RICE UNIVERSITY

AN ANALYSIS OF SOME ASPECTS OF PUBLIC LAW 480

by

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Abstract

Public Law 480, the Trade Development and Assistance Act, was passed by the 83rd Congress in July, 1954, for the purpose of utilizing surplus agricultural commodities to further the foreign policy of the United States. The Act provides that surplus agricultural commodities shall be sold for foreign currencies, with the proceeds of the sales used for trade development, economic development, the payment of U.S. obligations abroad, and other uses which promote U.S. foreign policy. The majority of P.L. 480 exports are shipped under Title I, sales for foreign currencies.

The rationale behind the use of surplus agricultural commodities to promote economic development in receiving countries is the following: The U.S. sells agricultural commodities to underdeveloped countries. It then grants or loans the majority of the local currency proceeds back to the country involved to be used in its development program. The additional investments undertaken as a result of the grants and loans create new income, part of which are spent on the agricultural products supplied by P.L. 480. Thus, P.L. 480 provides additional resources for the receiving countries, and enables them to undertake a greater amount of investment than would be possible in the absence of the food aid.

Food aid through P.L. 480 can increase the rate of economic development in the receiving country by increasing the rate of capital formation and by increasing the efficiency of the use of capital. It increases the rate of capital formation by freeing foreign exchange, redistributing income, and by reducing inflationary
inflationary pressures which tend to curtail capital formation. It increases the efficiency of the use of capital by furthering education and technical training.

There are several problems which seem likely to accompany the use of food aid to promote economic development. The two most serious problems are first, that surplus food imports tend to decrease agricultural prices in the receiving country, and second, that the local currencies generated by P. L. 480 Title I transactions tend to be inflationary in the receiving country. The inflation problem is compounded by the lags which frequently occur between the shipment of the agricultural commodities and the transfer of the local currencies back to the receiving country.

It is very likely that P. L. 480 will continue in the next decade, due to the continued existence of the U. S. farm surplus. Because of its apparent success in promoting economic development, and because of its negligible effect on the U. S. balance of payments, it will continue to be a popular form of economic assistance. To the extent that it has delayed the end of the government subsidy in agriculture, however, it is probably doing the U. S. a disservice.
## Table of Contents

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Public Law 480 -- History, Structure, Objectives and Magnitude</td>
<td>1</td>
</tr>
<tr>
<td>2. Rationale for the Use of Surplus Foods in Economic Development</td>
<td>10</td>
</tr>
<tr>
<td>3. Surplus Food Aid and Capital Formation in the Receiving Country</td>
<td>18</td>
</tr>
<tr>
<td>4. Problems Arising from the use of Surplus Food Aid to Promote Economic Development</td>
<td>29</td>
</tr>
<tr>
<td>5. The Economic Effects of P. L. 480 in Israel and Pakistan</td>
<td>41</td>
</tr>
<tr>
<td>Footnotes</td>
<td>64</td>
</tr>
<tr>
<td>Bibliography</td>
<td>68</td>
</tr>
</tbody>
</table>
Chapter 1

Public Law 480 -- History, Structure, Objectives, and Magnitude

Introduction

On July 10, 1954, the Congress of the United States passed into law the Agricultural Trade Development and Assistance Act, usually called Public Law 480. This act stated the following purposes in its introduction:

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that this act may be cited as "the Agricultural Trade Development and Assistance Act of 1954." It is hereby declared to be the policy of Congress to expand international trade among the United States and friendly nations, to promote the economic stability of American agriculture and the national welfare, to make maximum efficient use of surplus agricultural commodities in furtherance of the foreign policy of the United States, and to stimulate and facilitate the expansion of foreign trade in agricultural commodities produced in the United States by providing a means whereby surplus agricultural commodities in excess of the usual marketings of such commodities may be sold through private trade channels, and foreign currencies accepted in payment therefor. It is further the policy to use foreign currencies which accrue to the United States under this Act to expand international trade, to encourage economic development, to purchase strategic materials, to pay United States obligations abroad, to promote collective strength, and to foster in other ways the foreign policy of the United States." 1

It is the purpose of this presentation to analyze some aspects of Public Law 480, especially its effects on underdeveloped countries which receive surplus agricultural products from the Public Law 480 export program.

History

In order to have some perspective for examining Public Law 480, let us first look at the historical situation from which it emerged.
The farm surplus problem is an old one. In this century, the problem first became serious at the end of World War I. The decline in prices caused by the loss of foreign markets combined with high costs to squeeze the farmers. This led to the beginning of the debate on solutions to the farm problem, the problem which is still being debated today.

Attempts to protect farm prices in the 1920's began with the McNary-Haugen Bill, which would have held up the domestic price level by export dumping. It could not get past President Coolidge's veto.

Herbert Hoover's election brought the beginning of a new attack on the surplus problem: the protection of farm prices by buying and storing surpluses. The Farm Board set up to accomplish this task had the misfortune of occupying the same point of time as the crash and the Great Depression, and was doomed to failure due to a lack of resources. Nevertheless, the Farm Board was the forerunner of later programs which worked under the same principle.

In 1933 and 1934, the New Deal's agriculture adjustment programs were based on commodity loans (price supports), with a limited amount of acreage allotment. The Agriculture Adjustment Act of 1938 attempted to protect agriculture by setting up crop loans on a sliding scale of parity. This program caused large accumulations of some basic crops.

World War II brought an end to surplus food worries and changed emphasis to increasing output. Price guarantees were set at high levels, and domestic demand was supplemented by Lend-Lease exports. The result of this heavy demand was a large increase in productive capacity.
In the immediate postwar period, the increased food production was needed to feed the hungry in war damaged countries. Foreign aid and the Marshall Plan maintained the total demand for farm products at a high level. Nevertheless, surpluses, first of potatoes and eggs, and later of wheat began to accumulate. In the years 1950-52, the Korean War offered a temporary increase in the total demand for U. S. agricultural products. This was due largely to U. S. military operations, and to the increased aid which was intended to develop resistance to the Communist aggression. By 1953, however, the wheat surplus was again reaching huge proportions, and despite cuts in acreage, production continued at high levels.

This was the situation facing the authorities in 1954. The price guarantees offered by the government as protection for farmers caused more production than could be consumed or exported. Technology in agriculture was increasing at a very high rate. To see this, one need only observe that, while wheat acreage allotment was reduced from 62 million in 1954 to 55 million in 1955, wheat production increased from 916 to 970 bushels.

The first effort to increase exports of surplus foods by selling them for local currencies was the National Security Act of 1953, which authorized the President to enter into such agreements with friendly countries. This was the immediate forerunner of Public Law 480.

In addition to the domestic problems and controversies caused by the buildup of surpluses, which had reached a value of $6 1/4
billion by 1954, there were also international considerations. The United Nations was emphasizing the problem of hunger in the world, and this became an issue in the debate over the passage of Public Law 480. A further issue arose from Russian propaganda publicizing the paradox of America's overflowing granaries during a time of widespread hunger.

Under the influence of these and many other issues, the bill providing for the use of surplus agricultural products in a soft currency export program was debated and finally passed into law on July 10, 1954.

The fact that it is possible to dispose of some of the United States' surpluses by sending them abroad indicates a major problem of the twentieth century world: the unevenness of the development, particularly the agricultural development of the various countries of the world. One of the ideas behind Public Law 480 is that, by encouraging economic development, and by the development of new markets, the export of U. S. agricultural products through normal commercial channels may be enhanced and surpluses reduced.

Structure, Objectives, and Magnitude of Public Law 480

Public Law 480 provides for the export of agricultural commodities under four titles. Title I, the most important, provides for sales of agricultural commodities for local currencies of the buying country. Considerations involved in the negotiation of a Title I agreement include: (1) The participating country's needs, economic status, and foreign exchange position; (2) the impact on dollar sales and other export programs; (3) the effect on export markets of other supplying countries, and (4) the relationship of the program to the foreign aid program and overall foreign policies of the United States.
A very complex administrative structure is involved in setting up and carrying through Title I agreements. "The Department of State is responsible for negotiating agreements and for foreign policy determinations. The Agency for International Development reviews the programs for conformity to the aid programs of the United States and administers economic development loans and grants. The Bureau of the Budget makes allocations and appointments of foreign currencies to the extent to which the Director of the Bureau deems necessary. The Treasury Department is responsible for the purchase, custody, deposit, transfer, and sale of the currencies received." 

The foreign currencies generated by Title I sales are used in a variety of ways. One part of the currency is used to expand present export markets or to develop new markets abroad for U.S. agricultural commodities. This has been implemented through four types of activities: cooperative programs with trade and agricultural groups, trade fair activities, marketing research, and utilization research.

Another part of the foreign currencies may be used for purchase of strategic and other materials. No uses have been made of this provision up to the present time.

Common defense, including military equipment, materials and facilities is another use to which Title I foreign currencies may be put. Typical uses of currency in this area have been mapping, and military base construction projects.

Grants for economic development, loans to private enterprise, and loans to foreign governments comprise a large share of Title I currency uses. Loans to foreign governments are generally used in economic
development programs, and the AID attempts to coordinate such loans with other forms of assistance.

The payment of U. S. obligations is a major use of Title I currencies. The expenses of U. S. embassies, military family housing, U. S. Information Agency programs, educational exchange programs, American-sponsored schools, scientific research, translation programs, social welfare and health programs, and other activities have been partially financed in receiving countries through the use of Title I currencies.

