Food Aid: A Cause of Development Failure
or an Instrument for Success?

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The role of food aid in furthering the economic development of poor countries and in alleviating the adverse effects on the poor of structural and sectoral adjustment programs is discussed. A simple analytical framework for evaluating the incentive and welfare impact of food aid is suggested. Domestic and international markets for food historically have been subject to severe distortions, leading to ever-growing food stocks in some, mainly rich, countries while in others, largely poor, many cannot afford to consume enough food. The possible impact of distortion-free global food markets is sketched. The use of surplus food for payment of wages in rural works programs has often been proposed as a means to create productive assets while alleviating poverty. Using an applied general equilibrium model of the Indian economy, it is shown that a well-designed and efficiently implemented food-for-work program can virtually eliminate abject poverty in India at a modest cost. Experience with food aid in several other countries is also briefly discussed.

This article is concerned with food aid, its role in furthering the economic development of poor countries and in alleviating the adverse effects on the poor of structural and sectoral adjustment programs that many developing countries are undertaking. Some of this ground is well covered in the voluminous literature on food aid (Hopkins 1984, 1987, Mellor and Ezekiel 1987, World Food Programme 1983, 1985, and Wallerstein 1980, to mention only a select few). For an iconoclastic analysis of hunger, see Lappe and Collins (1977).

Before discussing food aid, a few remarks on aid in general may be appropriate. While any form of aid from one agent (individual, household, nation) to another is an unrequited transfer, the donor may often expect or receive some favors from the recipient in other forms (for example, political concessions or support). Furthermore, in a world with three or more agents, terms-of-trade effects can make a transfer from one agent to another beneficial to the transferor and not to the transferee. Some have suggested that developing
Countries, in accepting economic aid, have obtained short-term benefits at the cost of long-term dependency. Others argue that aid from governments and multilateral agencies (including loans at concessionary terms) is in large part a correction of the imperfect international markets for capital and risk sharing and shifting. Two very interesting recent studies, Cassen (1986) and Krueger and Ruttan (1983), explore in depth the larger concerns about aid.

Food aid, other than as emergency relief when famines or other abnormal circumstances arise, is of two forms: project aid, where aid is tied to the implementation of projects mutually agreed upon by the donor and recipient, and untied program aid. If a project is defined broadly enough to include policy reforms or changes, then the so-called policy-conditional food aid would be covered under project aid. I will discuss emergency food aid for relief of famines and natural disasters only briefly. My concern is mainly with longer-term food aid.

Hopkins (1984) points out that food aid has evolved from its inception in the 1950s as a means for disposal of food surpluses in donor countries to a policy tool for promoting economic development in the recipient countries in the 1980s. The volume of food aid has fluctuated, ironically reaching a low during the food crisis of 1973-74. The recovery since then has not restored the volume to the levels of the mid-1960s (table 1). In the mid-1960s the United States was essentially the only food aid donor. By the mid-1980s the European Economic Community (EEC) emerged as a significant donor, in large part reflecting the growth of its food surpluses as a consequence of its common agricultural policy of price support and protection of agriculture as well as the reduction in U.S. food stocks. Thus, surplus disposal as an objective has not completely disappeared from the food aid scene. Even though liberalization of agricultural trade is one of the items on the agenda of the ongoing Uruguay Round of multilateral trade negotiations and the costs of domestic agricultural subsidy programs are spiraling in the United States and the EEC, it is unlikely that either the programs or the surpluses will disappear soon.

Food aid can further economic development through several channels. First, as does any form of aid, it adds resources that can be used for current consumption or accumulation. Second, since most food is internationally traded, food aid provides balance of payments support (just as any other form of

Table 1. Cereal Aid by Principal Donors

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<tr>
<td>Australia</td>
<td>—</td>
<td>0.19</td>
<td>0.26</td>
<td>0.33</td>
<td>0.48</td>
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<tr>
<td>Canada</td>
<td>—</td>
<td>0.80</td>
<td>0.81</td>
<td>0.61</td>
<td>0.94</td>
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<tr>
<td>EEC</td>
<td>—</td>
<td>—</td>
<td>0.99</td>
<td>1.41</td>
<td>2.47</td>
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<tr>
<td>United States</td>
<td>17.32</td>
<td>13.50</td>
<td>6.95</td>
<td>4.72</td>
<td>7.54</td>
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<tr>
<td>Total (including others)</td>
<td>17.73</td>
<td>16.22</td>
<td>9.96</td>
<td>8.40</td>
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Negligible.

foreign aid) by reducing the foreign exchange spent on food imports. Third, it augments the domestic availability of food (though not necessarily on a one-to-one basis). Fourth, to the extent it is targeted at the poor, it can alleviate poverty, a major goal of economic development. By improving the health and nutritional status of the poor it augments their human capital and future income earning capability. Fifth, food aid tied to development-oriented projects that would not have been undertaken otherwise promotes development. Sixth, to the extent it can be credibly tied to the initiation of growth-promoting policies and reform of policies detrimental to growth, it can promote development. This last role can be important in the structural adjustment process. Adjustment to unanticipated shocks as well as reform of entrenched policies involve political and economic costs. External aid, including food aid, can in some situations increase the credibility of reforms by alleviating these costs. The operative word in all the above is “can” and not “will.”

As against the benefits of food aid, several possible costs have been discussed in the literature, for example, that it blunts incentives for domestic food production and hence increases the probability of long-term dependency on donors; or that by alleviating food shortages, it enables the regime in power to postpone, if not abandon, politically costly economic reforms.

Whether the potential of food aid for furthering development will be realized in full measure depends on the flexibility with which it is used, whether other objectives of donors conflict with the objective of economic development, and whether the domestic, economic, political, and institutional environment in recipient countries is conducive to efficient utilization of food aid as a development tool.

Section I is devoted to the analytics of food aid. Section II takes up the impact of global agricultural trade liberalization. Since surplus disposal has been an objective of food aid and the emergence of agricultural surpluses in the developed (and even in some developing) countries is a consequence of protection, it is worth analyzing the costs and benefits to developing countries of a liberal trade regime in agriculture. It is also worthwhile to see to what extent additional food availability in the global market will improve nutritional status in developing countries through reduced world prices of food. This section draws on the simulations from the Basic Linked System of Models (BLS) of the Food and Agriculture Project of the International Institute for Applied Systems Analysis (IIASA). In section III, the Indian model of the BLS is used to analyze the impact on the poor of an expansion of the subsidized system of public distribution of foodgrains and of the so-called food-for-work program, in which labor from poor rural households is employed in slack agricultural seasons in public works projects (roads, irrigation works, schools, and so on) and is paid in kind (at least in part) with foodgrains. These simulations are of some interest, since one of the more important objectives of food aid is poverty amelioration and improvement of nutritional status, and food-for-work programs are prime examples of projects to which food aid is tied. Section IV
briefly reviews some salient features of the experience with food aid. Section V concludes the paper with a few remarks on past experience with food aid and policy implications for the future.

I. SOME SIMPLE ANALYTICS OF FOOD AID

The standard workhorse of international trade theory, the two-commodity general equilibrium model, can be used to illustrate some of the analytical issues involved in food aid. Indeed, Bhagwati (1986) did so to great effect. We reproduce and extend his analysis below. A more general framework involving many commodities, while analytically tractable, will not add much to the insights derived from the use of a simpler framework in the present case.

