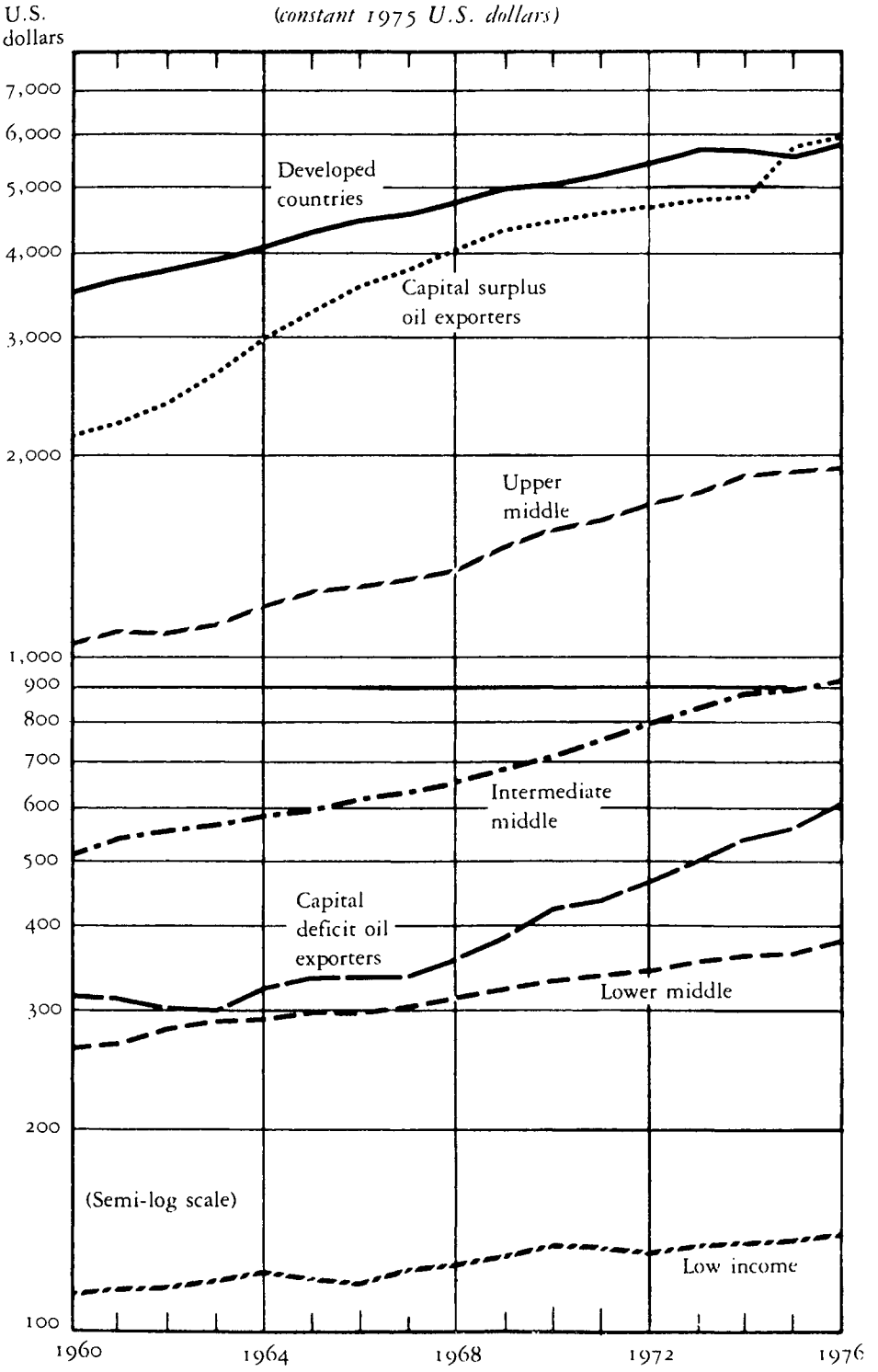
The articles in this volume by Carl Taylor and McCord suggest that well-designed composite packages of health, nutrition, and family-planning services are likely to be more cost-effective than single service programs. The fact that integrated programs are directed at multiple objectives also increases the likelihood that such programs will receive sufficient financial and administrative support so that these services will actually reach the rural poor. The three sets of activities are highly complementary, mainly because of the significant interactions between nutrition and infection, and between child survival and the willingness of parents to limit family size. Kocher's analysis of the interrelationships between socioeconomic development and fertility change also has implications with respect to integrated nutrition, health, and family-planning programs. His analysis suggests that family-planning programs can be expected to have only limited impact in many rural communities in tropical Africa because socioeconomic change has been so limited that there is little "demand" for the services offered by such programs. The rapid growth of the rural population in these countries magnifies the difficulty of achieving the threshold levels of development which appear to be necessary to induce a decline in fertility. The evidence for Bangladesh and India summarized by McCord and Carl Taylor suggests, however, that linking the delivery of rural health services with family planning could accelerate the required changes in motivation.

