

MONOGRAPHS IN THE ECONOMICS OF DEVELOPMENT

NO. 12

**The Use of Agricultural Surplus  
Commodities for Economic  
Development in Pakistan**

**DR. CHRISTOPH BERINGER**

*in collaboration with*

**IRSHAD AHMAD**

January 1964

**THE INSTITUTE OF DEVELOPMENT ECONOMICS**

Old Sind Assembly Building

Bunder Road, Karachi

(Pakistan)

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*Karachi,  
November 1963*

CHRISTOPH BERINGER  
IRSHAD AHMAD

## TABLE OF CONTENTS

INTRODUCTION	1
SECTION I: <i>History and Administration of PL-480 in Pakistan</i>	4
Agricultural-Production Trends since 1947/48	4
Composition of PL-480 Imports	7
The Accumulation of Local Currencies	10
The Use of Title-I Local Currencies	15
SECTION II: <i>Some Theoretical Aspects of Using Surplus Foods for Economic Development</i>	18
PL-480 and the Balance of Payments	18
Trade-Diversions Effects of PL-480	20
Income and Price Effects of the Expanded PL-480 Programme	21
SECTION III: <i>Impact of Surplus Disposal on Domestic Agriculture</i>	34
The Food Balance-Sheet Method of Estimating Import Requirements	35
Regional Inequalities in Production and Effective Demand	36
Regional Differences in Consumption Patterns	40
The Impact of Government Sales Policy on Agricultural Incomes	45
Farmer's Response to Price Changes under Conditions Prevailing in Pakistan	52

SECTION IV: *Summary and Conclusions* ... .. 57

APPENDIX

A: A Note on Importing Procedures of PL-480  
Commodities ... .. 61

B: A Note on the Estimation of Income Elasticities  
for Rural Consumers in West Pakistan ... 63

C: Statistical Tables ... .. 69

## INTRODUCTION

Few ideas advanced in the post-War world have had more commonsense appeal than the proposal to use the food surpluses of the United States and other advanced countries to help less developed nations in the process of capital formation and economic growth. The basic idea was first applied under the Marshall Plan when US agricultural surpluses contributed in rebuilding War-devastated European countries. Later on in the Fifties, attention gradually shifted towards that part of the world where low productivity and low real-incomes had much more deep-seated causes than those which had temporarily impoverished the European economies.

Partly to enable underdeveloped countries to import agricultural surpluses on terms which they could more readily afford, and partly to solve the domestic surplus problem in a constructive way, the United States Congress in 1954 enacted the Agricultural Trade Development and Assistance Act, generally known as PL-480<sup>1</sup>. Under Title I of this act, the United States Government sells agricultural commodities for inconvertible foreign currencies; under Title II, grants for famine relief and other assistance are made. Title III provides for distribution of surplus foods to needy persons in the United States as well as overseas, mostly through nonprofit agencies (CARE, Catholic Relief Organization, *etc.*). Title IV provides for long-term dollar sales contracts to facilitate economic development in less developed countries.

Up to June 1962, the United States had concluded 310 agreements or supplements to agreements with 44 different countries of the world. Total value of commodities exported during that period was about

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<sup>1</sup>. United States Congress, *An Act to Increase the Consumption of United States Agricultural Commodities in Foreign Countries, to Improve the Foreign Relations of the United States and for Other Purposes*. Public Law 480, 83rd Congress, 2nd Session, 1954, as amended through September 4, 1961. (Washington, D. C.: Sup. Doc.).

9.1 billion dollars. The commodities included in the programmes are wheat and wheat flour, feedgrains, rice, cotton, wheat products, tobacco, dairy products, fats and oils, poultry, dry edible beans, fruits and vegetables, and others. Approximately 60 per cent of the total shipments were sold for foreign currencies under Title I of the Act<sup>2</sup>.

There has been growing concern on the part of economists about the general usefulness of US surplus sales for economic development in underdeveloped areas. Serious questions have been raised regarding the long-run effects on agricultural production in the receiving countries<sup>3</sup>. Others have pointed out possibly undesirable implications of the United States owning and controlling huge balances of local currencies in foreign countries<sup>4</sup>. Exporting countries competing with the United States in the world markets have been concerned about the trade-diverting effects of the programme, which, in their eyes, is merely a disguised form of dumping<sup>5</sup>. Finally, it was argued that the use of loans and grants out of local-currency accumulations to support individual projects rather than the entire development programme, as has been done in some underdeveloped countries, may result in a disruption of an internally consistent development plan<sup>6</sup>.

Although most aspects of the programme appear to have been already considered on the theoretical level, there is still a scope for the assessment of programme as it has actually been carried

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2. PL-480 exports have also been of growing importance within the total United States export-picture: they constituted approximately 27 per cent of all US agricultural exports during the period 1954/55 to 1961/62. Source: U.S. Congress, *The 16th Semi-Annual Report on Activities for the Food-for-Peace Programme Carried on Under Public Law 480*. 83rd Congress, as amended 87th Congress, 2nd Session, House Document No. 526. (Washington, D.C.: Sup. Doc.), p. 3.

3. Cf., T.W. Schultz, "Value of U.S. Farm Surpluses to Underdeveloped Countries", *Journal of Farm Economics*, Vol. 42, December 1960, p. 1019 ff.

4. Cf., E. S. Mason, "Foreign Money We Can't Spend", *Atlantic Monthly*, May 1960, p. 81.

5. Cf., E. Mortensen, "Impact and Implications of Foreign Surplus Disposal on Developed Economies: The Competitor's Perspective", *Journal of Farm Economics*, Vol. 42, December 1962, p. 1019 ff.

6. Cf., S.R. Sen, "Impact and Implications of Foreign Surplus Disposal on Underdeveloped Economies—The Indian Perspective", *Journal of Farm Economics*, Vol. 42, December 1960, p. 1031 ff.

out<sup>7</sup>. Two recent FAO studies assess the impact of PL 480 on Japan and Pakistan; by giving a detailed description of the administrative procedures used in planning and disposing of agricultural surpluses in these countries. they contribute towards filling this gap.

We propose to carry the analysis one step further and to probe deeper into the actual working of the programme, using Pakistan as an example. The emphasis in the analysis will be on those domestic factors (*e.g.*, regional differences in resource endowment, consumption habits, marketing facilities and effective demand) that have not been considered so far on the empirical level in previous studies but are important in determining the extent to which food aid can contribute to economic development.

The problem in justifying the use of surplus commodities in underdeveloped countries is certainly not the danger that there is no need for additional food supplies. No detailed consumption surveys are required to convince one that millions of people in Pakistan and other underdeveloped countries are undernourished. One of the central problems in surplus disposal is rather to determine to what extent commodities and the resulting local currencies have been or could be used in such a way that the obvious need is also matched by an increase in effective demand particularly in those regions and among those income groups where the need is most strongly felt. Unless this connection is clearly understood and government policy based on it, there is reason to believe that the apprehensions expressed by Schultz and others about possible negative effects of surplus disposal may become highly relevant.

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7. For theoretical analysis of the potential impact of PL 480 under various assumptions, *see*:

a) FAO, *Uses of Agricultural Surpluses to Finance Economic Development in Underdeveloped Countries*. (Rome: Food and Agriculture Organization, 1958).

b) A. E. Kahn, "Agricultural Aid and Economic Development", *Quarterly Journal of Economics*, Vol. 76, No. 4, November 1962, pp. 568-591.



## SECTION I

### HISTORY AND ADMINISTRATION OF PL 480 IN PAKISTAN

#### *Agricultural-Production Trends since 1947/48*

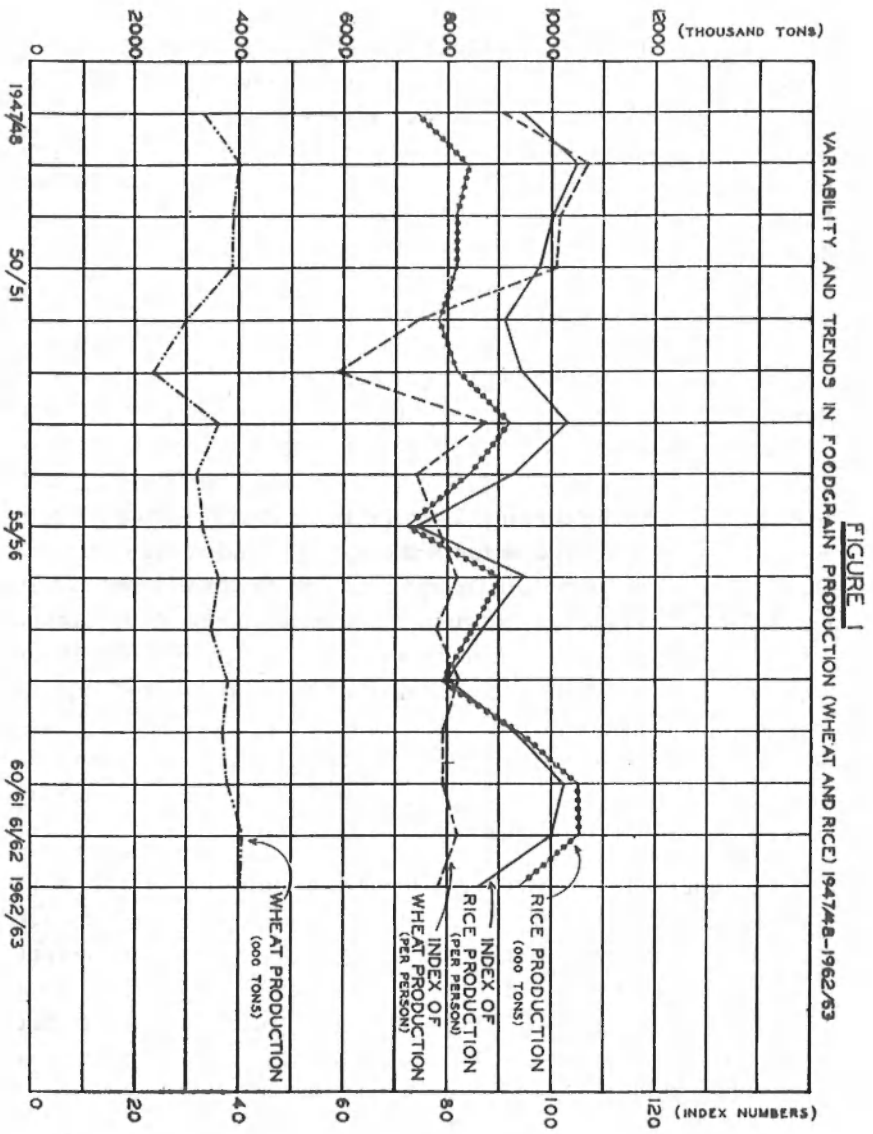
The growth of PL-480 imports and their role in Pakistan can be seen in better perspective if we consider briefly the development of agricultural production since 1947.

The two principal food crops grown in the country are wheat and rice. More than 95 per cent of the country's wheat output is produced and consumed in the West Wing whereas 88 per cent of total domestic rice production is produced and consumed in East Pakistan. These differences in cropping patterns and consumption habits are explained largely by the prevailing climatic differences: West Pakistan receives on the average about 10 inches of rainfall compared with 80 inches in East Pakistan. Although it is generally correct to say that wheat and rice respectively are the basic diet of the people in the two wings, the percentage of total caloric intake made up of wheat in West Pakistan is substantially less than the corresponding percentage for rice in the typical East Pakistan diet. There, much less food of animal or vegetable origin is consumed in addition to rice.

Production statistics and the corresponding index numbers are shown in Figure I and Appendix Tables C-1 and C-2. Wheat production has been almost static over the period if we use the 1947/48 to 1950/51 average as the base; this was the last period during which Pakistan was "self-sufficient" in foodgrain production, in fact, small quantities of wheat were exported during these years. Only during the last three production seasons was wheat output slightly above the base-period level<sup>1</sup>. Considering that population increased by about 30 per cent

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1. The Central Statistical Office in computing its index of foodgrain production uses the very poor harvest years of 1949/50—1952/53 as the base period. It is obvious from Figure I that their index, therefore, must show a more substantial growth over the period.



over the same period, the index of 'wheat production per person' shows a significant downward trend whereas the corresponding index for rice has barely maintained the level achieved during the base period.

Except for two years during the early Fifties, wheat production does not show very significant year-to-year fluctuations. This is explained by the fact that wheat is grown during the winter season and mostly on irrigated land; farmers, therefore, have fairly good control over factor inputs. The same is not true for rice production in East Pakistan where both floods and droughts can cause wide year-to-year fluctuations in output. From the available data, it appears that these fluctuations may be serially correlated which makes storage and price stabilization difficult problems.

The index of nonfood crops has risen faster than the food-crop index but their weight in the overall crop index is relatively minor (*cf.*, Appendix Table C-2). Most important among these nonfood crops are the fibres, namely cotton (grown mostly in West Pakistan) and jute (grown in East Pakistan). They are the principal sources of raw material for the industrial sector of the economy and at the same time the most important earners of foreign exchange. Production and export trends for these two crops are given in Appendix Table C-3. Cotton output appears to have increased from the time of Partition until about 1955 but not significantly since then. In addition, raw-cotton exports as a percentage of production have decreased sharply due to the development of the domestic textile industry. Export earnings from raw cotton have, therefore, decreased substantially; this loss in export earnings was not compensated by increases in textile exports.

For jute, no significant trend in production is visible but, as in the case of rice, year-to-year fluctuations in output are much greater than in cotton. In recent years, an increasing share of raw-jute output has been absorbed by the growing domestic jute-manufacturing industry, but the decline of raw-jute exports has not been as drastic as that of cotton. In any case, the share of jute manufactures exported is much larger than that of cotton textiles.

Taking all these various production statistics and indices together, it appears that, over the entire sixteen-year period since Partition,

agricultural production has barely kept ahead of population growth and in some cases (*e.g.*, wheat), it has fallen far behind the increases required to keep production per person at a constant level.

#### *Composition of PL-480 Imports*

Food shipments by the United States Government to Pakistan on noncommercial account commenced in 1953; at that time 610,000 tons of wheat were provided as an emergency gift under special legislation to meet the food shortages caused by a series of bad harvests in the previous years<sup>2</sup>. Commodity assistance under PL 480 began in January 1955 when the first agreement was signed between the two countries; since then, 7 major agreements and 10 supplementary agreements have been signed (*see*, Appendix Table C-4). From 1955 until 1960, the agreements were signed more or less on an annual basis. The first long-term agreement was concluded in 1961; it is the largest PL-480 agreement ever signed with any country. This so-called "Expanded PL-480 Programme" was to cover the 4 years of the Second-Five-Year-Plan period which remained at the time the agreement was signed in October 1961. Its aim is not merely to fill the deficit at prevailing levels of consumption but rather to go significantly beyond that in raising the nutritional standards of the entire population.

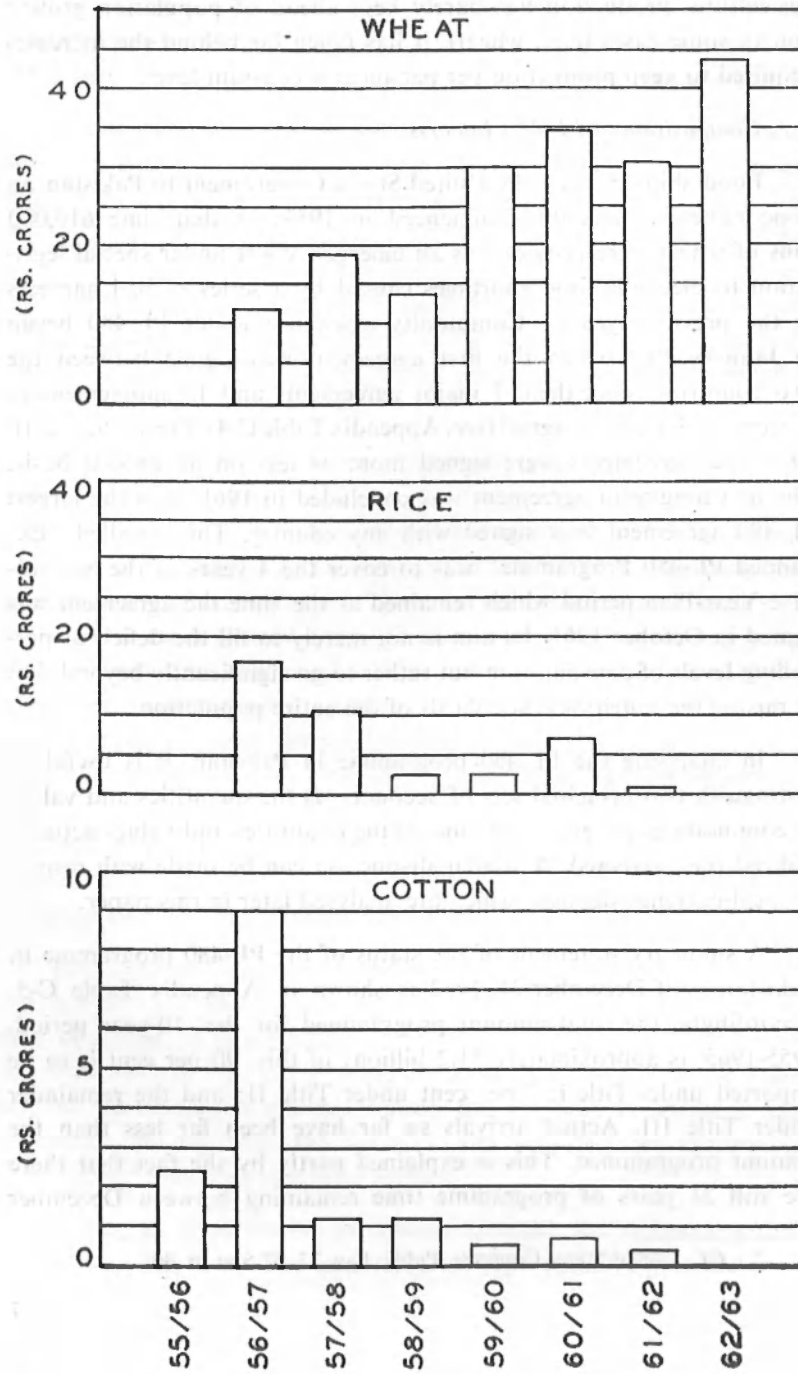
In analysing the PL-480 programme in Pakistan, it is useful to distinguish two principal sets of accounts: *i*) the quantities and values of commodities programmed, and *ii*) the quantities and values actually utilized (*i.e.*, arrivals). A similar distinction can be made with respect to local-currency deposits which are analysed later in this paper.

A summary statement of the status of the PL-480 programme in Pakistan as of December 31, 1962 is shown in Appendix Table C-5. Accordingly, the total amount programmed for the 10-year period, 1955-1965, is approximately \$1.2 billion: of this, 90 per cent is to be imported under Title I; 7 per cent under Title II; and the remainder under Title III. Actual arrivals so far have been far less than the amount programmed. This is explained partly by the fact that there are still 2½ years of programme time remaining between December

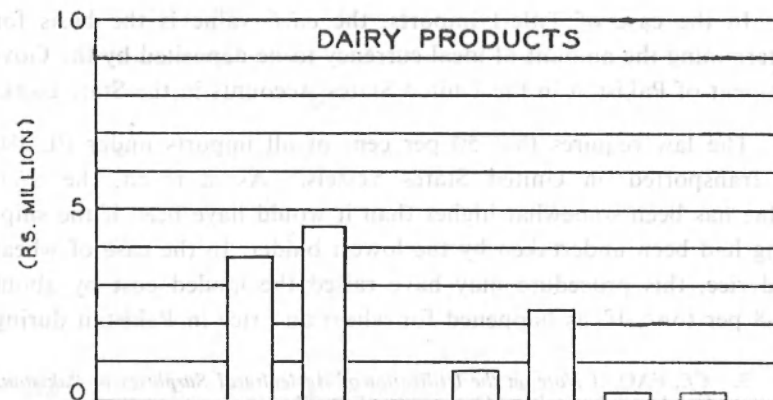
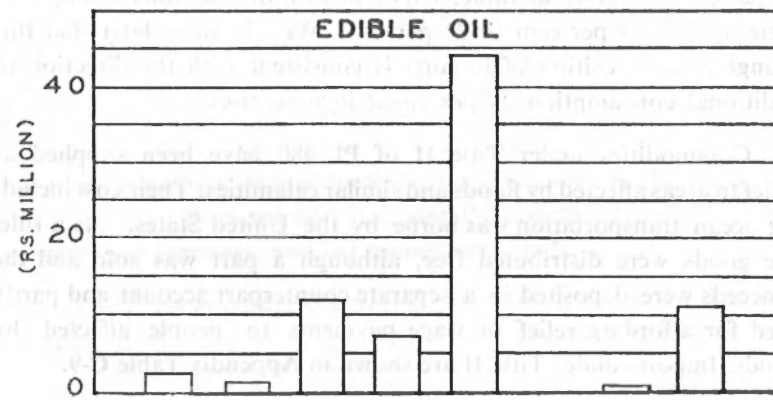
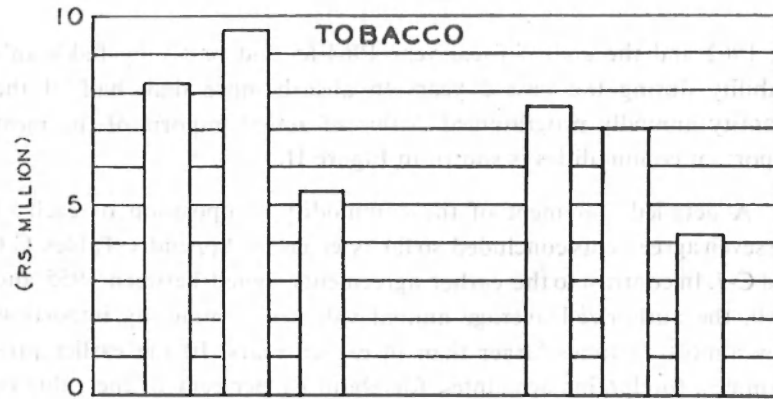
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2. *Cf.*, United States Congress, Public Law 77, 67 Stat. p. 80.