Consider a country producing and consuming two aggregate commodities, food and nonfood. The production possibility frontier (PPF) of this country is AB in figure 1. The preferences of its citizens are represented by a set of Samuelson social indifference curves (sics). Such a representation is based on a social welfare function that aggregates individual welfare and takes into account the feasibility of lump-sum income transfers (or some other nondistortionary tax subsidy mechanism) between individuals to implement social welfare maximization through decentralized markets. The latter is a critical

Figure 1. Food Aid without International Trade
assumption. As is well known, if lump-sum transfers are ruled out, resource-allocation efficiency cannot be separated in general from distributional equity issues. In other words, achieving distributional equity may involve the use of policy instruments that result in efficiency losses, and a tradeoff inevitably arises.

Assume, to begin with, that the country is in autarkic equilibrium with its production and consumption at $P^0$, where the SIC represented by $CC$ touches the PPF. The equilibrium domestic relative price of food in terms of nonfood is the common slope of the PPF and SIC at $P^0$. The common tangent is shown as $PP$ (hereafter price $PP$). Suppose the country (its government) is offered food aid, gratis, in the amount $AA'$. What will be its effect on domestic prices, production, and welfare? Of course, the answer will depend on how the recipient government responds to aid or conditions, if any, that the donor imposes on the recipient. We begin with the case of a closed economy.

Incentive Effects (Closed Economy)

With food aid of $AA'$, the domestic availability curve becomes $AA'B'$, which is to the right of the PPF by the distance $AA'$. Suppose the government sells the food aid in the open market and returns the sale proceeds to consumers as lump sum income transfers. If the domestic price remained unchanged at $PP$, output and domestic availability will be at $P^0$ and $A$ respectively. By construction, the slope of curve $AA'B'$ at $A$ equals price $PP$. For simplicity assume homothetic social preferences in which, given the same relative prices, the relative proportions of goods demanded remains the same at all levels of income or consumption. Then demand at price $PP$ and disposable income $OP$ in terms of food (including the value of food aid received as lump sum transfers) will be $C_1$. The resulting excess supply (demand) of food (nonfood) forces relative food prices down. Equilibrium obtains at $A'$ to the left of $A$ at which an SIC (not shown) touches $AA'B'$. Production is at $P'$ on the PPF. At $P'$ the equilibrium domestic relative price of food (that is, the slope of PPF at $P'$) is below price $PP$ and food output is lower than at $P^0$. This illustrates the often-cited production disincentive effect of food aid. Although the domestic price of food and its output have fallen, consumer welfare at $A'$ is clearly higher than at $P^0$. This is to be expected since aid is a transfer that augments the commodity availability set of the economy and the use of lump sum transfers counters any social welfare reducing income distributional effects among citizens. Gainers from aid can fully compensate the losers (that is, food producers) and still gain.

However, the government can maintain producer incentives by not allowing the domestic relative price to fall from $PP$ and by ensuring consumers are in equilibrium at $A$. For this to be a consumption equilibrium, the relative price of food facing consumers must be the slope of the SIC passing through $A$. Clearly this price will be lower than $PP$, at which price, as we saw earlier, there is an excess supply of food. A food subsidy for consumers (or equivalently a tax on nonfood) will therefore be needed. With this distortionary subsidy (or
tax), consumer welfare at $A$ (where an $sc$ intersects $AA'B^1$) is lower than at $A^1$ (where an $sc$ touches $AA'B^1$), but of course higher than at $P^0$. With a consumption tax on nonfood, the problem of financing does not arise—the tax revenue as well as the proceeds from food aid can be returned to consumers as lump sum transfers. If nonfood consumption is not taxable and production is to remain at $P^0$, then part of the value of food aid (at domestic prices) has to be used in financing the food consumption subsidy. Producer incentives could be maintained also through a production subsidy on food relative to the consumer price at $A$ or equivalently a production tax on nonfood.

These illustrations demonstrate that food aid being an unrequited transfer adds to domestic resources and at the same time adds to domestic food availability. Under laissez-faire, with prices unchanged, since not all of the additional resources will be spent on food, the relative price of food has to fall to absorb the additional food. However, consumer welfare will unambiguously rise. An intervention is needed if the price fall is to be prevented or mitigated. If this intervention takes the form of a food consumption subsidy or an equivalent production subsidy, part of the additional resources will be used up in financing the subsidy. This distortion-creating intervention will reduce the welfare gain from food aid compared to laissez-faire, but the gain is still positive. Thus the fall in food prices with aid is neither undesirable, if it occurs as in the laissez-faire situation, nor is it inevitable, since it can be prevented through government intervention (albeit at some welfare cost).

**Usual Marketing Requirements or Additionality (Open Economy)**

Let us now turn to the more realistic world in which the economy receiving food aid is open to international trade. To keep matters simple, let us assume the economy is a price taker in world markets and in the absence of noneconomic objectives is rationally following a free trade policy. In the pre-aid equilibrium (figure 2) production is at $P^0$, consumption is at $C^0$ (with the slope of $P^0C^0$ representing the relative price of food in world markets). Food imports equal $C^0D^0$. Suppose now food aid in the amount $TOT'$ becomes available. With prices unchanged (because of free trade), production remains at $P^0$, availability moves to $A'$, and consumption moves to $C'$ (under homotheticity). Food imports rise to $C'D'$. However $C'D'$ is less than the sum of the pre-aid commercial imports $C^0D^0$ and food aid $T^0T'$. Thus part of food aid has been used to replace commercial imports.¹

Food aid donors do not wish to see their commercial sales reduced as a consequence of food aid. For this reason they often impose what are called

¹. In this setup, the impact of food aid on demand is the same as that of aid not tied to food of equivalent value; that is, food aid is equivalent to the lump sum income transfer. In a different context, public finance economists in the United States compared different forms of grants to state and local government from the federal government on their impact on local public expenditures. Empirical analysis of the effects of revenue-sharing arrangements (which are analogous to food aid) appear to show that, contrary to theory, they are not equivalent to lump sum grants (see Gramlich 1977).
"usual marketing requirements" (UMR) as a condition for providing food aid. These can take various forms. But for simplicity assume that the donors require that the recipient country continue to import at least as much as it did from commercial channels before food aid. This means, given the aid, total imports (aid plus commercial) has to be at least $C_0D_0 + T^0T^1$. As is well known from the theory of noneconomic objectives (Bhagwati and Srinivasan 1969), the optimum policy to absorb food imports exceeding the level that would obtain under laissez-faire is to have an import subsidy. This means that the domestic price of food will fall below world prices, thereby discouraging domestic food production and consumption sufficiently to increase imports of food to the required extent. In figure 2 an import subsidy on food moves the production point to $P^2$ from $P^0$, thus lowering the output of food. The availability frontier now passes through $A^2$, and consumption is at $C^2$. Food imports $C^2D^2$ now equal pre-aid imports $C_0D_0$ plus food aid. Such a policy minimizes the welfare loss (relative to laissez-faire) associated with meeting UMR.

This brings to the fore a possible conflict between the two objectives of the donors, namely between the desire to see incentives for food production in the
recipient country not being adversely affected and the desire to see that export
markets for food for donors are not adversely affected by aid. UMR serve the
latter objective at the expense of the former if the optimal response of the
recipient country through an import subsidy reduces the domestic price of food
there. Of course, if the donors insist on both objectives being met, they will
force the recipient country to use the policy of a food consumption subsidy
rather than the first-best import subsidy, thereby imposing on it a further
welfare loss relative to aid without conditions.

Food Aid and Improvement of the Nutritional Status of the Poor

An objective of food aid is to improve the income and nutritional status of
the poor in recipient countries through some form of targeting. To explore this
set of issues a partial equilibrium model of the global food market is used.
More specifically, all donors of food aid are aggregated into one and all
recipients into another, with the former exporting food to the latter. Two
distinct groups of consumers within the recipient region are distinguished: the
poor, who have fairly elastic demand with respect to price, and the rich, who
have fairly inelastic demand. Again for simplicity, assume that there is no
domestic production of food in the recipient region. For the sake of variety let
us illustrate with numerically specified export supply and demand functions
rather than with diagrams.

