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CONTENTS

<hr/>	
World Bank Research on the Hunger Dimension of the Food Problem	3
<i>Shlomo Reutlinger</i>	
<hr/>	
Completed Research	10
Rural Development in China	10
Marketing Manufactured Exports: Clothing from Colombia	13
Management and Organization of Irrigation Projects	16
International Trade Policy for the Development of Bangladesh	18
Labor Migration from Pakistan and Bangladesh to the Middle East	20
Incomes and Welfare in Colombia, 1964-1978	24
<hr/>	
New Research	
Adjustment in Oil-Importing Countries	25
A Model of Energy Demand in Developing Countries	26
The Welfare Implications of Alternative Energy Pricing Policies in Indonesia	27

Planning Investments in Electric Power in Indonesia	27
Tax and Contractual Arrangements for Exploiting Natural Resources	28
Public Policies in Agriculture: Republic of Korea and Thailand	30
Economic Consequences of the Coffee Boom in East Africa	31
National Accounts Statistics of Centrally Planned Economies	33
Indian Urban Development	33
Industrial Location Policies for Urban Deconcentration: Republic of Korea	34
Income Formation and Expenditures of Poor Urban Households	35
Participant-Observer Evaluation of Urban Projects	36
Research and Development: Handpumps for Rural Water Supply	37
Determinants of Fertility in Rural Bangladesh	37
Demand for and Willingness to Pay for Services in Rural Mali	38
<hr/>	
New and Forthcoming Publications	39

WORLD BANK RESEARCH ON THE HUNGER DIMENSION OF THE FOOD PROBLEM

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Over the last decade, dramatic changes have occurred in perceptions about the nature and magnitude of the food problem in developing countries. Almost exclusive preoccupation with trends and fluctuations in aggregate food demand, production, and imports has been augmented with a new concern for inadequate food consumption by large numbers of people here and now. This evolution in perceptions about the food problem closely parallels the new realization that the preoccupation with economic growth ought to be complemented with an explicit concern for the poverty persisting among large segments of the population.

This new perception of the nature of the food problem, while widely shared, has not been uniformly interpreted, however, in its implications for policy and research. For example, Willi Brandt, in a recent article in the *Economist* reviewing the Cancun summit conference, states the widely held view that increased food production is the key requirement (for eliminating world hunger) and that food aid (presumably also food imports), while valuable, should be used only for temporary and emergency support.¹

Research in the World Bank on hunger issues is predicated on the basic premise that the extent of hunger cannot be inferred from data on aggregate food production and that to alleviate hunger, accelerated food production and the stabilization of food supplies through buffer stocks are neither sufficient nor necessary. A second premise is that the most important direct determinants of hunger are usually peoples' levels of income and the prices they must pay for food.

Research reviewed in this paper on the hunger dimension of the food problem has primarily focused on the effects of poverty and food prices on

the prevalence of hunger. This is not to deny the important contribution food production has made and will continue to make toward reducing hunger—without the “Green Revolution” the problem of hunger would be much worse than it is today. But while the World Bank has an extensive research portfolio on issues related to food supply, research about the impact on hunger of projects and policies designed to promote food production has hardly begun. Accelerated food production will alleviate hunger only to the extent that the scarce resources used in the process yield a larger reduction in poverty and/or food prices than they would if used in other ways.

Hunger in developing countries has essentially two major dimensions: chronically low levels of food consumption among major segments of the population and periodic reductions in food consumption on a national or regional scale caused by failing harvests, abnormally high prices of imported food, or reduced ability to pay for food imports.

Chronic Hunger

How many people are chronically short of food? By how much? Who are they? How does it affect them? How much additional income would the hungry need, to afford the food they require? How are their food shortages affected by the aggregate food supply and the price they pay for food? These are some of the questions that need to be addressed if any meaningful and cost-effective policies are to evolve.

What is the aggregate dimension of chronic food shortages?