**FIGURE II**  
**IMPORTS OF COMMODITIES UNDER PL 480**  
**(FY 1955/56-62/63)**



**FIGURE II**  
(CONTD)



55/56      56/57      57/58      58/59      59/60      60/61      61/62      62/63

31, 1962 and the end of fiscal year 1964/65 and partly by Pakistan's inability during the past 2 years to absorb more than half of the quantity annually programmed. Value of actual imports of the most important commodities is shown in Figure II.

A detailed statement of the commodity composition of each of the seven agreements concluded so far is given in Appendix Tables C-6 and C-7. In contrast to the earlier agreements signed between 1955 and 1960, the authorized average annual value of commodity imports is now almost 2½ times larger than in earlier years. In the earlier programmes, foodgrains accounted for about 67 per cent of the value of imports; in the Expanded PL-480 Programme they account for only 55 per cent of the total value. Fats and oils, on the other hand, have gone up from 7 per cent to 21 per cent. We will show later that this change in composition of imports is consistent with the direction of additional consumption as *per caput* income rises.

Commodities under Title II of PL 480 have been supplied as relief to areas affected by floods and similar calamities. Their cost including ocean transportation was borne by the United States. As a rule, the goods were distributed free, although a part was sold and the proceeds were deposited in a separate counterpart account and partly used for affording relief or wage payments to people affected by floods. Imports under Title II are shown in Appendix Table C-9.

#### *The Accumulation of Local Currencies*

In the case of Title-I imports, the *c.i.f.* value is the basis for determining the amount of local currency to be deposited by the Government of Pakistan in the United States Accounts in the State Bank.

The law requires that 50 per cent of all imports under PL 480 be transported on United States vessels. As a result, the *c.i.f.* value has been somewhat higher than it would have been if the shipping had been undertaken by the lowest bidder. In the case of wheat and rice, this procedure may have raised the landed cost by about \$7-8 per ton<sup>3</sup>. If, as happened for wheat and rice in Pakistan during

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3. Cf., FAO, *A Note on the Utilization of Agricultural Surpluses in Pakistan*. (Rome: Food and Agriculture Organization), p. 38.

certain periods, the sales price in the domestic market is below the *c.i.f.* value, the government has to make up the difference, thus, in effect, subsidizing the consumer. This subsidy has been particularly significant in the case of rice where the release price (Rs. 15-18 per maund) was about 43 per cent below the *c.i.f.* value (Rs. 29 per maund) of imported rice<sup>4</sup>.

As regards shipments of commodities under Title II, the question of valuation does not arise because they are provided as grants and they are intended for free distribution. If any of these commodities are sold by the Government of Pakistan, the rupee sales-proceeds have to be deposited in a counterpart account in the State Bank. This counterpart fund in contrast to local-currency deposits is owned by the Government of Pakistan; its use for specific purposes is, however, subject to approval by the United States Government.

To gain some understanding of United States involvement in the ownership and administration of local currencies, it is useful to distinguish three basic sets of local-currency accounts in the State Bank; they are: *i*) US-owned and unilaterally controlled; *ii*) US-Owner country use accounts; and *iii*) counterpart funds.

*i*) *US Unilaterally Controlled Accounts* are under the direct control of the United States Disbursing Officer (USDO). These accounts are credited with:

- a) Five per cent of the local-currency value of foreign aid given to Pakistan under PL 665<sup>5</sup>.
- b) Six per cent of the *c.i.f.* value of PL-480 Title-I shipments.
- c) Repayments of loans made under PL 480, Section 104g.
- d) Repayment of DLF loans
- e) Repayment of other dollar loans which are repayable in local currency

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4. *Ibid.*

5. PL 665 (Mutual Security Act) is the act which preceded the Foreign Assistance Act of 1961. It is the principal legislation under which hard-currency US foreign assistance is given to Pakistan.



*ii) US-Owner Country Use Accounts* contain the major portion of PL-480 Title-I local-currency accumulations. The use of these funds as loans or grants is governed by the provisions of the law (PL-480) and more specifically by each PL-480 agreement made between the two governments. These legal provisions will be explained in detail in the next section.

*iii) Counterpart Accounts* contain any sales proceeds obtained from the sale of PL-480 Title-II shipments and all local-currency counterpart deposits resulting from foreign aid under PL 665. The United States Government maintains indirect control over the use of these funds in Pakistan but in contrast to *i)* and *ii)* above does not own them.

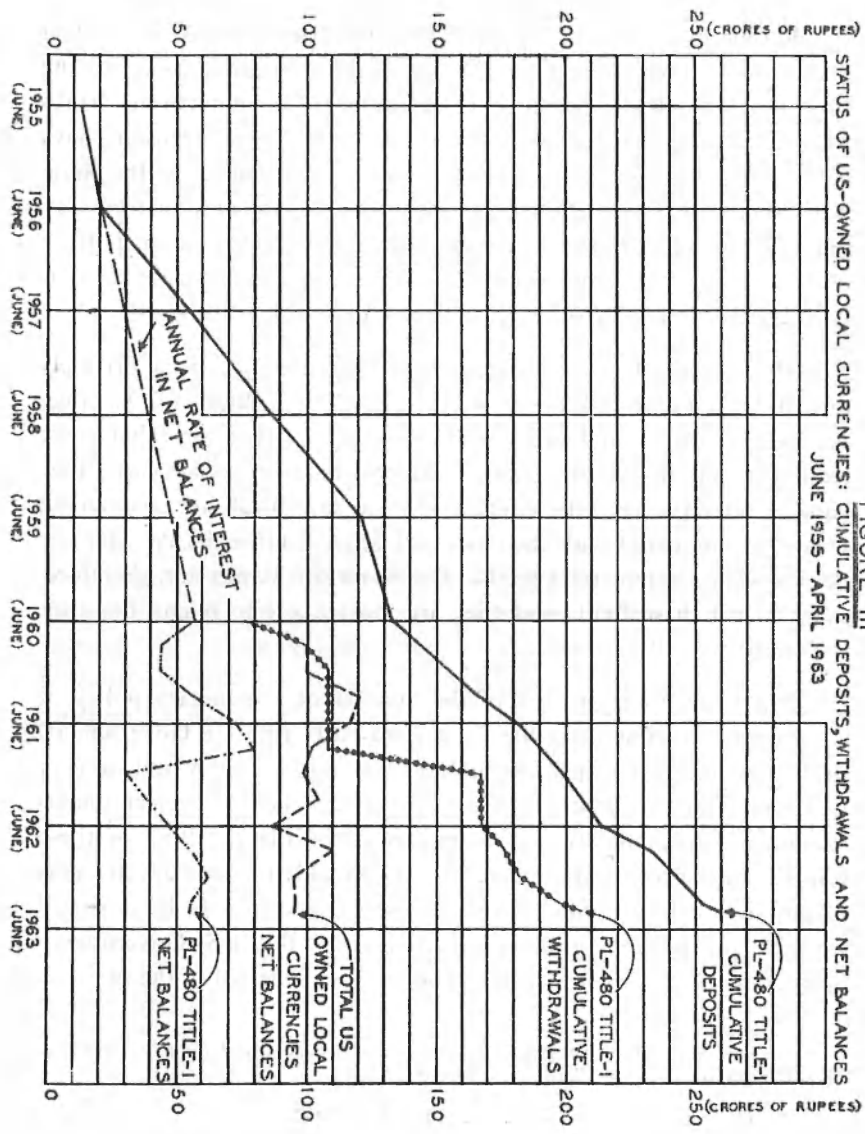
The fact that US-owned local currencies were programmed for various development projects or military purposes does not mean that they have been fully utilized. Of the total funds generated by PL 480, less than 60 per cent have been spent, so that there is at present a large unutilized balance in United States Accounts in the State Bank.

The status of US-owned local currencies from 1955 to March 1963 is shown in Appendix Table C-10 and Figure III. Up to 1960, the rate of increase in the cumulative withdrawals of these funds has been lagging behind the rate at which deposits were made. It appears, therefore, that during the period 1955 to 1960, the sale of PL-480 commodities in Pakistan resulted in a contraction of the money supply to the extent that the value of the commodities sold in the domestic market was larger than the withdrawals and disbursements made out of PL-480 accounts<sup>6</sup>. Since June 1960, average annual withdrawals increased *pari passu* with deposits. As a result the net balance has remained unchanged except for seasonal fluctuations.

The total net balance of all US-owned local currencies is shown in the last column of Appendix Table C-10. Between September 1960 and March 1963, this net balance has averaged around Rs. 104

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6. Since the sales value of commodities is somewhat smaller than the government local-currency deposits it would not be proper to regard the entire difference between deposits and withdrawals as representing the net contracting effect on the money supply.



crores, equivalent to 15 per cent of the total money supply in Pakistan during the same period<sup>7</sup>.

Recent discussion in the press has been concerned with the fact that an increasing proportion of US-owned local currencies is moving from the State Bank (where it is deflationary) to commercial banks where it can add to the total volume of credit<sup>8</sup>. These transfers have been made out of US unilaterally controlled accounts in the State Bank (*i.e.*, either the USDO account or the PL-665 account) but not out of the regular PL-480 Title-I account. The fact that the proportion of US-owned local currencies deposited in commercial banks has been increasing can be seen clearly from Appendix Table C-10.

Most of the banks receiving these deposits have been privately owned US commercial banks in Pakistan (*e.g.*, Bank of America, American Express, and others). Due to the fact that these banks are relatively new in Pakistan and, therefore, not well established, they have as yet relatively little contact with the industrial and commercial sectors as compared with the older and better established Pakistani or British-owned commercial banks. The American Banks are, therefore, eager to get these funds and they are most likely to relend them on the interbank call market<sup>9</sup>.

From the point of view of the State Bank's monetary policy, it is, of course, very undesirable for a third party (the US Government) to own as much as 15 per cent of the total money supply and to have unilateral control over almost 8 per cent unless there is a clear understanding between the two governments about the handling of these funds. Under present arrangements, it is possible that the effectiveness of any action by the State Bank to restrict credit could be impaired through independent transactions made by the US Government. Such action need not be premeditated as was suggested in the press.

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7. *Cf.*, State Bank of Pakistan, *Report on Currency and Finance, 1960-61*. (Karachi: State Bank of Pakistan, 1961), p. 153.

8. *Cf.*, *Dawn*, Karachi, December 14 and 15, 1962.

9. In this connection, *see*, R. C. Porter, *Liquidity and Lending: Volume of Bank Credit in Pakistan*. (Karachi: Institute of Development Economics, January 1963).

Another factor, deserving attention, concerns the reserve position of other commercial banks in their relation to PL-480 sales. It appears that most of the sales of PL-480 commodities are transacted through a small number of Pakistani and British commercial banks. This must result in considerable reductions in these banks' balances with the State Bank and, consequently, a lowering of their credit-expansion potential<sup>10</sup>. Therefore, if the US Government wishes to deposit its local currencies with commercial banks it would be fair to suggest, for the foregoing reasons, that this should be done not only in American but also in other Pakistani or British commercial banks. Unless the State Bank uses effective counter measures, the present situation can lead to a significant reshuffling in the relative reserve position within the banking system.

#### *The Use of Title-I Local Currencies*

Section 104 of PL-480 provides the legal basis for the allocation of US-owned local currencies. It consists of 16 subsections ('a' through 'p') each specifying individual purposes for which these funds can be used<sup>11</sup>. Some of these subsections provide upper or lower limits to the amount of funds that can or must be provided for any one of these purposes. For example subsection 104a specifies that not less than 5 per cent of the annual sales-proceeds must be made available for purposes of developing new markets for United States agricultural commodities.

Within the framework of the Law, commodity agreements are negotiated which specify not only the quantity and value of commodities to be imported but also the proposed allocation of the accruing local currencies.

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10. This relationship was pointed out to me by Professor Emile Despres.

11. Cf., *An Act to Increase the Consumption of the United States Agricultural Commodities*....., *op. cit.*, p. 44 ff. The most important subsections of the Section 104 relevant for Pakistan are the following:

104a. *Agricultural Market Development*: Not less than 5 per cent of the total amount of currencies generated must be made available for this purpose. These funds can be converted into currencies of third countries if used for this purpose. Four general types of programmes have been undertaken: cooperative programmes with trade and agricultural groups, trade fair activities, marketing research and utilization research.

(Footnote continued on page 16)

Appendix Table C-11 shows the allocation of local currencies under various heads in each one of the agreements signed so far. In the early agreements, more than 50 per cent of local currencies were allocated for common defence under subsection 104e. The rest was allocated for development loans under subsection 104g. Since 1958, there have been no more allocations for common defence, instead the largest proportion of local currencies (more than half) is now allocated as economic grants. The Expanded PL-480 Programme operating now, allocates 52.3 per cent for economic grants (including Indus Basin fund), 25.9 per cent for development loans, 4.9 per cent loans to private enterprise and 9.5 per cent for U.S. uses.

Local currencies made available to the Government of Pakistan in the form of long-term loans (subsection 104g) are administered

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(Footnote continued from page 15)

104c. *Common Defence*: Under this subsection grants are made for procurement of military equipment, materials, facilities and services for the common defence.

104d. *Grants for Economic Development*: The Law specifies that not more than 25 per cent of the funds can be made available for this purpose.

104e. *Loans to Private Enterprise (Cooley Loans)*: This section provides for advancing loans through the Export-Import Bank of Washington to US firms, their branches or subsidiaries as well as to Pakistani firms for purposes of expanding US markets for agricultural commodities.

104f. *Payment of US Obligations*: US agencies operating in Pakistan receive certain allocations in order to pay for expenses incurred in connection with their operation in Pakistan. These agencies, in turn, reimburse the Commodity Credit Cooperation out of their dollar budgets.

104g. *Loans to Foreign Governments*: In Pakistan this has been by far the largest single use of US-owned local currencies. The general purpose of the loans as specified in the Law is to promote economic development and multilateral trade. Funds are used to finance the local cost of development as well as the local-currency costs of projects whose foreign-exchange costs are financed by other international agencies.

Other sections under which relatively small amounts of foreign currencies have been allocated to Pakistan include: 104h, *International Educational Exchange*; 104i, *Translation, Publication and Distribution of Books and Periodicals*; 104j, *Assistance to American-Sponsored Schools, Libraries and Community Centers*; 104k, *Scientific, Medical, Cultural and Educational Activities*.

through the Export-Import Bank in Washington in accordance with the agreement between the Government of Pakistan and the Bank<sup>12</sup>.

The actual release of local currencies to the Government of Pakistan by AID out of its account in the State Bank is governed by a specific project agreement. The Government of Pakistan, after preparing an annual development programme, submits to AID certain projects proposed to be financed wholly or partly with Title-1 funds.

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12. *A Note on the Utilization...*, *op. cit.*, p. 41.

## SECTION II

### SOME THEORETICAL ASPECTS OF USING SURPLUS FOODS FOR ECONOMIC DEVELOPMENT

The amount of additional investment that can be financed with surplus foods in underdeveloped countries characterized by widespread underemployment is a question of great interest to economists. The theoretical groundwork for this analysis was laid in FAO's Commodity Policy Study No. 6<sup>1</sup> and more recently in an article by Kahn <sup>2</sup>.

It is intuitively obvious that the usefulness of surplus foods for additional economic development depends largely on how well a given bundle of these imports matches the prevailing expenditure pattern in the receiving economy. The FAO study, therefore, made some estimates of prevailing consumption patterns for India; and, on the basis of these estimates, worked out the percentage of additional development expenditure likely to be spent on surplus foods. It came to the conclusion that in India, out of a given increase in investment, about 34 per cent of direct wage payments and 26 per cent of derived income would be spent on surplus foods. To the extent that income is spent on surplus foods, savings, taxes and other imports from abroad, the income-generating effect of any given amount of investment is dampened. It was estimated that, when surplus food is available, the multiplier could thus be reduced from about 3.85 to 1.6 times the original investment.

#### *PL 480 and the Balance of Payments*

Kahn, in analysing the Israel experience of using surplus foods for economic development, points out that the potential impact of the

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1. *Cf., Uses of Agricultural Surpluses to Finance Economic Development in Underdeveloped Countries, op. cit.*, particularly Appendices 1, 2 and 3.

2. "Agricultural Aid and Economic Development", *op. cit.*

programme depends to a considerable extent upon whether these imports are 'additional' or 'diversionary'. If they are diversionary, they are as good as hard-currency foreign aid to the extent that they save the country's foreign exchange which otherwise would have to be committed to food imports. If, on the other hand, food-surplus imports are additional, their effect on investment and real income will depend upon the potential increase in domestic production as a result of *i*) better levels of consumption, and *ii*) better utilization of previously unemployed resources.

In analysing the Pakistan experience with PL 480, this distinction is useful. Whereas during the first period (1955-61) the effect and possibly the aim of the programme was to be diversionary; it appears that the present Expanded PL-480 Programme aims, at least in part, to go beyond this limited objective so as to increase investment over and above that contemplated in the regular-development plan. The best indication of this changed objective is the proposed works programme which is expected to absorb about Rs. 160 crores (about 50 per cent) of the accruing local currencies. The principal reason for the programme's diversionary nature during the earlier period was the severe decline in domestic wheat output *per caput* which undoubtedly would have forced the government to import, on the average, at least 75 per cent of the quantities actually imported under PL 480.

In assessing the programme's balance-of-payments impact, we first have to consider the fact that on hard-currency account the quantity of food imports would have been somewhat smaller in spite of the severe food shortage at home. As a best guess, we assume that it would have been less by about 25 per cent. Making a further downward adjustment for the fact that world-market prices are at least 30 per cent below US export prices<sup>3</sup>, it appears that the real diversionary value of these imports was about 50 per cent of their nominal value. During the period 1955-61, average annual imports of PL-480 commodities were valued at around Rs. 23 crores; if at least half of

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3. Schultz estimates that if CCC costs of a given bundle of PL-480 commodities are equal to 100, the subsidized US export-price would be equal to 80 and the corresponding value at world-market prices would equal 50. *Cf.*, "Value of U.S. Farm Surpluses to Underdeveloped Countries", *op. cit.*, p. 1026.



this amount would have had to be spent in any case, the foreign exchange saved through PL 480 would have come to about 7 per cent of Pakistan's average annual export earnings during the same time period<sup>4</sup>. A foreign-exchange 'loss' of this magnitude would have seriously retarded the domestic development programme unless—and in the case of Pakistan this is possible—the United States or other aid-giving countries would have made up the gap with additional hard-currency aid. Assuming that this would not have been the case, PL 480 permitted Pakistan to maintain the domestic investment programme at a level envisaged in the *First Five Year Plan*. From the point of view of the United States, it substituted directly for additional hard-currency aid which she may have been forced to provide otherwise.

There are a number of additional indirect ways in which the availability of PL-480 commodities has affected Pakistan's balance of payments favourably. For example, it is likely that relatively low wheat-prices prevailing in West Pakistan enabled the government to reduce the net import requirements for rice by procuring and exporting larger quantities of superior quality rice from West Pakistan either directly to the East Wing or to other countries.

A similar substitution process has taken place as a result of PL-480 cotton imports. These have been exclusively of the long-staple Upland or the American-Egyptian variety, raw materials that are used in the production of medium- and fine-quality cloth. Very little cotton of this type is grown in Pakistan but there is a large unsatisfied demand for finer cloth. As a result of PL-480 cotton imports, the Pakistani mills were able to change their product mix in that direction. This change in product mix has, in turn, released Pakistani raw cotton for export; and thereby, increased foreign-exchange earnings.

#### *Trade-Diversions Effects of PL 480*

Since one of the objectives of PL 480 has been to increase the flow of commodities to needy countries without impairing traditional

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4. Average annual export earnings over the same time period were approximately Rs. 163 crores. Cf., *Monthly Bulletin of Statistics*, May 1963. [Central Statistical Office, Government of Pakistan].

trade patterns, each PL-480 sales agreement contains a clause specifying the quantities of commodities Pakistan has to import through regular-trade channels. The Expanded PL-480 Programme specifies that, with respect to wheat, the annual amount should not be less than 75,000 tons. In the case of wheat, it is quite clear that over the past 8 years the United States has captured an increasing share of the Pakistan market. In 1952, the initial year of wheat imports, only 9.3 per cent was supplied by the United States while the balance was imported on commercial terms from other countries. Since that time, imports on commercial account have been steadily declining in favour of imports on noncommercial terms and the share of wheat imports originating in the United States has been increasing from an average of 54.4 per cent during the three-year period, 1952-54, to approximately 80 per cent during the period 1956-61 (*cf.*, Appendix Table C-13). Among other suppliers of wheat to Pakistan, only Canada and Australia have played a significant role in recent years, each accounting on the average for about 10 per cent of total Pakistani wheat imports. While most of the Canadian wheat exports, particularly in recent years, have been in the form of aid, the bulk of Australian exports to Pakistan has been on commercial account.