The export supply function of the donor region is \( 0.9 + p \), where \( p \) is the
price per unit. The demand functions of the rich and poor respectively are \( 10 -0.01p, 0 \leq p \leq 100 \) and \( 2 - 0.1p, 0 \leq p \leq 20 \). In free trade with no aid,
the market clears at a price of 10, with the donor region exporting 10.9 units,
of which 9.9 are consumed by the rich and 1 by the poor in the recipient
region.

Suppose now the farm lobby in the donor region succeeds in raising the
domestic price of food (by a "modest" 5.5 percent) to 10.55. The export
surplus rises to 11.45. Were this to be "dumped" in the recipient country
market, the price would fall by 50 percent to 5, with the consumption of the
rich increasing to 9.95 and the poor to 1.50. Thus export revenue would fall
from 109 to 57.25. The cost to the donor country treasury of acquiring and
dumping the surplus arising out of the domestic price increase would be \((10.55
- 5) \times 11.45 = 63.5475\). Policymakers in donor countries may think that
there must be better ways of disposing of the surplus created by their domestic
price policy than to dump it in world markets! One such idea is food aid tied
to its being used for the poor in the recipient country.

The donor offers, say, 1.55 units of the export surplus free of cost to the
recipient country to be sold to the poor, the resulting revenues being kept by
the recipient country government. The rest of the surplus, 9.9 units, is sold to
the rich. Assuming that the transactions cost for the poor of reselling to the
rich is prohibitive, the sale in the rich market will yield a price of 10. Thus the
price paid by the rich and their consumption are the same as in the free trade
equilibrium situation. The consumption of the poor rises by 55 percent to 1.55 and the price they pay falls by 55 percent to 4.5 as compared with free trade equilibrium. The donors realize a revenue of \(10 \times 9.9 = 99\) on the sales to the rich, thereby reducing the cost of their domestic price support program to 21.7975 from 63.5475, a reduction of more than 65 percent. The recipient country government realizes a revenue of 6.975 from the sale of food aid to the poor. Thus in the recipient country, with aid, the rich are just as well off as in the free trade situation, the poor much better off, and the government acquires revenues. As compared with the hypothetical equilibrium with dumping, in the aid equilibrium the poor in the recipient region are better off, the rich worse off (their food consumption under dumping at half the price would have been 5 percent higher), and the government is better off (it gets no revenue under dumping). The donor government, given that it has to raise domestic prices, is better off in the aid equilibrium compared with dumping, since it saves more than 65 percent on the cost of price supports!

The essence of the above example is that by inducing the recipient country to isolate the market with more elastic demand, that is, the poor market, with the carrot of food aid and the right to keep the revenue from sales to the poor, the donor government achieves price discrimination. If the poor are easily identified and targeted and the costs of organizing a resale market are sufficiently high, such market segmentation is possible. With such segmentation the donor government can do even better by giving the poor 2 units of food free of charge and selling the remaining 9.45 units to the rich at a price of 55 (a jump of 550 percent over the price in free trade), thus realizing a revenue of 519.75 and making a profit of 398.9525! Clearly, the rich in the recipient country will strenuously resist such gouging, let alone the fact the recipient government may balk because it receives no revenue from such a gift of food! Achieving price discrimination through food aid with the consent and cooperation of the recipient country government is the next best thing to gouging. Be that as it may, there is no reason to believe that monopolistic exploitation was ever the motivation of those who thought of food aid tied to the poor in recipient countries as a less costly way of dealing with surpluses than dumping. However, they may have viewed as more realistic the cost saving in surplus disposal achievable through what is essentially price discrimination.

In practice complete segmentation of markets is unlikely, and to the extent some part of the aid sold to the poor is resold to the rich the equilibria in the rich market will be lower and the cost of surplus disposal correspondingly higher. However, if the poor can be targeted but market segmentation is impossible, providing the poor with an income subsidy from aid receipts to shift their demand curve for food outward is another approach. If, for example, the demand curve of the poor shifts to \(2.33 - 0.1p\), when the sale proceeds of, say, 1.55 units of food, is transferred to them instead of accruing to the recipient government, the equilibrium market price will be 8. The donor government realizes 79.2 from sales of 11.45 units less the revenue given to the
poor, and the cost of surplus disposal becomes 41.5975, a reduction of about 35 percent compared with the dumping case. Governments in those countries interested in the welfare of the poor may welcome such targeted aid-cum-income subsidy for the poor even though they receive no revenues.

**Project Tying, Commodity Composition of Aid, and Use of Counterpart Funds**

Food aid by definition is tied aid: it is tied to a commodity or set of food commodities given as aid. However, as we saw earlier, if there are no usual marketing requirements and as long as the recipient country imports these commodities commercially and the volume of aid is not too large relative to commercial imports, commodity tying is likely to be of relatively little consequence, as long as rational behavior can be assumed (see footnote 1). Sometimes food aid is tied to particular projects, such as food-for-work projects (more on this below) in which a part or all of the wages of workers employed in such projects are paid in kind with food. There is no evidence to suggest that the availability of food aid has led to the choice and implementation of projects that should not have been chosen. If projects proposed for implementation are evaluated using techniques of social cost-benefit analysis in which food aid is valued at its social opportunity cost, the availability of food aid per se will not necessarily make a project (that would not have been socially worthwhile if food were to be commercially imported) pass the social cost-benefit test. The social cost of food obtained through aid has to be sufficiently below its commercial import cost to bring this about.

Food aid, originating as it did with the accumulated surpluses in donor countries, is more often than not offered in commodities which happen to be in surplus, mainly wheat, rice, yellow maize, and dairy products. As most of these commodities are internationally traded, the fact that aid comes in a particular commodity composition will not create any problem to the recipient if usual marketing requirements are not imposed as part of aid. By substituting for commercial imports or exports appropriately, aid can be absorbed without any domestic production effect. Even if the recipient country does not trade, as long as there are substitution possibilities in domestic production or consumption, aid can be absorbed by suitably altering the domestic production and consumption baskets through appropriate price changes. Of course, a problem can arise if conditions imposed on the recipient preclude trading part or all of the aid given in one commodity for others, and if there are no substitution possibilities in production and consumption. An example of such aid is yellow maize offered to Kenyans who preferred white maize. Since the same donor often provides aid to many countries with differing preferences and production possibilities, by permitting the recipients to exchange commodities received in aid for others which they can supply, the utility of aid to each recipient can be enhanced without affecting the donor's interests. Indeed, if such a swap can be planned ahead, some saving in transportation and other transaction costs can be attained as well.
A potentially more serious problem arising from food aid is the change in consumption preferences in the long run in the recipient country toward the commodities supplied as aid. Although a shift toward imported “superior” cereals (wheat and rice) supplied by aid and away from domestically produced “inferior” coarse grains has been observed in West Africa (Delgado and Miller 1985), as Mellor and Ezekiel (1987) point out, this shift may be simply a reflection of higher Engel elasticity for wheat and rice, in addition to the effect of lowered price of wheat and rice brought about in part by absorbing aid. In other words, the shift in commodity composition of consumption reflects the same preferences (that is, set of indifference maps), and changing budget constraints (prices and incomes) rather than a change in the preferences.

