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Development Assistance and Exports: The Case of the United States

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Abstract

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The relationship of development assistance and exports has been a controversial subject in recent years. U.S. public organizations feel that development assistance, particularly for research, while intended primarily and immediately to encourage economic development in low-income nations, will also help increase the effective demand for agricultural exports. Some commodity-oriented U.S. farm groups, on the other hand, see assistance primarily in terms of leading to increased competition for exports of their product. They would have the U.S.A. provide less international support for agricultural development and they have had some influence. While there has been considerable debate on the subject, this has not yet resulted in the development of an enlightened national policy. The paper attempts to sort out the facts and perceptions that have led to this situation and to provide some policy suggestions. Two important needs are for: (a) greater public understanding, and (b) strengthened domestic research and improved linkages between domestic and international research activities. Paradoxically, the latter point tends to be overlooked by some of the farm groups but is essential if the U.S. is to remain competitive in what is likely to become a more open international market in the future.

Introduction

The United States of America has been going through a difficult period concerning development assistance and exports. Particular attention has been given to the use of public funds to aid the development of agricultural production in developing countries. The issues are not the usual ones concerning the effectiveness of such assistance in developing countries, but rather the effect on exports of certain U.S. agricultural commodities.

There are different perceptions of the effects of development assistance. Public agencies maintain that such programs, to the extent that they stimulate economic development, are beneficial to overall agricultural exports. Commodity groups, on the other hand, are less interested in the overall situation

and are concerned with the possible competitive effect on their crop in the short run (Laws, 1985). They in turn have expressed their concern to their Congressional representatives.

While a good deal has been said on both sides of the issue, the arguments have not really been joined. Each side tends to talk to like-minded individuals and they are a bit like trains passing in the dark. The extreme sensitivity of the issue – particularly because of the political overtones – has made it difficult to carry out a meaningful public dialogue. And some important regional and global issues tend to get overlooked in what often is a rather narrow focus.

Our primary purpose is to attempt to sort out both the facts and the perceptions that have led to this situation and to provide some suggestions which may provide the basis for a constructive course of action. We build on an earlier paper by Brady (1987) and focus on the U.S.A. However, some of the same difficulties may also occur now or in the future in other developed countries. Those in developing countries may gain a clearer idea of the problems faced by donor organizations.

1. The larger context

Several of the larger issues which relate to U.S. foreign and domestic policies might be set forth at the outset. The first is that hunger and malnutrition are still major world problems. Per-capita food production in the developing countries as a whole has grown only slightly in the past decade; the USDA index, compared to 100 for 1976–78, was 102 in 1986 and the preliminary estimate for 1987 is 98 (C. Goode, USDA Economic Research Service, personal communication, 1988). A substantial part of the world's population live in countries with serious food deficits (Yetley and Shane, 1986). Many of these countries are vulnerable to a range of crises which could, quickly and with little advance notice, worsen their situation. This is ironic in a world in which major crop surpluses are usually a major concern (Insel, 1985). However, the surpluses are being generated primarily by the developed countries led by the U.S. and the European Community. The world as a whole may have surpluses but many countries have an enduring food shortage,

It is a basic foreign policy objective of the U.S. to help friendly countries strengthen their own economies and feed their own people. Public opinion polls consistently demonstrate that a majority of Americans support foreign development assistance to low-income countries (ODC, 1987). Except in a few cases of countries exceptionally rich in natural resources (Kuwait) or with economies built on trade (Singapore, Hong Kong), agricultural development is necessary for overall economic development. With a few exceptions, developing countries must be the primary source of their own food supply. Public U.S. foreign agricultural development assistance has been a significant contributor to achieving this objective.

It is also a basic objective of U.S. domestic policy to strengthen the U.S. agricultural sector and expand the markets in which to sell the output of U.S. agricultural production. U.S. foreign development assistance in agriculture, particularly in research, helps – we maintain – advance this goal. But, as noted in the introduction, some domestic commodity groups would have the U.S. sponsor less foreign assistance of this nature (some of the groups also show little interest in increasing production-oriented research in the U.S.A.; R. Stowe, personal communication, 1988). The results would be a decreased ability of low-income countries to develop their own economies and to increase imports from the U.S. The latter effect would not seem to be in the best interests of U.S. farmers.

The reasons for this paradoxical position are complex. In part, it is the result of some significant changes in the export market and the international monetary situation. In part, it is the result of a depressed U.S. farm economy. It is also a result of poor information and communication. We will explore these issues.