The first requirement for assessing the numbers of people short of food in any country is knowledge about how food consumption is distributed. The

*This review is, by necessity, only about research at the World Bank. My intellectual debt to the wider research community and, equally, to the dedicated practitioners in the field is enormous and gratefully acknowledged. This is essentially a very personal overview of the topic and how I see the pieces fitting together. Only what I regard to be some of the most important issues have been reviewed. Hunger is, of course, a symptom of a much broader malaise in societies. One reason for having selected the particular subjects I did is that they are not already treated in the much broader context of the literature on agricultural and general development, income distribution, and so forth.

1. *Economist*, November 28, 1981.

second requirement is an agreed standard of food adequacy. Here it has been pointed out rightly that different people require different amounts of food; hence, it would be inappropriate simply to count people whose intake of food is below an average standard of food adequacy and to assume that they are underfed. Ideally, one would need to know the food requirement and intake of each individual to draw meaningful conclusions about the extent of food shortages. But it is unrealistic to expect that data of this kind could ever be compiled on a scale large enough for the national prevalence of undernutrition to be assessed.

In *Malnutrition and Poverty*,² Reutlinger and Selowsky developed a methodology whereby the per capita food consumption of different income groups is estimated by the use of data on the per capita food consumption of a country's total population, income distribution data, and knowledge about the relationship between income and food consumption. By comparing actual per capita food consumption with an average standard of requirement for each income group, it is possible to infer which income group consumes less per capita than its requirement. It seems reasonable to assume further that among people whose incomes are similar, variations in consumption are closely correlated with requirements. On this assumption, all people within an income group whose average consumption is a certain percentage below requirements are underfed by the same percentage.

In a similar study of the prevalence of undernutrition among children, Selowsky shows how the association between food consumption and poverty leads to a higher incidence of undernutrition among children than adults when the association between income and family size—poor families being larger than the average—is taken into account.³

The sensitivity of estimates of the number of "underachieving food consumers" to different assumptions about variations in food intake and requirements among individuals within income groups has been explored in a recent paper by Reutlinger and Alderman.⁴

These studies suggest that the numbers of people consuming too little food are much larger than those suggested by independent observations of

people with clinical symptoms of health problems related to undernutrition. Though the subject of much controversy, this discrepancy should not be surprising. The standards of energy sufficiency, developed for a range of representative individuals by FAO/WHO and used in conjunction with the Reutlinger-Selowsky methodology, are meant to represent the requirements for food energy of people engaging in moderate activity and having unimpaired access to food. They go beyond ensuring the food energy required to maintain immediate physical health. The obvious implication is that lower standards of food adequacy should be used when the objective is to measure whether food shortages are impairing health. However, further research is required to determine whether and in what context food intake below the FAO/WHO standards inhibits peoples' activity. It is not known whether, for instance, people in poverty exert less energy than might be expected, due to lack of opportunity and social custom, or whether their limited food intake forces them to adopt a less active lifestyle. It should also be borne in mind that the FAO/WHO standards may underestimate the potential efficiency of energy conversion since they are based on studies of people whose means permit them to waste food. These and similar issues are discussed by Srinivasan.⁵

The studies by Reutlinger and others, as well as subsequent analyses of chronic food deficits derived from survey data on household expenditure and food consumption in several countries (India, Pakistan, Bangladesh, Brazil, Morocco, and Colombia) reported in papers by Knudsen and

2. Shlomo Reutlinger and Marcelo Selowsky, *Malnutrition and Poverty: Magnitude and Policy Options*. World Bank Staff Occasional Papers No. 23 (Baltimore and London: The Johns Hopkins University Press, 1976).

3. Marcelo Selowsky, "The Economic Dimensions of Malnutrition in Young Children." World Bank Staff Working Paper No. 294, October 1978.

4. Shlomo Reutlinger and Harold Alderman, "The Prevalence of Calorie-Deficient Diets in Developing Countries." World Bank Staff Working Paper No. 374, March 1980. Reprinted in *World Development* 8 (5-6) (May/June 1980), pp. 399-411.