Due to the fact that both Canada and Australia have found a market in Sino-Soviet bloc countries for most of their surplus wheat, it is likely that the problem of avoiding disturbances in world market is less acute now than it was in earlier years.

#### *Income and Price Effects of the Expanded PL-480 Programme*

It was shown previously that during the period 1955-1961 almost the entire amount of PL-480 aid to Pakistan can be regarded as having been diversionary. Without it, the investment programme in the non-agricultural sectors could not have been maintained at the level proposed in the *First Five Year Plan* (1955-1960). Similarly in the case of the *Second Five Year Plan*, it is apparent that without PL-480 food imports, the development plan would be internally inconsistent in the sense that the domestic agricultural sector will not be in a position to meet the growing domestic demand for food and raw materials. To make the plan internally consistent without PL 480,

given the other available foreign and domestic resources, would have required a reduction in the nonagricultural investment targets in favour of *i*) increasing the relative share of investment in agriculture, or *ii*) allocating funds for food imports, or *iii*) both.

In the case of the Expanded PL-480 Programme, it is, therefore, reasonable to assume that about one-half of the planned imports are an integral part of the real financing of the development plan, whereas the other half is available for additional — presumably labour-intensive — development schemes.

This is also the way in which PL 480 was explicitly integrated in the revised *Second Five Year Plan*<sup>5</sup>:

Second Five Year Plan	...	...	Rs. 60 crores
Indus Basin <sup>a</sup>	...	...	Rs. 106 crores
Works programme	...	...	Rs. 160 crores
US uses	...	...	Rs. 38 crores
Total value of PL-480 imports			Rs. 364 crores <sup>b</sup>

- a) The Indus Basin Programme, although not a part of the regular development plan, can be regarded as an internally consistent scheme superimposed on the regular-development programme.
- b) This figure is larger than the value of the Expanded PL-480 Programme because it covers the entire five-year period of the Second Plan.

In what follows our major concern is, therefore, to study the potential effects of the government's decision to enlarge the size of the regular-development plan by one-half of the value of the Expanded PL-480 Programme. We assume that the increase in development expenditure is made simultaneously with the release of commodities. In Pakistan, this is not a big problem because large net balances of local currencies from previous PL-480 imports have been accumulating in the State Bank (*cf.*, Section I). Even if such funds were not available, the government could—and indeed should—borrow from the State Bank and not wait for the accumulation and the release of local-currency sales proceeds.

5. *Cf.*, Planning Commission, Government of Pakistan, *The Second Five Year Plan, Revised Estimates*. (Karachi: Manager of Publications, November 1961), p. 23.

The following questions arise with respect to the absorption of PL-480 commodities which are to be imported in addition to the regular-plan requirements: *i)* how much of each commodity can be absorbed as a direct result of the increase in development expenditure and how much indirectly as a result of the multiplier effect? *ii)* how much of these commodities will have to be absorbed through price decreases? *iii)* what will be the effect on prices of those commodities that are not covered by PL-480 imports? and *iv)* what will be the effect on domestic prices and supplies of those commodities for which PL-480 creates excess supply?

The answer to these questions will depend upon: *i)* the composition of the bundle of imports coming in under the PL-480 programme, *ii)* the weight of various items of consumption in the consumer budget, and *iii)* the relevant income, price, and domestic supply elasticities.

We can begin this analysis by computing first how an increase in development expenditure would be spent by the workers who are the recipients of this additional income.

Let

$$1) \Delta C_i = \frac{E_y \cdot C_i \cdot \Delta Y}{Y} \quad \text{where}$$

$\Delta C_i$  = increase in expenditure on commodity 'i' resulting from a change in income

$E_y$  = income elasticity for the *i*-th commodity group

$C_i$  = total aggregate amount presently spent by consumers on commodity group 'i'

$\Delta Y$  = that part of increased development expenditure which becomes an addition to personal disposable income

$Y$  = aggregate personal disposable income prior to the increase in development expenditure.

Applying this formula to the analysis of the proposed works programme (=Rs. 160 crores over a four-year period), we first deduct 10 per cent from this amount to allow for a minimum direct import component to provide for equipment, engineering services, port

facilities, etc<sup>6</sup>. The increase in domestic personal disposable income is, therefore, Rs. 144 crores, equivalent to Rs. 36 crores per annum.

The relevant computations are shown in Table II-1. The first column shows the present percentage distribution of personal disposable income between commodity groups based on the information contained in the National Sample Survey (*cf.*, Appendix B). The column labelled  $C_i$ , shows the distribution of aggregate personal disposable income computed according to these percentages; and the column labelled  $E_y$ , shows the corresponding income elasticities. Using this basic information according to Equation (1), we have computed in the column, labelled  $\Delta C_i^I$ , how an increase in income of Rs. 36 crores would be distributed between commodity groups. The column, labelled  $R_i^I$ , shows how Rs. 40-crore-worth of PL-480 commodity imports are distributed between these same commodity groups. Subtracting  $\Delta C_i^I$  from  $R_i^I$  results in a new vector which we may call  $Z_i^I$ .

$$2) Z_i^I = R_i^I - \Delta C_i^I$$

This vector shows *i*) the amounts of PL-480 commodities 'left over' after the first round of spending has taken place<sup>7</sup>, and *ii*) the resulting excess demand (—) in those commodity groups which are not at all or only insufficiently covered by PL-480 supplies. It is also apparent from the computation up to this point that the government has collected local currencies as follows: Rs. 4.51 crores from the sale of wheat *plus* Rs. 6.79 crores from sale of fats and oils *plus* Rs. 1.2 crores from the sale of clothing *plus* Rs. 1.6 crores from the sale of other nonfood items = Rs. 14.10 crores. This amount, along with 'saving', must be considered as a leakage which does not enter the second round of spending.

6. *Cf.*, *Uses of Agricultural Surpluses to Finance Economic Development in underdeveloped Countries*, *op. cit.*

The works programme as it is described in the *Revised Second Five Year Plan* makes an allowance of Rs. 38 crores for this purpose. This amount of foreign exchange is 'bought' for local currencies from the Indus fund which supposedly has a small excess of foreign exchange. *Cf.*, *Second Five Year Plan (Revised Estimates)*, *op. cit.*, p. 25.

7. This is sometimes referred to as the second round, the first round being the government's original development expenditure.

Assuming first that the domestic supply for commodity groups not covered by PL 480 is elastic, increases in aggregate real income going into the second round of spending will be Rs. 17.62 crores since

$$3) 36 \text{ crores} - [14.10 + 4.28] = 17.62 \text{ crores}$$

We assume in the absence of better information that this amount will be distributed among various commodity groups in the same percentage pattern as that prevailing in the first round<sup>8</sup>.

In second round, the government receives Rs. 2.20 crores from the sale of wheat and Rs. 3.33 crores from the sale of fats and oils. Total local-currency accumulation up to this point comes to Rs. 19.63 crores. The analysis can now be extended through additional rounds as has been worked out in Table II.1 upto the 6th round.

It should be noted that, among PL-480 commodities, only wheat is available in unlimited quantities. The supply of clothing and other nonfood items was already exhausted after the first round, whereas the supply of fats and oils is exhausted after the fourth round of spending. A generalized multiplier analysis, in which the percentage of additional income spent on PL-480 commodities in the first round would be treated as a leakage coefficient, is, therefore, not possible or only partially so beginning with the fifth round of spending.

If we work out a multiplier beginning with the fifth round, it would look as follows:

$$4) 3.51 \left[ \frac{1}{0.125 + 0.119} \right] = \frac{3.51}{0.244} = 14.38 \text{ crores.}$$

This amount added to the income generated in the first four rounds will bring the total income generation to Rs. 83.67 crores; the implicit multiplier is 2.04. Without the availability of PL-480 aid and assuming a marginal propensity to save of 0.119, with marginal propensity to import and to tax being zero, the multiplier would be more than 8.

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8. This assumption is obviously not justified if the consumption pattern of recipients of derived income is significantly different from the pattern prevailing in the first round.

The total amount of local currency 'recovered' by the government through this income-generation process works out to Rs. 26.03 crores (*cf.*, Table II.2). The value of wheat 'left over' to be absorbed through price decreases is, therefore, Rs. 13.97 crores.

**TABLE II.2**  
**LOCAL-CURRENCY ACCUMULATIONS FROM SALE OF PL-480**  
**COMMODITIES**

Round No.	Amount (Rs. in crores)
1	14.10
2	5.53
3	3.14
4	1.50
5	0.44
6	0.33
7	0.25
...	...
...	...
n	...
} 1.76 <sup>a</sup>	
<hr/>	
Total value of commodities absorbed through income generation (annually)	26.03
Total value to be absorbed through price decreases (annually)	13.97
<hr/>	
Grand total	40.00

a) From fifth round onwards, after all PL-480 supplies except wheat have been exhausted we get an infinite converging series whose sum as  $n \rightarrow \infty$  comes to Rs. 1.76 crores since

$$S = \frac{a}{1-r} \text{ where } \begin{array}{l} a = \text{the first term in the series} \\ r = \text{the ratio between two successive terms} \\ S = \text{sum of the converging series} \end{array}$$

TABLE II-1  
MULTIPLIER ANALYSIS OF EXPANDED PL-480 WORKS PROGRAMME

Commodity group	Distribution of expenditure (per cent)	C <sub>i</sub> (Rs. crores)	E <sub>v</sub> (Rs. crores)	1st round				2nd round		3rd round		4th round		5th round		6th round	
				ΔC <sub>i</sub> <sup>I</sup> (Rs. crores)	(per cent)	R <sub>i</sub> <sup>I</sup> (Rs. crores)	Z <sub>i</sub> <sup>I</sup> (Rs. crores)	ΔC <sub>i</sub> <sup>II</sup> (Rs. crores)	Z <sub>i</sub> <sup>II</sup> (Rs. crores)	ΔC <sub>i</sub> <sup>III</sup> (Rs. crores)	Z <sub>i</sub> <sup>III</sup> (Rs. crores)	ΔC <sub>i</sub> <sup>IV</sup> (Rs. crores)	Z <sub>i</sub> <sup>IV</sup> (Rs. crores)	ΔC <sub>i</sub> <sup>V</sup> (Rs. crores)	Z <sub>i</sub> <sup>V</sup> (Rs. crores)	ΔC <sub>i</sub> <sup>VI</sup> (Rs. crores)	Z <sub>i</sub> <sup>VI</sup> (Rs. crores)
				(1)	(2)	(3)	(4)		(5)		(6)		(7)		(8)		(9)
Cereals	26.6	787.6	0.47	4.51	12.5	24.4	19.89	2.20	17.69	1.25	16.44	0.71	15.73	0.44	15.29	0.33	14.96
Fats, milk and ghee	17.4	515.2	1.08	6.79	18.9	12.8	6.01	3.33	2.68	1.89	0.79	1.07	— .28	0.66	—0.94	0.50	—1.44
Meat and fish	2.8	82.9	1.19	1.20	3.3	0	—1.20	0.58	—1.78	0.33	—2.11	0.19	—2.30	0.12	—2.42	0.09	—2.51
Sugar and gur	5.9	174.7	0.94	2.00	5.6	0	—2.00	0.99	—2.99	0.56	—3.55	0.32	—3.87	0.20	—4.07	0.15	—4.22
Fruits and vegetables	2.3	68.1	0.70	0.58	1.6	0	—0.58	0.28	—0.86	0.16	—1.02	0.09	—1.11	0.06	—1.17	0.04	—1.21
Other foods	5.0	148.1	0.75	1.36	3.8	0	—1.36	0.67	—2.03	0.38	—2.41	0.22	—2.63	0.13	—2.76	0.10	—2.86
Clothing	10.5	310.9	0.80	5.52	15.3	1.2	—4.32	2.70	—7.02	1.53	—8.55	0.87	—9.42	0.54	—9.96	0.41	—10.51
Other nonfoods	24.5	725.4	1.10 <sup>c</sup>	9.76	27.1	1.6	—8.16	4.78	—12.94	2.71	—15.65	1.54	—17.19	0.94	—18.14	0.72	—18.86
Savings	5.0 <sup>a</sup>	148.0	2.37 <sup>d</sup>	4.28	11.9	—	—	2.10	—	1.19	—	0.67	—	0.42	—	0.32	—
Total	100.0	2961.0 <sup>b</sup>	—	36.00 <sup>e</sup>	100.0	40.0 <sup>a</sup>	—	17.62	—	10.00	—	5.67	—	3.51	—	2.66	—

Col. (1) Details about the distribution of expenditure between expenditure groups are presented in Appendix B. They are based on family-expenditure studies for West Pakistan.

Col. (3) Cf., Appendix B for details of income-elasticity estimates.

a) 5 per cent is our estimate of average gross private saving over the period 1959/60—1961/62 in current prices. It was obtained in the following way: total consumption expenditure was deducted from gross national product to get gross domestic saving. From this, we deducted domestic public saving to get domestic private saving. Cf., Government of Pakistan, Planning Commission, *Mid Plan Review of Progress in 1960/61—1961/62*. (Karachi: Manager of Publications, March 1963), p. 51 ff.

b) Estimates of 1959/60—1961/62 average disposable income=private consumption expenditure + private saving. Cf., *Mid Plan Review, op. cit.*, p. 51 ff.

c) The elasticity for this group was estimated as a residual so that the sum of the additional expenditure on all items would exhaust the total addition to income.

d) Elasticity for saving was computed from national aggregate data by multiplying the marginal savings rate (0.171) by the inverse of the average propensity to save.

e) 36 crores=40 crores—10 per cent deduction for direct import component in connection with the works programme. Annual addition to disposable income is, therefore, only Rs. 36 crores.

f) This figure includes the allocation for edible oils and an allowance for the increased domestic production of milk due to the import of feedgrains under PL-480. We have assumed that each pound of feedgrains would increase milk production by an equal amount. Cf., E. Jenson, *et al.*, *Input-Output Relationships in Milk Production*. (Washington, D.C.: Sup. Doc.), May 1942.



The important point to be brought out by this analysis can be stated as follows: if the government intends a works programme of the size assumed in our analysis, then the amount of wheat that can be absorbed through the income effect is considerably less than the amount provided for in the Expanded PL-480 Programme. Or, conversely if all the wheat is to be absorbed through additional income generation without depressing domestic prices, government expenditure on the works programme would have to be considerably larger than the value of the bundle of PL-480 imports. How much larger can be determined as follows, assuming that wheat is the only commodity involved in the programme:

$$5) \Delta Y = W \left[ MP_w + MP_s \right] \left[ MP_w \right]^{-1}$$

where  $\Delta Y$  = change in government expenditure necessary to absorb a given quantity of wheat (w)

$W$  = value of wheat provided in the PL-480 Programme

$MP_w$  = marginal propensity to consume wheat

$MP_s$  = marginal propensity to save

Under our assumptions (Table II.1)

$$W = 24.4 \text{ crores, } MP_w = 0.125, \text{ and } MP_s = 0.119;$$

$$\begin{aligned} \text{therefore, } \Delta Y &= \frac{[24.4] \cdot [0.125 + 0.119]}{0.125} \\ &= \text{Rs. 47.63 crores} \end{aligned}$$

In other words, given the multiplier, an initial addition to personal disposable income of Rs. 47.63 crores would be required in order to absorb Rs. 24.4-crore-worth of wheat without depressing domestic wheat prices.

If, as is implicit in the works programme proposed under the Expanded PL-480 Programme, a part of the total wheat will have to be absorbed through a decrease in the price of wheat, then the magnitude of the required downward price adjustment will be determined largely by the relevant price elasticities such that

$$6) \Delta P_w = \left[ \frac{Z_w^n}{Q_w} \right] \cdot \left[ \frac{P_w}{E_{pw}} \right]$$

where  $\Delta P_w$  = decrease in the price of wheat

$Z_w^n$  = excess PL-480 wheat not absorbed through income effect

$Q_w$  = total amount of wheat marketed in the monetized sector including imports

$P_w$  = equilibrium price of wheat prior to the release of excess wheat

$E_{pw}$  = price elasticity of wheat

As no reliable estimate of price elasticity obtaining under Pakistan conditions are available, it is impossible to make an empirical application of this formula.

In the multiplier analysis carried out above, we have assumed that goods not affected by PL-480 imports have a high domestic supply elasticity so that the multiplier leads in fact to an increase in real income. If this were the case, it would imply the existence of unused capacity in the economy, and one could argue that the size of the regular-development programme was too small to begin with. It is more realistic to assume that, for most of the commodity groups not covered by PL 480, domestic supply is relatively inelastic with the possible exception of domestic services. The result is that the real-income multiplier would be much smaller than was assumed in the computations underlying Table II.1. In that case, commodity groups not covered by PL 480 will be subject to upward pressures on their prices. This, in turn, may set in motion a certain amount of substitution between these groups and PL-480 commodities in relative excess supply. If, even after this substitution has taken place, there is an excess amount of wheat to be absorbed, its price will fall. This would mean an increase in real income to nonagricultural consumers who may now bid away non-PL-480 goods from the rural sector whose real income, as a result of the fall in wheat prices, has decreased. Even

if the sale of PL-480 commodities should mean only a worsening of agriculturist's terms of trade in the sense that prices of products they buy are rising more rapidly than prices of products they sell, the final effect would be a decline in the purchases by agriculture from the nonagricultural sector. This effect, whose magnitude is not easy to assess, would have a tendency to counterbalance the pressure on prices originating from the receivers of additional income. Only if it is true that the market supply curve of agricultural goods in underdeveloped countries has a negative slope, would it be possible to rule out negative effects on agricultural incomes. This problem of supply response in agriculture will be considered in more detail in the following section.

In summarizing this argument, we can say that, considering the income elasticities of items *not* affected by PL 480, there is likely to be a net increase in demand for these products resulting from additional development expenditure in a works programme. The decrease in demand for these products resulting from a worsening of the terms of trade in the agricultural sector will tend to reduce the magnitude of this price rise.

One of the arguments advanced in favour of PL-480 imports is that it is likely to keep down the prices of the most important consumption items, particularly of foodgrains. As Table II.1 shows, expenditure on foodgrains accounts for about 27 per cent of total disposable income whereas expenditure on clothing and other nonfood items accounts for about 35 per cent. Yet, the marginal-expenditure pattern shows quite a different picture. Here, foodgrains constitute only 12 per cent of total additional expenditure whereas clothing and other nonfood items account for around 42 per cent of additional expenditure. This distortion would have been even more severe, if, instead of using rural-expenditure data, we had used consumption data and income elasticities for urban people. Available consumption studies for the subcontinent show that expenditure for basic necessities are a smaller proportion of total expenditure in the budget of urban consumers. Also, income elasticities for these items (particularly for foodgrains) tend to be even lower for urban people. It is apparent, therefore, that, given the present composition of PL-480 imports and the marginal-expenditure pattern, there will be a considerable amount of

excess demand for consumption goods not included in PL 480. This excess demand is likely to be much larger than what one would expect on the basis of the proportional importance of these items in the average consumer budget.

The consumer-price index with weights based on average distribution of consumption-expenditure pattern in some base period may not reflect the extent of the price rise which is likely to occur in some particular lines of consumer goods, particularly those which have a low domestic supply elasticity. Nor would the general consumer-price index reflect the considerable shifts in relative prices, and the consequent worsening of the terms of trade for domestic agricultural producers.

These problems could be reduced if it were possible to change the commodity composition of PL 480. In particular, the importance of foodgrains in the overall composition should be much less and other commodity groups such as meat and eggs as well as sugar should be increased.

If, on the other hand, the only factor that matters to the government is stability of foodgrain prices in urban areas, the present distribution of PL-480 imports would allow a relatively greater increase in total development expenditure without a rise in foodgrain prices. Alternatively if relative prices are of some concern for government policy and if no substantial changes are possible in the present composition of PL-480 imports, it would be desirable to direct development expenditure towards those areas and those income groups whose marginal-expenditure pattern fits most nearly the present distribution of PL-480 imports.

The foregoing analysis is static in the sense that it makes no allowance for an increase in 'capacity' due to the operation of the works programme. Presumably after the works programme has been going on for some time, investments will have been created which, in turn, should pay off in terms of increases in production and real income. An increase in consumption and/or investment above that planned in the regular-development programme will then



### SECTION III

#### IMPACT OF SURPLUS DISPOSAL ON DOMESTIC AGRICULTURE

One of the problems that has concerned economists with respect to surplus disposal under PL 480 is its possible negative impact on agricultural production in the receiving country. Importing PL-480 commodities does not involve payment in terms of real resources; it is, therefore, likely that a developing nation whose major aim is to industrialize as quickly as possible will import more than what would normally be imported on hard-currency commercial account. Whereas the usual rationale for importing in a country with balance-of-payments problems and an overvalued currency is to equalize social marginal utility of a limited amount of foreign exchange in each of its various uses, this criterion no longer applies for commodities included in the PL-480 programme. Instead, other considerations such as need, absorption capacity, limitations of storage and distribution facilities, become determining criteria for the quantities to be imported. If, in this process, domestic farm prices become depressed, and if this has the effect of retarding the increase in domestic production, it is possible that the long-run economic development of the country may be impaired.

The purpose of this section is to study a variety of factors which ultimately determine absorption capacity for surplus commodities as well as the effect of the programme on domestic agriculture. In particular, we will consider regional differences in production, income and effective demand and the problem of agricultural supply response in an underdeveloped agrarian economy. After studying these factors, it will be possible to show how surplus disposal can, and has, affected domestic agriculture in Pakistan.