The possible real problem is the fact that the continuance of food aid in the indefinite future is uncertain, and even if it continues, its volume will certainly fluctuate. If the resources allocated away from the production of commodities supplied under aid cannot be flexibly reallocated without excessive cost, then foreign exchange will have to be spent to import commodities when they are no longer supplied or supplied in smaller volumes under aid. Unanticipated withdrawal of food aid constitutes an adverse shock to which the economy will have to adjust. There is substantial evidence (Balassa 1985) that economies which have maintained a neutral incentive structure between earning foreign exchange through export promotion and saving foreign exchange through import substitution, thereby adhering to dynamic comparative advantage considerations, have not only achieved efficient and rapid economic growth but have weathered better the adverse oil and interest rate shocks since 1973. Apart from the foreign trade regime, domestic distortions of various kinds, including those adversely affecting producer incentives in agriculture and the capability to respond to a changing economic environment (in particular to the availability of new technologies) can impose high and avoidable social costs of adjustment.

Most of the above analysis is based on the assumption that food aid is an unrequited transfer. In reality this is not quite so. Until 1972 or so, the revenues generated in a recipient country’s currency (the so-called counterpart funds) by the sale of food aid received under U.S. Public Law 480 Title I (PL480) were put in special accounts, the disbursal from which was governed by agreements between the United States and recipient country governments. In effect the value of food aid was a U.S. asset in local currency, although the recipient had some say over the use of it. Part of it was used for some U.S. embassy expenses and part as a grant for investment on agreed projects. To the extent such expenses would have been incurred and such projects would have been aided even if counterpart funds were not available, the use of local currency assets for such purposes meant that foreign exchange that would otherwise have accrued to the recipient did not. Thus, the foreign exchange saved by the recipient to the extent food aid replaced commercial food imports becomes in effect a loan that is repaid later in the sense of potential foreign exchange inflow forgone.
In cases where the project would not have been aided but for the availability of U.S. assets in local currency, nor undertaken by the recipient in the absence of aid, the undertaking of the project adds to domestic demand which otherwise would have been absent, thereby adding to inflationary pressures usually present in many developing countries. In other cases some have argued that it is inflationary because the use of accumulated counterpart funds is not associated with any fresh inflow of food or other commodities from abroad. In India there was an extensive debate on PL480 aid (Rath and Patvardhan 1967; Shenoy 1974) and in particular on the inflationary potential of the use of PL480 funds and whether the deposits of such funds in special accounts added to the money supply growth, thereby adding another source of potential inflation (Sundaram 1970 and the references cited by him). The debate was inconclusive, mostly because whether or not any inflationary potential was realized depended on the assumptions one made about the actions (accommodating or sterilizing) of the Indian government and monetary authorities.

Food Aid Dependency, the Neglect of Agriculture, and Long-Term Development

The permanent shift in consumption preferences toward commodities supplied as aid is only one example of long-term consequences of food aid. Another is the complacency on the part of the recipient with a poorly performing agricultural sector, if not outright discrimination in favor of other sectors, induced by the expectation that food aid will be forthcoming to solve any emerging food problems. Such an attitude, it is claimed, can be changed only by withdrawing food aid or by making it costly politically, if not economically. For example, it has been suggested that the availability of cheap food under PL480 enabled Indian policymakers to neglect agriculture and pursue an import-substituting industrialization strategy emphasizing heavy industry while at the same time keeping the vocal urban population, including industrial workers and the bureaucracy, happy with public distribution of subsidized food and other essential commodities. U.S. President Lyndon Johnson's approved PL480 shipments to India on a month-to-month basis while India was threatened with famine after two successive years of unprecedented drought in 1965–66 and 1966–67 (which many saw as an attempt to change India's stance toward the Vietnam War). It is claimed that this convinced Indian policymakers of the dangers of food aid dependency and that the political cost of the neglect of agriculture was too high. In this version of history, Indian policymakers dramatically shifted the incentives in favor of agriculture, the Green Revolution was facilitated, and consequently India was able to export food in the late 1980s.

The facts appear to be more prosaic. As I showed elsewhere (Srinivasan 1986), the available data do not support the contention that the agricultural sector was much more favored in terms of allocation of investment by Indian
economic planners in the period since the mid-1960s than before. \textsuperscript{2} Nor is there any evidence for any significant change in the trend rate of growth of output of foodgrains or real agricultural output between the two periods. What did happen is a change in the sources of growth, a relatively larger proportion in the later period being accounted for by improvements in yield per hectare of cropped area and a smaller proportion by expansion of area. Of course the performances of different crops were not the same, with the growth in output of wheat (and to a lesser extent, rice) being substantially faster in the later period because of the adoption of the Green Revolution technology. This also suggests that if the planners shifted resources toward agriculture in the later periods, it may have been a rational response to the rightward shift in the marginal productivity of investment schedule for agriculture because of the Green Revolution, a technology that became available only in the mid-1960s.

The aid dependency argument is a multifaceted one. At the aggregate level, in an extreme form, it suggests that all foreign aid is used to substitute on a one-to-one basis for domestic savings, so that aggregate investment and hence the growth rate of aggregate output is unchanged. Thus, aid is simply consumed. Even in this form the implied behavior of the recipient is neither irrational nor suggestive of dependency. If aid (by which I mean the unrequited transfer element in external resource inflow) is confidently expected to be permanent, it is like an added permanent income flow. And theory would suggest that it be largely consumed. At the sectoral level, the argument has been stated earlier: the availability of food aid will either reduce producer prices and hence incentives to produce food and to invest in the capacity to produce food, or simply end up increasing consumption of food (not necessarily on a one-to-one basis) with no impact on prices or incentives. As we saw in the subsection on incentive effects, both of these results are essentially rational responses to a permanent availability of food aid.

There is one form of dependency argument that may make some sense: the recipient country embarks on a development strategy that is rational were aid to be permanent but aid is not, so that at some stage in the development process the country is faced with a cessation or reduction of aid that it did not anticipate. As argued above, this is equivalent to an adverse shock on an economy that has geared its resource allocation intertemporally to aid availability (that is, had become dependent on aid) and as such, suffers a cost of adjustment the size of which will vary with the flexibility and efficiency of

\textsuperscript{2.} Public investment in irrigation, research, and extension has been extremely important in Indian agriculture, particularly in the period before the mid-1960s. Whether shifts in relative prices or in nonprice factors such as investment in irrigation and technology are the major determinants of long-term growth in agricultural output has been extensively debated in the Indian literature. The available evidence does not indicate any significant trend in relative prices but only substantial fluctuations. The government has effectively insulated domestic agriculture price movements from their world market counterparts.
resource allocation. But unless the recipient's expectations about permanence of aid were irrational and not based on all available information about aid flows, it is inaccurate to blame aid dependency for the adverse consequence of unanticipated aid curtailment. Conversely, if despite all the available information to the contrary, a recipient chose to act as if aid were permanent, it is this irrationality, rather than aid dependency, that is responsible for the inevitable cost of adjustment when aid ceases.

**Famines and Food Aid**

Famine, according to the 1955 edition of the *Oxford Universal Dictionary*, means an instance of extreme and general scarcity of food, and in its transferred figurative use, hunger and hence starvation. Yet not having enough food to feed everybody (that is, general scarcity) does not mean everyone will starve. Equally, having enough food or more (that is, absence of scarcity) to feed everybody does not mean that none will starve. Unless an individual has access to available food, he is likely to starve regardless of food availability in the aggregate. This rather elementary and obvious point has been elaborately and elegantly developed by Sen (1981). As documented by him, the Bengal famine of 1943, the Bangladesh famine of 1974, and the Ethiopian famine of 1974 were not associated with any rapid decline in food availability. The Chinese famine of 1959–61, in which more than 20 million people are estimated to have died, had much less to do with a shortfall in aggregate food availability than with incentives and distribution.