5. T.N. Srinivasan, "Malnutrition: Some Measurement and Policy Issues." World Bank Staff Working Paper No. 373, February 1980.

Scandizzo,⁶ Berg,⁷ Austin,⁸ and Mohan and others,⁹ clearly highlight several basic propositions in connection with the hunger dimension of the food problem:

- In most countries, the prevailing distribution of food consumption indicates that large numbers of households are consuming less than fully adequate amounts of food (by FAO/WHO standards) and a smaller but still very large number are getting less food than required for normal health and child development.
- In future, the proportion, though not the absolute number, of people consuming less than adequate amounts of food is likely to show a modest decline under realistic assumptions about growth rates of per capita income and food supplies if the distribution of income remains unchanged.
- The total food deficit implied by this "chronic hunger" is only a small percentage of the food supply currently available: in most countries and amounts to no more than 2 percent-4 percent of global food supplies.

A recent study by Knudsen and Scandizzo,¹⁰ based on household survey data on consumption, analyzes the determinants of caloric intakes in developing countries to reach three broad conclusions. First, both income and price elasticities of demand for calories are below unity, so that quite large increases in income or reductions in prices are needed before people will consume more calories. These elasticities tend to cluster around 0.50 for the poorer consumers; they are much lower for higher-income groups. Second, even a moderate increase in caloric prices implies a large nutritional sacrifice for the poor if present trends in the growth and distribution of income continue. Third, with policies to redistribute income moderately so that the poor can better afford to buy food, malnutrition could be substantially reduced even with relatively little economic growth and increasing food prices.

Research on policy options

These findings on the nature and magnitude of chronic hunger have important implications for the kind of research needed in support of policies which could substantially reduce hunger. The prognosis from the World Bank's research about

the nature and magnitude of the problem is neither pessimistic nor optimistic. Insofar as the amount of food required to close the gap between current consumption and nutritionally adequate consumption is small, *the world's capacity to produce more food is not likely to be a major constraint*. Even so, the task of defining and implementing policies which would make it possible for hundreds of millions of people to augment their meager diets, albeit by small amounts, is a major challenge. The central thrust of research in this regard should be, therefore, to identify policies which cost effectively provide "hungry" people with more income to purchase more food at existing prices (or to consume more of the food they produce, if they are farmers) and/or make food available to them at lower prices.

In *Malnutrition and Poverty*, Reutlinger and Selowsky compared the cost effectiveness of income maintenance, food stamps, and general subsidies on food prices in augmenting the food consumption of the undernourished.¹¹ They defined cost effectiveness in terms of the fiscal cost per additional unit of food consumed by the undernourished population. The conclusions are quite stark, but not surprising. General food-price subsidies are extremely cost ineffective if only a small proportion of the population is undernourished and the elasticity of demand for the subsidized food by those who do not need it is fairly high. If, as is often the case, only the imported portion of the available food is subsidized, the fiscal cost effectiveness is improved, but only because the costs to the economy are

6. Odin K. Knudsen and Pasquale L. Scandizzo, "Nutrition and Food Needs in Developing Countries" World Bank Staff Working Paper No. 328, May 1979.

7. Alan Berg, "Malnourished People—a policy view." Poverty and Basic Needs Series, World Bank, June 1981.

8. James E. Austin, *Confronting Urban Malnutrition: The Design of Nutrition Programs*. World Bank Staff Occasional Papers No. 28 (Baltimore and London: The Johns Hopkins University Press, 1980).

9. Rakesh Mohan, Wilhelm Wagner, and Jorge Garcia, "Measuring Urban Malnutrition and Poverty: A Case Study of Bogota and Cali, Colombia." World Bank Staff Working Paper No. 447, April 1981.

10. Odin K. Knudsen and Pasquale L. Scandizzo, "The Demand for Calories in Developing Countries." *The American Journal of Agricultural Economics*, vol. 64, no. 1 (February 1982) (forthcoming).