The relative importance of the various uses of currencies can be seen by the following analysis: out of a total of over $9 billion of currencies involved in agreements since Public Law 480 was passed, the allotments of currencies by use have been made in the following proportions: common defense 7.2%, grants for economic development 18.5%, loans to private enterprise 6.1%, loans to foreign governments 45%, and all other U. S. uses 23.2%. Out of the $9 billion of currencies involved in agreements, however, only about $5.4 billion has been transferred to the accounts of the agencies who use it, and of this only about $3.5 billion has been disbursed. The lag between the signing of agreements and the disbursement of the currency will be discussed in more detail in a later section.

Title II of Public Law 480 provides for the use of surplus agricultural commodities for disaster relief and other assistance. Activities undertaken under this title include disaster relief, refugee assistance, child feeding, and economic development. The types of economic development programs financed by Title II commodities include resettlement and land reform, livestock feeding,
and other work programs which can be financed directly by surplus commodities.

Of a total of about $1.46 billion of agreements authorized under Title II, the following allocation has been made: Disaster relief $723 million, child feeding $134 million, refugee relief $123 million, economic development $207 million, and other uses $273 million.\(^8\)

Title III authorizes two programs. One provides for donations of surplus food both for domestic distribution and for distribution overseas through non-profit American relief agencies such as CARE, and through intergovernmental agencies. During the period 1955-63, about $2.1 billion in surplus foods has been shipped under the foreign donations program of Title III.\(^9\)

The other program of Title III involves the barter of surplus commodities for strategic and other materials, goods, and equipment. Agricultural commodities may be bartered for materials which are less expensive to store, for materials used in foreign economic or military assistance programs, or for materials to meet the requirements of other Government agencies.

The final division of Public Law 480, Title IV, provides for dollar credit sales of U. S. agricultural commodities. The major objectives of this title are "to increase the sale of U. S. agricultural commodities for dollars, utilize the financial resources made available through their sale on a deferred dollar payment basis to maximize dollar trade, and to assist in the economic development of recipient countries."\(^{11}\)

Objectives

It is apparent that Public Law 480 was primarily intended in the
beginning to be a means of getting rid of some of the embarrassing agricultural surpluses which the U. S. had acquired. Since the law was passed in 1954, many changes, both in the letter and the spirit of the law, have been made. "Public Law 480 originally was presented as a temporary program to eliminate current storage supplies. It was hoped that farm prices would increase as sales and disposals came into closer balance with production and that this would permit the government to retire from intervention in agriculture. As it became clearer to Congress and the Eisenhower administration that the excess capacity was persistent, Public Law 480 was periodically extended, but continued to be considered a short term or temporary program. With time other goals came into view, particularly a concern for using surplus food as a means of economic development abroad. In 1960 and 1961 greater efforts were made to implement this concern into policy, first through long-term sales contracts, and secondly, through partial wage payments in food to otherwise unemployed or underemployed workers in various countries. Practical program considerations, a humanitarian concern for people and nations with inadequate diets, and the desire to stimulate development combined to shift the focus of local currency sales toward those countries with heavy populations and weak currencies."\(^{12}\)

We can thus see that the objectives of the law have changed as it has been subjected to changing pressures on the policy makers.

**Magnitude**

In terms of market value of exports, Public Law 480 has made up a large part of the U. S. total foreign aid. The total market value of all commodities programmed for export under Public Law 480 since the beginning of the law is about $14.7 billion. Of this
total, about $9.3 billion has been under Title I sales for local
currencies. Total exports under P. L. 480 for each of the three
past years (1961-63) have averaged just over $2 billion.\textsuperscript{13}

The outlook for the future sees no immediate end to the surplus
problem. The addition of the U. S. S. R. to the list of buyers of
U. S. wheat may serve to decrease the amount of the surplus, thus
decreasing commodities available to P. L. 480 for disposal. It
might, however, increase the surplus by encouraging U. S. wheat
farmers to increase their output.) Other than this difference,
there appears to be little change in the U. S. farm surplus and
export situation in the immediate future.
Chapter II

Rationale for the use of Surplus Foods in Economic Development

Having seen the structure and objectives of Public Law 480, we are now led to question how surplus foods may be used in the receiving country for purposes of economic development. We need to determine the ways surplus foods may be used and the conditions necessary in the receiving country in order for food aid to promote economic development.

Public Law 480 is limited in extent by two major restrictions: (1) Exports under P. L. 480 must be in addition to normal U. S. commercial exports; and (2) P. L. 480 exports must not displace normal sales of friendly countries. This means that exports under P. L. 480 must go toward increased consumption, if the provisions of the Law are to be satisfied. We now come to the general rationale for the use of surplus foods in economic development.

In countries which are underdeveloped and which have a large amount of unemployment and underemployment, development projects can be undertaken which will reduce unemployment and increase incomes. If a development program is undertaken with no increase in supplies of food, clothing, and other goods on which the increased incomes will be spent, the result will tend to be inflationary, which can be harmful to the overall development of a country. Imports of surplus foods can satisfy part of the increased demand, especially since a large part of the income of people in underdeveloped countries goes to buy food. Surplus food aid should be most effective in countries which have a high income elasticity for food, so that a large proportion of the new incomes generated by additional development
projects is absorbed by purchases of the commodities supplied through the food aid program.

The reasoning behind surplus food aid is that by selling surplus foods for local currency, the United States will encourage the receiving country to undertake more development and investment projects than it would undertake in the absence of the food aid program. The U.S. implements this through the sales agreement: at that time the local currency generated by surplus food sales is allocated to various uses, the most important of which is loans or grants to be used for purposes of economic development by the receiving country.

In order for surplus food aid to promote economic development, to conditions should hold in the receiving country. The first of these is that the factors which limit the rate of economic development in that country should be of a type such that food aid can help to remove them, or at least lessen their influence. The two most important problems which food aid can help to solve are the lack of finance and the lack of skilled manpower. Food aid can help meet the need for financial resources by serving as a non-inflationary method of financing a sizeable proportion of additional development projects. It helps meet the need for skilled manpower by its use in subsidizing educational programs.

The second condition which should hold in the receiving country is that the increase in consumption should be as large as the addition to supply made by the food aid, or else the food aid should be accompanied by additional funds. This condition is a reflection of the fact that, if the increase in food supply caused by food aid
is greater than the increased consumption of food resulting from
the additional investment programs, food prices will be depressed,
causing possible setbacks to the development of agriculture. If
food aid imports cause reduced prices of agricultural products,
the result might be either decreased efforts on the part of farmers
to develop agriculture, or reduced commercial imports by the country,
a measure which would hurt the commercial exporters of the world.
The problem of food aid's interference with the agricultural
development of the receiving country will be discussed in more
detail in the following chapter.

It should be recognized that reduced agricultural prices may
be helpful in promoting economic development in the receiving
country. If reduced food prices are one of the objectives of
food aid, the administrators should insure that the price decreases
are not of a large enough magnitude that they hinder the develop-
ment of domestic agriculture, especially when agricultural develop-
ment is a major objective of developmental policy.

The most vital question which must be dealt with in planning the
use of food aid in economic development is "How much of the neces-
ary finance of an additional development program can be provided
surplus food aid?" This is a question which can only be answered
by examining a particular economy's development program and its
economic conditions in general. The FAO has made a study which
attempts to answer this question in the case of India.²

The question can be stated in another way: How much of the total
income generated by a new investment program will be spent on
increased food consumption? Analytically, the answer to this question
involves computing an investment multiplier, from this computing the total increase in income due to an increase in investment, and finally estimating what part of this increased income will be spent on food.

The results obtained in the FAO study in India are that from 30-50 per cent of the cost of additional development projects can be financed by agricultural surpluses. This means that 50-70 per cent of the cost of additional development projects must be financed by means other than surplus commodities.

The critical condition involved here is that the country in consideration must be able to finance this proportion of the cost of additional development projects without causing a highly unfavorable amount of inflation. This may mean the obtaining of additional external finance or aid. This problem should be investigated by each country before it engages in a food aid agreement.

The advantage of using food aid for economic development can be seen again at this point. Without food aid, the cost to a country of an additional development project would be 100 per cent of the total cost, while with food aid, the cost to the developing country would be reduced by some proportion, possibly as high as the 30-50 per cent estimated in the India study. This bargain aspect of food aid should encourage countries to undertake amount of development projects with food aid than they would otherwise undertake.

Given the reasoning behind the use of food aid in economic development, let us now look at the specific types of projects
which may be financed totally or in part by food aid. The FAO, in its study of India, describes four categories of food-aid-financed development projects. A review of this classification of projects will help us to see more concretely the type of development projects which can be financed by food aid.

First we have "Projects where the food is moved directly into consumption under such conditions that those receiving the food add all of it to their own or their family's consumption." This happens where labor is paid with food totally or in part. In order not to cause an excess supply of food, this direct method of distributing food to consumers should be no larger in magnitude than the increase in consumption which would normally occur due to the increase in the real income of the people who work on the project. If the surplus food distributed is greater than this amount, the workers will probably either sell the food or substitute the food for that which they ordinarily would have bought.

Examples of development projects which could be food-financed are food scholarships and school lunch programs, and voluntary labor projects for which surplus food acts as an added incentive.

The second type of food-financed development projects includes "projects where additional labor is put to work and part of the additional consumption is covered by surplus foods. These projects may take the form of surplus foods being sold for domestic currency, with the money used in turn to pay the labor." This category of projects is more practical in some respects because it eliminates the administrative problems involved in direct distribution of foods. It does, however, present other
problems. One of these is that it is not always possible to sell the surplus products in the same geographical area in which the development project is to be undertaken, due to distance from port, or heavy local supplies of the commodity in question. This situation leads to an uneveness of the price effect on the market of both the surplus food sold and the increased income generated by the development project.