Merely augmenting food availability through emergency food aid whenever an episode of famine threatens may not be adequate to prevent starvation, let alone reduce the chances of future occurrence of famines. However, an overwhelming proportion of the world’s poor depend on agriculture for their employment and income. As such, a serious crop failure erodes their incomes, and given the imperfection in credit and asset markets, they cannot borrow or sell their meager assets to finance consumption except at high cost. In such circumstances, food (whether from foreign aid or from other crop-failure-free regions of the country) can be used for relief and food-for-work programs to employ those who can work, and mass starvation can be avoided. Equally, if food-for-work programs financed by food aid are used even in normal years to employ rural labor in slack seasons in building irrigation works and infrastructure including roads, the probability and intensity of crop failure can be reduced in the long run. Mellor and Gavian (1987) provide an incisive analysis of these issues.

**The Role of Food Aid in the Adjustment Process**

An important role for an expanded, more purposeful and sharply focused program of food in support of the adjustment process in developing countries has attracted attention, particularly in international bureaucracies involved in food aid (World Food Programme 1987). Since by adjustment one means
painful adjustment, anything that eases the pain will be welcomed by the people in the country where adjustment is occurring. Analytically, there is nothing in food aid to suggest that it will ease the pain more than any other aid. If the policy framework, incentive structures, and resource allocation mechanisms can be reformed so as to enable the economy to perform efficiently and equitably in a changed external economic environment without sacrificing growth, it is of course desirable. However, if the need for adjustment arises in large part from past policies that would not have been sustainable for long even if there had been no change in the external environment, adjustment will necessarily involve sacrifices and even a pause in growth. In such circumstances, policy reform will not be credible (that is, it will not remain in place for long if initiated) because the short-run resource reallocation and hardship will be too severe to permit the political survival of the reforming regime.

The availability of additional resources to the required extent to ease the pain of adjustment could bring credibility to reforms. It must be emphasized that this is a political and not necessarily economic argument. The threat to political survival usually arises either because those who have to bear the burden of adjustment are politically powerful or because the burden is inequitably distributed. Making additional resources available raises another troublesome issue: if the country’s development strategies, and not changes in the external environment, led to the crisis, giving additional aid for adjustment in such a situation may encourage others to follow politically rewarding but economically unsustainable development strategies.

Similar considerations apply to food aid tied to policy reform or to the choice of particular projects even if these were not part of an adjustment program. If an economy is following an appropriate development strategy and the social cost of a project exceeds social benefits were food to be imported commercially, a donor may induce the choice of the project by providing food aid at a sufficiently low social cost to the recipient. There is, however, no strong empirical evidence of this having happened. But if aid is given to reduce the political cost to the regime in the recipient country to induce it to implement a project the donor regime prefers, the argument shifts to the political arena.

II. TRADE VERSUS AID IN COMBATING HUNGER: AGRICULTURAL TRADE LIBERALIZATION OR LARGER AID FLOWS?

There is perhaps no country in the world in which the government does not intervene in the determination of agricultural output, foreign trade, and prices. Obviously, interventions that affect a country’s imports or exports, such as quotas, tariffs, voluntary export restrictions, and voluntary import expansions, not only affect that country but the international market, the quantitative significance of the effect depending on how large a trader the country happens to be in world markets. Less obviously, domestic interventions, such as acreage restrictions, set-aside programs, credit subsidies, and price supports, affect the
international markets as well. The interventions are so many and their nature so complex that disentangling their individual effects is an almost impossible task. However, their combined effect in terms of the difference between domestic and border prices (that is, c.i.f. import prices or f.o.b. export prices) can be viewed as a measure of protection. By this measure, average agricultural protection varied from \(-19\) percent in Indonesia to \(175\) percent in Japan during 1975–76. Only Australia, New Zealand, and Thailand had negative protection besides Indonesia (details of the computation including the treatment of exchange-rate changes are available in an appendix to Parikh and others 1986). Of course, changes in the protection regime by one or more countries in the global market will affect all and call for adjustments by each. One needs a fairly sophisticated set of general equilibrium models, one for each country or region, linked together by global market clearing for a satisfactory analysis of changes in protection levels.

Researchers at the International Institute for Applied Systems Analysis (IIASA) have put together a system of empirically estimated models, distinguishing 18 countries, 2 regions (the EEC and the Eastern Bloc), and 15 simpler models for groups of the remaining countries of the world (Parikh and others 1986; Parikh and Tims 1986). The models distinguished 10 commodities: wheat, rice, coarse grains, bovine and ovine meat, other animal products, dairy products, protein feeds, other food agriculture, nonfood agriculture, and nonagriculture. The model solved for equilibrium domestic and international prices sequentially. The simulation period was 1980–2000.

A reference simulation of basically unchanged policies was compared with simulations of policy scenarios in which the number of hungry is affected mainly by changes in market prices (table 2). The policy scenarios shown include trade liberalization by (i) the countries belonging to the Organisation for Economic Co-operation and Development (OECD); (ii) the developing countries; and (iii) all market economies. In addition to trade liberalization scenarios, several other scenarios were simulated. In one, grain supplies in the world market are increased through (i) an extra 50 million tons of wheat being put on the world market each year, this addition being “manna from heaven,” so to speak, and not emerging from any of the countries in the model and hence not contributing to any country’s income, and (ii) a 50 percent reduction in the consumption of meat in OECD countries. In another, higher prices for producers in developing countries was assured by reducing OECD output by 25 percent. In contrast with these scenarios of policies which work mainly through changes in market prices, aid scenarios were also simulated (table 3). In scenario A, developed countries provide additional aid of 0.5 percent of gross domestic

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3. Defining a measure of protection that reflects the real incentive structure faced by agricultural producers is not simple. Tariffs and border and domestic nontariff measures (price supports, input subsidies, deficiency payments) must be measured, effective exchange rates computed and quality variations in agricultural commodities taken into account. Comparison of protection estimates from different studies, without taking into account the judgments required, can be simplistic and misleading.
Table 2. Effect on Hunger of Alternative Global Food Market Scenarios, Years 1990 and 2000

<table>
<thead>
<tr>
<th>Scenario</th>
<th>1990</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural trade liberalization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>By OECD countries</td>
<td>+3</td>
<td>+4</td>
</tr>
<tr>
<td>By developing countries</td>
<td>-5</td>
<td>-5</td>
</tr>
<tr>
<td>By all market economies</td>
<td>+1</td>
<td>+1</td>
</tr>
<tr>
<td>50 percent million tons more wheat in the market</td>
<td>-3</td>
<td>-2</td>
</tr>
<tr>
<td>50 percent less meat consumption in OECD countries</td>
<td>-7</td>
<td>-1</td>
</tr>
<tr>
<td>25 percent less output in OECD countries</td>
<td>+11</td>
<td>+9</td>
</tr>
</tbody>
</table>

Note: Hunger is defined as not having nutritionally adequate food energy intakes. The reference scenario is based on no change in current markets or policies and predicts 470 million and 400 million will be hungry in the years 1990 and 2000, respectively.

Source: Parikh and Tims (1986, box 3).

product (GDP) (over and above the present level of about 0.35 percent) in the form of program aid, that is, as balance of payments support. This additional aid is distributed to developing countries in inverse proportion to their per capita incomes. In scenario B, the same amount of additional aid is given as project-tied aid to be saved and invested. The results are compared with the third, reference, scenario.