2. Benefits of technical change to developing nations

The key to resolving the conflicting views is a clearer understanding of the role that agricultural development plays in the economic development of low-income nations and the role that technological change plays in promoting agricultural development. While food aid can help meet the short-term needs of the poor, in the longer term, the solution to the food problem is to raise the incomes of the poor. That solution also requires increasing food production so that food supplies are available to meet the ever-increasing demand of the poor for food. A large share of the population in low-income countries (often 50–75%) earns its livelihood from agriculture. Uncultivated fertile land is limited. Cultivated land is subject to diminishing returns; additional inputs will produce progressively less additional output. In most developing nations, the best long-term way to increase food supplies and to raise the purchasing power of the poor is through a widespread pattern of technological change in agriculture.

2.1 Role of technical change in development

In general, technological change in agriculture can play four critical roles in the development process (Mellor, 1986, 1988). First, technological change increases the production from given levels of inputs and thereby contributes to increasing food supplies and rural incomes. Between 1960 and 1987, output per hectare of major food crops in the developing world rose by 1.9% annually, and accounted for about two-thirds of total grain production growth.

Second, technological change reduces per unit cost of output, leading to lower prices and lower food costs to consumers, and therefore has a significant pos-

itive effect on nutrition and net real income. In developing countries, low-income people typically spend 60–80% of their additional income on food. Nutrition in the developing countries has improved significantly as indicated by increases in life expectancy and decreases in infant mortality.

Third, increased food production can contribute to increased rural employment. If, in the face of economic growth, more food is not available, food prices will be bid up, the real cost of labor will increase, and investment will swing to more capital-intensive (labor-saving) processes. Increasing productivity reduces upward pressures on wages.

Fourth, technological change in agriculture has important employment and income linkages with the rural nonfarm economy. Technological change in agriculture raises the incomes of farmers who spend a large proportion of their new income on a wide range of nonagricultural goods and services. The small enterprises that produce such foods tend to be labor-intensive. They thus provide the rural poor with a range of nonagricultural employment opportunities. This increases the effective purchasing power of the poor at the same time that it provides for new rounds of growth in the economy at large.

2.2 Role of research in technical change

Technological change is largely the result of research. The exceedingly high returns to countries from investment in agricultural research are well documented. A large number of studies indicate that returns to a great deal of investment in agricultural research have been two to three times higher than returns to other agricultural investment (Arndt and Ruttan, 1977).

Fortunately, through the early 1980s, developing countries, supported by assistance from the developed countries, made substantial progress in strengthening agricultural research institutions. The developing countries have, with some exceptions (especially in Latin America in recent years), substantially increased their appropriations for agricultural research and have increased the number of scientists employed in agricultural research. International agricultural research centers have played a major role in assisting country research programs. Improved technology has been accompanied by more enlightened policies, greater efforts to improve infrastructure, and increased efforts to provide needed inputs such as fertilizer.

While research has enabled overall agricultural production in the developing countries to increase substantially, population growth has continued at a high rate, with the result that production increases have barely kept up with population growth.

Technology alone cannot bring about agricultural development in low-income countries. A range of institutional innovations, policy changes, and infrastructure investments must occur if agriculture is to develop and the benefits are to be spread widely. However, without continuing generation and

diffusion of improved technology, few development programs will move very far or have lasting effect. Improved technology, adapted to farmer needs and capabilities, is a necessary but not sufficient condition for agricultural and rural development.

3. Benefits of development assistance to the United States

While foreign agricultural development assistance is designed in the first instance to aid developing nations, this assistance can also be of major benefit to donor nations, including the United States.

3.1 Increasing markets for agricultural exports

Since agricultural production has difficulty in keeping pace with ever-surging demand for food in many developing countries, the developed world has an important role to play in the supplying of food imports to the developing countries. Between 1961–65 and 1973–77, net food imports by the Third World increased nearly five-fold, from 5 to 23 Mt per year. Conservative projections by the International Food Policy Research Institute suggest that the level of net food imports could reach almost 80 Mt by the year 2000 (Paulino, 1986). More complex projections, taking the livestock sector more fully into account, suggest as much as 120 Mt of net food imports by the year 2000 (Mellor, 1988).

