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PROSPECTS AND PROBLEMS OF WHEAT
SURPLUS IN WEST PAKISTAN DURING
4TH FIVE YEAR PLAN

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TABLE OF CONTENTS

ACKNOWLEDGEMENT

Chapter I. - Introduction

Nature of the problem:

The area now constituted as West Pakistan was considered the granary of British India. Despite this, the area has been troubled by food problems during many of the years since independence.

A major reason is the high rate of population growth. As the National Government improved the public health facilities, after independence, the death rate declined but the birth rate remained high. The population in 1931 of areas which came to be West Pakistan was 23.6 million persons, with a growth rate of 1.2 percent; in 1941 it was 28.3 million and growth at 2.0 percent; in 1951 it was 33.7 million and 1.9 percent [32]. For 1966 the estimate is 48.8 million, a doubling of the population in 35 years, implying a doubling of food requirements without any improvement in diet. But in addition, developmental activities have increased the level of income, thus increasing the demand for food. In West Pakistan, both factors substantially increased the demand for wheat, as it is the major component of the diet of the people.

On the supply side, although new areas were brought under cultivation, as new barrages were constructed at Thal, Ghulam Muhammad, Guddu and Taunsa, a substantial area went out of cultivation, as a result of water-logging, salinity, soil erosion etc. Wheat production in 1948-49 was 3,974,000 tons (32) and in 1966-67 it was 4,266,000 tons (36) i.e. an increase of only 7.3 percent over a period of 18 years or .4 percent

per year. The wheat yield moreover, decreased from 10.2 maunds (838 lbs.) to 8.79 maunds (723 lbs.), during the period 1948-49 to 1966-67.

As increasing demand was not matched with an expanding supply, chronic food problems occured, and the Government had to resort to imports, a burden on the meagre foreign exchange resources of the country. Wheat imports in 1954 were 0.133 million tons (32), but by 1966-67, reached 1.565 million tons (19), a twelve-fold increase in imports.

Realizing the impact of this wheat shortage on the whole economy, the Third Plan laid down the objective to achieve self-sufficiency in foodgrains. It suggested both extensive and intensive methods to increase foodgrains production, with wheat as the most prominent crop in West Pakistan. The Plan recommended continued subsidies on inputs and emphasized that yield increasing methods should be given more priority. To accomplish these objectives, the Third Plan provided Rs.1621.67 millions (34) for Agriculture Development in West Pakistan, of which 50 percent were allocated to improved inputs.

The wheat technology of West Pakistan had not improved despite concentrated efforts in the Second Plan. Farmers were growing the same old wheat varieties developed in 1930-35 period, deterioration of which had taken place by the 1950s. The wheat yield in West Pakistan lagged far behind most other major producers, as appears in the following tabulation, based on the 1950-65 period (13):

Country	Yield per hectre (K.Grams)
West Germany	3590
France	3290
U.A.R.	2570
Australia	2200
Mexico	1900
U.S.A.	1660
Argentina	1400
Canada	1330
Japan	1260
Turkey	1060
India	840
Pakistan	820

The main problem was that the local varieties were not fertilizer responsive, and disease resistent, the long stems, started to lodge with higher yields, and after a certain point, the yield instead of rising, decreased when fertilizers were applied. The climatic conditions in West Pakistan were quite suitable for wheat cultivation, but the technology had not been kept up to date and many of the methods of cultivation are still age-old. The whole structure needed to be changed.

At the start of the Second Plan, research was started to modernize the technology, so that new varieties of higher yield could be evolved. High yield wheat varieties were imported from many countries for testing and the Ford Foundation was requested to provide personnel for the breeding program. By 1965 the Agriculture Research Institutes with the help of Ford Foundation Advisors had tested the adaptability of several Mexican wheat varieties in West Pakistan (41). These varieties were highly fertilizer responsive, short-stemmed and strong enough to hold the burden of additional grains and gave 2-3 times more yield than the local varieties. The water requirements of the new varieties, however, are more than the indigenous varieties. Efforts were also started to evolve new wheat

varieties through cross breeding.

The availability of a new technology changed the whole situation, and broke the pessimism developed in the past. Enthusiastically a new Food Self Sufficiency Plan was prepared in February, 1967, approved by the West Pakistan Government with special implementing procedures, and began to be implemented in 1967-68 (38). It envisaged food self-sufficiency by 1969-70, with major emphasis on wheat. The wheat target for 1967-68 of 5.4 million tons, was exceeded with actual production at 6.317 million tons. This was an increase of 48 percent over the production of 4.266 million tons of wheat in 1966-67. Wheat requirements for 1967-68 were estimated as 6.2 million tons, and thus West Pakistan approximated self-sufficiency in wheat two years ahead of schedule.