POLITICAL FACTORS AND THE PROBLEM OF CONSENSUS

Increased awareness of objectives which go beyond increasing average GNP is an important advance. But the multiplicity of options that need to be considered increases the difficulty of reaching the degree of consensus required for effective action. Decisions that affect "who gets what, when, and how" are by their very nature political decisions. Nutritionists, health and population specialists, and development economists have typically given little attention to the political factors which influence strongly the choice of programs and the allocation of scarce resources for their implementation. It is therefore noteworthy that Srinivasan's paper includes a section on the political framework as it affects distributional policies. Almost invariably a redistribution policy that benefits the poor has to be at the expense of the non-poor (at least relative to the incomes that wealthier segments might have enjoyed). Implementation of redistributive measures or more generous allocation of resources for social services to meet the needs of poor households is dependent on the political process. Either an authoritarian regime must have the will and the power to impose such measures or, in a more liberal

CHART 2.—GROWTH OF GNP PER CAPITA OF DEVELOPING COUNTRIES 1960-76*

(constant 1975 U.S. dollars)



*Reproduced from World Bank, Development Policy Staff, *Prospects for Developing Countries 1975-85*. Washington, D.C., 1977.

framework, those in power must be able and willing to mobilize the support of a broad coalition of interest groups which support such action for a variety of reasons.

Carl Taylor calls attention to the need for better understanding of how the necessary political support can be generated for health and nutrition programs that will have a broad impact on the population. He suggests that making health, nutrition, and family-planning services available as an integrated package enhances the prospects for mobilizing political support at national and local levels and of obtaining greater acceptance and more active participation by village communities. (See also 6, pp. 898-99.)

Lance Taylor's discussion of food subsidies in Egypt, which in 1975 amounted to over 11 percent of the country's gross domestic product, calls attention to the political repercussions of a policy change aimed at reducing the burden on the national budget that results from such a massive subsidy program. His citation of the food riots in Egypt in January 1977 is a case in point. Political leaders in developing countries tend to be influenced by an "urban bias," in part because urban populations constitute a particularly visible and often powerful pressure group. (See especially 9.)

Given that the poor in most developing countries are concentrated overwhelmingly in rural areas, a critical unresolved issue relates to the problem of mustering coalitions of political support that will ensure that policies and programs pay greater heed to that large but often quiescent group. Increased emphasis on decentralization and participation by local groups is no doubt a part of the answer to that problem. (See Carl Taylor's discussion of "planning from below" as it relates to health activities.) More generally, there is a need to evolve criteria that will be useful in providing guidance in the design of development strategies that will be effective in attaining multiple objectives and which are likely to command the necessary political, financial, and administrative support for effective implementation.

It is impossible to generalize about the types of policies and programs that merit priority in particular countries because of the great diversity that characterizes "developing countries." In fact, it is apparent from Chart 2 that in the period since 1960, the disparities in growth rates between the "low income" countries and the other categories of developing nations have been even greater than the disparity between those low-income countries and the developed countries. It is precisely because the problem of trade-offs in the allocation of resources between development and social services is so acute in countries such as India, Bangladesh, Indonesia, Kenya, and Tanzania that the determination of priorities is especially crucial. Moreover, the structural and demographic characteristics of those countries make it inevitable that their problems of poverty will continue to be concentrated mainly in rural areas for several decades at least. Given the severity of resource constraints and the pervasiveness of rural poverty in these countries, the most basic requirement is to accelerate the growth of output of food and other essential products by means which ensure widespread participation in gains in productivity and income. But the essays in this issue direct attention to the need to reinforce those efforts by giving a high priority to programs capable of improving nutritional status and health among the most vulnerable population groups and of slowing population growth.

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