11. Shlomo Reutlinger and Marcelo Selowsky, *ibid.*

shifted, in part, to domestic producers. This kind of subsidy reduces efficiency, increases dependence on imports and, possibly, increases hunger among poor farmers and laborers to the extent that subsidized imports depress production. In general, policies that target benefits to the undernourished—food-price subsidies, food-stamp programs, or straight income transfers—are shown to be much more cost effective.

Separate studies by Selowsky¹² and Knudsen¹³ show that it is even more difficult to design cost-effective, subsidized food-distribution programs when the target population is more narrowly defined, so as to consist only of children. Selowsky concludes that it is difficult to do better than through an equivalent income transfer. Knudsen suggests that effectiveness can be reasonably assured only if supplementary feeding is restricted to the most needy cases, is carried on for a limited period, and if the ration size is close to the full nutritional requirements of the child.

Applications of cost effectiveness and cost-benefit criteria to the evaluation of projects and policies designed to raise the food consumption of the undernourished population are discussed in studies of a supplementary feeding project for children in Tamil Nadu (India)¹⁴ and the ration shop program in India.¹⁵ In a study of the milk-distribution program in Chile,¹⁶ Harbert and Scandizzo analyzed the extent to which the food given to the household is actually used by the intended beneficiaries (children and pregnant women) and questioned whether the program's economic and dietary benefits ensured a lasting improvement in nutrition. They found that, while some of the benefits go to other family members, a substantial amount still reaches the target group. Among the target group, caloric and protein consumption rose significantly, while weight and height increased.

Scandizzo and Graves¹⁷ analyzed both fiscal and economic costs of policies for broad-based food distribution in several Asian countries. Their results show that such policies tend to be more cost effective in countries with higher food deficits per capita and where a larger share of the population is in deficit and increases its consumption significantly in response to small reductions in food prices. Further, countries in which a larger portion of the distribution cost is sustained by the

government, rather than by domestic producers, appear to be the more efficient distributors of low-priced calories.

In a recent analysis of commodities used in US food-aid programs for distribution to selected target groups, Reutlinger developed criteria for measuring the cost effectiveness of alternative commodities and program modalities. Preliminary data indicate large variations in cost effectiveness.¹⁸ For cases in which interventions cannot be targeted to the poor, the work of Timmer,¹⁹ particularly in reference to Indonesia, has shown that subsidizing the distribution of the "inferior" foods consumed in relatively large quantities by the poor can be much more cost effective in reducing chronic hunger than subsidizing foods in high demand by the whole population.

In principle, it would be nice to know not only the cost of inducing a given increase in food consumption by a target population, but also the consequences of doing so. For instance, if the consequences could be expressed in terms of the contribution to national income, one could compare the benefits from a supplementary food program with those of a transport project. Or, if the consequences for health could be predicted and quantified, one could compare the cost effectiveness

12. Marcelo Selowsky, "Target Group Oriented Food Programs: Cost Effectiveness Comparisons." World Bank Reprint Series: Number 127. Reprinted from *American Journal of Agricultural Economics*, vol. 61, no. 5 (December 1979):pp. 988-994.

13. Odin K. Knudsen, "Economics of Supplemental Feeding of Malnourished Children: Leakages, Costs, and Benefits." World Bank Staff Working Paper No. 451, April 1981.

14. Odin K. Knudsen, *ibid.*

15. Pasquale L. Scandizzo and Gurushri Swamy, "Benefits and Costs of Food Distribution Policies: The India Case." World Bank, Agriculture and Rural Development Department, September 1981.

16. Lloyd Harbert and Pasquale L. Scandizzo, "Food Distribution and Nutrition Intervention—The Case of Chile." World Bank, Agriculture and Rural Development Department, Working Paper No. 27, February 1980.

17. Pasquale L. Scandizzo and J. Graves, "The Alleviation of Malnutrition: Impact and Cost Effectiveness of Official Programs." World Bank, Agriculture and Rural Development Department, Working Paper No. 19, January 1981.