### *The Food Balance-Sheet Method of Estimating Import Requirements*

In several papers prepared by the Planning Commission in connection with the projection of PL-480 import requirements, present availability per person from domestic production was contrasted with requirements if the level of nutrition as recommended by the Indian Nutrition Advisory Committee were to be attained<sup>1</sup>. The resulting difference was used as an estimate of import requirements adjusted downward somewhat to take account of limitations on transportation, storage and port facilities. On that basis, the wheat deficit for West Pakistan was estimated at 2.24 million tons during the year 1961/62, decreasing to 1.27 million tons in the year 1964/65. This estimate of 'need' is at least 50 per cent to 100 per cent above the present level of imports into the province.

Some of the problems encountered in this procedure of estimating import requirements have been considered recently by Sukhatme<sup>2</sup>. He comes to the conclusion that in underdeveloped countries some of the key variables which constitute the basic equation of a food balance sheet are not reported accurately enough to permit a meaningful estimate in the absolute terms of the calories available from domestic production<sup>3</sup>.

1. Cf., Government of Pakistan, Planning Commission, *Memorandum on the United States Surplus Agricultural Commodities Aid to Pakistan*. (Karachi: Manager of Publications, February 1961).

2. P.V. Sukhatme, "The World's Hunger and Future Needs in Food Supplies", *Journal of the Royal Statistical Society, Series A. (General)*, Vol. 124, Part 4, pp. 463-525.

3. Sukhatme summarizes the estimation problem as follows:

"... the estimate of *per caput* caloric supply per day at retail level may be written as

$$C = (P + I + J_1 - E - J_2 - S - F - W - M) RN \frac{1}{\text{Population}}$$

where the summation is over commodities. For any commodity,  $J_1$  and  $J_2$  represent the stocks at the beginning and end of the consumption year;  $I$  and  $E$  represent the imports and exports ...;  $P$  stands for the production during the year;  $S$  for seeds;  $F$  for feeds;  $W$  for waste and  $M$  for amounts used in manufacture for purposes other than food;  $R$  represents the extraction factor to fit with the form in which the commodity is measured at the retail level and  $N$  the corresponding content of calories (or nutrients). Clearly, the accuracy of the calorie and nutrient supply estimates depends not only on the accuracy with which the statistics of  $P$ ,  $J$ ,  $I$ , and  $E$ ,  $S$ ,  $F$ ,  $W$  and  $M$  are available but also on the accuracy of  $R$ ,  $N$  and the population figure at midyear."

The questions raised by Sukhatme are highly relevant in the case of Pakistan where recent research suggests that the actual population as well as food-production statistics may differ from those officially reported anywhere between 10 and 20 per cent. In Appendix Table C-14, we have contrasted the population assumptions made by the Planning Commission with a simple extrapolation based on the Population Census of 1961 and with the most recent population projections carried out in the Institute of Development Economics. These figures suggest that, by 1964/65, the Planning-Commission figures, which underly PL-480 projections, would have underestimated total population by about 19 per cent. With respect to the available production statistics, the situation is very similar. While acreage figures, as officially<sup>4</sup> reported, appear to be reasonably accurate, crop-cutting experiments conducted in West Pakistan have shown that the official yield-data have consistently underestimated total output by about 21 per cent. A summary of results of these crop-cutting experiments is given in Appendix Table C-15<sup>5</sup>.

To what extent underestimation is correlated with above- or below-normal output is not clear from the available data. It appears that the best cropyear (1960/61) shows the highest degree of underestimation for West Pakistan as a whole; but there is no clear trend between regions which would suggest statistical significance for such an hypothesis. Likewise with respect to regional differences, the data do not suggest that underestimation of production is consistently more severe in some regions than in others.

#### *Regional Inequalities in Production and Effective Demand*

Although the errors in Pakistan's production and population statistics are undoubtedly larger than similar data in many other

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4. Cf., W. P. Falcon, "Reliability of Punjab Agricultural Data", *Acreage, Production and Prices of Major Agricultural Crops for West Pakistan (Punjab), 1931-59*. (Karachi: Institute of Development Economics, 1961).

5. Crop-cutting experiments have been conducted in West Pakistan for 7 years since 1950/51. Initially, their scope was restricted to the Lyallpur district; later they were extended to the whole of the Punjab. Only for three years are results available for all regions of West Pakistan. Four crop-cutting experiments conducted before 1956 show that survey yields are on the average 17 per cent higher than the official yield-estimates.



countries, the reliability and accuracy of statistics is necessarily a relative matter. Rejection of the food balance-sheet method on this ground alone would, therefore, not be entirely convincing. There are, however, other more serious conceptual problems which would render the method inapplicable even if the statistics were accurate.

One of the major difficulties is that an aggregate estimate of food deficit for the country as a whole, based purely on this nutritional concept, conceals the fact that there are substantial regional differences within a country regarding food production and availability. In some areas, food production per person is far below, while in others it is considerably above the annual nutritional requirements. Even more important is the likelihood that, in a less developed country such as Pakistan, these food 'surplus' and 'deficit' areas may exist side by side without a strong tendency for food to move from one area to another. This is particularly true for those 'deficit' areas where the ratio of nonagricultural population to total population is small. Since farmers in the deficit area will be forced to market some of their food products to obtain other basic necessities, it is likely that even an area where the rural sector has a 'deficit' in food production (measured by, say, FAO nutritional standards) will support a small nonagricultural community. If the size of this nonagricultural sector is not appreciably larger than what can be supported by the marketed surplus coming from the agricultural sector (such that there is little real excess demand originating in the urban areas), then there would be no natural tendency for commodities to flow from 'surplus' to 'deficit' areas. Nor could one expect that the 'deficit' areas are necessarily characterized by higher food-prices. To put the argument in a different and somewhat weaker form, if the ratio of urban to rural population is low in the 'deficit' areas and high in the surplus areas, then the price differential for foodstuffs between the two areas is likely to be smaller than it would be if the ratio of urban to rural population is the same in all regions. From the point of view of utilizing surplus foods for additional economic development or for purposes of raising the general level of nutrition, it is, therefore, very important to determine the location of those areas that have the greatest food deficit and the greatest lack of effective demand.

The regional differences<sup>6</sup> within West Pakistan with respect to various important indicators of foodgrain availability and agricultural output per person are shown in Table III.1. It is apparent that there are considerable differences between regions with respect to foodgrain production per rural person. Leaving aside the urban population in these regions, it is apparent that only in two regions (Peshawar and Quetta) is foodgrain production so low that one must expect a food deficit to exist even in the rural areas. Total foodgrain production per rural person and, therefore, potential marketable surplus is highest in the Lahore and Hyderabad regions. As the ratio of "other cereals to wheat and rice" (Column (7)) is higher in the Peshawar region than in the remaining areas, it is obvious that the production of wheat and rice per rural person (Column (11)) shows an even greater regional imbalance.

Column (3) indicates that there are substantial differences between regions with respect to the ratio of urban to rural population. Aside from Karachi which consists essentially of the metropolitan area with a small rural hinterland, it is the Lahore region which has the highest percentage of urban population. Although the potential marketable surplus per rural person may be high in the Lahore region, the potential for marketing outside the region are, therefore, smaller than in the remaining surplus areas. In fact with respect to wheat and rice, the Lahore region appears to be a deficit area, although certainly not to the extent to which this is the case in Peshawar and Quetta regions.

One may question the importance which is being placed in this paper on foodgrain production per person in the individual regions; certainly, there is no pressing economic reason why every area should be self-sufficient in foodgrains no more than one should expect the whole country to strive towards autonomy in foodgrain production if its comparative advantage lies elsewhere. Foodgrain self-sufficiency is certainly not important if an area produces other industrial or agricultural products which it can exchange for foodgrains. As the Central Statistical Office of Pakistan does not publish regional income-estimates,

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6. Although we have argued previously that there is serious doubt about the accuracy of the available data, we are assuming here that they can be used for this relative analysis between areas.

TABLE III.1  
REGIONAL DIFFERENCES IN FOODGRAIN, CASH-CROP AND LIVESTOCK PRODUCTION  
(WEST PAKISTAN)

Region <sup>a</sup>	Total population (1960) (...million...)	Rural population (1960)	Urban to rural ratio	Production of wheat & rice <sup>b</sup> (..... 000 tons .....	All cereals <sup>b</sup>	Ratio of other cereals to wheat and rice	All cereals per rural person (..... ounces .....	Wheat & rice per rural person (..... ounces .....	All cereals per person (..... ounces .....	Wheat & rice per person average <sup>b,c</sup>	Ratio of cash to food crop	Cattle and buffaloes per rural person
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Peshawar	7.5	6.8	.114	300.8	348.1	1.157	9.41	4.36	8.44	3.91	.13	.193
Lahore	16.4	12.3	.331	2087.0	1000.6	0.479	24.60	16.62	18.48	12.49	.17	.509
Bahawalpur	9.2	7.8	.172	1316.4	349.9	0.266	20.88	16.50	17.81	14.08	.41	.511
Hyderabad	6.4	5.2	.244	977.3	357.9	0.366	25.37	18.58	20.38	14.93	.36	.573
Quetta	1.2	0.9	.235	67.3	22.2	0.33	9.35	7.03	7.56	5.68	.08	.302
Karachi	2.1	0.2	.875	—	—	—	—	—	—	—	—	—
West Pakistan	42.8	33.2	.290	4748.9	2078.7	0.44	20.18	14.04	15.64	10.88	.26	.439

Sources: i) Office of the Census Commissioner, Ministry of Home Affairs, Government of Pakistan, *Population Census of Pakistan, Census Bulletin No. 2*, (Karachi: Manager of Publications, 1961).

ii) Planning and Development Department, Government of West Pakistan, *Statistics of West Pakistan, Agricultural Data, 1947/48—1958/59*, (Lahore: Superintendent of Printing).

a) The eleven divisions of West Pakistan were grouped as follows: Peshawar region includes Peshawar and D. I. Khan Divisions; Lahore region includes Lahore, Rawalpindi and Sargodha Divisions; Bahawalpur region includes Bahawalpur State and Multan Divisions; Hyderabad region includes Hyderabad and Khairpur Divisions; Quetta includes Quetta and Kalat Divisions.

b) Production data represents the 1958/59—1960/61 average as reported in the official statistics.

c) Ratio computed on the basis of acreage data.

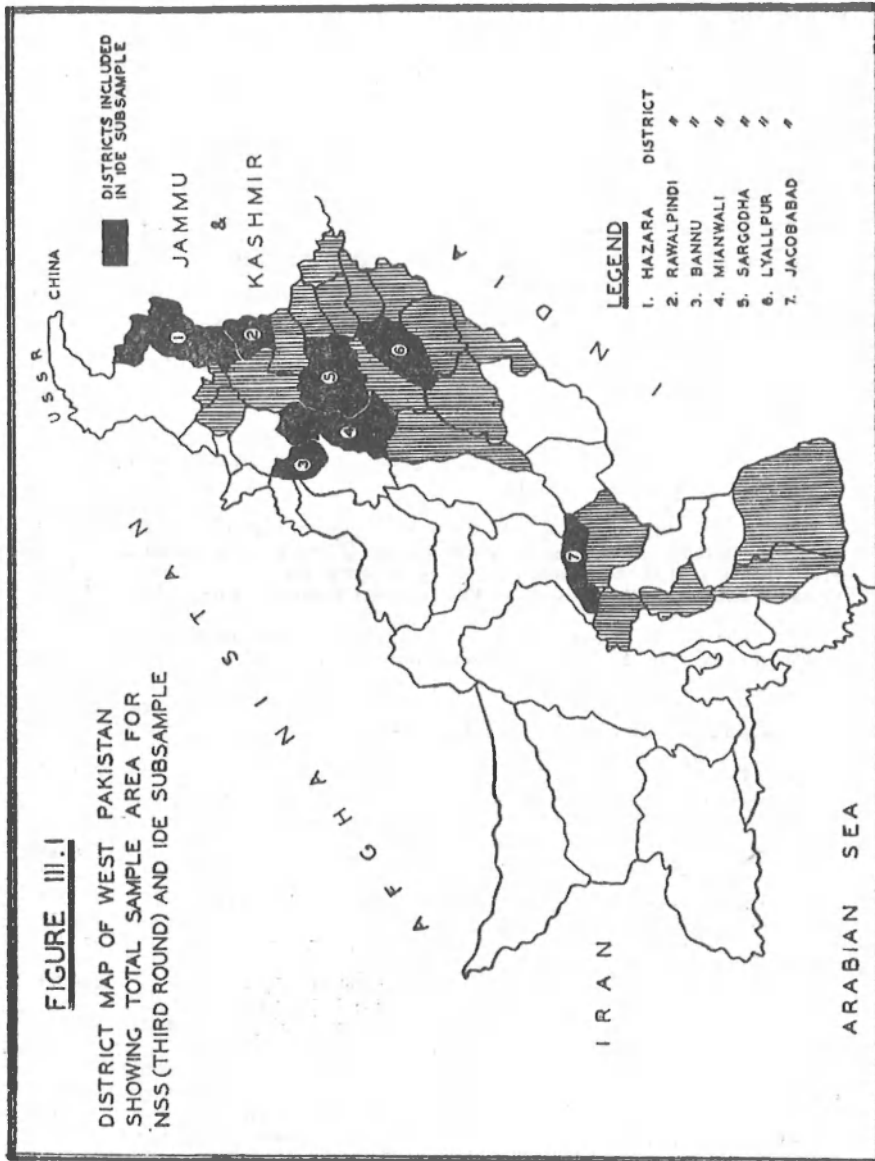
we had to employ other rough indicators to ascertain the relative position of different regions with respect to their real income position. In a nonindustrialized country one possible indicator is the ratio of food crops to cash crops in various regions. The index is only an approximate one because some cash crops have a higher market-value per acre than others and the output mix is not the same in all areas. Keeping this qualification in mind, it can be seen nevertheless from Table III.1 that the regions which are most deficient in foodgrains have also the lowest ratio of cash crops to food crops in their production pattern and the lowest ratio of urban to rural population. They have, therefore, the greatest lack of real purchasing power for products from outside the region.

#### *Regional Differences in Consumption Patterns*

In addition to studying regional differences in production, we have also analysed the available consumption data to see if these tend to confirm our earlier conclusions.

The data providing the basis for this regional comparison of consumption (as well as for the income-elasticity estimates given in Appendix B) were taken from the third round of the Pakistan National Sample Survey (NSS). This survey was carried out by the Central Statistical Office during the first six months of 1961 in the rural areas of East and West Pakistan. In West Pakistan, 300 villages in 26 districts were covered, the total number of families interviewed was approximately 2,400.

Out of this universe, a subsample of 262 households in West Pakistan was chosen by the Institute of Development Economics. In choosing this subsample, the objective was to get a representative geographical cross-section so as to include an approximately equal number of very poor, average and above-average rural districts. A subsample chosen purely on a random basis would not have been adequate for our purposes because the probability of getting sufficient coverage of food-deficit areas would have been rather small. Stratification of districts was done on the basis of the available production statistics. The accompanying map (Figure III.1) shows the districts covered by the NSS as well as the districts included in the IDE sub-



sample<sup>7</sup>. Cropping patterns and production of foodgrains per person in each of the districts included in our subsample is shown in Appendix Table C-17.

The consumption data were converted into expenditure per 'equivalent adult consumer'<sup>8</sup>, because the ratio of male adults to female and children dependents is considerably lower in the families with high per-family expenditure<sup>9</sup>.

Looking now at the consumption expenditures (Table III.2) it is evident that what appear to be the poorest areas on the basis of the available production statistics are precisely the districts where consumption expenditure by the families included in the National Sample Survey is also lowest. No striking difference in total expenditure appears among the remaining areas. Food expenditure as a proportion of total

7. A list of the districts, *tehsils* and villages included in the IDE subsample is given in the Appendix Table C-16.

8. Cf., Ansley J. Coale and Edger M. Hoover, *Population Growth and Economic Development in Low Income Countries*. (Princeton: Princeton University Press, 1958), p. 124. In computing the 'adult consumer unit' children under 12 years are counted as 0.5, women as 0.9 and males above 12 years as 1.0.

9. The two distributions for families with average monthly expenditure above and below Rs. 125 are shown in the following table:

Ratio of equivalent adult consumers	Family expenditure below 125		Family expenditure above 125		
	No. of persons in the family	No. in group	Per cent	No. in group	Per cent
0.500 — 0.600	1	00.79	0	0.00	
0.601 — 0.700	4	17.45	12	8.82	
0.701 — 0.800	39	32.54	49	36.02	
0.801 — 0.900	35	27.77	52	38.23	
0.901 — 1.000	47	37.29	23	16.91	
Total	126	100.00	136	100.00	
Weighted average		0.848		0.813	

The use of 'adult consumer unit' as a basis for measurement, while eliminating some problems, introduces other conceptual difficulties particularly in those nonfood categories (*e.g.*, rent, clothing) where consumption is not related to the size of the person as is the case for food items. Nevertheless, since the emphasis in this study is on a comparison of various food items it was felt that the seriousness of the error introduced due to the use of 'adult consumer units' is far less than that which would have occurred if unadjusted 'expenditure per person' had been used.

TABLE III.2  
REGIONAL DIFFERENCES IN TOTAL CONSUMPTION EXPENDITURE

District	No. of families in the sample	Average total exp. per family		Food expenditure		Cereals and pulses		Milk and ghee		Meat and fish		Fruits and vegetables		Sugar and ghur		Other food expenditure		Clothing and footwear		Other nonfood	
		Rs. cent)	(per Rs. cent)	Rs. cent)	(per Rs. cent)	Rs. cent)	(per Rs. cent)	Rs. cent)	(per Rs. cent)	Rs. cent)	(per Rs. cent)	Rs. cent)	(per Rs. cent)	Rs. cent)	(per Rs. cent)	Rs. cent)	(per Rs. cent)	Rs. cent)	(per Rs. cent)	Rs. cent)	(per Rs. cent)
Hazara	40	100.78	100	69.77	69	36.80	36	14.51	14	1.90	2	3.46	3	6.62	7	6.40	6	14.94	15	16.07	16
Rawalpindi	40	97.66	100	68.28	70	28.59	29	23.58	24	4.07	4	1.48	2	4.51	5	6.05	6	8.16	8	21.22	22
Sargodha	32	195.96	100	116.52	59	44.71	23	43.20	22	5.59	3	3.04	2	11.13	6	8.80	4	20.91	11	58.53	30
Bannu	39	187.28	100	131.99	70	58.25	31	30.89	16	8.30	4	7.94	4	17.06	9	9.55	5	16.39	10	38.90	21
Mianwali	32	168.24	100	100.56	60	38.83	23	31.50	19	4.93	3	3.51	2	11.84	7	9.95	6	19.73	12	48.31	29
Lyallpur	47	158.61	100	98.41	62	42.94	27	25.61	16	3.71	2	3.87	2	12.02	8	10.26	6	14.65	9	45.55	29
Jacobabad	32	208.26	100	114.14	55	65.46	31	32.09	15	6.43	3	2.50	1	3.76	2	5.61	3	32.97	16	60.55	29

expenditure is highest in the poorest districts whereas expenditure on clothing and footwear shows small interdistrict variation. This finding suggests a low expenditure-elasticity for this item and it may lend support to the theory that farmers even in deficit areas have to market some of their food products in order to obtain a certain amount of other basic necessities such as clothing and footwear.

In order to bring out the regional differences in consumption standards more clearly, the districts were divided into two groups, those with high productivity per acre and per rural person and those with low agricultural income. The comparison is shown in Table III.3. On the basis of the chi-square criterion, it is apparent that the poorest agricultural districts have a significantly higher percentage of families in the lower expenditure-groups.

TABLE III.3  
DISTRIBUTION OF 261 FAMILIES IN HIGH- AND LOW-INCOME  
AREAS ACCORDING TO EXPENDITURE GROUPS

Expenditure per person (rupees)	No of families	
	Low-income areas	High-income areas
	Rawalpindi, Bannu, Hazara (number of families)	Sargodha, Mianwali, Lyallpur, Jacobabad (number of families)
10—20	31	15
20—30	50	31
30—40	21	39
40—75	16	53
75+	0	5
	$\chi^2=38.23$	$\chi^2=9.4888$ .95

The conclusion that can be safely drawn from this comparison is that the available official production-statistics give a sufficiently reliable picture of relative differences in the rural standard of living between regions. They are, therefore, useful in pinpointing those geographical areas which have the greatest need but probably also the greatest limitation of effective demand for additional food imports.



### *The Impact of Government Sales Policy on Agricultural Incomes*

One factor which affects the possibility for disposal of surplus commodities on a large scale is the availability of transportation, milling and storage facilities. In West Pakistan, these are located predominantly either in the bigger cities or in traditionally surplus areas. Tables III.4 and III.5 show the distribution of total government-owned storage capacity and the location of flour mills by regions in 1961.

Since these facilities are needed for surplus disposal, the government has either prohibited the roller flour mills from milling any domestic wheat, as in Karachi, or limited it to about 10 per cent of their total output as in other cities of West Pakistan. The result has been that a substantial part of these urban markets which were previously supplied to a much larger extent from domestic surplus areas were taken over by the government for purposes of surplus disposal. The data in Table III.6 demonstrate the resulting imbalance between domestic surplus and deficit areas and sales of imported PL-480 wheat as it exists in West Pakistan.

Although there still exists the possibility for local producers to market their grain through small nonmechanized mills, the so-called *chakkis*, it is doubtful that their capacity is sufficient to make up for the loss resulting from the ban on the roller flour mills. Considering the fact that local mills are allowed to mill domestic wheat only up to 10 per cent of their capacity, it appears according to the data in Table III.6 that all the roller flour mills combined are permitted to mill only about 53,000 tons of domestic wheat annually. This was approximately 1.3 per cent of total domestic wheat production during the 1961/62 cropyear and less than 5 per cent of the estimated marketable surplus in a good cropyear.