The world agricultural export market is changing (Vocke, 1987). Traditional markets in the industrial countries are unlikely to grow significantly in the future. The developing countries have replaced industrialized countries as export growth markets. Their agricultural imports from the U.S. increased from \$1.1 billion in 1970 to a peak of \$15.4 billion in 1981. Developing countries now account for approximately half of U.S. foodgrain and feed exports and a growing proportion of soybean exports (Lee and Shane, 1987).

As a group, the developing countries with the most rapid growth rates in income are also the countries which have the most rapid growth rates in food and feed grain imports (Vocke, 1988). These countries are, in most cases, also expanding agricultural output, but demand is increasing faster than supply. Countries experiencing high growth rates in production also have high rates of growth in imports (Kellogg, 1985; Paulino, 1986). The few major exceptions – India, China, Egypt, Nigeria and Mexico – are primarily due to specific domestic policy decisions which may not always work to the best development interests of the respective countries (Paarlberg, 1987).

The developing countries will be the significant export growth markets of the future if these countries have money to purchase food. U.S. assistance, typically emphasizing agricultural development, can help to move low-income

Mt, million metric tonne = 10^6 t = 10^9 kg.
billion (US) = 10^9 .

countries to middle-income status where they become improved cash markets for food, feed, and fiber. Whether these countries will become significant export markets for the U.S. will depend in large part on whether U.S. agriculture is competitive in these markets (Vocke, 1988).

3.2 Improving the competitiveness of U.S. agriculture

A key to regaining the competitive advantage in world export markets, one that the U.S. has enjoyed historically, is to get production costs down. The key to doing this is to develop improved technologies – better varieties and production practices. U.S. participation in global agricultural development provides access to scientific knowledge and genetic materials that the U.S. requires for its own agricultural development. For example:

- Varieties with dwarfing genes from Asia were sown in nearly 59% of the wheat area and about 22% of the rice area in the U.S. in 1984 (Dalrymple, 1985). The proportions are undoubtedly higher now. These semidwarfs, many of which utilize varieties developed in the international agricultural research centers as a parent, have contributed to increases in yield levels (Dalrymple, 1988b).
- The genetic source of golden nematode resistance in U.S. potatoes is Peru. The genetic source of modern resistance to rust in U.S. wheat varieties is Kenya.
- Genetic material from Korea has led to new soybean lines which, because they require less processing before use, should significantly lower costs and increase demand for U.S. soybean production, particularly for animal feed.

Developing countries are the primary origins of almost all the crops grown in the U.S. – maize came from Central America, soybeans from Asia, and wheat from the Middle East (Harlan, 1976). The developing countries have the largest reservoirs of native species which provide genes for dwarf stature, resistance to insect pests and diseases, day-length insensitivity, and high-yield potential – many of which have been incorporated into modern crop varieties to increase productivity. The U.S. therefore, returns to those areas for genetic materials with which to breed desirable characteristics into its varieties. Access to foreign germplasm, which increasingly can be gained *only* through collaborative research conducted with and in other nations, including developing countries, is of great benefit to the United States.

4. Why is there difficulty in funding foreign assistance in agriculture?

If the benefits are so clear, why is there difficulty in funding the foreign agricultural assistance program? There are several somewhat different problems which have come together at about the same time.

4.1 Budgetary constraints and earmarking

One of the major difficulties in funding these programs is overall budget stringency. The Gramm–Rudman–Hollings budget balancing act has placed the entire U.S. government in a tighter budget situation. This factor began to be felt in 1986 and became more important in 1987 and 1988. Earmarking of certain foreign assistance appropriation items by Congress for special treatment has increased the difficulty of A.I.D. to fund other budget categories.

A vivid example of the effect of earmarking was provided in 1986. One program, Health and Child Survival, found strong support from a constituency, and Congress responded by increasing funding. But the overall A.I.D. budget was not increased correspondingly and it was necessary to draw the funds from elsewhere – and the Agriculture, Rural Development, and Nutrition (ARDN) account was most affected. It is unlikely that the group which lobbied more development assistance for the Health and Child Survival account meant to obtain this increase at the expense of agricultural development assistance (better nutrition through more and better food is probably the best way to improve health and child survival). But that was the effect.

Earmarking can have peculiar effects – not all of them negative – on funding of foreign agricultural development programs. It certainly provides a new and important element in the resource allocation-process.

4.2 Lack of constituency

Why wasn't agricultural development assistance given a higher funding priority? The humanitarian motivations for aid are clear and strong. A recent poll found that 87% of the U.S. public agree that the U.S. should help farmers in other countries grow their own food even if it means they buy less from the U.S. (ODC, 1987).