The further problem involved is the financing of that part of the cost of the development project not covered by increased consumption of the surplus commodities sold. An additional foreign loan might be necessary to provide the increased goods and services demanded.

The third category of development projects contains "projects which begin to be productive in an unusually short time, so that all the additional consumption from the labor put to work is covered either by surplus foods or by the profits from the projects."

Projects of this type depend upon the opening up of new resources which can be reached with additional transportation or extraction facilities. The key to this type of project being self-financing is the speed of return.

One example of this category is the extension of roads into an area of heavy timber and the building of plants to produce lumber from the timber.

The final category of development projects involves "the possibility that imported surplus stocks might be used to finance an increase in the development program as a whole, without being focused on any single particular project or projects." In order
to prevent a net increase in the supply of food, the total national consumption resulting directly or indirectly from any additional development investment would have to be equal to the amount of surplus food sold, or would have to be partially financed by means other than food aid.

The advantage of this overall type of development program would be that the coordination of the food aid program could be centralized and this could enable projects which would cause a market imbalance when undertaken individually to be used together to achieve an overall balance. This method of food aid planning would be very practical in countries which have centrally planned development program.

The preceding portion of this chapter has dealt with the rationale behind the use of food aid in promoting economic development and with the various possibilities of total or partial financing of additional development projects by the increased consumption of food. There is another general way in which food aid may be used to promote economic development: the establishment of national food reserves in underdeveloped countries.

The need for food reserves is especially critical in underdeveloped countries. The conditions which lead to this need for food reserves are many. One of these is the imperfect nature of the market, caused by poor transportation and communication facilities. This leads to local shortages with delays before supplies from other localities can be brought in.

Another condition which makes food shortages more serious in underdeveloped countries is that the level of consumption is already
very low, with a decrease in food due to poor crops sometimes causing severe undernourishment or even starvation.

The importance of food reserved to development can be seen by the fact that "in some regions, reductions in output from one year to the next may be as much as one-third, and the changes in marketed supplies could be much greater." The price changes caused by such a wide fluctuation in output could be very harmful to the development of a country.

Food reserves can also provide conditions which provide an incentive for farmers to increase production. An example of this is found in the case where a bumper crop causes prices so low that farmers' incomes are actually reduced from incomes of a normally productive crop year. By leveling out prices, food reserves can promote agricultural development.

The main purposes of food reserves in underdeveloped countries can be stated in two general categories:

1) To decrease the fluctuations of the basic supply of basic foods caused by weather conditions and to relieve emergencies caused by these fluctuations.

2) To provide stocks which enable the implementation of domestic price policies by the government of the country.

How can food aid be used to establish food reserves? Title I of Public Law 480 provides one method. Under this title, surplus foods may be sold to a country for its own currency, with the food being used to assist the development of adequate food reserves. The loans made by the U. S. of the local currency involved may be used to help construct storage facilities. The effect of such a program is to transfer U. S. food reserves to a particular country, where they are directly beneficial to economic development.
Chapter 3

Surplus Food Aid and Capital Formation in the Receiving Country

The only way to attempt to predict the effect which surplus food aid will have on the receiving country, other than sheer speculation, is by some type of theoretical analysis. This approach has both shortcomings and advantages.

The main advantage of theoretical analysis is that it enables one to simplify a complex problem into a framework which may be handled more readily. A good theoretical model is one which is simple enough to be useful in analysis while still containing the important variables in question. A useful theoretical model enables the analyst to observe the effects of a change in one of the variables in the model on the object of analysis.

The shortcoming of any theoretical model is that it may be an over-simplification. This happens if the abstraction required to simplify the real situation to the level of a model results in the exclusion of an important variable. The use of such a model could cause faulty analysis.

Despite the danger of oversimplification, a theoretical analysis is the next step of this presentation. We shall analyze the effect of surplus food aid on the economic development of the receiving country. The receiving economy is assumed to be underdeveloped, that is, to have low per capital income relative to the "developed" countries, and low levels of average productivity per unit of labor.

The problem will be approached by examining the effects of surplus food aid on capital formation. Through a growth model, the effects on capital formation will be shown to affect the rate of economic growth.
Investment, or capital formation, is central in importance to economic development. The main reason why a state of underdevelopment exists is very low levels of productivity in the economy. Productivity can be increased only by technological advancements, involving increased skills or effort in part, but largely involving improved techniques. "For the most part, the most efficient techniques require heavy investment for their introduction, even if they reduce capital costs per unit of output once they are installed and operating."¹ This means that a country desiring to raise levels of productivity and output must be willing to make investments. The definition of "underdeveloped" refers to low per capita income, which implies a low rate of saving. Since investment requires savings, excluding outside aid, it is easy to see the problem facing the underdeveloped countries.

Having seen the importance of capital formation in underdeveloped economies, let us now look at a model of economic development which emphasizes the role of investment in economic development. The model we shall use deals with total output, so we shall assume that population remains constant so that any increase in total output means an increase in real per capita income.

The model begins with this basic relationship:

\[ O = a \cdot Q \]

where \( a \) is the capital-output ratio, \( O \) is total output, and \( Q \) is the stock of capital.² If we are interested in increasing total output, we have two possible means to do so, as seen in the following expression:

\[ \Delta O = a \cdot \Delta Q + a \cdot \Delta Q. \]
The two ways to increase total output are to increase either the
stock of capital or the efficiency of the use of this capital, the
capital-output ratio. Let us call investment (I) the increase in
the stock of capital (\( \Delta Q \)). Our expression now becomes:

\[
\Delta O = a\cdot I + \Delta a\cdot Q.
\]

Investment in this expression includes both government and private
investment.

It is now necessary to review the administration of surplus
food aid to an underdeveloped economy in order to see the effects
it might have on capital formation. Let us first assume that surplus
food is sold to an underdeveloped economy under Title I of P. L. 480.
This means that food is sold to a country for its own currency. We
will further assume that surplus food sales generate currency which
is loaned or granted back to the receiving country for its own use
in a development program.

The first case we will examine is one in which the food is dis-
tributed through normal commercial channels in the receiving country.
If this is the case, the government will sell surplus food to commer-
cial sellers at the existing price. What will be the results of such
a sale?

In the first place, if the food being sold is in scarce supply in
the country under consideration, the sale of surplus food at a given
price level will tend to prevent the price from rising further, assum-
ing that total supply is now sufficient to meet demand. In any case,
we can say that the added supply of food will prevent a price increase
as large as would have occurred without the food aid.

Thus, the first thing we can say about surplus food aid is that it
tends to reduce inflationary pressures on food prices of the foods involved in the aid program. If lower consumer prices mean increased consumer savings, the anti-inflationary effects of surplus food aid cause increased consumer savings and thus increased investment over that which would have taken place without food aid. Increased private investment causes an increase in the rate of economic growth.

A word of qualification needs to be inserted at this point. It should be emphasized that people with very low incomes are unable to save a very large proportion of their incomes. A decrease in food prices would result largely in increased food consumption or increased consumption of other goods. Furthermore, savings in many underdeveloped countries tend to be held in the form of hoards of gold or jewelry. Either of the two price effects here mentioned would tend to reduce the effectiveness of food aid as a means of increasing saving and investment.

If the country receiving the food aid has a sufficient supply of the food concerned (that is, if there is no excess demand for the food at the current price level) the result of food aid is a depression of the price of the food involved. This is harmful to the producers in the receiving country, largely in that it increases their income.

If the agricultural sector adds little to investment in an economy, a decrease of incomes in the agricultural sector will not appreciably affect total investment in the economy. The net investment effect of surplus food aid in these circumstances depends on the relative saving propensities of the agricultural and consumer
sectors. Thus if surplus food aid causes reduced food prices, and if the increase in savings in the consumer sector is greater than the decrease in savings in the agricultural sector, the net effect will be to increase the rate of economic development due to the increase in savings and investment. If the opposite savings relationship between the two sectors exists, a price increase induced by surplus food aid will decrease the rate of economic growth by decreasing total savings and investment.

Another consideration involved when analyzing surplus food aid under the current set of assumptions concerns the effect of the local currencies which are generated by the sale of surplus foods. The usual food aid program involving sales for local currencies provides for loans or grants of a large proportion of the local currency back to the receiving country. To simplify matters, we have assumed that all of the currency is granted or loaned for use in an economic development program.

The U. S. grants or loans the currency back to the receiving country for the purpose of increasing the total amount of investment in the development program over that which would have been undertaken without the food aid program. The grants of local currency by the U. S. do not indicate a double contribution to the receiving economy, since the receiving country could print money to be used in development projects with the same results. The rationale behind the grants and loans of local currency is that the investment projects for which they are allocated are less inflationary than they would be without the food aid program, since a substantial part of the income generated by the development project is absorbed by purchases of food. Because
of this, it is assumed that the country will undertake a greater amount of investment after receiving surplus food aid than it would normally undertake. This indicates, if the program works as planned, another source of increased investment with an accompanying increase in the rate of economic growth.

A further effect of surplus food aid in increasing investment is the result of savings in foreign exchange which may result from the receiving of food aid. Consider the case of a country which has an inconvertible currency, meaning that it will not be able to buy foreign machinery and other investment goods with its own currency. Assume that the country has a food shortage and must spend part of its foreign exchange earnings on food purchases. Under these conditions, if the country then receives food aid under a Title I sale for local currency, the result would be the freeing of foreign exchange holdings for uses other than food purchases. If the foreign exchange is then spent on capital goods imports, an increase in total investment will occur.