Now a wheat surplus is anticipated for the last year of the Third Plan, thus perhaps developing some problems of plenty rather than of shortage. Wheat demand is inelastic, and if supply increases, wheat prices and farm income would come down, which may create frustrations and political pressures. In a free market automatic adjustments could offset the demand and supply fluctuations, which means surplus would be disposed of at lower prices, or resources would shift to other uses. Agriculture, however, has peculiar features of resource fixity and imperfectness of knowledge, which hamper the smooth working of a free market. Price and income uncertainties influence resource allocation for future production, and if at the very start, the prices are low, the farmers may not use the new inputs. If surplus is allowed to expand in

the hope that the domestic market will expand or wheat will be exported,

such expectations may not materialize. The income elasticity of wheat

demand in the domestic market is low, and increases in income may be

earmarked by the consumers for superior foods. ⟩ In the international

market, West Pakistan may not be able to compete with traditional

exporters, for several possible reasons including the high internal

prices at the current exchange rate, the extra cost, which a new

exporter faces, the possible long run comparative disadvantages,

which may apply to West Pakistan, and the existing over-supply of wheat

in the world market. Farmers are price takers and plan production on

the basis of future expectations. A well considered price policy could

therefore, help in proper resource allocation. If higher support

prices are fixed, the output could expand tremendously, and the new

technology would establish its roots, which could bring a problem

of over-production, as the un-certainty has been removed. If production

is controlled to avert over supply, and the support price is quite

favorable, then we might face a problem of finding alternative avenues

for resource employment. If the wheat price is low, then we might not

even achieve self-sufficiency in wheat. Price policy could therefore,

influence the production pattern in many ways. We have to define the

objectives of the price policy clearly, and have to study the implica-

tions, so that some guidelines are offered for a price policy. The

purpose of this paper is to study and recommend a future wheat price

policy. But first we need to estimate the extent of the potential wheat

surplus, during the Fourth Plan in West Pakistan; following this we
will examine desirable resource uses and the price policies to attain
such uses.

Chapter II - Domestic Wheat Demand

A. - Wheat demand in West Pakistan:

Demand for wheat is a function of many variables e.g. population, income, prices of wheat, its substitutes and complements, tastes and preferences etc. Our major emphasis however, is on population and income. An increase in population implies more demand for wheat to feed the additional mouths. Increase in income means, that as the purchasing power of the consumers improves, some portion of it will be spent on wheat. The effect of both these variables on wheat demand in West Pakistan is discussed below:

Population: The Pakistan Census Organization carried out two Censuses in West Pakistan, one in 1951 and the other in 1961. According to 1961 Census, the population of West Pakistan was 42.88; million persons. As collection of vital statistics in Pakistan is not on satisfactory footing, there were serious doubts about the birth and death rates, following the above Census. A number of agencies attempted to correct the estimates, and gave different figures. Appendix #4 shows how the estimates differ among many agencies. As the initial figures for 1961 were not accurate, projections based on them were also not considered reliable; also, there are differences in the projections made by various agencies. The figures of Census of Pakistan have since been adjusted in 1967, and as the revised figures compare favorably with U.N.O. and F.A.O. figures and also with some Pakistani demographers, we use them for this study. The population

of West Pakistan in the Fourth Plan, according to the projections of
the Census of Pakistan (10), is given below, and for this population,
the demand for wheat has to be calculated:

Population (million persons)

Year	High	Medium	Low
1961	42.88	42.88	42.88
1966	48.82	48.82	48.42
1971	56.26	55.33	54.52
1975	63.89	60.88	59.46
1976	65.93	62.38	60.68

Growth of income: The Fourth Plan is under preparation and its full
dimensions have not been announced so far, but some preliminary work
has been done, and we will have to depend on it for our study. Accord-
ing to the "Preliminary Analysis of Fourth Five Year Plan " prepared by
the West Pakistan Planning and Development Board (37), the gross Provincial
Product for 3rd Plan was Rs.173360 millions and for 4th plan, the fore-
cast is Rs.225000 millions. The Provincial savings have been estimated
as Rs.19450 millions for 3rd plan and Rs.28130 millions for 4th plan.
The disposable income thus is estimated as Rs.153,910 millions for 3rd
plan and Rs.196,870 millions for 4th plan, which means an increase of
Rs.42960 millions during the Fourth Plan or 28%. Taking the population
in 1971 as 55.37 million persons (average of three population projections),
the per capita disposable income comes to Rs.2780 for five years or
Rs.556 per year in third plan. Similarly taking population for 1975 as
61.41 millions (average of three population projections) the per capita
income comes as Rs.3206 for five years or Rs.641 per annum in 4th plan.