The main problem is lack of a politically active constituency for the whole ARDN account. Constituencies are composed of two types: humanitarian and self-interest. The humanitarian groups are more oriented to immediate food crises rather than long-term programs such as research. The self-interest motivations represent a wide range of interests and level of organization and do not necessarily work closely together. Private and voluntary organizations tend to respond to food shortage crises, brought vividly to the public by mass media. Universities are more apt to organize support for specific projects in which they have been involved than to lobby generally for agricultural assistance programs.

There is a second problem. Traditional development assistance supporters feel that foreign assistance is being used more for security objectives than for humanitarian and development objectives. This creates a dilemma for them in expressing support for 'foreign aid'.

Hence, ironically, a program such as the ARDN account which stands to

benefit a very wide range of society is apt to suffer in political terms because the global benefits are spread relatively thinly and do not generate the support they deserve except in times of crisis.

4.3 Concerns of some farmer groups

Concurrently, spokespersons for some segments of the U.S. agricultural community singled out foreign aid as a leading cause of reduced U.S. agricultural markets – and were successful in making their voices heard by Congress. There may be several reasons for their success.

First, the U.S. farm economy was ‘hurting’, in part due to declining exports of farm commodities. This is a significant change from earlier trends. During the 1970s, world grain exports nearly doubled as developing countries grew rapidly. The U.S. was able to capture about 80% of the increase in world export markets. The boom in U.S. agricultural exports was abruptly halted in 1981; U.S. agricultural exports fell by over one-third, declining from a peak of \$43.8 billion in 1981 to \$26.3 billion in 1986. A drop of this severity generated large shock waves. The effect was magnified by a rise in land prices during the period of export prosperity. Farmers went heavily into debt at high interest rates, using their land values as collateral. When the export market contracted, the value of land assets collapsed. Farmer incomes were, in part, supplemented by rapidly accelerating farm support payments, but many farmers became financially insolvent.

Second, there were concurrent changes in the annual patterns of U.S. exports of given crops to given countries. There were, in the short run, gainers and losers from the point of view of U.S. commodity groups. Many factors are involved in the changes, one of which may have been the effect of agricultural development programs in certain nations. India, for example, has become more self-sufficient in wheat which has led to reduced U.S. exports of that commodity. However, some of the displaced U.S. sales to India were not commercial sales but were subsidized or concessional exports made under PL480. And U.S. wheat exports to other developing nations have increased. A larger view would, of course, take into account changes in export of other U.S. commodities. However, the political system is more likely to hear from the perceived losers than from the winners.

Third, some people perceived that the U.S. has ‘given away’ technology which has contributed to increased competition with U.S. exports in third markets. In response to this question, it is important to differentiate between the technology transfer effects of the public and private sectors. The public efforts – which we discuss here – are oriented to low-income farmers and consumers in the poorer nations. There is little U.S. technology which can be transferred directly to these groups; adaptive research must be carried out in the developing countries and is directed at products for domestic consumption. The tech-

nologies provided by private firms, however, are more likely to be oriented to larger farmers in the commercial sectors; in some such cases, U.S. technology may prove more immediately applicable. These distinctions may not, however, always be easily drawn.

Fourth, the structure of Congressional committees has changed. Congressional committees used to be structured to deal with general farm problems – farmers who grew maize and soybeans. And the general farm organizations, those who saw the complete balance sheet of the farm in perspective, were very influential. Now Congressional subcommittees are organized on commodity lines, and the commodity organizations tend to be more powerful than the general farm organizations, at least on specific matters. The larger view tends to get lost. And the national commodity organizations, often being coalitions of state organizations, do not always speak with the same voice (Stowe, 1988).

Fifth, A.I.D. may have been perceived to be an easy target. This is, unfortunately, probably true because of the lack of a hard-core constituency, but for other reasons as well. The commodity associations may have felt that they had to show that they were doing something positive to help farmers regain their income positions. Attacking some A.I.D. programs was an easy and popular way to start. And once one commodity group demonstrated success, the other commodity groups felt the pressure to join forces (Soroko et al., 1987; Stowe, 1988).

5. The result: reduced funding and restrictions

It would seem that these different factors have some influence. There have been two major types of effects: reduced funding and restrictions on activities. Neither is unprecedented, but the cuts in funding are particularly sharp and the restrictions have been given a new twist.