Under these administrative arrangements, it appears that the excess domestic supplies, which during the 1961/62 year have been usually large, had to be marketed either in areas where they were produced or in the areas where the nutritional gap is greatest. Since the

TABLE III.4

PRESENT GOVERNMENT STORAGE CAPACITY AND CAPACITY  
PLANNED DURING SECOND-PLAN PERIOD

Region	Capacity as of Dec. 1961 (000 tons)	Per cent of total	Capacity to be added during 2nd Plan (000 tons)	Total after 2nd Plan (000 tons)	Per cent of total
Lahore ...	153	29.9	148	301	31.5
Bahawalpur ...	64	12.5	5	69	7.2
Peshawar ...	39	7.6	38	77	8.0
Hyderabad ...	84	16.4	138	222	23.2
Quetta-Kalat ...	31	6.1	16	47	4.9
Karachi ...	140	27.4	100	240	25.1
<b>Total</b> ...	<b>511</b>		<b>445</b>	<b>956</b>	

Source: Planning Commission, Government of Pakistan.

TABLE III.5

LOCATION AND CAPACITY OF ROLLER FLOUR MILLS IN  
WEST PAKISTAN (EXCL. KARACHI) AS OF JULY 1961

Region	Division	No. of mills	Capacity (tons)	Percentage of total capacity
Lahore ...	Lahore ...	15	189,902	36.3
	Sargodha ...	6	158,232	30.2
	Rawalpindi ...	3	34,094	6.5
Bahawalpur ...	Multan ...	3	25,995	4.6
Peshawar ...	Peshawar ...	1	54,872	10.5
Hyderabad ...	Hyderabad ...	4	45,152	8.6
	Khairpur ...	1	14,576	2.8
<b>Total</b> ...		<b>33</b>	<b>522,823</b>	<b>100.0</b>

Source: Planning Commission, Government of Pakistan.

TABLE III.6  
REGIONAL DIFFERENCES IN FOODGRAIN PRODUCTION AND DISPOSAL OF PL-480 WHEAT  
IN WEST PAKISTAN (EXCL. KARACHI)

Region	(1) Total population (million)	(2) Per cent of total population	(3) Total foodgrain production 1956/57-1958/59 Average (000 tons)	(4) Foodgrain production per person (tons)	(5) Average annual sales of PL-480 wheat 1957/58-1961/62 (tons)	(6) Per cent of total sales under PL-480 (excl. Karachi)	(7) PL-480 wheat sales per person (pounds)
Peshawar <sup>a</sup>	7.548	18.5	609.8	0.08	95,420	17.2	26.5
Lahore <sup>b</sup>	16.405	40.3	2,426.2	0.15	377,344	68.0	50.7
Bahawalpur <sup>b</sup>	9.177	22.5	1,389.2	0.15	8,212	1.5	2.2
Hyderabad <sup>b</sup>	6.424	15.8	1,121.4	0.17	42,166	7.6	15.4
Quetta <sup>a</sup>	1.161	2.9	126.4	0.11	32,307	5.7	61.7

Sources: Col (1): Ministry of Home Affairs, Government of Pakistan, *Population Census of Pakistan, 1961*. (Karachi: Manager of Publications, October 1961).

Col (2): Planning and Development Department, Government of West Pakistan, *Statistics of West Pakistan, Agricultural Data*. (Lahore: 1960 (Processed).

Col (5): Food Department, Government of West Pakistan, private communication, July 16, 1962.

<sup>a</sup>) relative deficit areas.

<sup>b</sup>) relative surplus areas.

latter had neither the necessary marketing facilities nor sufficient real demand to absorb appreciable quantities, most of the excess domestic wheat had to be absorbed in the producing areas resulting in substantial decreases in prices received by West Pakistan farmers, particularly in those areas which have traditionally marketed the relatively largest percentage of their wheat output.

Although the available price data have severe limitations for analytical purposes, we have plotted weekly wheat prices in three important West Pakistan marketing centres for the calendar years 1961 and 1962 (*cf.*, Figures III.2 and III.3). These have been the first full years since wheat prices were decontrolled in April of 1960.

These two years are typical for the behaviour of wheat prices in Pakistan. There is a very sharp break in prices at the beginning of the harvesting season at about the second week of May. Prices then gradually recover reaching their highest level during the January-March period. The volume of farm marketings is largest immediately after harvest from about May to August.

With respect to domestic production, 1961 was an average year whereas 1962 was considerably above the average of the last 10 years. This is clearly reflected in the prices prevailing in all three markets. What is important for judging the impact of the government's PL-480 sales policy is the fact that the average percentage difference in prices between the surplus market (Multan) and the remaining markets was substantially larger during 1962 than in 1961 (*cf.*, Table III.7). This suggests first of all that, in the biggest surplus areas such as Multan and Bahawalpur, the elasticity of marketing with respect to production is likely to be much larger than unity and, secondly, it suggests that the greatest loss in income was experienced by the farmers in these surplus areas. For reasons which will be explained later, these are also the areas where the price elasticity of supply is likely to be highest.

On interpreting the weekly price data, it must be pointed out furthermore that these are wholesale prices and not prices received by

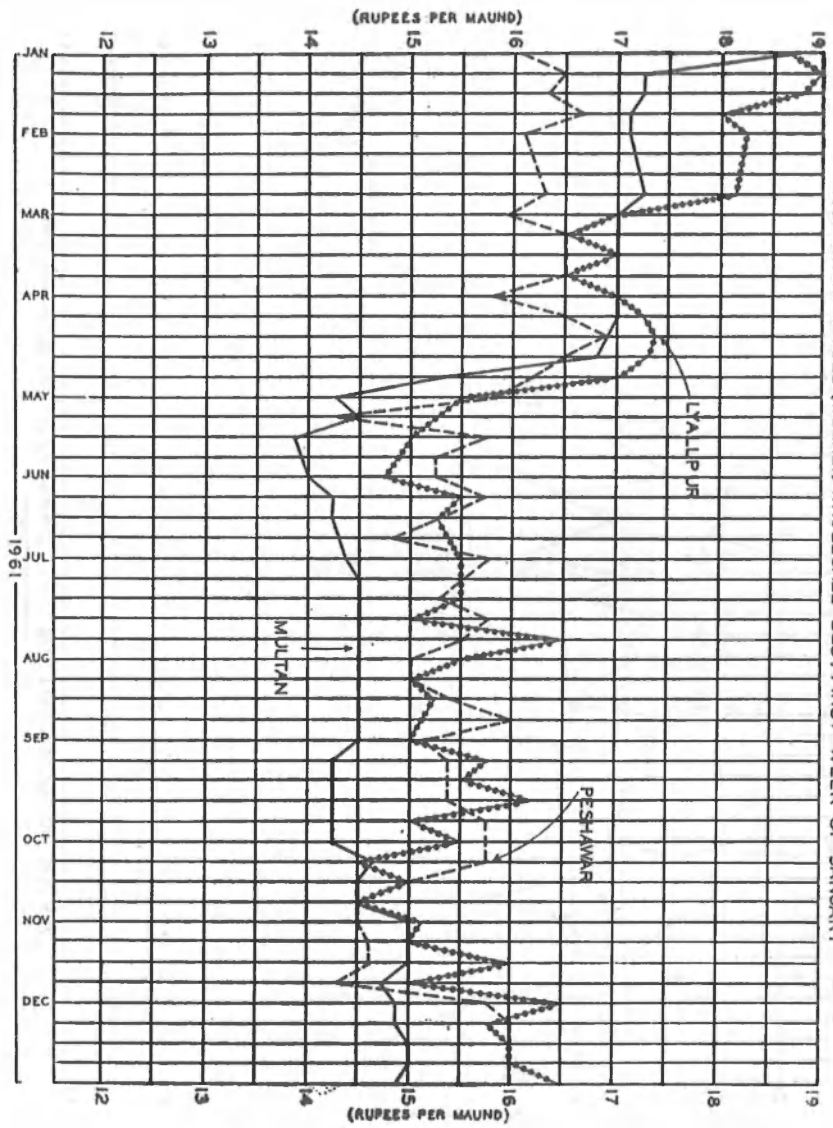
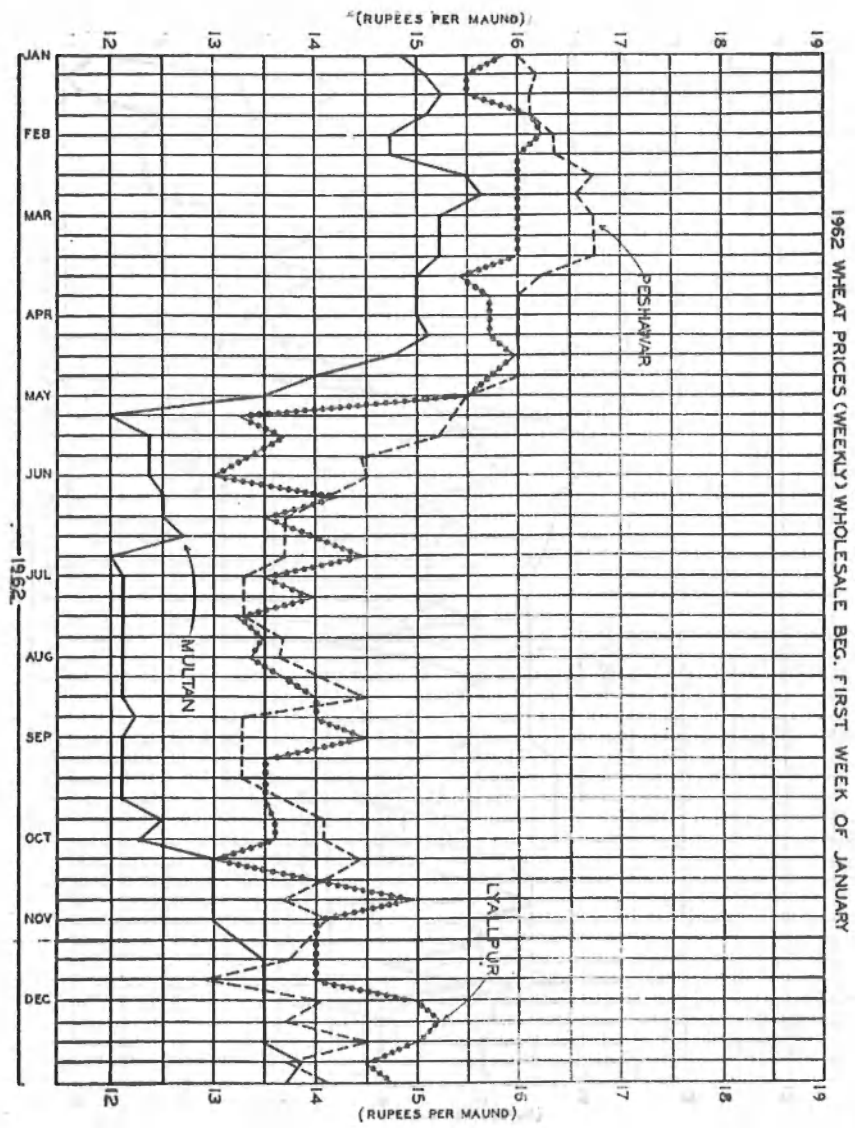


FIGURE III. 2  
1961 WHEAT PRICES (WEEKLY) WHOLESALE BEG. FIRST WEEK OF JANUARY



farmers. Although no reliable farm-price series exist in Pakistan, it is safe to assume that farm prices are at least 15-20 per cent below the reported wholesale prices.

TABLE III.7  
MONTHLY AVERAGE WHOLESALE PRICES FOR WHEAT IN LYALLPUR  
AND MULTAN AND RATIO BETWEEN THE TWO MARKETS

Month	1961			1962		
	Lyallpur (Rs./maund)	Multan (Rs./maund)	Ratio	Lyallpur (Rs./maund)	Multan (Rs./maund)	Ratio
May	15.25	14.13	1.08	13.97	12.56	1.11
June	15.17	14.17	1.07	13.85	12.43	1.11
July	15.60	14.48	1.08	13.56	12.13	1.12
August	15.25	14.50	1.05	13.79	12.17	1.13
September	15.50	14.30	1.08	13.73	12.20	1.12
October	14.88	14.47	1.03	13.88	12.75	1.09
6-month average	15.28	14.34	1.06	13.80	12.37	1.12

Source: Appendix Tables C-21 and C-22.

If city consumers had been given a free choice between domestic and imported wheat, it is almost certain that overall wheat prices would have been somewhat higher but the sales of PL-480 wheat would have been much smaller, particularly during the year 1962 when domestic wheat production was considerably above the average of the past 5 years.

*Farmer's Response to Price Changes under Conditions Prevailing  
in Pakistan*

On the basis of the available evidence, there can be little doubt that the inflexible disposal policy for PL-480 wheat on the part of the Government of Pakistan has resulted in substantial income losses to the domestic agricultural sector. But before one can determine to what extent this loss in income will affect domestic supply of agricultural products, some agreement about short-run and long-run policy objectives for agriculture in this country are necessary. Without such a point of reference it is difficult to analyse any impact of surplus disposal which may exist.

To establish such a point of reference it should be remembered that the present organization of the cropping pattern of the so-called 'subsistence units' is not exchange oriented but rather designed to provide the peasant and his family with a more or less adequate diet throughout the year, that is, from one harvest to the next. The opportunity cost of providing himself with this secure year-round food supply may be very high. The difference between the opportunity cost of the available inputs and the market value of output resulting from the crop rotation presently followed can serve as an index of the "informal insurance premium" which each individual and in the aggregate the nation pays to provide this individual security of food supply. In Pakistan, this "insurance-oriented" cropping pattern is characterized by a high percentage of foodgrains, either rice or wheat, which make up 50-90 per cent of the planted acreage on the smallest units and decreases in favour of cash crops (cotton, sugarcane, jute, *etc.*) as the unit of cultivation increases.

One important objective of long-run development policy would appear to be to move gradually towards a cropping pattern which conforms more closely with regional comparative cost advantages and allows for a better year-round utilization of resources on the farm. In pursuing this long-run objective, it may well be that self-sufficiency in foodgrains for the country as a whole is an unrealistic goal and that at least a certain portion of total foodgrain needs should be met through imports from abroad in exchange for other agricultural pro-



ducts that can be produced at lower real-cost at home. To achieve this long-run policy objective one would have to try to remove the causes of the uncertainty which presently prevent the agriculturist from following a cropping pattern which uses the available resources more efficiently. Price uncertainty is one, but only one of these factors. If the surplus-disposal programme can be operated in such a way that it contributes to greater price stability (between seasons as well as between good and bad cropyears), it would contribute towards the achievement of this long-run policy objective.

Whatever be the long-run aims of agricultural policy, for the time being Pakistan's short-run objective as stated in the *Second Five Year Plan* is to achieve self-sufficiency in foodgrain production at the pre-second-plan levels of consumption<sup>10</sup> by the end of the second-plan period. It seems important, therefore, to consider the available evidence on price elasticity of supply in order to determine if a fall in the relative prices of foodgrains would be likely to work against this short-run policy objective.

One argument which must be mentioned first in this connection is the theory of the backward-sloping supply curve<sup>11</sup>. It says that the quantity of marketed grain surplus on subsistence farms in underdeveloped countries is inversely related to price changes in view of the cultivator's fixed cash needs. In years of high prices, he has to market less than in years of low prices to obtain a fixed amount of cash; the acreage planted remains constant regardless of price movements. Khatkhate<sup>12</sup>, in a recent article, has used this argument to rule out any possible negative impact of surplus disposal on farm production in India.

While there is undoubtedly some merit in this argument, the available statistical evidence suggests that it has more relevance with

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10. *The Second Five Year Plan, op. cit.*, p. 133.

11. See, for example, P.N. Mathur and H. Ezekiel, "Marketable Surplus of Food and Price Fluctuations in a Developing Economy", *Kyklos*, Vol. 14, 1961, pp. 396-408.

12. D. R. Khatkhate, "Some Notes on the Real Effects of Foreign Surplus Disposal in Underdeveloped Economies", *Quarterly Journal of Economics*, Vol. 56, No. 2, May 1962.

respect to the number of farmers than with respect to total acreage and production. A study on size distribution of farms in the former North West Frontier Province shows, for example, that 75 per cent of the peasant proprietors had holdings below 10 acres in size but they commanded less than 40 per cent of the total acreage<sup>13</sup>. A similar study for East Punjab, one of the relatively more prosperous farming areas in India, suggests that 55 per cent of the cultivators had holdings below 15 acres in size but they commanded only 28 per cent of the cultivated acreage<sup>14</sup>. Studies conducted in other areas of the sub-continent come to similar conclusions.

With respect to marketable surplus, Khatkhate indicates that, up to the 10-15 acre size group, the marketable surplus as a proportion of the value of output tends to decline but it increases again after that point<sup>15</sup>. It appears, therefore, that the backward-sloping supply curve may apply to those holdings which fall below the subsistence minimum but does not apply to those farmers—perhaps small in number—who command the biggest part of the cultivated acreage.

Turning now to the statistical evidence on supply elasticity, the few studies which have been conducted in Pakistan and India show greater variability as well as a higher and statistically more significant price-response for cash crops than for food crops<sup>16</sup>. Falcon shows a price elasticity of  $-0.4$  for cotton when 'price' is expressed as a lagged ratio of cotton price to an index of substitute prices whereas the price

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13. Cf., C. Beringer and A. Hadi, *Land Fragmentation and Size of Agricultural Holdings in the Former North West Frontier Province of West Pakistan*. (Peshawar: Board of Economic Enquiry, Peshawar University, March 1962).

14. Ministry of Food and Agriculture, Government of India, Directorate of Economics and Statistics, *Studies in Economics of Farm Management in Punjab, Report for 1955-56*.

15. Cf., "Some Notes on Real Effects of Foreign Surplus Disposal in Underdeveloped Countries", *op. cit.*

16 See, for example, the following recent studies:

a) N. A. Khan, *Problems of Growth of An Underdeveloped Economy*. (Bombay: Asia Publishing House, 1961). The author shows for example that for acreage time series between 1917/18 the 1939/40 the standard deviation of food crops (wheat and rice) was much lower than that for cash crops (jute and cotton).

(Footnote continued on page 55)

elasticity of supply for wheat in irrigated areas is shown to be only +0.2. Considering the geographical distribution of cash crops and food crops, this result is not surprising. It was shown earlier that the largest percentage of cash crops is grown in the more prosperous areas and within these areas predominantly by the above-subsistence-level farmers. The estimates of supply elasticity for cash crops are, therefore, derived from a much narrower universe than those for food crops. If it were possible to derive both elasticity estimates from approximately the same universe (such that below-subsistence farms and areas which are low in cash crops could be eliminated), it should be expected that the supply elasticity for foodgrains would also become more meaningful and its value would increase approaching that for cash crops. Falcon summarizes this point in the following way<sup>18</sup>:

“... One of the most important factors of the wheat supply analysis is the effect which climatic restrictions are shown to have on price responsiveness. In the rainfall (barani) areas of northwest Punjab only a very few production substitutes are possible because of a lack of rainfall. In this area wheat acreage tends to be a constant percentage of total fall sown acres. On the other hand in the irrigated area which is slightly more commercialized and where a much wider diversity of cropping alternatives was possible, wheat acreage was positively correlated with a lagged ratio of wheat to sugarcane prices.”

The fact that the cash-crop-growing areas are also the principal suppliers of the marketable surplus of wheat is brought out clearly in Table III.8 which shows government procurement by regions during the period before wheat rationing and price control were abolished in 1960.

(Footnote continued from page 54)

b) W. P. Falcon, *Farmer Response to Price in an Underdeveloped Area, A Case Study of West Pakistan*. Unpublished Ph.D. dissertation, Harvard University, 1962.

c) R. Krishna, *Farm Supply Response in the Punjab (India-Pakistan), A Case Study of Cotton*. Unpublished Ph.D. dissertation, University of Chicago, 1961.

18. *Farmer Response to Price in An Underdeveloped Area* ....., *op. cit.*, p. 6.

**TABLE III.8**  
**GOVERNMENT PROCUREMENT OF WHEAT**  
**(1954/55—1959/60 Annual Average)**

Region	Procurement (tons)	Per cent of total procurement	Per cent of total production (1959-60)	Procure- ment as per cent of production
Former Punjab	215,868	62.8	69.0	8.4
Former Sind incl. Khairpur	77,628	22.6	11.7	17.8
North West Frontier	4,290	1.2	8.0	1.4
Bahawalpur	38,151	11.1	9.6	10.8
Kalat	2,550	0.7	{ 1.4	{ 14.0
Baluchistan	4,985	1.4		
<b>Total</b>	<b>343,771</b>	<b>100.0</b>	<b>100.0</b>	

*Source* : Food Department, Government of West Pakistan, private communication.

On the basis of those considerations, it appears that, if as a result of the surplus-disposal programme prices received by farmers for food crops fall in relation to prices received for cash crops, it is likely that *on the larger farms* and in the more commercialized segments of agriculture, acreage or input substitution in favour of cash crops will take place. Since these farmers have been traditionally the most important suppliers of wheat to the urban centres, total marketed surplus is likely to decline at a much faster rate than total production. The fact that commercial marketings may suffer more than total production is a factor which is of particular concern in an under-developed country where the biggest problem is not only to increase output but simultaneously to increase commercial marketings. Also it may not be possible for agriculture to respond with increasing output and more rational cropping-patterns unless opportunities for commercial marketing are opened up through government policy. Present PL-480 disposal policy in Pakistan works in the opposite direction.