These results show that market-price-mediated effects on hunger in developing countries appear modest, except perhaps in the case of increased producer prices in developing countries through reduced OECD output, in which case the effect is detrimental. For example, even though the volume of additional food needed to raise the food intake of the entire population of developing countries to nutritional adequacy is about 50 million tons of wheat in 2000, simply

Table 3. Effect on Hunger of Aid

<table>
<thead>
<tr>
<th>Countries</th>
<th>Reference scenario: millions of hungry persons, year 2000</th>
<th>Percent change compared with reference scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>All developing</td>
<td>400</td>
<td>-32</td>
</tr>
<tr>
<td>Middle-income</td>
<td>30</td>
<td>0</td>
</tr>
<tr>
<td>Low-middle-income</td>
<td>60</td>
<td>-13</td>
</tr>
<tr>
<td>Low-income</td>
<td>310</td>
<td>-40</td>
</tr>
<tr>
<td>of which India</td>
<td>155</td>
<td>-34</td>
</tr>
</tbody>
</table>

Note: Hunger is defined as not having nutritionally adequate food energy intakes.

a. In A, developed countries provide additional aid of 0.5 percent of GDP over present levels, distributed to developing countries in inverse proportion to per capita income. In scenario B, the same quantum of additional aid is given as project-tied aid to be saved and invested.

Source: Parikh and Tims (1986, box 4).
adding 50 million tons of wheat to the market supplies will reduce the number of hungry persons by only 2 percent. The reason is that the global market systems adjust to the extra wheat put on the market through price reductions, shifts of resources away from wheat, and so on. The net result is that, because of a reduction in food output induced by these changes, the net addition to food consumption is far less than the 50 million tons added to the market and the consumption of the poor increases even less. Interestingly, given the protection levels in developing countries, consumers, particularly the poor, are better off when trade is liberalized and worse off and significantly so when their domestic producer prices are increased. The reason is that in most developing countries the majority of the poor are net purchasers of food, many being landless agricultural workers. An increase in producer prices that is passed on to consumers increases the purchase price of food for the poor, while the income effect of the producer price increase, if any, through additional employment and output, is not enough to offset the adverse purchase price effect. In contrast, agricultural protection in OECD countries and the consequent surplus disposal actually helps the poor in developing countries by reducing world market prices below what they would be if there were no surpluses.

In contrast to the above, the results in table 3 show substantial reductions in hunger, particularly in low-income countries when the volume of aid is increased. It does not make any difference, to developing countries as a whole or to low-income countries, whether aid is program aid or project aid. With project aid tied to investment, however, the time pattern of the reduction in hunger (not shown in table 3) is different, with only a small reduction initially, but catching up with program aid by 2000. More significantly, the reduction in hunger with project-tied aid persists even if aid is discontinued after fifteen years.

III. SUBSIDIZED FOOD DISTRIBUTION, FOOD-FOR-WORK PROGRAMS, AND HUNGER IN INDIA

The India model (Narayana and others 1988, forthcoming) of the Basic Linked System (BLS) of the IIASA models distinguishes five different socioeconomic groups within the rural and urban areas of India, each group defined by its monthly household real consumption expenditure per head. A household in each group has a claim on the output of the economy depending on its factor endowments, any income transfers from the government, and the direct taxes it pays. It saves part of its income and spends the rest on consumption of the ten commodities distinguished in the model, given their prices, according to a linear expenditure system separately estimated for each group. The model is thus better equipped to analyze income distribution issues than representative consumer models.

In the simulations with the model reported here, India is viewed as a small open economy facing parametrically given international prices, the time path
of which was taken from the reference scenario of the BLS system as a whole. Four scenarios are compared, the first, C, being equivalent to no public procurement or distribution of foodgrains. In the second, D, a basket of rice, wheat, and coarse grains (in fixed proportions) weighing approximately 135 kg. is distributed to all urban residents in each year at a subsidized price (approximately 20 percent subsidy). The foodgrains needed are purchased from the farmers at a price below the equilibrium open-market price. In E, 100 kg. of wheat are distributed free of charge to all residents of India (rural and urban), with the cost of procuring the needed grains being financed by additional income taxes. In F, the cost of free distribution of food is accommodated by a reduction in aggregate investment while keeping the tax rate fixed at its level in the reference scenario. The results are presented in table 4 in terms of their effect on the size of the population in each expenditure group and its average equivalent expenditure (that is, the expenditure needed at 1970 prices to achieve the same welfare as is being attained in the relevant scenario in the year 2000). Thus, equivalent expenditures are comparable across scenarios.

It is seen from table 4 that scenario D, the distribution of subsidized food in urban areas (and the associated implicit procurement tax on food producers in rural areas) as compared to scenario C, as is to be expected, worsens rural income distribution and slightly improves the urban distribution. The macro indicators do not differ much. Interestingly, extension of the public distribution of foodgrains to rural areas, making it completely free and financing it through an increase in income taxes (levied mainly on the urban rich) in E, improves rural income distribution significantly: the number of persons in the poorest class falls by 58.5 and 57 million compared with C and D respectively, while the number of persons in all other income groups rises. The income distribution in urban areas also improves though not as dramatically. With investment kept unchanged, aggregate growth (that is, GDP) is essentially unchanged, while the average energy intake rises and the Gini coefficient of equivalent expenditure falls. When the free distribution of food is financed by a reduction in investment rather than through an increase in taxes, as in F, aggregate growth of course is affected—GDP is about 10 percent less and the improvements in income distribution in rural areas are slightly attenuated compared to E. An implication of the comparison between E and F is that if the free distribution of food could be financed through aid, rather than tax increases, the improvements in E as compared to C or D would be even more dramatic.

Rural works programs (RWP) in India are meant to provide gainful employment to rural workers, particularly during slack seasons, in creating productive assets. Because participation in these programs has been voluntary and because it is largely the poor who participate, these schemes enable better targeting of the poor for other poverty alleviation programs. However, the execution of these programs has been criticized on the grounds that the works are often poorly designed and hence unproductive and that the benefits largely accrue to nontarget groups because of corruption and other problems. In specifying rural
<table>
<thead>
<tr>
<th>Expenditure group</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rural</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>149.1</td>
<td>136.3</td>
<td>147.6</td>
<td>132.8</td>
</tr>
<tr>
<td>2</td>
<td>113.8</td>
<td>270.6</td>
<td>114.0</td>
<td>261.4</td>
</tr>
<tr>
<td>3</td>
<td>135.2</td>
<td>413.5</td>
<td>136.0</td>
<td>399.1</td>
</tr>
<tr>
<td>4</td>
<td>154.8</td>
<td>634.3</td>
<td>154.9</td>
<td>616.2</td>
</tr>
<tr>
<td>5</td>
<td>165.7</td>
<td>1,233.8</td>
<td>166.0</td>
<td>1,227.3</td>
</tr>
<tr>
<td>1</td>
<td>2.4</td>
<td>169.2</td>
<td>1.5</td>
<td>171.8</td>
</tr>
<tr>
<td>2</td>
<td>12.2</td>
<td>271.6</td>
<td>10.6</td>
<td>272.9</td>
</tr>
<tr>
<td>3</td>
<td>42.5</td>
<td>390.6</td>
<td>41.2</td>
<td>394.8</td>
</tr>
<tr>
<td>4</td>
<td>108.0</td>
<td>596.7</td>
<td>109.0</td>
<td>604.9</td>
</tr>
<tr>
<td>5</td>
<td>164.6</td>
<td>1,199.1</td>
<td>167.3</td>
<td>1,223.6</td>
</tr>
<tr>
<td><strong>Urban</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2.4</td>
<td>169.2</td>
<td>1.5</td>
<td>171.8</td>
</tr>
<tr>
<td>2</td>
<td>12.2</td>
<td>271.6</td>
<td>10.6</td>
<td>272.9</td>
</tr>
<tr>
<td>3</td>
<td>42.5</td>
<td>390.6</td>
<td>41.2</td>
<td>394.8</td>
</tr>
<tr>
<td>4</td>
<td>108.0</td>
<td>596.7</td>
<td>109.0</td>
<td>604.9</td>
</tr>
<tr>
<td>5</td>
<td>164.6</td>
<td>1,199.1</td>
<td>167.3</td>
<td>1,223.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Macro indicator</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Real GDP (1980 = 100)</strong></td>
<td>270</td>
<td>270</td>
<td>272</td>
<td>244</td>
</tr>
<tr>
<td><strong>Average energy intake per capita (kcal. per day)</strong></td>
<td>2,581</td>
<td>2,569</td>
<td>2,610</td>
<td>2,539</td>
</tr>
<tr>
<td><strong>GINI coefficient of expenditure</strong></td>
<td>0.3418</td>
<td>0.3450</td>
<td>0.3100</td>
<td>0.3149</td>
</tr>
</tbody>
</table>