18. Sidomo Reutlinger, "Analysis of the Nutritional Cost-Effectiveness of Commodities." World Bank: Development Economics Department, September 1981.

19. C. Timmer, "Toward a Nutrition Oriented Food Policy: The Case of Indonesia." World Bank (mimeo).

of supplementary food programs with that of other health-promoting investments.

World Bank researchers have investigated two kinds of relationships between nutrition and productivity: the effect of early nutritional deprivation on children's mental development and educational achievement, with its consequences for lifetime earnings, and the effects of adult malnutrition on workers' performance. Studies by Selowsky and Taylor²⁰ on the former and by Basta and Churchill²¹ on the latter show that nutritional deprivation can significantly impair productivity, but that this impairment is difficult to separate from the effects of other factors in the environment. Such a concept of the benefits from improved nutrition is made even more difficult to use as a criterion in project selection because any assessment of the social, as distinct from the private, gains requires additional assumptions about the social value of the current and future marginal product of labor and mental abilities both in the present and many years into the future.

An alternative approach to the evaluation of benefits from additional food consumption is presented in a paper by Scandizzo and Knudsen.²² They derive criteria for estimating social demand functions, which measure the value society places on various amounts of food consumed by each of its members. The extent to which social demand exceeds private demand is used to measure the gains from enabling poor people to consume more food than they otherwise would.

Given the state of present knowledge and the cost of learning more about the functional and economic significance of undernutrition, it is doubtful that projects or policies designed to reduce hunger could or should be evaluated using cost/benefit analysis. In any case, the cost of human suffering cannot be assessed in any objective manner. Besides, different degrees of compassion and political considerations play an important role in determining the kind and extent of measures adopted in a particular country. In this context, research on the chronic hunger dimension of the food problem can be most relevant when it focuses primarily on identifying which segments of the population are denied access to food by any reasonable standard and on evaluating which are the most cost-effective measures to reduce these deprivations.

Periodic Countrywide Food Scarcities

Periodic poor harvests, high prices of imported foods, and reduced foreign-exchange earnings can sharply reduce the food available to a nation. The effects may be severe for the poor but hardly noticeable for the well-to-do. When aggregate supplies decline and prices rise, the well-to-do can continue to eat the same amounts of food simply by buying cheaper foods or by reducing their nonfood consumption. The poor do not have this option; they must sharply reduce their total consumption of food when the price rises. As a consequence, the chronically underfed have even less food than usual, and people who normally "get by" become underfed periodically, too. Worst hit when harvests fail are poor farmers and the landless, who derive their income largely from food production.

When the World Bank first began its research on instability in food supplies, neither the many causes of observed variations in food supply and consumption nor their implications for the incidence of hunger was explicitly recognized. The main objective of the first study²³ was to estimate the benefits and costs of a national buffer stock under conditions that would be most favorable to its economic justification: the case of a country unable or unwilling to vary food imports or exports in response to variations in its domestic food production. A simulation model was used to transform the probability distribution of production into a probability distribution of price and consumption associated with buffer stocks of

20. Marcelo Selowsky and Lance Taylor, "The Economics of Malnourished Children: An Example of Disinvestment in Human Capital." *Economic Development and Cultural Change*, vol. 22, no. 1 (October 1973): pp. 17-30.

21. Samir S. Basta and Anthony Churchill, "Iron Deficiency Anemia and the Productivity of Adult Males in Indonesia." World Bank Staff Working Paper No. 175, April 1974, and "The Relationship of Nutrition and Health to Worker Productivity in Kenya." Study of the Substitution of Labor and Equipment in Civil Construction, Technical Memorandum No. 26, World Bank, May 1977.

22. Pasquale L. Scandizzo and Odin K. Knudsen, "The Evaluation of the Benefits of Basic Needs Policies." *American Journal of Agricultural Economics*, vol. 62, no. 1 (February 1980): pp. 46-57.