#### SECTION IV

##### SUMMARY AND CONCLUSIONS

The conclusions that have been reached in the foregoing analysis must seem in many ways paradoxical. On the one hand, we have argued that PL-480 imports were necessary to the development effort in Pakistan; they have effectively relieved the pressure on the balance of payments as well as contributed greatly to maintain a stable domestic price-level particularly in West Pakistan (*cf.*, Appendix Table C-23). On the other hand, it is quite evident that the way in which these imports were handled in West Pakistan they had significant negative income-effects on domestic agriculture.

Looking at the PL-480 programme in Pakistan in historical perspective, it has become apparent that particularly during the earlier period (1955-1960) it helped greatly in checking a potentially dangerous inflationary trends in food prices which could have had undesirable effects on the general development effort. This price-stabilizing effect was supported by the rapid accumulation of local currencies in the United States Account in the State Bank of Pakistan which increased at a much faster rate than disbursements. The negative implications of huge local-currency accumulations in US-owned accounts were also brought out in this paper. It has become obvious that even an unintentional mishandling of these funds can bring about undesirable political situations which are hardly counterbalanced by the political advantages of maintaining the fiction that these commodity transfers are actual 'sales'. It would seem more realistic to treat these transfers like other grants or to amend the law such that it would impose definite limits on the amount of local currencies that can be owned by the donor country. Accumulations in excess of that amount would automatically revert to the recipient country as grants although it is conceivable that, like other counterpart funds, their spending could take place only in consultation with the United States authorities.

One purpose of this paper was to illustrate how surplus commodities can be used to enlarge the size of the regular-development plan. In this connection it was shown that, given the present composition of PL-480 imports, development expenditures would have to increase by

a multiple of the value of imports if these commodities are to be absorbed without negative effects on prices received by domestic agricultural producers. It was also shown that this problem is less serious if additional development expenditures can be directed towards those geographical areas of the country where expenditure patterns fit most nearly the product mix of the surplus-commodity programme.

With respect to estimating import requirements and absorption capacity, it has been shown that the 'food balance-sheet' method is not likely to be a useful estimating procedure. One of the reasons is that the available population and production statistics are not accurate enough to permit meaningful estimates of food deficit in absolute terms. More important, the method fails to take account of the fact that the food deficiency is not spread uniformly over the whole country but tends to be localized in certain geographic regions. This makes it imperative to take account of deficiencies in effective demand in these areas in the projection of import requirements and absorption capacity.

As the Planning Commission has used the food balance-sheet method for estimating import requirements under the Expanded PL-480 Programme, it was not surprising that in the case of wheat their original estimates were more than 100 per cent above the amounts which could be imported in West Pakistan in recent years.

One factor which has prevented imports and consumption from reaching the level originally projected was the fact that the public-works programme proposed to be carried out in connection with the Expanded PL-480 Programme could be implemented only to a very limited extent. Originally, the works programme was expected to absorb Rs. 160 crores over a four-year period, an amount equivalent to one-half of the sales value of projected PL-480 imports. It is now estimated that by the end of the second-plan period the amount of local currencies which can be absorbed in this way will be at the most Rs. 60 crores, roughly one-third of the amount estimated earlier.

To avoid the negative impact on agricultural prices and incomes, as has occurred particularly during the 1961/62 cropyear, it is essential that the government relax the present ruling of a partial ban on the marketing of domestic foodgrains. The effects of this policy were

analysed in detail in Section III. In view of the unpredictability of domestic output, it appears that the answer to the problem is to have sufficient storage capacity to accommodate the domestic marketable surplus as well as a sufficient bufferstock of PL-480 foodgrains. The presently available government storage-capacity of approximately 600,000 tons seems entirely insufficient for this purpose in view of the fact that in a good cropyear the domestic marketable surplus alone is likely to be more than that amount. It is, therefore, unfortunate that the construction of storage facilities planned for the period of the Second Five Year Plan is lagging far behind the schedule<sup>1</sup>.

If sufficient storage space were available, the Government of Pakistan would be in a position to maintain a ceiling price on wheat which would protect the urban consumer and at the same time permit local producers to compete freely with imported commodities.

On the basis of our analysis, it also appears that, in an under-developed country such as West Pakistan, it is not possible initially to fill the entire nutritional gap with surplus foods from abroad without simultaneously affecting domestic agriculture. If this problem is to be overcome it will be necessary, in addition to constructing storage facilities, to concentrate development projects in the food-deficit areas so as to create additional effective demand. Often this approach cannot be followed easily because many of these areas lack the natural resources (e.g., water) which are the basis for large-scale public-works projects. If this is the case, then a recruiting of surplus labour from these deficit areas for work on projects elsewhere in the economy would be an alternative approach.

In conclusion, we should like to point out that there is a danger that the relatively stable urban food-price situation which has been maintained with the help of PL-480 imports is beginning to blur the government's vision of the seriousness of the agricultural supply situation in Pakistan. The preliminary outlines for the Third Five Year

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1. The *Midplan Review* of the *Second Five Year Plan* indicates that the plan target is to spend Rs. 18.5 crores for construction of foodgrain storage. In the first two years of the Plan, only Rs. 3.6 crores of this allocation were utilized which leaves a balance of Rs. 14.9 crores to be spent in the remaining three years (*cf. Midplan Review, op. cit.*, p. 93).

Plan which are presently circulated for comments suggest that the Planning Commission intends to reduce substantially the percentage allocation for agriculture in the total investment budget. During the Second Five Year Plan this allocation came to about 17 per cent of total investment expenditure in the Public Sector.

If the gap between domestic food production and demand is allowed to widen, it is possible that not the availability of surplus foods from abroad but rather domestic absorption potential (*i.e.*, marketing and transportation facilities) will determine to what extent a stable domestic price level can be maintained. In East Pakistan, it is already apparent that port facilities, milling and inland transportation and storage are entirely inadequate to handle the surplus wheat that could be made available to that wing under PL-480. As a result, prices for rice have reached a level above 30 rupees per maund in the interior of the country while government wheat sells officially for Rs. 12.50 per maund where it can be made available. It is conceivable that a similar situation can develop in West Pakistan unless either domestic supply increases or marketing and distribution facilities are improved.



## **Appendix A**

### **A NOTE ON IMPORTING PROCEDURES OF PL-480 COMMODITIES**

The Economic Affairs Division of the President's Secretariat acts as the major channel of communication between the Government of Pakistan and the Government of the United States. In the case of wheat and rice, import requirements are determined by the provincial departments and central ministry of food and agriculture on the basis of production estimates. For other commodities, estimates of import requirements are based on requests received from private imports and industrialists.

After the annual import requirements have been determined by the Economic Affairs Division, a request for purchase authorizations is made to the Foreign Agricultural Service (USDA) either through the local US Embassy or through the Pakistan Embassy in Washington.

For commodities to be imported through commercial channels (at present, everything except wheat), the Government of Pakistan issues subauthorizations to private importers. These are, in effect, import licences which specify quantities and shipping costs. The private importer then arranges the purchase with US exporters at prevailing market prices. The Controller of Imports and Exports in Pakistan checks sales contracts in order to prevent any irregularity.

The Pakistan importer opens a letter of credit with his own bank which, in turn, deposits in a "Designated Pakistan Bank" an amount equivalent to the value of imports plus that part of the shipping costs which was incurred on US vessels. This bank, in turn, notifies the corresponding 'Designated Bank' in the United States that the rupee payment has been made. The US bank then informs the US exporters and the Commodity Credit Corporation which in turn credits the exporter with the equivalent dollar amount.

In the case of wheat, which is imported directly by the Government, the purchasing and shipping arrangements are made by the Pakistan Embassy in Washington. The wheat may be bought from Commodity-Credit-Corporation stocks or from private exporters. Because the US Government is subsidizing wheat exports, the price paid is about 30 per cent lower than the prevailing support price in the United States. After the wheat arrives in Pakistan, the central ministry of food and agriculture makes the arrangements for its distribution in coordination with provincial departments.

After the wheat import requirements have been determined by the Economic Affairs Division, a request for purchase authorizations is made to the Foreign Agricultural Service (FAS) either through the local US Embassy or through the Pakistan Embassy in Washington.

For commodities to be imported through commercial channels, the importer must obtain a license from the Government of Pakistan. These licenses are issued to private exporters or to private importers. The private importers then arrange the purchase with US exporters or receiving agents. The Government of Pakistan and the US Embassy in Pakistan coordinate the import and export arrangements.

The Pakistan importer opens a letter of credit with his own bank. The bank then issues a "Designated Pakistan Bank" on amount equivalent to the value of imports plus that part of the shipping costs which was incurred on US vessels. This bank, in turn, notifies the corresponding US bank in the United States that the import payment has been made. The US bank then informs the US exporters and the Commodity Credit Corporation which in turn credits the exporters with the equivalent dollar amount.

## **Appendix B**

### **A NOTE ON THE ESTIMATION OF INCOME ELASTICITIES FOR RURAL CONSUMERS IN WEST PAKISTAN**

The analysis of consumption expenditure reported in this note is based on a subsample of the third round of the National Sample Survey. Details as to how this subsample was chosen have been outlined in Section III.

#### *Distribution of Expenditure by Expenditure Groups*

The percentage distribution of consumption expenditure classified by expenditure groups is shown in Appendix Tables C-18 and C-19. Taking total expenditure equal to 100, it is apparent that the percentage spent on food decreases consistently with rising expenditure levels. Among the individual items of consumption, a number of factors deserve mention: *i*) cereals are a rapidly declining component of total expenditure as people become better off; *ii*) there appears to be a significant increase in the consumption of milk and ghee as well as sugar and gur but no strong tendency to shift into meat consumption as one could expect on the basis of expenditure data for Western countries; *iii*) the outlay for clothing is a slightly decreasing percentage of total expenditure whereas nonfood items other than clothing show a rapid increase as the expenditure levels go up. The changing importance of various items in the consumer's food budget is brought out in Appendix Table C-19 where nonfood expenditures have been omitted.

These conclusions are further supported, if we compare the results of food-consumption surveys for rural families conducted in other countries with the results obtained in the IDE subsample (*cf.*, Appendix Tables C-20a and C-21b). An international comparison of this kind is necessarily crude as it hides differences in relative prices as well as in quality and composition of different food groups. Nevertheless, a few observations can be made which are relevant to our subject and which will suggest the direction in which consumption patterns are likely to change in the process of economic development.

With the exception of Japan, it appears that the percentage of total food expenditure spent on cereals and starches decreases rapidly as income per person rises, whereas meat, fish and eggs make up a rising proportion of total food expenditure. Sugar does not appear to have a high income-elasticity between expenditure groups. There is a strong tendency for carbohydrates and starches to be replaced by fats and proteins as sources of energy. This conclusion agrees with the results of other econometric studies<sup>1</sup>.

While in most Western countries with high per-capita income meat is the primary source of proteins in the human diet, the consumption surveys conducted in India and Pakistan show a completely different picture for these countries. Meat remains relatively unimportant in the consumer budget even at relatively high income-levels and most of the increased protein consumed is derived from milk and milk products. The low importance of meat in the general diet even at the highest expenditure levels appears to be a cultural characteristic of the demand pattern in the subcontinent. The prevailing climatic conditions and the difficulty of preserving meat for any length of time may be primarily responsible. As the input-output coefficients of these two foodgroups (milk and meat) are partially related (*i.e.*, an increased supply of milk is likely to result in an increased supply of meat), the prevailing preference pattern may be the cause of the relatively low meat-prices which prevail in Pakistan.

#### *Estimation of Income Elasticities*

In the absence of reliable data on income, it was decided to estimate first the expenditure elasticities and later on make the necessary adjustment based on estimates of the aggregate marginal and average savings ratio for the economy as a whole. As long as the marginal propensity to save is greater than the average propensity, the resulting income-elasticity estimates will always fall below the corresponding estimates of expenditure elasticity.

Due to limitations on time and personnel, it was necessary to limit ourselves to discrete estimates of expenditure elasticity rather

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1. See, for example, L. Jureen, "Long Term Trends in Food Consumption", *Econometrica*, Vol. 24, January 1956, pp. 1-21.

than to fit continuous functions and to derive expenditure elasticities on that basis.

The estimate of average expenditure elasticity was obtained by using the following equation:

$$E_c = \frac{\frac{\Delta E}{E_1 + E_2}}{\frac{\Delta X}{X_1 + X_2}}$$

where  $E_1$  and  $E_2$  refer to expenditure on a particular item while  $X_1$  and  $X_2$  refer to average total monthly expenditure below and above the medium expenditure per family.

The expenditure-elasticity estimates derived on this basis are shown in Column (1) of Appendix Table B-1.

The average elasticity estimates shown in Table B-1 seem to be consistent with similar estimates derived from data in India. Within the cereal group, it is significant that 'minor cereals'—included in this group are bajra, jowar, maize and barley—show a negative expenditure-elasticity. The expenditure elasticity for 'all cereals' is, therefore, somewhat lower than the corresponding estimate for wheat and rice taken alone. As the regional analysis presented in Section III suggests, however, this result may be misleading if it is thought that people in the lowest income-group in all regions consume necessarily a larger proportion of minor cereals as compared to wheat and rice. The fact is that the poorest rural areas of the country are those where minor cereals predominate in the cropping patterns and they are, therefore, consumed largely in these areas. A similar relationship as that found between major and minor cereals can be found for sugar and gur. Sugar, a rich man's good, has a much higher expenditure-elasticity than the unrefined product—gur.

In deriving income elasticities from expenditure-elasticity estimates, use has been made of the data presented in the Planning Commission's *Midplan Review*. There it is indicated that the average rate

of domestic saving was approximately 6.6 per cent in 1959/60, and rose to 8.1 per cent during the second year suggesting an average rate of 7.3 per cent. The marginal savings rate is substantially higher, having been 12.4 per cent during the first year of the Second Plan and having risen to 21.8 per cent in 1961/62 for an average rate of 17.1 per cent. Recalling that the income elasticity can be derived from expenditure elasticity by multiplying the latter by the elasticity of aggregate consumption with respect to income, we obtain<sup>2</sup>:

$$E_y = E_e \left[ (.829) \left( \frac{100}{92.7} \right) \right]$$

$$E_y = E_e \left[ 0.89 \right]$$

Table B-1 shows the average expenditure-elasticity as well as the income-elasticity estimates derived on that basis.

2. Derivation of income elasticity from expenditure elasticity:

$$\text{let } E_e = \frac{\Delta E}{\Delta X} \cdot \frac{X}{E} \quad (\text{expenditure elasticity})$$

$$\text{and } E_y = \frac{\Delta E}{\Delta Y} \cdot \frac{Y}{E} \quad (\text{income elasticity})$$

$$\text{then } \frac{\Delta E}{\Delta Y} = \frac{\Delta E}{\Delta X} \cdot \frac{\Delta X}{\Delta Y}$$

$$\text{and } \frac{Y}{E} = \frac{X}{E} \cdot \frac{Y}{X}$$

$$E_y = \left[ \frac{\Delta E}{\Delta X} \cdot \frac{X}{E} \right] \cdot \left[ \frac{\Delta X}{\Delta Y} \cdot \frac{Y}{X} \right]$$

$$E_y = E_e \left[ \frac{\Delta Y - \Delta S}{\Delta Y} \right] \cdot \left[ \frac{Y}{Y - S} \right]$$

TABLE B-1  
**AVERAGE EXPENDITURE ELASTICITIES AND DERIVED  
 INCOME ELASTICITIES**

Items	Expenditure elasticity ( $E_e$ )	Income elasticity ( $E_y$ )
All food	0.84	0.75
All nonfood	1.28	1.14
Wheat and rice	0.79	0.70
Minor cereals	-1.02	-0.91
All cereals	0.53	0.47
Milk and ghee	1.22	1.08
Meat and fish	1.34	1.19
Sugar and gur	1.06	0.94
Sugar	1.06	1.42
Gur	0.64	0.57
Fruits and vegetables	0.79	0.70
Clothing	0.90	0.80

If the marginal propensity to save out of additional income is lower for the rural population than for the country as a whole, then the income elasticities as shown in Table B-1 would be biased downward. However in the absence of reliable savings estimates for the rural sector alone, we had to use the aggregate savings figures as the best available approximation.

Comparison of the income-elasticity estimates derived from the IDE subsample with similar estimates made in India for rural and urban consumption data is shown in Table B-2 below. Although it would be inappropriate to place too much confidence in the absolute level of any of these estimates, a few important hypotheses emerge: *i*) the income elasticity for all foods is significantly lower than for nonfoods; *ii*) the income elasticity for foodgrains is the lowest within the food group and it is significantly lower in urban than in rural areas; *iii*) the income elasticity for minor cereals is negative; *iv*) the

income elasticity for milk and milk products coupled with the fact that this item represents a high proportion of food expenditure even in the lowest income-group suggests that changes in income will result in significant increases in demand for these products.

TABLE B-2  
COMPARISON OF RURAL AND URBAN INCOME-ELASTICITY  
ESTIMATES (INDIA AND PAKISTAN)

Commodity	IDE sub-sample of Pak. NSS third round (rural)	NSS India		Coale and Hoover		Farid-abad Township (Urban)
		Rural	Urban	Rural	Urban	
	(1)	(2)		(3)		(4)
All food	0.75	—	—	0.85	0.81	0.57
All nonfood	1.14	—	—	—	—	1.25
Wheat and rice	0.70	0.55	0.12	—	—	—
Minor cereals	-0.91	-0.83	-1.32	—	—	—
All cereals	0.47	0.52	0.28	0.75	0.52	0.22
Milk and ghee	1.08	—	—	1.37	1.35	0.93
Meat and fish	1.19	—	—	0.90	1.03	1.29
Sugar and gur	0.94	—	—	0.77	0.64	0.58
Sugar	1.42	—	—	—	—	—
Gur	0.57	—	—	—	—	—
Fruits and vegetables	0.70	—	—	—	—	—
Edible oils	—	0.89	0.78	0.90	0.85	0.57
Clothing	0.80	0.65	0.70	—	—	—

Sources : Col. (1): Table B-1.

Col. (2): National Council of Applied Economic Research, *Long Term Projection of Demand for and Supply of Selected Agricultural Commodities 1960/61 to 1975/76*. (Delhi: National Council of Applied Economic Research, 1961).

Col. (3): *Population Growth and Economic Development in Low Income Countries, op. cit.*, p. 124.

Col. (4): Computed on the basis of data presented in *Uses of Agricultural Surpluses to Finance Economic Development in Underdeveloped Countries, op. cit.*, p. 50.



## APPENDIX C

### STATISTICAL TABLES

<i>Table C-1: Foodgrain Production in Pakistan (Official Estimates):1947/48—1962/63</i> ... ..	70
<i>Table C-2: Production Indices: 1947/48—1950/51 (Average = 100)</i> ...	71
<i>Table C-3: Cotton and Jute Production and Exports</i> ... ..	72
<i>Table C-4: PL-480 Title-I Agreements Between Pakistan and USA: 1955-1961</i> ... ..	73
<i>Table C-5: United States Economic Assistance to Pakistan Under PL 480</i>	74
<i>Table C-6: Commodity Composition of PL-480 Title-I Agreements</i> ...	75
<i>Table C-7: Commodity Composition of PL-480 Title-I Imports (Summary)</i> ... ..	77
<i>Table C-8: Composition of PL-480 Imports Requested by Government of Pakistan for 1961/62—1964/65 and Actual Expanded PL-480 Programme Allocations</i> ... ..	78
<i>Table C-9: Commodity Assistance Under PL-480 Title II</i> ... ..	79
<i>Table C-10: Status of United States-Owned Local Currencies: 1955—April 1963</i> ... ..	80
<i>Table C-11: Allocation of PL-480 Title-I Local Currencies in Seven Agreements signed between 1955 and 1961</i> ... ..	81
<i>Table C-12: PL-480 Title-I Imports</i> ... ..	82
<i>Table C-13: Imports of Wheat into Pakistan: 1951 to November 1962</i> ...	85
<i>Table C-14: Population Assumptions for West Pakistan</i> ... ..	86
<i>Table C-15a: Results of Crop-Cutting Experiments on Wheat Conducted Prior to 1956/57</i> ... ..	87
<i>Table C-15b: Results of Wheat Crop-Cutting Experiments Conducted since 1956/57</i> ... ..	88
<i>Table C-16: Villages and Number of Families Included in IDE Subsample of the National Sample Survey</i> ... ..	89
<i>Table C-17: Production Patterns in Seven Districts Covered by IDE Subsample on NSS</i> ... ..	90
<i>Table C-18: Distribution of Expenditure between Items of Consumption According to Expenditure Groups</i> ... ..	91
<i>Table C-19: Distribution of Food Expenditure According to Expenditure Groups</i> ... ..	93
<i>Table C-20a: Percentage of Total Food Expenditure Spent on Major Food Groups (Rural Consumption Surveys)</i> ... ..	94
<i>Table C-20b: Percentage of Total Food Expenditure by Major Sources of Energy</i> ... ..	95
<i>Table C-21: Weekly Wholesale Prices of Wheat in Three Markets: 1961</i> ...	96
<i>Table C-22: Weekly Wholesale prices of Wheat in Three Markets: 1962</i> ...	98
<i>Table C-23: Wholesale Prices for Wheat in Lyallpur and Peshawar: 1952/53—1961/62</i> ... ..	100

TABLE C-1  
FOODGRAIN PRODUCTION IN PAKISTAN (OFFICIAL ESTIMATES)  
1947/48—1962/63

Year	Population (million)	Wheat production (000 tons)	Rice production (000 tons)	Other foodgrain <sup>a</sup> production (000 tons)	Total foodgrain production (000 tons)	Import of wheat and rice <sup>d</sup> (tons)
	(1)	(2)	(3)	(4)	(5)	(6)
1947/48	71.1	3320.8	7418.2	980.0	11,719.0	—
1948/49	72.7	3992.9	8408.6	1200.0	13,601.5	—
1949/50	74.3	3884.4	8169.2	1210.0	13,263.6	—
1950/51	75.9 <sup>b</sup>	3949.8	8194.4	1160.0	13,304.2	—
1951/52	77.5	2984.3	7752.8	960.0	11,697.1	322,952
1952/53	79.2	2390.7	8154.2	940.0	11,484.9	1,189,567
1953/54	80.9	3610.7	9150.5	1333.0	14,091.2	134,626
1954/55	82.6	3162.1	8414.5	1150.0	12,726.6	—
1955/56	84.3	3338.6	7212.2	1268.2	11,819.0	867,579
1956/57	86.1	3605.8	9016.0	1285.7	13,907.5	1,119,507
1957/58	88.0	3543.7	8461.4	1090.3	13,095.4	1,106,760
1958/59	89.9	3785.2	7891.2	1285.3	12,901.9	486,837
1959/60	91.8	3739.9	9372.1	1197.0	14,304.1	1,640,054
1960/61	93.7 <sup>b</sup>	3805.0	1,0533.0	1093.0	15,430.0	1,382,915
1961/62	96.2	4066.4	1,0575.0	1228.0	15,869.4	1,075,913
1962/63	98.8	3961.0 <sup>c</sup>	9427.0 <sup>c</sup>	1288.0 <sup>c</sup>	14,676.0	N.A.