5.1 Reduced funding

Public financial support for U.S. foreign economic assistance in general, and agricultural development assistance in particular, is declining (Brady, 1987). The Section 103 Account in the Foreign Relations Authorization Act for Fiscal Year 1987, which supports agriculture, rural development, and nutrition (ARDN) assistance, was reduced by 73 million, or 10%, from 1986 levels. Once the flagship of our foreign aid program, the \$686 million authorization for ARDN in 1987 was only 44% of total functional development assistance.

5.2 Restrictions on A.I.D. activities

Until the late 1960s it was the policy of the U.S. (and Canada as well) not to help nations to increase production of crops that might compete with its

surpluses in world markets (Moseman, 1966). This position prevented the U.S. from effectively helping countries address their own food problems. The policy was changed in 1968 and permitted U.S. assistance to food crop production (NAS, 1977, p. 96).

The one A.I.D. limitation on agricultural technology transfer was codified in Policy Determination Number 71 (PD-71) in 1978. This PD states that "AID/W will as a matter of general policy examine at the earliest possible stage proposed projects involving production, processing, or marketing of sugar, palm oil, or citrus for export. ... A.I.D. should, therefore, only finance such projects when their development rationale is strong and their likely impact on U.S. production is low" (A.I.D., 1978, p. 1). Few, if any, such projects have been supported. Nor has A.I.D. supported projects in tobacco or cotton.

More recently, A.I.D. has issued another policy determination (PD-15) which states "... it is A.I.D. policy to avoid supporting the production of agricultural commodities for export by developing countries when the commodities would directly compete with exports of similar U.S. agricultural commodities to third countries and have a significant impact on U.S. exporters" (A.I.D., 1986, p. 2). Policy Determination 15 was issued in response to the Bumpers Amendment (to Section 209 of the Urgent Supplemental Appropriations Act, 1986, P.L. 99-349). Since, in response to the earlier policy determination, A.I.D. has steered away from activities which would be most apt to create competition for U.S. agricultural exporters (A.I.D., 1987), the effect of the legislation has principally been of cautionary nature (Brady, 1987).

The threats of additional limitations to foreign assistance are ever present. Currently under consideration in the U.S. Congress, for instance, is the Foreign Agricultural Investment. Reform (FAIR) bill which would, in effect, extend these restrictions to multilateral development banks.

6. Prescription for the United States

What can be done to consolidate support for international technical assistance activities and at the same time strengthen the position of agriculture in the U.S.? We think that two steps are of primary importance:

- (1) develop greater public understanding of the nature of the benefits of technical assistance in agriculture; and
- (2) strengthen agricultural research in the U.S.

6.1 Need for greater public understanding

As Brady recently stated: "Agricultural development assistance is difficult to explain; it is even more difficult to defend" (1987, p. 927). There is neither good nor widespread understanding of the factors – many of them relatively short-term in nature – which created export difficulties or of the potential long-

term benefits of foreign agricultural assistance. There were several causes of the reduced U.S. agricultural export performance, involving rates of economic growth, external debt loads, changes in exchange rates, and high and inflexible support rates for U.S. commodities.

Some of the short-term factors have already changed; others are changing. The Food Security Act of 1985 will gradually reduce loan rates for several major agricultural commodities. The U.S. foreign exchange rate has weakened against some key currencies. Exports are beginning to recover. A rice surplus has turned into a relative shortfall within a year; other commodities may do so in the near future. History demonstrates that the international agricultural scene is characterized by continually recurring shortages and surpluses.

Foreign agricultural assistance, by contributing to faster economic growth of the developing countries and stimulating imports, and by contributing to increased competitiveness of U.S. agriculture, has been and can continue to be a significant contributor to expanding exports. This story needs to be better and more widely understood.

However, the principal reason for providing development assistance is because of humanitarian interest. The more affluent nations have a moral obligation to help countries whose people are hungry and malnourished and are subject to high rates of infant mortality.

6.2 Need to strengthen agricultural research in the United States

Increasing support for public agricultural research programs in the U.S. and increasing linkages with the international agricultural research community will help improve the competitive position of the U.S. in international markets by reducing the cost of production and marketing and by improving the export quality of U.S. products.

6.2.1 Support for public research in the United States

Trends in public agricultural research funding (state and federal) give reason for concern. A review of public funding from 1915 to 1984 (Dalrymple, 1988a) shows steady growth in dollar terms, but when these figures are deflated by population growth and inflation, the increases are not impressive, especially for the period since 1965–1969. In fact, funding dropped 4.3% from the 1975–1979 period to the 1980–1984 period.