23. Sldomo Reutlinger, "A Simulation Model for Evaluating Buffer Stock Programs," in *Symposium on Food Grain Marketing in Asia*, Asian Productivity Organization, Tokyo, 1971.

various sizes. Probability-distributions of the costs and benefits of the buffer stock operations were calculated on the basis of a large sample of 30-year sequences of production selected at random from the probability distribution of production. For a range of plausible parameters, it was illustrated that the cost of a buffer stock, relative to its effect on stabilizing price and consumption, increases rapidly with the size of the stock and that for a reasonable level of stabilization the costs would far exceed the gains in consumer surplus associated with the stabilization of prices.

This basic framework of analysis was retained in subsequent studies undertaken over more than a decade, but the model was expanded in many new directions. Additional factors contributing to the instability of food consumption were explicitly considered and studies increasingly emphasized the hunger dimension of food supply and consumption instability.

In a study of global instability in the supply of wheat,²⁴ the original model was modified in order to investigate the effectiveness of buffer stocks in reducing the likelihood of extreme shortfalls in supply. It was illustrated that this purpose would require a very large and costly buffer stock if the stock were operated by rules which provide for the reduction of general price instability. A much less costly stock of moderate size, however, was shown to be adequate to the task if rules were adopted providing for the release of stocks only in the event of extreme shortfalls in supply.

Further studies of countrywide instability in the consumption of foodgrains investigated the effects of instability both in domestic production and in world market prices under alternative buffer-stock and food-trade policy scenarios. It was shown that under a free-trade regime, with imports filling the gap between food consumption and production at existing world market prices, much of the supply instability caused by fluctuations in domestic production could disappear. The remaining instability would be the result of instability in import prices and the response of consumers to price fluctuations. This source of instability could be eliminated under a stabilizing trade policy, whereby all or some consumers would be insulated from fluctuations in international prices. It was shown, however, that a free-trade policy and, more

so, a stabilizing-trade policy in grains would reduce supply instability at the cost of greatly destabilizing the foreign exchange and fiscal accounts. Domestic buffer stock operations could be justified, but only to the extent that they are less costly than financial measures to cope with unstable food trade accounts.²⁵

Another study specifically compared the cost effectiveness of buffer stocks, trade policies, and internal food pricing policies for preventing shortfalls in the consumption of food by low-income consumers. This research illustrated that through the redistribution of existing food supplies within the country, periodic hunger could be prevented at a reasonable cost without either large buffer stocks or the excessive demands on foreign exchange which a countrywide supply-stabilization trade policy entails.²⁶

Applying this research to the case of India, it has been shown that buffer stocks of the magnitude India has held in recent years effectively stabilize supply, but at a very high cost. Equally effective stabilization could be assured through trade and less stocks, particularly if stocks are replenished when world prices are favorable.²⁷

24. ———, "A Simulation Model for Evaluating World-Wide Buffer Stocks of Wheat." World Bank Reprint Series: Number 34. Reprinted from *American Journal of Agricultural Economics*, vol. 58, no. 1, (February 1976):pp. 1-2.

25. Shlomo Reutlinger, D. Eaton, and D. Bigman, "Should Developing Nations Carry Grain Reserves?" in Eaton and Steele, eds., *Analysis of Grain Reserves*. United States Department of Agriculture: ERS-634, pp. 12-38. August 1976. D. Bigman and Shlomo Reutlinger, "Food Price Stabilization: National Buffer Stocks and Trade Policies." *American Journal of Agricultural Economics*, vol. 61, no. 4 (November 1979): pp. 657-667, "National and International Policies Towards Food Security and Price Stabilization" *American Economic Review*, vol. 69, no. 2 (1979), pp. 159-163. Shlomo Reutlinger and K. Knapp, "Food Security in Food Deficit Countries: A Brief Historical Review and Probabilistic Simulation of the Effect of Trade and Stock Policies," in Yaron and Tapiers (eds.) *Operations Research in Agriculture and Water Resources: Proceedings* (Amsterdam: North Holland Publishing Company, 1980).