**Note:** Scenario C = no subsidized distribution or purchases at below market prices. Scenario D = subsidized annual basket of 135 kg. of rice, wheat, and coarse grains distributed to all urban residents, purchased at below market prices from farmers. Scenario E = 100 kg. of wheat a year distributed to all Indians, financed by taxes. Scenario F = same distribution as E, cost met by reduced investment.

*Exhaustive groups are from lowest to highest quintiles of monthly household real consumption expenditure per head.*

*b. Population in millions. Total rural population is 718 million and urban population is 330 million in all scenarios.*

*c. Expenditure per capita required at 1970 prices to achieve the welfare level in the relevant scenario in the year 2000. Thus higher expenditure indicates a higher welfare level.*

**Source:** An unpublished longer version of Narayana and others (1988), available upon written request from the author of this article.
works scenarios in the model, the efficiency of design and targeting can be varied.

More specifically, it is now assumed that the two lowest expenditure classes constitute the target groups. Each person in the poorest class is assumed to receive 125 kg. of wheat per year as wages for participation in the RWP. The payment to each person in the other class is adjusted (depending on the scenario-specific populations in the two classes) to maintain an average payment of 100 kg. for the two classes together. Other inputs besides labor are needed for constructing rural works, and the cost of these inputs are assumed to be 50 percent of the wage bill. Half of the works created are assumed to be used for agricultural production and the other half for nonagricultural production.

If the RWP is well-designed and well-executed, the value of the entire expenditure is translated into assets of equal value. At the other extreme, a poorly designed and poorly executed program spends the resources but creates no productive assets. Thus, efficiency is defined as the ratio of the value of assets created to the value of resources spent, and this ratio, $e$, is assumed to take two values, 1 and 0. Targeting success is captured by a parameter $t$: a proportion $t$ of the wage bill is assumed to reach the two poorest rural expenditure groups (the target groups) and the remaining $(1 - t)$ accrues to all the other rural classes in proportion to their population. Values of $t$ used are 1 and 0.5. Scenarios are designated by $R-t-e$. Thus, $R-1-1$ means a well-targeted and well-executed RWP. The two alternative values for each of $t$ and $e$ together yield four scenarios. In these it is assumed that the rural works are financed by reducing other investment. In scenario $R-1-1-T$ the cost of rural works is financed by additional taxation while investment is kept unchanged. The results are presented in table 5 in terms of the value of the relevant variable in the policy scenario as a percentage of its value in the reference scenario, which is the base situation without rural works programs.

It is clear from table 5 that rural works programs have a substantial impact on the poor. A well-targeted and well-executed program raises the equivalent expenditure and energy intake of the poorest class by about two-thirds and the two poorest classes by about two-fifths relative to the reference scenario. With their cost coming out of investment, aggregate growth is somewhat lower. As is to be expected, a poorly executed and well-targeted program still yields the same benefits for the poor—because they are the beneficiaries of the expenditure on the program rather than its product. But spending resources in creating unproductive assets naturally affects aggregate growth adversely (compare $R-1-1$ with $R-1-0$ or $R-0.5-1$ with $R-0.5-0$). Targeting failure reduces the benefits to the poor by nearly a half (compare $R-1-1$ with $R-0.5-1$ or $R-1-0$ with $R-0.5-0$). If a well-executed and well-targeted program can be financed through additional taxes rather than by reduction in investment, the poor will benefit as much and the economy will gain growth. If instead of additional taxes, aid becomes available, benefits as well as growth could be even further augmented.
IV. Food Aid: Some Relevant Experience

Food aid in the form of cereals has declined substantially from its peak in the mid-1960s: that of the United States in 1984–85 was nearly 10 million tons less than the 17.7 million tons it reached in 1965–66 (see table 1). The emergence of other donors, mainly the EEC, only partially compensated for the decline from the United States. The U.S. domestic price-support program, as it operated until the mid-1960s, contributed to the accumulation of stocks which reached a peak of over 1.5 billion (billion = 1,000 million) bushels of wheat or over 118 percent of all uses in 1960–61. In part as a means of stock disposal, food aid shipments almost quadrupled from the early 1950s to their peak of 572 million bushels in 1965. The basic support price, together with other support, fell progressively from $2.00 per bushel in 1962 to $1.69 in 1965. Stocks began declining and with the extraordinary food aid shipment to India in the two drought years of 1965–66 and 1966–67, they fell to 36 percent of all uses. After increasing and then falling again to an even lower level in 1974, the year of large sales of wheat to the Soviet Union, they recovered and in 1982–83 surpassed their 1960–61 peak in absolute terms (USDA 1984, 1986). However, political support in the United States for a return to using food aid as a means of disposing of emerging stocks was not present, and instead farmers were induced through changes in policy to divert cropland from food-grain production. In 1984 stocks had risen above the 1973 trough but only to their 1950s levels, and the terms of U.S. food aid also became harder. For example, payment in terms of local currency was phased out: while in 1965,

<table>
<thead>
<tr>
<th>Variable (average)</th>
<th>Scenario a</th>
<th>R-1-1</th>
<th>R-1-0</th>
<th>R-0.5-1</th>
<th>R-0.5-0</th>
<th>R-1-1-T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real GDP growth rate (1980–2000)</td>
<td></td>
<td>95.1</td>
<td>85.6</td>
<td>96.1</td>
<td>87.0</td>
<td>104.3</td>
</tr>
<tr>
<td>Equivalent expenditure per capita in 2000:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>99.8</td>
<td>94.6</td>
<td>100.0</td>
<td>95.3</td>
<td>102.2</td>
<td></td>
</tr>
<tr>
<td>Poorest rural class</td>
<td>167.0</td>
<td>167.0</td>
<td>133.0</td>
<td>133.0</td>
<td>167.0</td>
<td></td>
</tr>
<tr>
<td>Two poorest rural classes</td>
<td>139.0</td>
<td>139.0</td>
<td>119.0</td>
<td>119.0</td>
<td>139.0</td>
<td></td>
</tr>
<tr>
<td>Energy intake per capita (kcal. per day) in 2000:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>104.7</td>
<td>102.6</td>
<td>103.0</td>
<td>101.0</td>
<td>105.7</td>
<td></td>
</tr>
<tr>
<td>Poorest rural class</td>
<td>170.0</td>
<td>170.0</td>
<td>140.0</td>
<td>133.0</td>
<td>170.0</td>
<td></td>
</tr>
<tr>
<td>Two poorest rural classes</td>
<td>140.0</td>
<td>140.0</td>
<td>120.0</td>
<td>119.0</td>
<td>140.0</td>
<td></td>
</tr>
</tbody>
</table>

Note: Each variable is expressed as a percentage of its value in the reference scenario, in which no RWP$s are adopted.

a. Scenario R-1-1 = efficient targeting and execution. Scenario R-1-0 = efficient targeting and poor execution. Scenario R-0.5-1 = semiefficient targeting and efficient execution. Scenario R-0.5-0 = semiefficient targeting and poor execution. Scenario R-1-1-T = efficient targeting and execution; tax financed; in the other scenarios, the RWP$s are financed by reduced investment.