It must be noted that one of the conditions of P. L. 480 Title I sales is that such sales will not displace normal commercial sales. If these terms are strictly adhered to, the increase in investment allowed by the freeing of foreign exchange for investment purposes will not occur. There is some evidence, however, that food aid has had such an effect. Israel offers one example of this.

A final way in which food aid under Title I can increase investment is through increased supplies of resources which may induce investment in various industries. An example of this effect is cotton which, made available through Title I sales, might cause
increased investment in the textile industry due to the increased availability of cotton, possibly at a lower price. This effect could also occur if increased wheat imports caused an expansion in the flour milling industry.

The only serious negative effect on investment of food aid under P. L. 480 Title I which can be foreseen is in agriculture. The price effect of increased food supplies may cause farmers to decrease investment in agriculture. This possibility will be analyzed more fully in a later section of this paper.

The preceding analysis has dealt with the effects on capital formation of food aid as administered under Title I of Public Law 480. Let us now turn to an examination of another program of P. L. 480—direct food grants for economic development under Title XI. Under this program, development projects are directly financed by surplus food, that is, the workers on the development projects are paid partly in currency and partly in food.

The type of projects usually financed by this program are those which are labor intensive and capital conserving. These are especially important and valuable in the development of a country which has large amounts of unemployment. Labor which would otherwise be idle can be used in projects such as road building, irrigation, and dams. These types of social overhead investment can be made without the use of heavy equipment or other scarce investment resources.

Whether these projects are directly financed by food payments in kind, or indirectly by payments in local currency with much of the increased incomes absorbed by increased food supplies furnished
by P. L. 480, they are very valuable as a means of capital formation.

The Food and Agriculture Organization of the United Nations has estimated that, in the case of India, 30-50% of the cost of social overhead investment projects such as roads, dams, and irrigation can be financed by surplus food aid. This means that 30-50% of the additional income generated by a given labor intensive development project would be absorbed by increased consumption of the commodities in the surplus food aid program. The remainder of the new income would be directed toward increased demand for consumer goods other than food, and could cause inflationary pressures. This indicates that surplus food aid should be accompanied by increased dollar aid in order to be more effective.

Returning to the capital formation model of economic growth, we can see that there are two variables involved: capital formation, and the capital-output ratio. We have seen ways in which food aid affects capital formation. Let us now turn to a consideration of the possible effects of surplus food aid on the capital-output ratio.

Any increased consumption of food which serves to lessen malnutrition and improve the general health of workers in an economy can serve to increase the capital-output ratio. In some underdeveloped countries, the workers are so poorly fed that they are too weak to work efficiently. This is one of the causes of low productivity. Title I sales, in so far as they increase the consumption of foods, can have a positive effect on worker productivity and thus on the capital-output ratio.

There are also more direct ways in which P. L. 480 can increase food consumption. Title II provides for disaster and famine relief.
Under this program grants of food are made in times of crop failure or other causes of famine. Although these grants are made for humanitarian reasons, they do have an indirect effect on the rate of economic development by increasing the level of worker productivity.

Under Title III of P. L. 480, private organizations such as CARE distribute surplus food to needy families in underdeveloped countries. This means of increasing consumption may also serve to increase the productivity of labor.

A final way in which surplus food aid can help to increase the capital-output ratio is through its use in educational activities at all levels. Education is vital to the process of economic development. There are many ways in which education can be aided by surplus foods. School lunch programs at the lower levels provide a greater incentive for children to attend school and increase their alertness and general health as well. Food scholarships at the high school and college levels can enable many who otherwise could not attend school to take advantage of an advanced education.

Technical training both in industry and in agriculture can be increased by surplus food grants which help support those who are foregoing work for a period of time in order to attend training classes. This type of training could cause a considerable increase in the productivity of those who attend. The end result of such a program should be an increase in the overall rate of economic growth by means of an increase in the capital-output ratio.

In addition to contributing directly to capital formation, food aid can also benefit economic development in other ways. Let us now consider the effect of food aid on the transfer of labor from
the agricultural sector to the industrial sector in a developing country. W. Arthur Lewis has presented a two-sector model of economic growth in which such a shift of the labor force is involved.\(^6\)

In Lewis' model, which assumes a large excess supply of labor, capital formation in the industrial sector creates employment for the unemployed and for those transferring from the agricultural sector due to underemployment. The low wage level in the entire economy is determined by the maximum wage level paid in the agricultural sector. The resulting low wage level in the industrial sector enables a high profit, which can be re-invested to accelerate the rate of growth.

Food aid can be helpful to this process of growth in three ways. First, it can be used to provide food grants for those who are making the transition from the agricultural to the industrial sector. This would serve to lessen labor immobility due to the laborers being reluctant to move without being sure of being able to obtain food for a certain period of time. Second, food aid can be supplied to a country in which the agricultural population is declining as a result of labor shifting out of agriculture in order to fill the production gap until productivity can be increased enough to offset the decline in the labor force. Finally, food aid can force labor out of the agricultural sector by reducing the price of agricultural commodities. The resulting reduction in farm incomes should encourage some farmers to shift to a more profitable occupation in the industrial sector.

The above model abstracts from the problem of cultural reasons for labor immobility, and it may be that the effects of food aid
cannot overcome such deterrents to mobility. Nevertheless, food aid should tend to increase mobility between sectors, if the conditions assumed in the Lewis model are in effect.

This chapter has been concerned with an analysis of the effects of surplus food aid under Public Law 480 on capital formation and economic growth. It has examined the effects of surplus food aid both on capital formation and on the capital-output ratio. The following chapter will deal with some of the problems and drawbacks of surplus food aid under Public Law 480.
Chapter 4

Problems Arising from the use of Surplus Food Aid to Promote Economic Development

The previous chapter has shown ways in which surplus food aid can increase the rate of economic development in an underdeveloped country. Having seen the positive side of the ledger, let us now turn to the consideration of the problems which may arise when food aid is put into practice.

There have been two major charges against food aid. The first is that surplus food imports tend to decrease agricultural prices in the receiving country, thereby causing a decreased agricultural output. The second charge is that the local currencies generated by purchases under Title I, P. L. 480 tend to be inflationary in the receiving country. We will discuss these two charges in turn.

The charge that food aid tends to discourage agricultural production and development in the receiving country was made at least as early as 1960. In a paper presented in that year, Professor Theodore Schultz stated that the "effects of P. L. 480 imports upon agriculture are likely to be adverse." ¹

There are two questions involved in determining the effect of food aid on agriculture in the receiving country. First, we need to know whether the increase in the supply of food due to food aid imports causes a price decrease. Second, if such a price decrease occurs, it needs to be determined whether or not a price decrease causes a decline in output and a decreased rate of development in agriculture in the long run.
The question of the long run or short run effect of increased food supplies on price is complicated. The first consideration is whether or not a country has a considerable scarcity of the food to start with. In a country such as India, where there are great inflationary pressures working to increase food prices, it is unreasonable to say that an increase in supply on the order of magnitude of usual P. L. 480 programs is likely to cause a sizeable price decrease.

This condition can also be stated in terms of demand and supply curves. It is generally assumed that demand for food in very low income countries is relatively price elastic, while supply is relatively inelastic to price. This would imply curves shaped like those in Figure I.

\[ \begin{align*}
&\text{Supply is inelastic to price since farmers in food-deficit countries are already maximizing their output at the current level of technology, especially if the agricultural sector is primarily composed of small subsistence farms. Demand is elastic to price, since many low income consumers will consume more food as the price decreases and less as the price increases.}
&\text{The possibility of a price decrease is also dependent upon the results of the increased investment undertaken as a result of the local currency generated by the sale of the surplus commodities. If most of the incremental income resulting from the}
\end{align*} \]
multiplied additional investment is spent on the commodities in the aid agreement, the price of those commodities will not fall appreciably. Conversely, a low marginal propensity to consume the commodities involved means an excess supply and a decrease in price.

Several contributions have been made to the controversy over farmers' reactions to price decreases in an underdeveloped country. While Khatkhate concludes that India has a very large proportion of subsistence farmers and a price-inelastic supply of food,\(^2\) Falcon and Beringer argue that farmers do vary their output as prices change, at least in the long run.\(^3\) Dantawala argues that, as price drops, farmers produce less because they are then not able to afford some inputs such as high-grade seed and fertilizer which they would normally use.\(^4\)

On the other hand, Dantawala states that the controversy over the farmer's response to a lower price is irrelevant in India, where there is such a strong inflationary pressure on food prices. To back up this statement, he quotes figures showing that, while wheat prices in India have declined since 1953 by about 10%, the production of wheat has increased.\(^5\) This helps to illustrate the difference between a long run and a short run supply curve. In the short run, say, of 1 or 2 years, the supply curve may be shaped as in Figure I, while in the long run, output of wheat may increase even though price decreases.

The major factual case against food aid on the grounds that it has impaired local agriculture has been made by Christoph Beringer and Irshad Ahmad.\(^6\) They show that unequal geographical distribution of P. L. 480 wheat in Pakistan seriously affected the price of wheat and farm incomes in particular regions of Pakistan.
The situation in Pakistan in 1961-62 was one of a large domestic crop of wheat plus large P. L. 480 imports. Furthermore, government imports under P. L. 480 were disposed of in the areas which had the best transportation, milling, and storage facilities, which are located largely in the traditionally surplus areas of grain production, or in the large cities. After the government surplus distributions, domestic producers were left only with the glutted areas in which they produced to sell their output, since areas with a grain deficit offered little in the way of transportation or milling facilities. This surplus of wheat on the market in areas which needed little assistance in the form of wheat caused serious price decreases to the producers.