26. Shlomo Reutlinger and D. Bigman, "Policy Options in Attaining Food Security: Feasibility, Effectiveness and Costs," in A. Valdes, (ed.), *Food Security for Developing Countries* (Boulder: Westview Press, 1981).

27. Shlomo Reutlinger, "The Level of Stability of India's Foodgrain Consumption." *World Bank Staff Working Paper No. 279*. November 1979.

In recent years, research in the World Bank on the stabilization of food grain supply has focused increasingly on the international environment and initiatives. In the wake of the food crisis in the early 1970s and its visible consequences in developing countries, the media and international fora issued pleas for new and large investments in national and international buffer stocks. Research in the Bank has demonstrated effectively that such supply-oriented solutions are extremely costly and could ill be afforded. Moreover, on the level contemplated, they would be too small to solve the hunger problem of poor people and poor countries.

In a paper published in 1978, Reutlinger demonstrated that if countries are short of foreign exchange or are unwilling to allocate enough foreign exchange to food imports, their food supplies will continue to be unstable, irrespective of the level of supply stabilization in the international market. Perhaps as often as four out of five times, a food shortage in a country will be caused by poor harvests uncompensated by imports. These occurrences would not be remedied by international supply stabilization through international buffer stocks. (Otherwise, what is the explanation of the repeated supply shortfalls in many countries during a long period preceding 1973 when the world price of food grains was very stable?) Domestically held buffer stocks in each country would be a solution, but a very costly one. The obvious alternative is to seek a solution to the financial constraints that prevent countries from offsetting losses in their own production of food by imports. Research showed that an international financing facility could insure countries against excessive food import bills at low cost, even if the credit were extended on very favorable terms.²⁸

The most significant policy initiative traceable to research on food security is the recent modification of the International Monetary Fund's Compensatory Financing Facility (CFF) to compensate countries for shortfalls in export earnings as well as excessive cereal import bills. A current study is analyzing the possible impact on food security (i.e., the prevention of a precipitous decline in food consumption) of countries availing themselves of credit from the CFF. It also considers how domestic pricing and foreign exchange-allocation policies affect the food security of countries with and without access to the new facility. The study

includes what is so far the most complete analysis of the sources of instability in a country's food consumption: as well as variations in domestic production and import prices, these include variations in export earnings.²⁹

Summary

The focus on the hunger dimension of the food problem has led researchers in the World Bank to look increasingly at the link between hunger and poverty. In this regard, there is a clear symmetry between the problem of chronically underfed people within countries and periodic threats to aggregate food consumption in poor countries. In both cases, the aggregate amount of food—the country's food supply or the worldwide food supply, respectively—plays a role. However, by far the more decisive determinant of whether people and countries obtain enough food is their ability to pay for it. For the chronically hungry, what matters is their income and the prices they must pay for food. Producing more food, if it doesn't generate a sufficiently large wage bill and if it doesn't reduce the price of food faced by those in hunger, will do little to prevent hunger. The food produced might end up in excessive stocks or in exports, or depress prices to farmers and thereby "kill the goose that laid the golden egg." Similarly, the supply of food in poor countries is more likely to be stabilized by providing them with the financial assistance they need for imports than by stabilizing global supplies of food.

Future research on hunger issues in the World Bank and elsewhere might well concentrate more on identifying those hunger conditions which are primarily caused by poverty as distinct from those primarily caused by supply constraints. In either case, it might be easier to become knowledgeable about the causes than about appropriate and cost-effective remedies. Yet without cost-effective remedies little is likely to change in a world which has very limited resources and is preoccupied with much else besides hunger.

28. Shlomo Reutlinger, "Food Insecurity: Magnitude and Remedies." World Bank Reprint Series: Number 71. Reprinted from *World Development* vol. 6, no. 9/10 (September-October 1978): pp. 797-811.

29. B. Huddleston, D. Gale Johnson, Shlomo Reutlinger, A. Valdes, *Financial Arrangements for Food Security*. World Bank, Development Economics Department, 1981.)