Thus the per capita disposable income would increase by 15 percent over the 4th plan period or 3 percent per year.

Income elasticity of demand for wheat: Change in income influences the consumption pattern, and this is measured by the concept of income elasticity. Two kinds of income elasticities are calculated, one is expenditure income elasticity, which covers both quality and quantity changes, and the second is quantity income elasticity, which measures quantity changes only. The F.A.O. Economists (13) are of the view, that for calculation of food demand, only quantity elasticity should be employed, as with the rise in income, the normal behaviour of the consumers is to have better quality products, in addition to augmenting their present consumption in quantitative terms. The use of expenditure elasticity instead of quantity elasticity is likely to inflate the quantity demanded, as the value elasticity in almost all cases is higher than the quantity elasticity.

Many writers have calculated income elasticity of food crops for Pakistan. F.A.O. has estimated quantity elasticity of o.5 (13) for wheat in Pakistan. This figure is based on data supplied by the member countries in 1964 after carrying out surveys. It however, covers both East and West Pakistan, and as the consumption patterns in both parts of the country are quite different, this figure may not be so useful for West Pakistan.

Dr. S.A. Abbas (1) has made separate calculations for East and West Pakistan, in respect to both expenditure and quantity income elasticities for all agricultured crops. There are however, some inconsistencies in

his calculations, perhaps due to some mis-printing. On page 122 of

his book, he gives different income elasticities for wheat and rice than

on page 211, for West Pakistan. I think figures given on page 211,

appear correct in view of the fact, that the main diet in West Pakistan

is wheat, and on page 122 the figures were simply reversed in printing.

It has been stated earlier, that quantity elasticity is always less than

the expenditure elasticity, but on this page the quantity elasticity

in respect of wheat in West Pakistan is more than the expenditure

elasticity, which does not appear correct. If the figures have been

reversed in printing due to some mistake, then we could assume, the

quantity elasticity as 0.21 for wheat in West Pakistan.

Dr. G.C. Hufbaer (19) has calculated the income elasticity of wheat

for West Pakistan as 0.18. Mr. Sayed-ul-Haq (17) has given a figure of

0.40 for rural West Pakistan wheat consumption. Dr. Hufbaer has however,

cast doubts about the calculations of Mr. Haq. Mr. A.N.M. Aziz-ur-Rehman

(42) has given a figure of 0.44 for expenditure elasticity for cereal

consumption for rural West Pakistan. Dr. Nur-ul-Islam (22) has calculated

income elasticity of rural areas in West Pakistan as 0.26. As the figures

of Dr. Abbas, Dr. Hufbaer and Dr. Islam compare well with each other, we

take an average of 0.22 for the purposes of this paper.

Consumption pattern: A number of studies have been carried out to assess

the foodgrain requirements by finding out the actual per capita consumption

in West Pakistan. These studies offer different figures and the results

are summarised in Appendix 8. These surveys on the average give the per

capita food grain consumption of 18 ounces of foodgrains for the rural

area of West Pakistan. This consumption however, appears on the high

side, when we look at the actual availability. The World Bank Consultants

(23) have also made some estimates about wheat consumption in West Pakistan.

Their estimate was 108 Kg. per year or 237.6 lbs (2.2 lbs = 1 kg) or 10.4

ounces daily in 1964-65. Dr. Abbas (1) has estimated current consumption

of wheat at 14.067 ounces per capita per day. Against the above data, the

apparent availability of wheat in West Pakistan in 1963-64, which was

taken as a base year for the Food Self-Sufficiency Plan for West Pakistan,

was 11.1 ounces per capita per day. In 1967-68 the apparent availability

was 14.6 ounces, due to a bumper crop and high imports. The average for

1964-65 to 1967-68 comes to 12.0 ounces as shown in Appendix 9. Thus, it

appears that the estimated per capita consumption of wheat at 18 ounces

(rural areas) is much above the average availability for the period

1964-65 to 1967-68. We may therefore maintain the per capita consumption

pattern of 12.4 ounces in the 4th Plan also. West Pakistan, even at this

rate, is one of the highest per capita wheat consumers in the world, as

shown below (13):