The result of this price decrease in Pakistan is likely to be a switch toward cash crops, especially since the farmers in areas of surplus wheat production already have a larger proportion of cash crops than the farmers in areas where a wheat deficit exists.

The example just given illustrates the possibility of harmful price effects due to food aid. Its policy implication is that those in charge of the P. L. 480 program in a country should match the supply of imported food with the areas which most need it. This may involve the development of transportation and food processing facilities in food deficit areas.

Another argument advocating caution in the administration of food aid has been made by Franklin M. Fisher. He argues that, although food aid may not lower prices, it nonetheless keeps them at a lower level than would occur without food aid. This prevents domestic agriculture from expanding as it would in response to higher
prices. The result could be a sharp increase in price at the termination of food aid. One answer to this criticism is to use all food aid imports for additional consumption, that is, consumption which would not take place in the absence of food aid and the accompanying increased investment.

The main conclusion which can be drawn from the discussion about the price impact of surplus food aid is that many more empirical studies are needed before any real conclusion can be made. It appears that in most countries food aid has not been of a large enough magnitude to harm domestic agriculture. On the other hand, it is not known what would be the results if food aid were suddenly withdrawn from a country in which it had become an important addition to the food supply.

It should be remembered also, that, even if food aid does cause decreased agricultural prices, it can still benefit overall economic development. As was pointed out in Chapter III, price decreases may promote development by forcing redundant labor out of the agricultural sector into a more productive industrial sector. Decreased agricultural prices may also redistribute income so that investment is increased.

One final warning should be noted against complacency in the agricultural development of a developing country. If a nation states its objectives to be self-sufficiency in food and feed grain production, as Pakistan did in its second Five Year Plan, it should realize that it is not self-sufficient as long as it is dependent on food aid grain imports. Beringer reports that Pakistan appears to be planning to decrease agricultural investment due to the relatively stable price situation which was maintained with the aid
of P. L. 480 imports. The immediate seriousness of such action depends on how much longer P. L. 480 aid can be expected to continue.

The second charge which has been made against food aid as implemented through Title I of P. L. 480 is that the local currencies generated by Title I and allocated for use in the receiving country may be used in a way that they cause inflation. In order to be able to analyze this charge, let us first review the procedures involved in a P. L. 480 Title I agreement.

When a Title I sales agreement is made, the terms for the deposit and use of the foreign currency proceeds are included. Thus an agreement for a Title I sale includes not only the amount of the agreement and the commodities involved, but also includes the allocation of the local currency proceeds by uses. These currencies may be used for the following purposes: economic development loans to foreign governments, U. S. uses, common defense, loans to private enterprise, and grants for economic development.

When the shipment is made, the local currencies are deposited to the account of the U. S. disbursing officer in the country concerned, where they are held until disbursed for the various uses.

Let us now examine the impact of P. L. 480 on the money supply in the receiving country. First, let us assume that the food aid purchase is financed with a bond issue by the government of the receiving country. This bond issue would tend to withdraw money from circulation and have an immediate deflationary effect on the receiving country's economy. The next step is for the government to receive the agricultural commodities, wheat, say, and deposit the receipts of the bond issue to U. S. account. Then the government sells
the wheat and uses the proceeds of the sale to retire the bond issue.

The net effect of the food aid on the money supply would be neutral, assuming that the U. S. deposits are held in the commercial banking system, and also assuming that the government uses the proceeds of the wheat sales to retire its indebtedness. If the government follows a policy of credit creation and uses the proceeds of the wheat sales for economic development or other uses, the net effect of the Title I transaction will probably be inflationary.

Another factor in determining the impact of a Title I transaction is the manner in which the currencies are held by the U. S. If the counterpart funds are held outside the commercial banking system by the U. S., and if the money financing the local currency transaction had been held previously in the banking system, the net monetary effect will be deflationary.

The actual use of the currencies appears to have the effects one would expect. Local currency loans or grants for economic development are useful only insofar as they cause investment to be undertaken which would not be undertaken in the absence of food aid. There are no additional resources created other than the commodities in the purchase agreement. This means that if the money used to purchase the surplus commodities from the U. S. is created specifically for that purpose, that part of the currency which is loaned or granted back to the recipient country may tend to be inflationary, especially if only a small amount of the income generated by the food aid-financed investment goes to purchase the commodities in the agreement.
It should be remembered that the Title I transaction itself tends to be inflationary if the purchase of commodities by credit creation, and if the proceeds of the commodity sales are used for an expansionary fiscal policy rather than for debt retirement. If, in addition, the local currency counterpart funds are granted by the U. S. to the receiving country for use in economic development, there will be an even stronger inflationary tendency.

U. S. uses of local currency proceeds of Title I agreements are harmful to the receiving country in any case that they replace dollar transactions. This is due to the inconvertibility of the currencies of most low income countries. The replacement of dollar expenditures on defense or embassy expenses by local currency counterparts decreases the amount of foreign exchange available to the country in question. This leads ultimately to a reduction in capital imports, or other imports vital to the country's development.

It is interesting, in light of the above theoretical considerations, to review the actual allocation of Title I local currencies. From the passage of the law in 1954 up to June, 1963, a total of $9.4 billion of commodities has been sold through Title I agreements. Of this total, 45% has been allocated for loans to foreign governments, 23% for U. S. uses, 18% for grants for economic development, 7% for common defense, and 6% for loans to private enterprise. 11

These figures indicate that most of the local currencies generated by Title I sales go toward loans and grants for economic development. Unless these funds have displaced funds which would otherwise have been spent for economic development, one would expect
that these additional investment expenditures would tend to be inflationary, since most of the countries which have received the commodity aid had significant inflation problems before the added push of P. L. 480 investment. Empirical evidence from Pakistan indicates that "given the present composition of P. L. 480 imports and the marginal expenditure pattern, there will be a considerable amount of excess demand for consumption goods not include in P. L. 480." This suggests the likelihood of inflation.

On the other hand, evidence from Colombia indicates that "the generally conservative banking and credit policies characterizing the Colombian situation have helped to provide a favorable environment for using Title I pesos as a spur to development." In Colombia Title I funds have been mainly used for agricultural development, so that food aid there serves both as a temporary increase in the food supply and as an investment towards permanently increasing the food supply. This use of food aid serves to combat inflation, in both the long run and the short run.

The controversy over whether or not local currency uses are inflationary and harmful to development depend on policies and conditions in the country in which they are used. In a country in which they force needed investment without causing a harmful degree of inflation they should serve to the benefit of economic development. On the other hand, if the inflation effect of food aid-induced investment is severe enough to outweigh the beneficial development effect, the use of local currencies is harmful.

A further issue involved in the problem of inflation is the effect of the time lag between the sale of Title I commodities in
the receiving country and the disbursement of the local currency proceeds. The basic principle of surplus food aid is that surplus commodities are made available to help absorb the increased income generated by additional development projects. In order for food aid programs to satisfy this condition, however, the commodities must be marketed in the receiving country at the same time that the new income is being generated. This requires a careful coordination between the marketing and currency use parts of a Title I P. L. 480 program.

Consider what happens if the marketing of the commodities in a Title I agreement precedes local currency-financed investment by a considerable period of time. When the commodities are marketed, they depress agricultural prices below normal levels, since there is no accompanying increase in demand. At a later time when the investment projects financed by the local currency counterpart funds are undertaken, the increase in demand due to the new investment is met by no increase in the supply of food -- an inflationary situation.

The importance of timing in P. L. 480 agreements is easy to see. Another important part of planning is the matching of investment projects and increased food supply according to geographic location.

The final issue to be discussed in the area of monetary effects of local currency proceeds is the problem of U. S. accumulation of foreign currencies. Although Title I agreements include the allocation of the currencies to various uses, this does not mean that they all get used, at least in a reasonable period of time. In actuality, the U. S. continues to keep a considerable amount of the currency deposited to its account.
One reason for this accumulation is the programming of excessive amounts for U. S. uses in countries where the U. S. has very few expenses. Another reason is the reluctance of some countries to borrow back their currency for development purposes when they can either print their own money or borrow from their own money or borrow from their central bank at a lower rate of interest than is charged by the U. S. Furthermore, by taking the latter course of action, a country avoids having to listen to U. S. advice on how to spend the money.

For whatever the reason, there can be no doubt that the U. S. accumulation of foreign currencies is excessive. This is especially true in countries in which the U. S. has very few expenses, and from which the U. S. imports very few goods. Furthermore, the currencies of underdeveloped countries are generally inconvertible, which means that they are not acceptable for U. S. payments to third countries. These accumulated currencies are of little value to the U. S. because there is very little on which they can be spent. Out of a total sales proceeds from Title I of $5.86 billion as of December 31, 1962, only $3.51 billion had actually been disbursed. This means that the U. S. at that time had over $2 billion in foreign currencies.\textsuperscript{16}

In the case of Pakistan, for example, less than 60% of the funds generated by P. L. 480 have been spent.\textsuperscript{17} The residual is an amount of Pakistan currency equal to 15% of the total money supply. This is a very large amount of power to be held in the hands of an outside force.

The policy implication of this collection of "worthless" money is for the U. S. to do away with the fiction of selling surplus
commodities for local currency. Any country with a perceptive administration can maintain its own best use of fiscal and developmental policy without intervention by the U.S. The value of surplus food aid is in the commodities received, not in the loans of local currency. Existing stocks of useless surplus currencies could be given back to the country for debt retirement or for whatever other use the country wished.
Chapter 5

The Economic Effects of P. L. 480 in Israel and Pakistan

The P. L. 480 Title I program has been in operation in more than 40 countries since its beginning in 1954. Of these countries, there are only a few in which the Title I program has been of a large enough magnitude in relation to the overall economic activity of the country in order to exert a measurable influence on the domestic economy. Of these few countries, fewer still have been the object of detailed studies on the effects of the P. L. 480 program.