Source: Narayana and others (forthcoming).
nearly 70 percent of wheat exports under aid programs was sold for foreign soft currency, by 1972 none of it was. Further, recipient countries had to bear an increasing share of transport and other costs.

As mentioned earlier, until the mid-1960s a large fraction of food aid went to India and Pakistan. In both countries import-substituting industrialization was facilitated by food aid, which was used to supply a substantial part of the subsidized distribution of grains through ration shops in urban areas, reducing food costs and wages. Famine was barely averted in India in the drought years of 1965–66 and 1966–67 by the importation of more than 10 million tons of cereals, largely under PL480 food aid. Earlier U.S. technical assistance (governmental as well as private) in setting up agricultural universities and strengthening research capability in plant breeding (including the Indian Agricultural Research Institute) helped India to reap substantial gains from the Green Revolution technology that became available in the mid-1960s (Lele and Agarwal 1987). But external aid to these institutions was technical assistance and not food aid.

Another major recipient of food aid in the 1950s and 1960s was the Arab Republic of Egypt. Handoussa (1987) claims that during the 1959–66 period the availability of food aid under PL480 enabled Egypt to save foreign exchange that otherwise would have been spent on commercial food imports. The saved foreign exchange was spent on importing capital goods needed for industrial investment and growth. But food imports, mainly wheat, vegetable oils, and sugar, were more than a third of merchandise imports in 1975 and a quarter in 1984 and rice exports and output of wheat declined during this period. Cereal imports increased from about 50 percent of domestic production in 1975 to 100 percent in 1984–85 and cereal consumption grew at a phenomenal 15 percent a year average. This course of events was largely due to the heavily subsidized food distribution policy backed by imported food (see Alderman and others 1987 for a description of the system, and von Braun and de Haen 1983 for its effects on agriculture). The political difficulties of such a policy were shown by the riots that ensued when a reduction in the subsidy was attempted. As Scobie (1983, p. 48) points out, this political commitment to the system of food subsidies meant that “any decline in the supply of foreign exchange is met first by postponing the import of capital goods, then by reductions in raw materials, and finally, and only in a minor way, by a reduction in the quantity of imported food.”

In the 1970s and 1980s Sub-Saharan African (SSA) countries have been the major recipients of food aid: the share of SSA in cereal aid has risen steadily from less than 5 percent in 1970–71 to nearly 50 percent in 1984–85. To cite just a few cases from a study on managing agricultural development in Africa (MADIA) by the World Bank, during 1970–85 the volume of food aid grew at an average annual rate of 4.1 percent in Cameroon, 43.1 percent in Kenya, 28.6 percent in Malawi, and 23.5 percent in Tanzania (see also Lele 1989, this issue). Ezekiel (1986) states that between 1985 and 1990 food aid requirements
will grow by about 25 percent in Kenya, 20 percent in Tanzania, 15 percent in Senegal, and 14 percent in Cameroon. There is also an increasing tendency to use food aid as a lever to promote structural adjustment and policy reform (World Food Programme 1987). For example, in the late 1970s the United States provided food aid to Bangladesh more or less as a grant under Title III of PL480 to sustain Bangladesh's attempt to reduce food subsidies and move toward an open-market food pricing system. Eleven food aid donors have agreed to provide food aid to Mali in return for its restructuring the cereal marketing system, reducing the deficits of the parastatal marketing boards, stabilizing cereal prices, and improving farm incomes. A more broad-ranging reform of the agricultural sector conditioned on food aid is being attempted in Madagascar and Senegal. In Ghana, where there have been substantial falls in real wages and productivity over several years, food aid under the World Food Programme (WFP) and the World Bank is being used to augment the real wages of workers engaged in key export sectors and in the improvement of infrastructure. In Grenada, local resources generated from sales of food aid have been earmarked for support of a structural adjustment and reform plan. In Morocco, food aid is to be used in a compensatory program for people placed at nutritional risk during a structural adjustment plan aimed at the elimination of food subsidies by 1990. The adjustment program was expected to reduce the real income of the very poor by a fifth, placing them at nutritional risk. By expanding ongoing supplementary feeding and school feeding projects using additional project food aid provided by the United States and WFP, this risk is expected to be avoided. Since the results from most of these programs are not yet available for evaluation, it is too soon to judge the effectiveness of food aid in easing structural adjustment costs.

V. POLICY IMPLICATIONS AND CONCLUSIONS

Food aid can play a useful role in furthering development and poverty amelioration in situations in which the recipient country is generally following an appropriate development strategy and the aid is used either in support of distributive policies that are effectively targeted at the poor or in financing efficiently executed and effectively targeted investment projects. But the use of any aid, in the form of food or foreign exchange, in support of policy reform and adjustment has to be carefully thought through so that it does not end up encouraging the very thing it wants to eliminate, namely, inappropriate policies. Of course, the effectiveness of the use of food aid can be enhanced substantially through proper design, the choice of commodities, and the flexibility with which recipients can exchange with each other commodities supplied by aid and their own output (Mellor and Ezekiel 1987; Hopkins 1987).

During the 1950s and 1960s the United States and Canada were the major food aid donors, and most of the aid was received by the South Asian states of India, Pakistan, and Sri Lanka, and to a lesser extent other Asian states (the Republic of Korea and the Philippines). With the dramatic increase in food
output in all of them and the accumulation of large food stocks in some in the 1980s (more than 25 million tons in India in June 1987 that would decline to less than 10 million tons by April 1, 1988, after the failure of the 1987 monsoon rains), it is tempting to conclude that purposively used food aid is a major factor in this turnabout. Such a conclusion is too facile, however. Certainly, food aid at concessional terms, particularly in years of unprecedented droughts, helped India avert what could have been major disasters. But regardless of the persuasion that aid donors may have applied, it is the availability since the mid-1960s of dwarf varieties of wheat and rice with high-yield responses to heavy doses of chemical fertilizers that largely explains the change. Some of the domestic policy distortions, such as zonal restrictions in the movement of food, had been removed even earlier. The new technology brought in its wake new distortions: fertilizer subsidies, irrigation subsidies, and price supports at levels that led to the accumulation of stocks. The extent of their distortionary effects is hard to judge since the distortions in favor of agriculture were in part corrections for distortions in other sectors that penalized agriculture. It may be time now to remove or reduce these distortions. Still, the availability of technology and the desire to exploit it induced these, albeit distortionary, producer incentives.

With Sub-Saharan Africa replacing South Asia as the major recipient of food aid, it may be thought that in SSA also, food aid leverage can be used to turn the situation around. Extreme caution is warranted before any such conclusion is drawn. First of all, the domestic policy distortions with respect to agriculture in SSA appear, according to some of the MADIA studies, to be far more serious and pervasive than they were in South Asia. South Asia has never experienced a decline in the trend of growth of food or agricultural output, let alone a negative trend. Although severe droughts in the Sahel and other regions are partly responsible, the declining trend in SSA output is a reflection largely of policy failures. Most important, in South Asia a research infrastructure existed that could rapidly breed rice and wheat varieties to suit local conditions, once the dwarf genes became available, and an extension service for spreading the knowledge about new varieties could be assembled. None of these conditions exist in SSA to the same extent, not to mention the differences in soil, climate, and factor endowments between SSA and South Asia. One should not be unduly optimistic about the quick success of food aid conditional on policy reform. It remains to be seen whether policy-reform conditioned food aid will prove to be a cure.

REFERENCES