Sources: Col. (1): Office of the Census Commissioner, Ministry of Home Affairs, Government of Pakistan, *Population Census of Pakistan, Census Bulletin No. 2*. (Karachi: The Manager of Publications, 1961).

Cols. (2), (3), (4): i) Directorate of Agriculture, Government of East Pakistan, *Agricultural Production Levels of East Pakistan, 1947-60*. (Dacca: 1961).

ii) Planning and Development Department, Government of West Pakistan, *Statistics of West Pakistan, Agricultural Data: 1947/48-1958/59*. (Lahore: Superintendent of Printing).

Notes: a) 'Other foodgrains' include Barley, Maize, Jowar, Bajra and local varieties of cereals in East Pakistan.

b) Actual counts; the remaining population figures are interpolations.

c) Second or third but not final estimates.

d) Import data are by calendar years. The first figure relates to calendar year 1952.

TABLE C-2  
PRODUCTION INDICES: 1947/48-1950/51  
(Average = 100)<sup>a</sup>

Year	All crops	Food crops	Non- food crops	Wheat		Rice	
				Pro- duction per person	Pro- duction per person	Pro- duction per person	Pro- duction per person
1947/48	93	91	93	88	91	92	94
1948/49	104	106	103	115	107	104	105
1949/50	99	101	106	103	102	102	100
1950/51	104	103	98	104	101	102	98
1951/52	97	92	102	79	75	96	91
1952/53	100	92	110	63	59	101	94
1953/54	110	109	128	95	87	114	103
1954/55	108	100	142	84	74	105	93
1955/56	100	91	126	88	78	90	78
1956/57	114	109	127	95	82	112	95
1957/58	112	103	141	94	78	105	87
1958/59	106	97	147	100	82	98	80
1959/60	118	113	141	99	79	116	93
1960/61	125 <sup>b</sup>	120 <sup>b</sup>	145 <sup>b</sup>	100	79	131	102
1961/62	129 <sup>b</sup>	122 <sup>b</sup>	157 <sup>b</sup>	107	82	131	100
1962/63	N.A.	N.A.	N.A.	105 <sup>c</sup>	78	117	86

a) Sources: i) *Statistical Bulletin* (Central Statistical Office), Vol. 11, No. 5, May 1963. The CSO index which uses 1949/50-1952/53 as a base has been converted to the 1947/48-1950/51 base.

ii) Appendix Table C-1.

b) Provisional.

c) Second estimate.

TABLE C-3  
COTTON AND JUTE PRODUCTION AND EXPORTS

Year	Cotton			Jute		
	Production (000 tons)	Exports (000 tons)	Exports as per cent of Production	Production (000 tons)	Exports (000 tons)	Exports as per cent of production
1947/48	196	N.A.	...	1222	N.A.	...
1948/49	172	N.A.	...	978	N.A.	...
1949/50	220	N.A.	...	595	N.A.	...
1950/51	250	N.A.	...	1073	N.A.	...
1951/52	245	195.6	79	1131	872.3	77
1952/53	315	269.0	85	1218	941.7	77
1953/54	252	209.1	83	645	916.4 <sup>c</sup>	142
1954/55	280	127.3	45	833	917.7 <sup>c</sup>	110
1955/56	297	169.4	57	999	1015.0 <sup>c</sup>	102
1956/57	302	118.5	39	985	726.4	74
1957/58	303	77.8	26	1107	854.4	77
1958/59	282	82.3	29	1072	729.4	68
1959/60	291	80.1	277	958	860.2	90
1960/61	299	52.3	17	1004	526.8	52
1961/62	322	48.7	15	1244	719.4	58
1962/63	312 <sup>a</sup>	57.3 <sup>b</sup>	...	919	540.0 <sup>b</sup>	...

*Source:* Central Statistical Office, Government of Pakistan, *Pakistan, Statistical Yearbook, 1962*. (Karachi: The Manager of Publications, 1962) except for production figures for cotton and jute for the year 1962/63 and jute production figure for 1961/62 and jute export figure for 1962/63 which were taken from *Statistical Bulletin* [Central Statistical Office], May 1963.

a) Second estimate.

b) July 1962—February 1963.

c) Production figures do not account for stock accumulations from previous years; exports were, therefore, larger than current production.

**TABLE C-4**  
**PL-480 TITLE-I AGREEMENTS BETWEEN PAKISTAN AND USA**  
**1955-1961**

Sr. No.	Date of agreement	Nature of agreement	Value <sup>a</sup> (million dollars)
1.	18-1-1955	Main agreement ... ..	29.4
2.	3-3-1956	Main agreement ... ..	16.9
3.	7-8-1956	Main agreement ... ..	74.4
4.	15-11-1957	Main agreement ... ..	65.4
5.	26-11-1958	Main agreement ... ..	85.8
6.	28-1-1960	Supplementary agreement for wheat ... ..	26.0
7.	11-5-1960	Supplementary agreement for cotton, tobacco, soyabean oil ... ..	15.9
8.	27-4-1960	Supplementary agreement for skimmed milk	0.5
9.	11-4-1960	Main agreement for wheat and wheat products	72.2
10.	23-9-1960	Supplementary agreement for rice ... ..	10.3
11.	11-3-1961	Supplementary agreement for tobacco and rice ... ..	9.5
12.	22-4-1961	Supplementary agreement for wheat ... ..	9.2
13.	3-6-1961	Supplementary agreement for soyabean oil and wheat ... ..	13.2
14.	14-6-1961	Supplementary agreement for long-staple cotton	3.0
15.	12-8-1961	Supplementary agreement for wheat and cotton ... ..	12.6
16.	14-10-1961	Expanded PL 480 ... ..	621.5
<b>Total</b> ... ..			<b>1065.9</b>

*Source:* Government of Pakistan, Ministry of Finance.

a) Value of agreements including cost of ocean transportation incurred on US vessels.

**TABLE C-5**  
**UNITED STATES ECONOMIC ASSISTANCE TO**  
**PAKISTAN UNDER PL-480**  
**(as of December 31, 1962)**

Authority	Programmed		Disbursements <sup>b</sup>	
	Value (000 dollars)	per cent	Value (000 dollars)	per cent
PL 480 Title I	1,065,920 <sup>a</sup>	90	510,965	81
PL 480 Title II	82,381	7	82,381	13
PL 480 Title III	40,494	3	40,494	6
<b>Total</b>	<b>1,188,795</b>	<b>100</b>	<b>633,831</b>	<b>100</b>

*Source:* United States Agency for International Development, Karachi.

*a)* Includes Expanded PL-480 agreement for \$ 621.55 million.

*b)* Disbursements mean arrivals.

TABLE C-6  
**COMMODITY COMPOSITION OF PL-480 TITLE-I AGREEMENTS**  
*(Commodities, Quantity, Value and Ocean Freight)*

Commodity	Units (000)	Total		Agreement No. 1		Agreement No. 2		Agreement No. 3		Agreement No. 4		Agreement No. 5		Agreement No. 6		Agreement No. 7	
		Quantity	Value (000 dollar)	Quantity	Value (000 dollar)	Quantity	Value (000 dollar)	Quantity	Value (000 dollar)	Quantity	Value (000 dollar)	Quantity	Value (000 dollar)	Quantity	Value (000 dollar)	Quantity	Value (000 dollar)
Wheat	Tons <sup>a</sup>	9,343	562,900	—	—	—	—	493	25,500	600	36,600	1,250	75,200	1,375	84,500	5,625	341,100
Rice	Tons <sup>a</sup>	657	76,700	—	—	139	16,900	217	25,000	105	14,400	66	7,200	130	13,200	—	—
Cotton	Bales	580	51,240	129	21,500	—	—	43	7,500	—	—	12	3,400	10	2,940	386	15,900
Tobacco	Lbs.	18,888	17,800	4,030	3,300	—	—	1,747	1,500	—	—	1,111	1,000	4,000	4,000	8,000	8,000
Dairy products	Lbs.	35,936	7,090	4,353	2,400	—	—	637	100	4,037	2,200	4,815	590	—	—	22,046	1,800
Vegetable oils	Lbs.	1,070,600	160,350	3,129	1,000	—	—	13,749	2,400	—	—	172,635	22,400	43,339	6,900	837,748	127,650
Poultry and eggs	Lbs.	1,543	1,000	—	—	—	—	—	—	—	—	—	—	—	—	1,543	1,000
Tallow	Lbs.	202,525	16,250	—	—	—	—	—	—	2,595	250	—	—	—	—	200,000	16,000
Feedgrains	Tons <sup>a</sup>	500	23,600	—	—	—	—	—	—	—	—	—	—	—	—	500	23,600
Ocean transportation		—	148,990	—	1,200	—	—	—	12,400	—	11,950	—	18,480	—	18,480	—	86,500
<b>Total</b>		—	<b>1,065,902</b>	—	<b>29,400</b>	—	<b>16,900</b>	—	<b>74,400</b>	—	<b>65,400</b>	—	<b>128,270</b>	—	<b>130,000</b>	—	<b>621,550</b>

<sup>a</sup>) Metric tons.

Source: United States Agency for International Development (AID), Karachi.

TABLE C-7  
COMMODITY COMPOSITION OF PL-480 TITLE-I IMPORTS (SUMMARY)

Commodity	Unit (000)	AGREEMENTS I-VI				AGREEMENT VII			
		1955-1961				1962-1955			
		Quantity	Value (000 dollar)	Per cent of total	Average annual quantity	Quantity	Value (000 dollar)	Per cent of total	Average annual quantity
Wheat	M. Tons	3,718	221,800	50	620	5,625	341,100	55	1,406
Rice	M. Tons	657	76,700	17	110	—	—	—	—
Cotton	Bales	194	35,340	8	32	386	15,900	3	97
Tobacco	Lbs.	10,888	9,800	2	1,810	8,000	8,000	1	2,000
Dairy products	Lbs.	13,890	5,290	1	2,310	22,046	1,800	a	5,512
Vegetable oils	Lbs.	232,852	32,700	7	38,809	837,748	127,650	21	209,437
Poultry and eggs	Lbs.	—	—	—	—	1,543	1,000	a	386
Tallow	Lbs.	2,525	250	a	420	200,000	16,000	3	50,000
Feedgrains	M. Tons	—	—	—	—	500	23,600	4	125
Ocean transportation	—	—	62,490	14	—	—	86,500	14	—
Total	—	—	444,370	100 <sup>b</sup>	—	—	621,550	100 <sup>b</sup>	—

a) Value is less than  $\frac{1}{2}$  of one per cent.

b) Discrepancy due to rounding.

Source: Appendix Table C-6

TABLE C-8  
**COMPOSITION OF PL-480 IMPORTS REQUESTED BY GOVERNMENT  
 OF PAKISTAN FOR 1961/62—1964/65 AND ACTUAL  
 EXPANDED-PL-480-PROGRAMME ALLOCATIONS**

Commodity	Unit	Requested	Agreement
(1)	(2)	(3)	(4)
Wheat	000 M. tons	7170	5625
Rice	000 M. tons	2600	—
Fats and oils	000 M. tons	900	379
Dried milk	M. tons	4930	10000
Dried eggs	000 M. tons	35	—
Animal feeds	000 M. tons	3600	500
Cotton	000 Bales	860	386
Tallow	Million dollars	16	16
Tobacco	Million dollars	16	8
Pulses, fruits, vegetables and poultry	as available		\$ 1 million <sup>a</sup>

*Source:* Col. (3): Planning Commission, Government of Pakistan, *Memorandum on the United States Surplus Agricultural Commodities Aid to Pakistan*, February 1961.

a) The US Government agreed to supply these commodities as available upto a maximum value of one million US dollars.



**TABLE C-9**  
**COMMODITY ASSISTANCE UNDER PL-480 TITLE II**

Year	Commodity	Value of imports (million of US\$)
1955	Cottonseed oil	4.00
	Raw cotton	4.67
1956	Wheat, rice	16.98
	Rice	16.42
1958	Wheat	7.96
FY 1962/63	Wheat	26.90
	Corn (maize)	1.85
	Dry milk	1.50
	Edible oil	0.24
	Ocean transport	5.18
<b>Total<sup>a</sup></b> ...		84.69

*Sources:* i) For 1955, 1956 and 1958: Ministry of Finance, Government of Pakistan.

ii) For FY 1962/63: United States Agency for International Development, Karachi.

a) The slight discrepancy between this total and that given in Appendix Table C-5 is explained by the fact that Table C-9 covers the entire fiscal year 1962/63 whereas Table C-5 covers only up to December 31, 1962.

TABLE C-10  
STATUS OF UNITED STATES-OWNED LOCAL CURRENCIES: 1955—April 1963  
(Cumulative Deposits, Withdrawals and Net Balances)

Date	PL-480 Title I		Net balances of US-owned and unilaterally controlled local currencies				Total net balance <sup>c</sup>
	Cumulative deposits	Withdrawals	Commercial banks	USDO <sup>b</sup>	PL-665	Total	PL-480 and other net balances
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(.....in crores of rupees.....)							
June 30, 1955	13.2	a	a	a	a	a	a
June 30, 1956	21.3	a	a	a	a	a	a
June 30, 1957	56.2	a	a	a	a	a	a
June 30, 1958	85.0	a	a	a	a	a	a
June 30, 1959	121.5	a	a	a	a	a	a
June 30, 1960	133.7	75.6	a	a	11.4	u	a
September 1960	144.5	100.2	18.9	23.8	13.0	55.7	100.0
December 1960	154.9	109.3	10.8	32.2	11.7	54.7	100.3
March 1961	166.4	109.3	10.8	27.6	26.9	65.3	122.4
June 1961	182.7	109.3	10.7	17.2	15.9	43.8	117.2
September 1961	190.1	109.3	15.7	1.2	14.8	21.7	102.5
December 1961	199.7	168.3	15.7	44.9	7.0	67.6	99.0
March 1962	208.1	168.3	23.6	34.0	8.1	65.7	105.5
June 1962	214.8	168.3	28.2	2.5	9.4	40.1	86.6
September 1962	234.7	177.6	28.1	4.3	20.6	53.0	110.1
December 1962	243.2	181.8	27.8	4.0	1.5	33.3	94.7
March 1963	252.2	197.0	28.2	3.5	9.0	40.7	95.9
April 1963	260.5	206.0	28.1	4.8	7.9	40.8	95.3

Source: United States Agency for International Development, Karachi.

a) No detailed data available.

b) Accounts of the United States Disbursing Officer in the State Bank of Pakistan.

c) [Column (1) — Column (2)] + Column (6).

TABLE C-11  
ALLOCATION OF PL-480 TITLE-I LOCAL CURRENCIES IN SEVEN AGREEMENTS  
SIGNED BETWEEN 1955 AND 1961

Agreement number and date	Total value of agreement		Common defence 104(c)		Economic grants 104(e)		Cooley loans 104 (e)		Development loans		Indus Basin		US uses	
	(Rs. crores)	per cent	(Rs. crores)	per cent	(Rs. crores)	per cent	(Rs. crores)	per cent	(Rs. crores)	per cent	(Rs. crores)	per cent	(Rs. crores)	per cent
I (18-1-1955)	14.0	100	7.1	50.9	—	—	—	—	4.8	34.0	—	—	2.1	15.1
II (2-8-1955)	8.1	100	5.2	65.2	—	—	—	—	1.2	14.8	—	—	1.6	20.1
III (7-8-1956)	35.4	100	23.0	65.1	2.4	6.7	—	—	5.3	14.9	—	—	4.7	13.3
IV (15-11-1957)	31.1	100	2.4	7.7	7.1	22.9	3.1	9.8	14.7	47.1	—	—	3.9	12.5
V (26-11-1958)	61.1	100	—	—	23.2	38.0	3.4	5.6	24.8	40.6	—	—	9.7	15.9
VII (11-4-1960)	61.9	100	—	—	21.7	35.1	3.4	5.5	21.7	35.1	6.5	10.5	8.5	13.8
VIII (14-10-1961)	295.3	100	—	—	147.7	50.0	14.8	5.0	59.1	20.0	56.1	19.0	17.7	6.0
Total	506.9	100	37.8	7.5	202.2	39.9	24.6	4.9	131.4	25.9	62.7	12.4	48.3	9.5

Source: Ministry of Finance, Government of Pakistan.

TABLE C-12  
 PL-480 TITLE-I IMPORTS  
 (By Commodity, Agreement and FY)

FY	Agreements	Total	Wheat	Rice	Cotton	Tobacco	Edible oils	Dairy products	Dried eggs	Cotton seed	Corn (yellow)	Tallow
(.....in million rupees.....)												
1955/56	I	34.38	—	—	23.92	8.19	2.27	—	—	—	—	—
		<u>34.38</u>	<u>—</u>	<u>—</u>	<u>23.92</u>	<u>8.19</u>	<u>2.27</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
1956/57	I	86.07	—	—	74.76	7.06	0.49	3.76	—	—	—	—
	II	80.48	—	80.48	—	—	—	—	—	—	—	—
	III	228.33	125.15	86.08	15.12	2.00	—	—	—	—	—	—
		<u>334.90</u>	<u>125.15</u>	<u>166.56</u>	<u>89.88</u>	<u>9.06</u>	<u>0.49</u>	<u>3.76</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
1957/58	I	11.66	—	—	6.91	0.07	0.19	4.49	—	—	—	—
	II	0.64	—	0.64	—	—	—	—	—	—	—	—
	III	113.62	43.20	48.93	4.94	5.21	11.34	—	—	—	—	—
	IV	207.47	150.97	55.46	—	—	—	—	—	—	—	1.04
		<u>333.39</u>	<u>194.17</u>	<u>105.03</u>	<u>11.85</u>	<u>5.28</u>	<u>11.53</u>	<u>4.49</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>1.04</u>

(continued)

TABLE C-12—Contd.

FY	Agreements	Total	Wheat	Rice	Cotton	Tobacco	Edible oils	Dairy products	Dried eggs	Cotton seed	Corn (yellow)	Tallow
1958/59	I	1.60	—	—	1.54	—	—	0.06	—	—	—	—
	II	—	—	—	—	—	—	—	—	—	—	—
	III	10.69	—	—	9.19	—	0.14	1.36	—	—	—	—
	IV	78.09	57.50	9.73	—	—	—	10.66	—	—	—	0.20
	V	109.00	89.14	12.24	0.50	—	7.12	—	—	—	—	—
		<u>199.38</u>	<u>146.64</u>	<u>21.97</u>	<u>11.23</u>	<u>—</u>	<u>7.26</u>	<u>12.08</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>0.20</u>
1959/60	IV	2.29	2.28	—	—	—	—	—	—	—	—	0.01
	V	356.06	282.97	23.18	5.32	—	43.78	0.81	—	—	—	—
	VI	16.41	—	—	—	—	—	—	—	—	—	—
		<u>374.76</u>	<u>301.66</u>	<u>23.18</u>	<u>5.32</u>	<u>—</u>	<u>43.78</u>	<u>0.81</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>0.01</u>
1960/61	IV	0.01	—	—	—	—	—	—	—	—	—	—
	V	91.60	18.13	0.51	7.00	4.85	—	2.25	—	58.86	—	—
	VI	398.17	329.17	66.26	—	2.74	—	—	—	—	—	—
		<u>489.73</u>	<u>347.31</u>	<u>66.77</u>	<u>7.00</u>	<u>7.59</u>	<u>—</u>	<u>2.25</u>	<u>—</u>	<u>58.86</u>	<u>—</u>	<u>—</u>

(continued)

TABLE C-12—Contd.