Israel and Pakistan have been selected to represent two general examples of the effects of the P. L. 480 program in particular countries. Pakistan is representative of the countries which have a very low per capita income and a relatively small degree of industrialization, while Israel represents those countries which are well into the process of economic development. Another reason to present the results of the P. L. 480 program in these two countries is that the results have been somewhat different in the two cases.

Israel

Israel is a country which has received massive amounts of foreign aid since its establishment in 1948. The total inflow of capital during the period of 1949-1960 totalled $3.7 billion. Of this total, $648 million came in the form of loans and grants from the U. S. government and $159 million, 22% of U. S. aid and 4% of total capital imports came under the P. L. 480 Title I program.

The large amount of foreign aid received is by no means the
only unusual feature of the Israel economy in the period since
1948. During the period 1948-1960 the population nearly tripled,
and gross national product increased nearly 350%. Large increases
also took place in industrial production, which increased 250%
during the period, and per capita consumption, with an increase
of 56% at constant prices.

Inflationary pressures, which arose as a result of the extremely
rapid economic expansion were checked after the early years by
fiscal and monetary policies and by large supplies of imported
goods.

What impact did the Title I program have on Israel's economy?
This question has been answered in detail in a report written by
Fanny Ginor. Her comprehensive and precise study of the effects
of the Title I program is based on the assumption resources imported
into Israel under Title I are additional resources, that is, that
they are additional to what would have been imported in the absence
of the program. It is not possible to determine what investments
would have been made in the absence of the additional resources
supplied by Title I, so a similar assumption is made regarding
the investments which took place because of Title I aid.

Total shipments under Title I amounted to $159 million during
the period January, 1955, to December, 1960. Foods intended for
direct consumption comprised 23% of the shipments, 36% were feed
grain, and 5% were materials for industrial production, such as cotton.

One of the most important effects of the Title I program has
been the freeing of large amounts of foreign exchange for uses other
than food imports. This is especially true in regard to wheat, of
which about one-third of total Title I imports were composed. To
the extent that the food aid replaced normal hard currency sales, it can be thought of as equivalent to direct dollar aid. The foreign exchange saved as a result of food aid was probably spent on needed capital imports. It is doubtful that much of the wheat went toward consumption above what would have been consumed in the absence of the program, because of the government policy of providing bread for the poor which was in effect before the program was started, and also because of the low elasticity of demand due to the relatively high level of per capita income in Israel. (Per capita income was approximately $600 in 1960.)

Israel's import statistics support this hypothesis. They show that total wheat imports remained relatively constant during the period 1953-60, while Title I imports made up an average of 42% of the total between 1955 and 1960. The share of imports furnished by Title I imports appears to have displaced normal commercial sales by the U. S. and by Canada.

The FAO lists as a requirement that in order for Title I imports to aid economic development in the receiving country, conditions should be such that the food aid commodities are consumed as a result of the incremental income generated by increased investment expenditures which are part of the Title I program. If the demand generated by the investment program goes largely for goods other than those in the food aid agreement, the result will be an inflationary tendency in sectors other than the agricultural sectors, in which prices will be decreased because of excess supply.

It appears that in Israel the total addition to supply was greater than the total addition to demand due to the investment
program which was financed by P. L. 480 local currency funds. During the period 1955-60, food consumption rose from an index of 129.3 to 162.8. The additional food supplies not only enabled a large increase in food consumption, but were also of a large enough magnitude that they prevented a larger increase in the price of foods than would have otherwise taken place.

Ginor estimates that only $46.5 million, or 31% of the total shipments of Title I commodities went toward additional consumption. The rest of the commodities had the effect of displacing commodities which would have been purchased from other sources in the absence of the P. L. 480 program. One interesting detail of the Ginor report is that she calculates the income elasticity of demand for wheat to be negative. This means that the quantity of wheat consumed declined as income increased.

The factor which prevented the increased food supplies from having harmful price effects on domestic agriculture in Israel was the tremendous increase in income and demand for food during the period, combined with rapid increases in the output of consumption goods other than Title I commodities. Without these conditions, the excess supplies due to Title I imports would probably have depressed agricultural prices, at the same time as prices of other consumption goods would have increased due to excess demand.

The FAO requirement that the consumption of agricultural surplus commodities should be additional consumption in receiving countries has not been the case in Israel. It appears, however, that the P. L. 480 program has successfully aided economic development, due to the conditions prevailing in Israel, primarily the large quantities
of foreign aid in forms other than food aid. The large quantities of foreign aid generated income, which increased demand enough to absorb the Title I commodities without depressing domestic agricultural prices.

The investment induced by the Title I program of local currency loans and grants played an important role in the economic development of Israel during the period 1955-60. Of a total gross capital formation of about 5.3 billion Israeli Pounds, investments made from Title I funds totalled IL 186 million, or about 3.5% of the total. In individual years Title I investments comprised as much as 7% of the total gross capital formation. Loans to industrial enterprises amounted to IL 65 million, or 44% of additional investment in these particular industries. The two largest areas of investment under Title I were agriculture and irrigation, with about of 30% of the total Title I investments, and industry and mining, with about 42% of the total.

The lasting effect of the investment program utilizing Title I funds is calculated by Ginor to be a permanent 2% increase in GNP, or an increase of $40 million as reflected in the GNP of 1961.

The anti-inflationary effects of Title I food supplies played an important role in allowing increased investments to take place. Since only part of the local currency proceeds of Title I imports were released for the financing of investments, the income generated by this investment expenditure was smaller than Title I imports. (Ginor assumes that the multiplier effect is small because of the large import component of consumption goods, and also because the economy is operating at very nearly full capacity, so that any
multiplier effect is mostly in the form of price increases.) The result of this was an absorption of a sizeable amount of purchasing power.

If the main detriment to additional investment during this period was inflation, it can be seen that the anti-inflationary effect of Title I may have worked to enable even more investment than that contained in the Title I program itself. On the other hand, the government might have been able to maintain a high level of investment in the absence of Title I by using rationing and price controls.

Under the assumption that Title I imports and investments were additional, the estimate regarding the deflationary effect is that Title I aid held the increase in the domestic price level down to 28%, instead of the 36 1/2% increase which would have taken place in the absence of food aid.6

The overall conclusion is that food aid has been very useful in promoting economic development in Israel. It has increased the rate of capital formation, increased levels of food consumption, and helped to combat inflationary pressures. There is no evidence of harm to domestic agriculture in Israel. It is probable that the increased investment in agriculture was effective enough to offset any setbacks in agricultural development due to localized price decreases.

Pakistan

Pakistan is an example of an underdeveloped country which has an extremely large agricultural sector, overpopulation, and much underemployment. It is a new state, having come into existence
in 1947 when India was divided into two independent countries. Pakistan is physically divided into two units, East and West Pakistan, which are separated by more than 1000 miles of Indian territory at their closest point.

Pakistan has a population of about 94 million people in a total area of 365,000 square miles, slightly larger than the states of Texas and Oklahoma combined. The present level of per capita income is about $70 per year.

Several years of poor crops due to natural disasters have made Pakistan an obvious target for large amounts of food aid, especially since food crops there have been struggling to keep up with the rapidly growing population in the past decade.

In the period between 1955 and December, 1962, Pakistan entered into Title I agreements in the amount of $1.07 billion. Of this total, $510 million arrived in Pakistan by the end of 1962. The reason for the large difference between the amount programmed and the amount received is that a very large agreement was signed late in 1961 to provide for shipments through the end of 1964. Approximately 50% of Title I shipments have been in the form of wheat, with rice, vegetable oils, and cotton being the other major commodities in the agreement.

The first and perhaps most important effect of Title I to be discussed is its effect on the balance of payments. It has been estimated that, due to the level of domestic wheat production, Pakistan would have had to import commercially about 75% of the quantities of wheat actually imported under P. L. 480, had the program not been in effect. This does not mean that 75% of the
value of imports under P. L. 480 would have been spent on commercial imports, however. The actual diversionary value of P. L. 480 is probably closer to about 50% of their nominal value, due to differences between world prices and U. S. valuation of food aid commodities. This difference is due to the fact that U. S. exports are subsidized, and commercial exports are priced about 25% lower than the U. S. support price, which is the price used by the C.C.C. in evaluating P. L. 480 exports. It is estimated that about 7% of Pakistan's annual export earnings during the period 1955-1961 was saved due to P. L. 480.

A loss in foreign exchange of this amount would have set back Pakistan's development program to a considerable degree. It must be remembered that this type of analysis depends on assumptions regarding "what might have been." The major assumption is that Pakistan would not have received more hard currency aid without P. L. 480 than it did with the existence of P. L. 480. This assumption can neither be verified nor rejected as being unrealistic.

One piece of evidence in support of the thesis that P. L. 480 has had trade diversionary effects can be seen by the trade data, which show that commercial wheat imports made up 91% of the total of wheat imports in 1952, while in 1961 all wheat imported into Pakistan was under aid programs, largely from the U. S.\textsuperscript{3}

We can now turn to an examination of the price and income effects of P. L. 480 in Pakistan. In particular, we will be concerned with whether or not the increased incomes due to the investment program financed by P. L. 480 counterpart funds are largely spent on the
additional consumption of the commodities in the Title I program. A related question is whether or not P. L. 480 food imports have affected domestic agricultural prices, and thus farm incomes. This effect occurs in the case of net additions to excess supply, that is, in cases where incremental demand is less than incremental supply as a result of the entire P. L. 480 Title I program.