This drop is particularly ominous for two reasons. First, a large proportion of agricultural research funding must be devoted to maintenance research – as high as 90% according to one recent study on wheat (Blakeslee, 1987). Further declines in funding could seriously cut not only productivity-increasing research but could eventually endanger the ability to even maintain yields. Second, an increasing share of total agricultural research funding is going to ac-

tivities which, while important, are oriented toward other goals such as environmental concerns or rural development.

Moreover, the rest of the world is not standing still. During the 1959–1974 period, one study showed impressive gains in funding for research in other nations while the U.S. was losing ground in relative terms. To quote from the report (OTA, 1981, p. 162):

“From 1959 to 1974, total global expenditures (in constant dollars) increased three times. The largest increase was in Asia (excluding Japan). The smallest increase (excluding perhaps some small developing nations) was in the United States. In 1959, public research expenditures in Western Europe were half of those in the United States; by 1974, Western Europe exceeded the United States. Or to view the matter differently, in 1959, U.S. expenditures represented about 27.7 percent of global agricultural research expenditures; by 1974, the U.S. proportion had dropped by 10 percent to 17.9 percent.”

On the basis of the more recent U.S. data noted above, the situation has probably worsened since 1974. The Office of Technology Assessment (OTA, 1986, p. 10) concludes that the fraction of non-defense research spent on agriculture in Japan, France, and several other countries exceeds that of the U.S. If privately sponsored research of significant importance in the U.S. were included, the situation might be somewhat different, but the same might be true of other developed nations.

In addition, there have been, from time to time, reports critical of the direction and quality of the U.S. public agricultural research system (NAS, 1972; OTA, 1981). Concern has also been expressed about deteriorating facilities, especially at the nation’s major facility, the Beltsville Agricultural Research Center (Sinclair, 1988). There is reason for suggesting that the U.S. could be, in part, living on past laurels when it comes to publicly funded agricultural research.

Moreover, U.S. agriculture will face an increasingly competitive world. As a recent article in *Science* concluded: “The nation that best combines high-quality, low-cost, efficient production and effective marketing of agricultural products will win the competition” (Holt, 1987, p. 1402). Thus, as Ruttan stated: “new sources of productivity will be needed if U.S. agriculture is to maintain its preeminence” (Ruttan, 1987, p. 781). The U.S. must have a stronger, not relatively weaker, public research base.

6.2.2 Linkages with the international agricultural research community

U.S. agricultural research must tap into technologies wherever they are being developed. A report of the Office of Technology Assessment in 1981 concluded that “The United States has as much to gain as well as to give in the international research network” and noted that at that time no Federal agency had the specific responsibility to facilitate the process (OTA, 1981, p. 169). The situation remains unchanged.

If the U.S. is to share more fully in the benefits of work at international

agricultural research centers and in the increasing work done by other national programs, it must give more attention to improving its institutional arrangements for acquiring these technologies. It must encourage collaborative research arrangements in which U.S. scientists work side-by-side with scientists in other countries and in international networks in which new varieties are developed and tested over a range of different conditions. The U.S. must also facilitate research of younger scientists in other countries.

U.S. agriculture will surely suffer if it is not an even more active participant in international collaborative research. Relatively modest efforts in assisting the acquisition of international technology or involvement in collaborative research projects could bring substantial benefits to the U.S. in the future.

7. The challenge ahead

This is a particularly important time to consider the case for continued foreign agricultural development assistance and for increased emphasis on agricultural research. Part of the recent concern has arisen from some problems which are or may be short term in nature. But there are also important longer term issues at work. The structure of the international economy has undergone revolutionary change over the past decade (Schuh, 1987).

It is highly likely that international trade in agricultural commodities will change dramatically over the next decade. A linchpin of change could be the U.S. proposal, supported in some form by numerous other countries, to eliminate all subsidies and tariffs on agricultural commodities over the next ten years. If that reform is eventually accomplished, it could unleash a powerful new growth force throughout the world. However, it could also require substantial adjustment in the developed and developing countries, including the U.S. It is likely to increase rather than decrease the demand for agricultural research.

The U.S. must gear itself to remain competitive in this new environment. Foreign economic development assistance could be a powerful positive force both for the world as a whole and for the nation.

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