FY	Agreements	Total	Wheat	Rice	Cotton	Tobacco	Edible oils	Dairy products	Dried eggs	Cotton seed	Corn (yellow)	Tallow
1961/62	I	0.08	—	—	0.08	—	—	—	—	—	—	—
	V	7.88	0.63	—	3.46	—	0.04	0.08	—	3.77	—	—
	VI	151.81	143.27	1.65	—	6.99	—	—	—	—	—	—
	VII	161.27	161.27	—	—	—	—	—	—	—	—	—
		<u>321.24</u>	<u>303.17</u>	<u>1.65</u>	<u>3.54</u>	<u>6.99</u>	<u>0.04</u>	<u>0.08</u>		<u>3.77</u>	<u>—</u>	<u>—</u>
July 1962—April 1963	V	—	—	—	—	—	—	—	—	—	—	—
	VI	5.96	5.96	—	—	—	—	—	—	—	—	—
	VII	451.43	432.22	—	—	4.22	11.43	0.93	0.03	—	2.55	0.05
		<u>457.43</u>	<u>438.18</u>	<u>—</u>	<u>—</u>	<u>4.22</u>	<u>11.43</u>	<u>0.93</u>	<u>0.03</u>	<u>—</u>	<u>2.55</u>	<u>0.05</u>
Total Arrivals		<u>2605.22</u>	<u>1858.28</u>	<u>385.16</u>	<u>152.74</u>	<u>41.33</u>	<u>76.80</u>	<u>24.40</u>	<u>0.03</u>	<u>—</u>	<u>62.63</u>	<u>1.30</u>

Source: United States Agency for International Development, Karachi.

TABLE C-13  
IMPORTS OF WHEAT INTO PAKISTAN: 1951 TO NOVEMBER 1962  
(Commercial and Aid)

Year	US	Canada	Australia	Others	Total	Commercial imports as per cent of total	Imports from US as a per cent of total
	(.....in thousand tons.....)						
1951	—	—	—	—	—	—	—
1952	30.2(C)	9.1(C)	—	—	—	—	—
1953	38.2(C)	172.4(C)	87.2(C)	283.6(C)	322.9	91	9
1954	132.1(C)	116.7(A)	43.0(A)	132.8(C)	1189.6	35	54
	476.3(A)	—	—	—	—	—	—
1954	134.6(A)	—	—	—	134.6	0	100
1955	—	—	—	—	—	—	—
1956	299.5(A)	16.4(A)	99.1(C)	19.5(A)	437.6	23	68
	—	3.0(A)	—	—	—	—	—
1957	407.5(A)	42.8(A)	212.4(C)	39.0(C)	701.8	36	58
1958	672.4(A)	71.1(A)	—	10.1(C)	753.5	1	89
1959	526.4(A)	149.2(A)	9.8	—	717.2	4	73
	—	—	31.7(C)	—	—	—	—
1960	1178.8(A)	42.3(A)	103.7(C)	—	1324.8	8	89
1961	1004.7(A)	35.4(A)	Nil	—	1040.2	0	97
1962*	777.2(A)	N.A.	Nil	—	777.2	N.A.	—

Notes: \* Up to November  
C = Commercial  
A = Aid

Source: A Note on the Utilization of Agricultural Surpluses in Pakistan, op. cit.

TABLE C-14  
POPULATION ASSUMPTIONS FOR WEST PAKISTAN

Year	Planning Commission	Extrapolation of actual count in 1961 <sup>a</sup>	Correction for under-enumeration <sup>b</sup>
	(1)	(2)	(3)
1961/62	40.70	43.40	47.3
1962/63	41.40	44.35	48.4
1963/64	42.13	45.45	49.6
1964/65	42.89	46.65	50.9

*Source:* Col. (1): *Memorandum on the United States Surplus Agricultural Commodities Aid to Pakistan, op. cit.*, p. 15.

*Notes:* a) This extrapolation is based on the actual count of 42.9 million persons in West Pakistan on February 1, 1961. The extrapolation has been made on the assumption that the total population of Pakistan has been rising at an average annual rate of 2.1315 per cent. In addition account has been taken of the fact that West Pakistan's population is increasing faster than this average rate. This is reflected in the fact that in 1951 approximately 55.5 per cent of the total population lived in East Pakistan whereas in 1961 this percentage had gone down to 54.2 per cent.

b) Recent IDE research suggests an underenumeration of 8.2 per cent for Pakistan as a whole. We have, therefore, assumed that Column (2) represents 91.8 per cent of the actual population. Cf., Karol J. Krotki, *Population Size, Growth and Age Distribution, Fourth Release from the 1961 Census of Pakistan*. (Karachi: The Institute of Development Economics, Research Report No. 8., May 1963), p. 28.

**TABLE C-15a**  
**RESULTS OF CROP-CUTTING EXPERIMENTS ON WHEAT**  
**CONDUCTED PRIOR TO 1956/57**

Year	Official (Maunds/acre)	Crop-cutting experiments (Maunds/acre)	Per-cent difference
1950/51 <sup>a</sup>	16.04	17.44	+ 9
1951/52 <sup>b</sup>	8.25	10.15	+23
1953/54 <sup>b</sup>	10.99	12.24	+ 10
1954/55 <sup>b</sup>	8.52	9.80	+ 15

*Source:* Data supplied by Dr. D.M. Qureshi, Planning and Development Department, Government of West Pakistan, Lahore.

*a)* Lyallpur District only.

*b)* Punjab only.

TABLE C-15b  
RESULTS OF WHEAT CROP-CUTTING EXPERIMENTS CONDUCTED SINCE 1956/57

Region	1956/57		1958/59			1960/61			Average percentage difference	
	Official (Maunds/acre)	Crop-cutting experiment (Maunds/acre)	percentage difference	Official (Maunds/acre)	Crop-cutting Experiment (Maunds/acre)	Percentage difference	Official (Maunds/acre)	Crop-cutting Experiment (Maunds/acre)		Percentage difference
Peshawar	6.71	8.58	+28	7.00	7.40	+6	7.17	8.38	+17	+17
Lahore	8.69	9.88	+14	7.97	10.40	+30	7.71	9.28	+29	+24
Multan	10.65	13.61	+28	9.55	12.82	+34	10.44	13.46	+29	+30
Hyderabad	8.27	10.11	+22	7.97	10.34	+30	8.22	11.44	+39	+30
West Pakistan	8.33	10.04	+20	8.76	10.53	+20	9.28	11.50	+24	+21

Source: Same as in Table C-15a.

TABLE C-16

VILLAGES AND NUMBER OF FAMILIES INCLUDED IN IDE  
SUBSAMPLE OF THE NATIONAL SAMPLE SURVEY

District	Tehsil	Villages	No of families
Hazara	Mansehra	Harori Kakhu Gali Bagh Kaghan Mari Safdar Shah Balig Tarli	40
Bannu	Bannu	Mohammedi Kel Wazir Khojari Jana Fateh Khel Sarwar Amin Moghal Khel Shigi Micha Khel	37
Rawalpindi	Kahuta	Thoon Nara Mator Pandora Hardo Dar Kali Mamoori	40
Mianwali	Mianwali	Kot Belian Dhibba Chak-Daseri Doaba	32
Lyallpur	Lyallpur	Abbaspur Shabazpur Mullazim Abad Ghartal Khurd Jawalpur Jagatpur Ahmed Abad	47
Sarghoda	Sarghoda	Chak No. 98 S-B Chak No. 60 N-B Chak No. 112 S-B Shah Nakodar Chak No. 157 N-B	32
Jacobabad	Kandh Kot	Mal Hir Lashari Tang Wali Ghous Pur Sonwah	32
<b>Total</b>			<b>260</b>



TABLE C-17  
 PRODUCTION PATTERNS IN SEVEN DISTRICTS COVERED BY IDE SUBSAMPLE OF NSS

District	Rural population (000)	Wheat production <sup>a</sup> (000 tons)	Rice production <sup>a</sup> (000 tons)	Other cereals <sup>a</sup> (000 tons)	Pulses <sup>a</sup> (000 tons)	Foodgrain Production per person (tons)	Foodgrain and pulses per person (tons)	Ratio of cash crops to food crops <sup>b</sup>
Hazara	1307.6	32.7	2.5	84.7	9.1	.0917	.0986	N
Rawalpindi	730.4	63.1	0.2	39.3	30.0	.1404	.1815	N
Sargodha	1183.2	207.3	6.5	43.8	86.0	.2177	.2903	.312
Bannu	387.0	56.2	0.8	22.2	7.1	.2046	.2230	.027
Mianwali	604.5	98.4	—	14.8	88.3	.1872	.3333	.040
Lyallpur	2110.7	344.1	7.8	72.3	55.3	.2010	.2272	.428
Jacobabad	470.5	26.9	118.1	10.0	44.8	.3294	.4216	.023

N= negligible

Source: Same as ii) in Table C-1

a) 1956/57—1958/59 average production.

b) Based on 1958/59 average of food crops and cash crops. Cash crops include tobacco, sugarcane and cotton.

TABLE C-18

## DISTRIBUTION OF EXPENDITURE BETWEEN ITEMS OF CONSUMPTION ACCORDING TO EXPENDITURE GROUPS

No. of families	Expenditure range <sup>a</sup>	Total expenditure		Total food		Total nonfood		Cereals		Pulses		Milk and ghee		Meat and fish		Fruits and vegetables		Sugar and gur		Other foods		Clothing		Nonfood other than clothing		per cent of items affected by PL-480
		Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	
46	10<20	16.56	100	11.63	70	4.93	30	6.92	42	0.39	2	2.02	12	0.35	2	0.46	3	0.81	5	0.68	4	2.15	13	2.78	17	69
81	20<30	24.74	100	17.07	69	7.67	31	8.11	33	0.54	2	4.47	19	0.63	2	0.68	3	1.63	7	1.01	4	2.73	11	4.94	20	65
60	30<40	35.53	100	22.97	65	12.56	35	10.21	29	0.65	2	6.66	19	1.05	3	0.86	2	2.22	6	1.32	4	4.11	12	8.45	23	63
69	40<75	51.51	100	30.85	60	20.66	40	12.21	24	0.81	2	10.14	20	1.74	3	1.22	2	3.17	6	1.56	3	5.35	10	15.31	30	57
5	75+	94.25	100	43.02	46	51.23	54	12.06	13	1.10	1	16.74	18	2.76	3	1.41	1	6.41	7	2.54	3	9.72	10	41.51	44	44
261	Average	34.19	100	21.60	63	12.39	37	9.54	28	0.62	2	6.27	18	1.01	3	0.84	2	2.12	6	1.20	4	3.77	11	8.82	26	60

a) Refers to monthly average expenditure per 'adult consumer unit'.

Source : IDE subsample of CSO National Sample Survey.

TABLE C-18

## DISTRIBUTION OF EXPENDITURE BETWEEN ITEMS OF CONSUMPTION ACCORDING TO EXPENDITURE GROUPS

No. of families	Expenditure range <sup>a</sup>	Total expenditure		Total food		Total nonfood		Cereals		Pulses		Milk and ghee		Meat and fish		Fruits and vegetables		Sugar and gur		Other foods		Clothing		Nonfood other than clothing		per cent of items affected by PL-480
		Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	
46	10 < 20	16.56	100	11.63	70	4.93	30	6.92	42	0.39	2	2.02	12	0.35	2	0.46	3	0.81	5	0.68	4	2.15	13	2.78	17	69
81	20 < 30	24.74	100	17.07	69	7.67	31	8.11	33	0.54	2	4.47	19	0.63	2	0.68	3	1.63	7	1.01	4	2.73	11	4.94	20	65
60	30 < 40	35.53	100	22.97	65	12.56	35	10.21	29	0.65	2	6.66	19	1.05	3	0.86	2	2.22	6	1.32	4	4.11	12	8.45	23	63
69	40 < 75	51.51	100	30.85	60	20.66	40	12.21	24	0.81	2	10.14	20	1.74	3	1.22	2	3.17	6	1.56	3	5.35	10	15.31	30	57
5	75 +	94.25	100	43.02	46	51.23	54	12.06	13	1.10	1	16.74	18	2.76	3	1.41	1	6.41	7	2.54	3	9.72	10	41.51	44	44
261	Average	34.19	100	21.60	63	12.99	37	9.54	28	0.62	2	6.27	18	1.01	3	0.84	2	2.12	6	1.20	4	3.77	11	8.82	26	60

<sup>a</sup>) Refers to monthly average expenditure per 'adult consumer unit'.

Source : IDE subsample of CSO National Sample Survey.

TABLE C-19

## DISTRIBUTION OF FOOD EXPENDITURE ACCORDING TO EXPENDITURE GROUPS

Per-adult consumer expenditure range	Total food expenditure		Cereals		Pulses		Milk and ghee		Meat and fish		Fruits and vegetables		Sugar and gur		Other foods	
	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%
10<20	11.63	100	9.92	60	0.39	3	2.02	17	.35	3	0.46	4	0.81	7	0.68	6
20<30	17.07	100	8.11	48	0.54	3	4.47	26	.63	4	0.68	4	1.63	10	1.01	6
30<40	22.97	100	10.21	44	0.65	3	6.66	29	1.05	5	0.86	4	2.22	10	1.32	6
40<75	30.85	100	12.21	40	0.81	3	10.14	33	1.74	6	1.22	4	3.17	10	1.56	5
75+	43.02	100	12.06	28	1.10	3	16.74	39	2.76	6	1.41	3	6.41	15	2.54	6
Average	21.60	100	9.54	44	0.62	3	6.27	29	1.01	5	0.84	4	2.12	10	1.20	6

Source: IDE subsample of CSO National Sample Survey.

**TABLE C-20a**  
**PERCENTAGE OF TOTAL FOOD EXPENDITURE SPENT ON MAJOR FOOD GROUPS**  
**(RURAL CONSUMPTION SURVEYS)**

Country	Cereals and starches	Sugar	Meat, fish and eggs	Milk production, fats and oils	Fruits and vegetables	Other
West Pakistan <sup>a</sup>	44	10	5	29	3	9
Egypt <sup>b</sup>	40	10	19	15	<i>g</i>	16
Japan <sup>c</sup>	60	—	21	<i>h</i>	8	11
France <sup>d</sup>	15	3	32	19	12	19
Germany <sup>e</sup>	19	5	33	19	12	12
USA <sup>f</sup>	13	2	30	21	15	19

*Source:* FAO, *Review of Food Consumption Surveys*. (Rome: Food and Agriculture Organization, 1958) (processed).

- Notes:*
- a) *Source:* IDE subsample of third round of CSO National Sample Survey.
  - b) 1955 survey of 233 rural families, size 3-5 persons/family.
  - c) 1951/52 survey of 5093 rural households.
  - d) 1951 survey of 1949 rural families.
  - e) 1953 survey of 51 rural households.
  - f) 1955 survey of 1679 families.
  - g) Not available.
  - h) Included under meat, fish and eggs.

**TABLE C-20b**  
**PERCENTAGE OF TOTAL FOOD EXPENDITURE BY MAJOR SOURCES OF ENERGY**

Country	Carbohydrates and starches	Fats and proteins	Fruits and vegetables	Other
Pakistan	54	34	3	9
Egypt	50	34	—	16
Japan	60	21	8	11
France	18	51	12	19
Germany	24	52	12	12
USA	15	51	15	19

*Source:* Table C-20a.

**TABLE C-21**  
**WEEKLY WHOLESALE PRICES OF WHEAT IN**  
**THREE MARKETS: 1961**

Week ending		Lyallpur	Peshawar	Multan
January	7	18.63	16.05	18.75
	14	19.00	16.50	17.25
	21	18.75	16.31	17.25
	28	18.00	16.68	17.12
February	4	18.25	16.12	17.12
	11	<i>N.A.</i>	<i>N.A.</i>	<i>N.A.</i>
	18	<i>N.A.</i>	<i>N.A.</i>	<i>N.A.</i>
	25	18.13	16.31	17.25
March	4	16.88	15.93	17.00
	11	16.50	16.50	17.00
	18	17.00	<i>N.A.</i>	17.00
	25	16.50	16.50	17.00
April	1	17.00	15.75	17.00
	8	17.25	16.50	17.00
	15	17.38	16.87	16.88
	22	17.31	16.50	16.75
	29	17.00	16.13	15.25
May	6	15.50	15.75	14.25
	13	15.25	14.25	14.50
	20	15.00	15.75	13.63
	27	<i>N.A.</i>	15.25	<i>N.A.</i>
June	3	14.75	15.25	14.00
	10	15.50	15.75	14.25
	17	15.25	15.25	14.25
	24	<i>N.A.</i>	14.75	<i>N.A.</i>

(continued)

TABLE C-21—*contd.*  
WEEKLY WHOLESALE PRICES OF WHEAT IN  
THREE MARKETS: 1961

Week ending		Lyallpur	Peshawar	Multan
July	1	15.50	15.75	14.38
	8	15.50	15.50	14.50
	15	15.50	15.25	14.50
	22	15.00	15.75	14.50
	29	16.50	15.50	14.50
August	5	15.50	15.00	14.50
	12	15.00	15.00	14.50
	19	15.25	15.37	14.50
	26	N.A.	16.00	14.50
	September	2	15.00	15.09
9	15.75	15.37	14.25	
16	15.50	15.37	14.25	
23	16.25	15.37	14.25	
30	15.00	15.75	14.25	
October	7	15.50	15.75	14.25
	14	14.50	15.75	14.62
	21	15.00	15.00	14.50
	28	14.50	14.50	14.50
November	4	15.12	14.50	15.00
	11	15.00	14.62	15.00
	18	16.00	14.62	15.00
	25	15.06	14.25	14.75
December	2	16.50	15.75	14.88
	9	15.75	16.00	14.88
	16	16.00	16.00	15.00
	23	16.00	16.00	15.00
	30	16.50	16.00	14.88

Source : CSO weekly wholesale price reports (mimeographed).

TABLE C-22

WEEKLY WHOLESALE PRICES OF WHEAT IN  
THREE MARKETS: 1962

Week ending	Lyallpur	Peshawar	Multan
January 6	15.88	16.00	14.88
13	15.50	16.19	15.13
20	15.50	16.12	15.25
27	16.12	16.12	15.12
February 3	16.25	16.38	14.75
10	16.00	16.38	14.75
17	16.00	16.76	15.50
24	16.00	16.57	15.63
March 3	16.00	16.76	15.25
10	16.00	16.76	15.25
17	16.00	16.76	15.25
24	15.38	16.25	15.00
31	15.75	16.00	15.00
April 7	15.75	16.00	15.00
14	15.75	16.00	15.13
21	16.00	16.00	14.75
28	15.75	16.00	14.00
May 5	15.50	15.50	13.50
12	13.25	N.A.	12.00
19	13.75	15.25	12.38
26	13.38	14.47	12.38
June 2	13.00	14.50	12.38
9	14.25	14.09	12.50
16	13.50	13.71	12.50
23	14.00	13.71	12.75
30	14.50	13.71	12.00

(continued)



TABLE C-22—*contd.*WEEKLY WHOLESALE PRICES OF WHEAT IN  
THREE MARKETS: 1962

Week ending	Lyallpur	Peshawar	Multan
July 7	13.50	13.30	12.13
14	14.00	13.30	12.13
21	13.25	13.30	12.13
28	13.50	13.71	12.13
August 4	13.38	13.67	12.13
11	<i>N.A.</i>	<i>N.A.</i>	<i>N.A.</i>
18	14.00	14.47	12.13
25	14.00	13.30	12.25
September 1	14.50	13.30	12.13
8	13.50	13.30	12.13
15	13.50	13.30	12.13
22	13.50	13.71	12.13
29	13.63	14.09	12.50
October 6	13.63	14.09	12.25
13	13.00	14.47	13.00
20	<i>N.A.</i>	<i>N.A.</i>	<i>N.A.</i>
27	15.00	13.71	13.00
November 3	14.00	14.09	13.00
10	<i>N.A.</i>	<i>N.A.</i>	<i>N.A.</i>
17	14.00	13.71	13.50
24	14.00	12.92	13.50
December 1	15.00	14.09	13.50
8	15.25	13.71	13.50
15	15.00	14.47	13.50
22	14.50	13.71	13.88
29	14.75	14.09	13.75

Source : Same as for 1961.

**TABLE C-23**  
**WHOLESALE PRICE (SEMI-ANNUAL AVERAGE) FOR WHEAT IN LYALLPUR**  
**AND PESHAWAR: 1952/53—1961/62**

Year	Lyallpur (Rs./Maund)	Peshawar (Rs./Maund)
1952/53 <sup>a</sup>	22.15	23.68
1953 <sup>b</sup>	12.99	18.92
1953/54 <sup>a</sup>	13.18	16.06
1954 <sup>b</sup>	9.70	10.05
1954/55	10.07	10.91
1955 <sup>b</sup>	8.80	10.56
1955/56 <sup>a</sup>	12.16	12.38
1956 <sup>b</sup>	12.08	13.62
1956/57 <sup>a</sup>	15.05	15.24
1957 <sup>b</sup>	15.40	14.36
1957/58 <sup>a</sup>	15.26	17.96
1958 <sup>b</sup>	12.96	14.87
1958/59 <sup>a</sup>	12.60	14.11
1959 <sup>b</sup>	13.19	18.95
1959/60 <sup>a</sup>	12.50 <sup>c</sup>	21.18
1960 <sup>b</sup>	16.22	16.24
1960/61 <sup>a</sup>	17.53	17.01
1961 <sup>b</sup>	15.85	14.70
1961/62 <sup>a</sup>	15.86	15.84
1962	14.22	14.48

*Source: Markets and Prices, (monthly publication of the Department of Cooperation and Marketing Adviser to the Government of Pakistan). No price data are available prior to 1952/53.*

- Notes:* a) September-March monthly average wholesale price.  
b) April-August monthly average wholesale price.  
c) Off-season prices for these two years appear to be controlled prices.

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