One of the arguments generally used to favor P. L. 480 is that it works to combat inflationary pressures, especially in regard to food prices. There is some evidence which indicates that the expected deflationary effects of the program have not been too important in Pakistan. Beringer and Ahmad9 studied consumption patterns in areas of Pakistan and made the following conclusions: Although expenditures on food grains account for 27% and expenditures on clothing and other non-food items account for 35% of total disposable income, in terms of marginal expenditures food grains make up only 12% of total additional expenditures, while clothing and other non-food items amount to about 42% of additional expenditures.

The implication of these figures is that the net impact of a P. L. 480 program involving commodity aid coupled with increased investment is an excess supply of wheat and other food grains in the program, and an excess demand for clothing and non-food commodities. No data are available to prove that prices of clothing and other non-food commodities have gone up as a result of the predicted excess demand condition. There are, however, wheat price data which show that wheat prices have had a downward trend as a result of P. L. 480.

This is in line with Beringer and Ahmad's calculations, which
estimate that of a total of about $600 million of wheat available under P. L. 480 in the period 1961-64, only about half will be absorbed by increased incomes, which means that the rest will have to be absorbed by price decreases.\(^{10}\)

The price effect of P. L. 480 on the agricultural sector of Pakistan has been strengthened by the effects of methods of distribution and regional differences in Pakistan. In the first place, there exist large differences in wheat production per capita among the regions of Pakistan, with some surplus and deficit areas existing side by side. Further, transportation, milling, and storage facilities are located largely in the larger cities or in surplus wheat production areas. These two conditions are very important to the effect which P. L. 480 surplus distribution has on wheat prices in West Pakistan.

The government is responsible for distribution of the surplus food aid commodities in Pakistan. The policy generally followed by the government has been to distribute the aid wheat in areas in which milling and other facilities are available. This means that P. L. 480 wheat has been distributed primarily to the areas which were already surplus producers of wheat. The result, especially in the 1961-62 crop year, was an excess marketed supply of wheat in the surplus areas of production, causing significant price decreases to the producers.

Ahmad and Beringer predict that, as a result of the decreased wheat prices, farmers in wheat surplus areas will substitute cash crops for food crops. This is unfortunate, especially in the light of Pakistan's Second Five Year Plan, which states that Pakistan should
strive to attain self-sufficiency in food grain production.11

An overall view of the workings of P. L. 480 in Pakistan presents a picture of conflicting results. The foreign exchange savings enabled by P. L. 480 have been very important to Pakistan's development. Further, the addition to resources furnished by P. L. 480 is contributing a large amount to Pakistan's investment program. Of a total plan investment of about $6 billion planned for the period 1960-65, Pakistan anticipates that about $600,000, or 10% will be furnished by Title I aid.12

It appears, however, that the large magnitude of operation has led to some harmful results. The great inflow of food aid has been more than can be absorbed by the increased incomes without depressing agricultural prices. Thus the investment policy conflicts with agricultural interests.

The negative price effect could be lessened considerably by concentrating food distribution and development projects in food deficit areas where more of the food can be absorbed.

Comparison

In comparing the effects of P. L. 480 in Israel and Pakistan, we can see one important similarity and one important difference. The similarity is that both countries realized a saving in foreign exchange as a result of commodity aid imports. This foreign exchange saving enabled a greater importing of needed capital goods than would have been imported in the absence of aid.

The major difference in the effect of P. L. 480 in the two countries was that wheat imports had a negative price effect and a negative effect on the production of wheat in Pakistan, while the importing of wheat and feed grains had no reported negative effect
on agriculture in Israel. This difference can be explained largely by the relative amounts of investment other than that induced by P. L. 480. In Pakistan, P. L. 480 accounted for more than 10% of all investment in 1959-60, while in Israel P. L. 480 investments made up only 3.2% of total investments over the period 1955-60. This meant that incomes were increasing at a more rapid rate in Israel, and that the food aid could be absorbed without seriously depressing the agricultural sector. In Pakistan the amount of commodity aid in proportion to total investment was too high for it all to be absorbed by the increased demand generated by investment expenditures. The result was price depression in the agricultural sector.

Although P. L. 480 has had some drawbacks in Pakistan, it still appears that the advantages outweigh the disadvantages, and that the program should be continued.
Chapter 6
Evaluation and Prospects for the Future

It is now time to attempt to evaluate the working of the P. L. 480 program in the years since it was enacted. In particular, we will consider its effects on surplus disposal, economic development, trade development, and the U. S. balance of payments. We will conclude by examining the future of food aid as a means of economic assistance.

If a judgement must be made as to whether the P. L. 480 program has been successful or unsuccessful, nearly all evidence points to a decision in favor of labeling the program "successful". It has worked to attain the ends specified in the law setting up the program, namely in putting U. S. agricultural surpluses to use, and in encouraging economic development abroad. Although the bill was established as a short run measure on a relatively small scale, it has since become a major part of U. S. foreign aid, and has attained a magnitude which is sizeable in proportion to total U. S. agricultural exports.

Let us first consider the success of P. L. 480 as a means of surplus disposal, since surplus disposal was the major motivation behind the passage of the law. During the period June, 1955–June, 1963, total shipments at export market value amounted to more than $11 billion. This does not mean, however, that as a result of P. L. 480 the U. S. store of farm surpluses has decreased by this total. There are several circumstances which tend to prevent this from being the case.

In the first place, P. L. 480 exports have not all been in
excess of usual marketings of such commodities, as is stipulated in the text of the law. We saw earlier in this presentation that, in the cases of Israel and Pakistan, a large part of food aid to those countries served to displace normal commercial sales. To the extent that food aid exports displace usual commercial exports, U. S. surpluses are not reduced.

A further issue relating to the extent U. S. surplus stocks have been reduced by P. L. 480 is a hypothetical one—Would U. S. surpluses have been allowed by government policy to increase to the level they would have tended to reach in the absence of a surplus disposal program? It is possible that the larger buildup of surpluses in the absence of a surplus disposal program would have forced the U. S. government to cut back on subsidization policies which resulted in the high level of surpluses.

The Commodity Credit Corporation's inventory of surplus commodities has ranged from $4.6 billion to a high of $6 billion in 1960, then back down to $4.5 billion in 1962.\(^2\) Of this total, wheat made up almost half of the 1962 value, the wheat inventory being 1.1 billion bushels valued at slightly greater than $2 billion. The figures show that surplus inventories are no lower than they were in 1955, but this is not to say that the surplus disposal program has not held surplus inventories at a lower level than they would have been in the absence of the P. L. 480 program.

In connection with surplus inventories, it can be seen that the P. L. 480 program has resulted in a saving of storage costs to the U. S., assuming that P. L. 480 exports would have otherwise increased the total inventories held by the C. C. C. In a memorandum to the
President, Richard W. Reuter, director of the Food for Peace program, estimates that more than $500 million has been saved as a result of U. S. shipments under P. L. 480.\(^3\)

The effect of P. L. 480 on economic development has been reported in almost all cases to be favorable. It has made additional resources available to underdeveloped countries at a negligible cost to them. In many cases the food aid program has enabled the receiving country to use its foreign exchange earnings to purchase capital imports rather than food.

The two major criticisms of P. L. 480's effect on economic development in the receiving countries have been: (1) That food aid imports have depressed agricultural prices, and (2) That the investment financed by P. L. 480 counterpart funds has tended to be inflationary. Both of these claims are difficult to prove, especially in light of the very limited amount of statistical information. The only report of harmful effects has been from Pakistan, and it appears that this was due largely to faulty administration by Pakistan officials.

Another difficult task is to evaluate the effectiveness of investments induced by U. S. grants and loans of local currency counterparts. If it is true that the factor which limits investment in most underdeveloped countries is inflation, food aid should result in an increase in investment, due to its inherent deflationary effect on food prices. If inflation if not a limiting factor, it may be that P. L. 480-induced investments have been substitutes for investments which would have taken place anyway.

Trade development activity under the P. L. 480 program has
amassed to the expenditure of $70 million equivalent in local currencies. Market development activities have appeared to increase U.S. exports, especially into more-developed countries such as Japan. Amounts programmed to trade and market development purposes have increased since the early years of the food aid program.

The nature of the world demand for food is such that expenditures on market development are of little or no value to countries which receive most of P.L. 480 aid. In India and Pakistan, for example, the problem is to have enough food to keep the people from getting hungry. Any attempts to laud the quality of U.S. poultry or wheat would find deaf ears in countries which are struggling with the problem of providing an adequate diet for all their people.

Let us now turn to the consideration of the effects of P.L. 480 on the U.S. balance of payments. One factor which has enabled the continuation of food aid during the period of U.S. balance of payments deficits has been the fact that food aid, except under Title IV, does not add to the payments deficit, as do other forms of foreign aid. In fact, as is brought out in the annual reports on activities under P.L. 480, the program actually benefits the balance of payments by enabling foreign currencies to be used for the payment of U.S. obligations abroad. The total amount of U.S. obligations paid with P.L. 480 local currencies has been about $800 million through 1963. An additional saving to the U.S. has been made under the barter program, in which agricultural surpluses are exchanged for strategic materials, or for materials which can be stored more practicably than food products. The total value of goods obtained under barter contracts has amounted to more than
$1.5 billion since the enactment of the program. However, about $1.3 billion of this has been for stockpile materials, which would probably not have been purchased in the absence of the barter program. It appears, therefore, that the balance of payments benefit from the barter program has been slight.

Another phase of the P. L. 480 program which benefits the U. S. balance of payments is the program of trade and market development. Any increase in commercial agricultural exports as a result of such programs is a net addition to the payments balance. The effectiveness of the trade and market development program is almost impossible to measure, and it is therefore impossible to estimate to what extent the U. S. balance of payments has benefitted.

Over against the above benefits to the balance of payments are a number of adverse effects. In the first place, there has been a considerable amount of displacement of dollar sales by P. L. 480 exports. This means that sales which would have otherwise been made under normal commercial terms were replaced by P. L. 480 sales for local currencies. The result of any such displacement is a direct decrease in the U. S. payments balance.

To what extent has the displacement of commercial sales actually taken place? By looking at U. S. export statistics, one can observe that P. L. 480 exports have become a significant part of total agricultural exports during recent years. During the nine years 1954-62, P. L. 480 exports accounted for 28% of total U. S. agricultural exports. How much of this amount took the place of commercial sales?

The data regarding P. L. 480 exports in proportion to total
agricultural exports are not too helpful in answering this question. If total exports had remained at a constant level during the period it would be easy to see whether or not food aid has displaced commercial sales. This is not the case, however, because the value of total agricultural exports has more than doubled since 1946.

Agricultural Exports
(Billions of dollars)

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<tbody>
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<td>Commercial Exports</td>
<td>1.0</td>
<td>1.0</td>
<td>2.2</td>
<td>2.2</td>
<td>2.12</td>
<td>2.7</td>
<td>2.7</td>
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<tr>
<td>P. L. 480 Exports</td>
<td>-</td>
<td>-</td>
<td>.7</td>
<td>.9</td>
<td>1.4</td>
<td>2.0</td>
<td>1.3</td>
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<tr>
<td>Total</td>
<td>3.9</td>
<td>3.0</td>
<td>2.9</td>
<td>3.1</td>
<td>3.5</td>
<td>4.7</td>
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<tr>
<td>Commercial Exports</td>
<td>2.4</td>
<td>3.2</td>
<td>3.4</td>
<td>3.4</td>
<td>3.6</td>
</tr>
<tr>
<td>P. L. 480 Exports</td>
<td>1.3</td>
<td>1.3</td>
<td>1.6</td>
<td>1.7</td>
<td>1.5</td>
</tr>
<tr>
<td>Total</td>
<td>3.7</td>
<td>4.5</td>
<td>5.0</td>
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Source: Statistical Abstract of the U. S.

The statistics lead one to believe that displacement has occurred, although the conclusion is not very concrete. Consider successive years such as 1954-55, 1955-56, and 1961-62, in which commercial sales decreased or remained constant while P. L. 480 exports increased. Commercial sales have more than tripled since the end of World War II, but it appears that they would have increased even more in the absence of P. L. 480.

The other item which is detrimental to the U. S. balance of payments is the Title IV program, long term dollar sales. Sales under this title amounted to nearly $90 million in 1963. Long term dollar sales are equivalent to a dollar loan and represent a debit to the U. S. balance of payments.

The total impact of P. L. 480 on the U. S. balance of payments is difficult to assess. It appears that commercial sales have
been displaced, perhaps to a sizeable extent. A complicating condition in this regard is that any food aid which displaces commercial sales releases foreign exchange in the receiving country to be used for other imports. It is probable that a large proportion of the foreign exchange thus released is used to import other commodities, especially capital equipment, from the U. S. To the extent that this is the case, the detrimental effect to the U. S. balance of payments by displacement of commercial sales is cancelled.

If it is true that the displacement is generally cancelled by exports of other U. S. goods, then it appears that the effect of P. L. 480 on the U. S. balance of payments has been favorable, due to the payment of U. S. obligations with local currency counterpart funds. In any case, the net effect on the balance of payments is not very large.

Let us now turn to a consideration of the future of P. L. 480. We will first discuss the prospects for the continuation of the U. S. farm surplus, and conclude with a discussion of the effectiveness of food aid, and possibilities for its use in promoting economic development in the future.

Food surpluses in the U. S. are a result of the farm subsidy program administered by the Commodity Credit Corporation. As long as farm prices are held artificially at a price higher than the free market price, surpluses will continue to build up. The U. S. government has attempted to restrain production by a program of acreage control, but increasing productivity has cancelled most reductions due to decreased acreage.
The continuation of the subsidy program reflects a large proportion of legislative power held by agriculture supporters. Recent developments illustrate this. In 1963 a referendum was held in which wheat farmers voted on a program of acreage control. They were told that if they rejected the controls, the subsidy on wheat would be discontinued. Nevertheless, the majority of farmers voted against the control measure. Despite this, Congress passed a wheat subsidy bill early in 1964, assuring the continued buildup of wheat surpluses.

Most current indications lead one to expect the continuation of farm surpluses. Two exceptions to this trend are now evident, however. One is the process of congressional redistricting going on in some states, which will take part of the legislative power away from rural areas. Another is the growing awareness and response of the urban population to the huge subsidies which are being paid each year by the U. S. taxpayers. These subsidies have reached the level of $5 billion a year, and urbanites are realizing that this amount could be used in many other ways.6

Let us now assume that U. S. food surpluses will continue for at least several more years. Can surpluses continue to be sent abroad? How effective can they be as a means of promoting economic development?

First, let us consider the world's need for food in the approaching decades. The U. N. predicts that the population of the world will more than double in the period 1950-2000. This indicates that world food needs will go up correspondingly, and unless the supply function abroad goes up, the need abroad for U. S. food will increase.

Another giving rise to the need for U. S. food abroad is the
amount of malnutrition which exists in many countries. The Foreign Agricultural Service has estimated the amount of food per year required to bring world consumption up to minimum nutritional levels. This amount, the world food deficit, is much greater than the annual surplus production of the U.S.

It can be seen, therefore, that the reason for the difficulty of selling U.S. food surpluses abroad is not a lack of world need, but a lack of effective world demand. Most developing countries have chosen to emphasize investment and industrial development rather than increased nutritional standards for their people. The condition of malnutrition is a familiar one to many people in developing countries.

It may be that, even if the U.S. is willing to give food to developing nations, they would prefer not to have it, especially if the food could be promised only for a few years at a time. If a nation accepted short term food aid, its people would be no better off in regard to food, and worse off in regard to expectations when the food aid was terminated. Nations also would tend to reject food aid because of a desire for independence and in order to force the development of their own agricultural sectors.

We come now to the evaluation of the effectiveness of food aid as a means of economic assistance. We have just seen that one drawback of food aid is that it has largely been on a short term basis, which makes it very difficult for the receiving country to make any long term plans. One effective short term use of food aid would be in agricultural development programs. In such programs, food could be supplied during the time of the development program, then withdrawn when the development program yielded increased agricultural
One criticism of food aid has been that it tends to reduce agricultural prices in the receiving countries. This can be critical if it inhibits the development of agriculture in the receiving country. If food aid had such an inhibiting effect on agriculture, there would be a serious food shortage in the event that food aid was withdrawn. On the other hand, it might be that a negative price effect would force labor out of the agricultural sector and into the industrial sector. If productivity were higher in the latter sector, such a shift would be beneficial to the country's development.

If we consider the U. S. food surplus as given, we can say that it has been beneficial as a tool in economic development, although it may have had adverse effects in some nations. If we consider the U. S. food surplus to be controllable, it may be that it has not reflected the optimum use of resources which could have been made in order to promote economic development abroad.

One can see many ways in which the U. S. farm program could be changed in order to better promote world economic development. It has been suggested that, rather than using great amounts of technical assistance and investment in domestic agriculture, we should send such assistance abroad. This should tend to reduce the domestic surplus while assisting agricultural development abroad. It would also eliminate the added costs of storing and shipping U. S. surplus food.

If U. S. resources could be withdrawn from an overabundant agricultural sector, it might be possible to provide other investment goods to the underdeveloped countries, allowing them to buy food
on the world market. It is likely, however, that resources withdrawn from U. S. agriculture would not be channeled into the foreign aid program.

Since the foreign aid program has met with more and more opposition in recent years, it may be that the food aid program is the best use to which agricultural resources can be put, so far as economic assistance is concerned. This is true if P. L. 480 aid is additional to regular foreign aid and if no additional regular aid would be forthcoming were the food aid program discontinued.

A faint glimmer of hope is offered to the U. S. farm problem by the possibility of economic development in the underdeveloped nations of the world. If per capita income begins to rise in countries like India, the demand for food is certain to go up, and it is possible that such an expansion of income abroad may increase world demand enough to greatly ease or even eliminate the over-supply conditions in U. S. agriculture.
Footnotes

Chapter 1


4. Ibid., p. 8377.


6. Ibid.


8. Ibid., Table 18.

9. Ibid., Table 27.

10. Ibid., p. 96.

11. Ibid., p. 103.


Chapter 2


4. Ibid., p. 6.
5. Ibid.
6. Ibid.
7. Ibid.
8. Ibid.


11. Ibid., p. 27.
12. Ibid., p. 25

Chapter 3


2. Ibid., p. 209


Chapter 4


5. Ibid., p. 89.


8. Beringer and Ahmad, pp. 59-60.


12. Beringer and Ahmad, p. 32.


17. Beringer and Ahmad, p. 12.
Chapter 5

1. All statistical data in this section are from F. Ginor, *Uses of Agricultural Surpluses* (Jerusalem: Bank of Israel, 1963).

2. Kahn, p. 574.
5. Ginor, p. 23.
7. Beringer and Ahmad, p. 73.
10. Ibid.
12. Ibid., p. 21

Chapter 6

1. Eighteenth Semiannual Report, pp. 4-5.
5. Ibid, p. 61.
8. Ibid., p. 656.
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