Yearly per capita wheat consumption

Country	k.gram.	Lbs.
U.S.A.	54.2	119.24
Canada	58.7	129.14
Germany	54.2	119.24
France	96.4	212.08
United Kingdom	74.3	163.46
Turkey	140.2	308.44
Australia	78.6	172.92
U.S.S.R.	124.5	273.90
Argentina	86.9	191.18
Iran	117.3	258.06
West Pakistan (4 years average)	124.0	272.75
"availability" 1967-68	151.7	332.95

Too much dependence upon cereal consumption indicates problems
of mal-nutrition, affecting health, productivity, income etc., and there
is a need to remove the imbalance in diet.

Future requirements of wheat: Following the projections of the West
Pakistan Planning Board, per capita income in West Pakistan will increase
by 3 percent during the 4th plan. With an income elasticity assumed at
0.22 in the middle of several estimates it means that with an increase in
income of 3 percent the quantity demanded/ <u>would increase by 0.66 percent.</u> The population census has
given three growth rates for population for West Pakistan. The demand for
wheat should therefore, grow at the following rates in 4th plan:

$$Cw = Pr + E (Y)$$

where	Cw	= Consumption of wheat.
	Pr	= Population growth rate.
	E	= Income Elasticity.
	Y	= Change in per capita income.

High Fertility Projections   ....   3.22 + 0.22(3)   = 3.88% per year

Medium "   "   ....   2.46 + 0.22(3)   = 3.12% "   "

Low   "   "   ....   2.07 + 0.22(3)   = 2.73% "   "

The average wheat consumption for the period 1964-65 to 1967-68
comes to 6.086 million tons (Appendix 9), which gives a per capita wheat
consumption of 12.0 ounces per day.

If we assume this as the base year consumption and calculate the
increased wheat demand from 1967-68 due to population and income increases,
the wheat demand in West Pakistan would be:

Wheat demand in 1971

					Million Tons
i) High population projection		$[6.086 \times (100 + 3.88/100)^4]$	=	7.086
ii) Medium " "		$[6.086 \times (100 + 3.12/100)^4]$	=	6.882
iii) Low " "		$[6.086 \times (100 + 2.73/100)^4]$	=	6.778
	Average of three projections		=	6.915

Wheat demand in 1975

i) High population projection		$[6.086 \times (100 + 3.88/100)^8]$	=	8.251
ii) Medium " "		$[6.086 \times (100 + 3.12/100)^8]$	=	7.782
iii) Low " "		$[6.086 \times (100 + 2.73/100)^8]$	=	7.549
	Average of three projections		=	7.861

This will give the daily per capita wheat consumption as under:

Year	Population (average of three) Projections in millions	Wheat demand (average of three) Projections in million tons	Daily per capita consumption in ounces
1971	55.37	6.915	12.3
1975	61.48	7.861	12.6

The above projections take into consideration the population and income effect only. Changes in price could also influence the wheat demand, and our next step is to study that aspect.

Changes in prices: When prices go up, the demand for wheat declines, and the reverse could happen, if the price decreases. Changes in quantity demanded due to changes in prices can be measured by price elasticity. Dr. Bussink (9) calculated the price elasticity for wheat in West Pakistan as 0.3. This shows that demand cannot be expanded much if price is reduced

and this may not help in disposing of the surplus production. If the
wheat price is reduced by 10%, the demand would increase by 3%, which
means reduction in wheat price will not help in expanding wheat demand
much, but consumer would gain. Less expenditure on wheat will improve
purchasing power of the consumers, which might be utilized for other
goods. If the wheat price goes up, the consumer expenditure would increase,
but the revenue of the producers would be influenced more.

Effect of substitutes on wheat demand: When wheat prices go up, demand
for wheat decreases, and demand of substitutes e.g. rice, maize, barley,
jowar, bajra and gram increases. In West Pakistan these grains are used
both as human food and as feed for cattle, and their demand is closely
linked with wheat demand. In urban areas of the central region, rice is
usually the evening meal. Similarly in rural areas, maize, barley,
jowar, bajra etc. are often used for food. The Preliminary Analysis of
the 4th Plan, prepared by the Planning & Development Board, West Pakistan
shows the production of these crops in 3rd plan and targets for 4th plan
as under:

Crop	Second plan average	Production in 1967-68	1968-69	Target for 1969-70	4th Plan target (1974-75
		Thousand tons			
Rice	1175	1475	1800	2100	3500
Maize	490	779	800	900	2000
Barley	110	106	110	120	150
Bajra	225	286	300	300	440
Jowar	383	407	400	400	350
Gram	624	473	520	520	600
Total	3007	3526	3910	4340	7040

The income elasticity of rice is 0.64 (1) and for others it is insignificant. The demand for rice will grow at a higher rate than wheat, with the increase in income, and this will influence wheat demand too. With economic development, however, demand for processed goods increases as has been the case in developed countries. A number of food products are made from these foodgrains, which might alter the insignificance of income elasticity, when they are introduced in processed forms. These grains are also used as feeds for animals, and their demand is likely to increase, as more and more commercial live-stock farming comes up. There will be some substitution of coarse grains for human consumption, if wheat prices go up, provided the prices of these grains do not rise, but when demand for feeds goes up, this effect could be nullified. Rice prices could go down when its production increases and there would be a substitution effect on wheat demand. Rice exports are expanding, and this could check the decline in rice prices, in which case there would be little effect on wheat demand.

B. Demand for Wheat of East Pakistan: The main food diet in East Pakistan is rice, but there has been a shift to wheat in the last few years. It is however, difficult to estimate wheat requirements of East Pakistan, as wheat is not a regular food there. But we could at least substitute the imports of wheat, and if extension work is carried out, wheat consumption could increase. The wheat imports were 0.890 million tons in 1965 and 0.417   million tons in 1966 (8).

East Pakistan is also working on a food self sufficiency program (3)

and it is planned to achieve this target by 1969-70, which, however,
looks too optimistic. The new rice varieties have shown a good response
in East Pakistan, and Mexi-Pak wheat has also given good results. The
rice production in East Pakistan may increase to 12.2 million tons in
1969-70 from 10.20 million tons in 1964-65, and wheat production may
increase to 0.11 million tons in 1969-70 from o.o4 million tons in
1964-65, but these expectations appear optimistic. Due to rice shortages
it may be necessary to increase imports, and East Pakistan's wheat
requirements might grow upto one million tons. It may be added, that if
some incentives are given to consumers in the shape of reduced prices and
extension work is done to promote wheat consumption, there is a possibility
to increase wheat demand in East Pakistan, but this can happen only, when
there is a serious rice shortage. The new rice varieties have given
encouraging results in East Pakistan, and if enough rice is available
for consumption, promotion efforts probably will not be successful. In
the light of this we can assume East Pakistan's imported wheat requirements
as one million tons per year for the 4th plan, derived from West Pakistan
to substitute imports and fill the rice shortage in case of crop failures.

Chapter III - Supply of Wheat and Surplus

In a market economy, prices are settled by the intersection of demand and supply curves. In the previous chapter, we examined the factors which influence the demand for wheat in West Pakistan. Our next step is to study the forces working behind the supply of wheat. A supply function is the relation between different quantities sold and the determinants e.g. price of the commodity, technology, prices of inputs, natural and physical factors etc. Our main emphasis however, will be on the first three, as we assume that the physical factors are quite suitable for wheat production in West Pakistan, except that there might be some weather adversities. The marginal cost relationships indicate, how much would be offered by each farm at different prices for sale. The long run supply curve of a wheat farmer is that portion of marginal cost curve, which lies above the average variable cost curve, and when the supply curves of all wheat farmers in West Pakistan are combined, we get the aggregate supply curve. In the following paragraphs, various factors affecting wheat supply in West Pakistan are examined.

Wheat Prices: Farmers are price takers and due to their large number and product homogeniety, they are not in a position to influence prices. If the prices are favourable, more would be produced, and more would be offered for sale. In addition, new entrants would start producing wheat. More inputs would be used, and this will raise their prices with the consequence that the marginal cost curve would shift to left and profits would be reduced. If the prices are less, farmers would reduce

production, through using less inputs, or keeping some land fallow, or shifting resources to other uses. Production plans, however, are made before planting of crops on some expected prices. If these expectations do not materialise, it becomes difficult to change the output, except by reducing use of some within season inputs or by not harvesting the crop.

In order to see the responsiveness of farmers to wheat price changes in West Pakistan, some studies were carried out, which indicate that farmers in West Pakistan respond to favourable prices, provided proper opportunities are given. Falcon (12) calculated the short run supply elasticity at .1 to .2 for irrigated wheat in West Pakistan. Krishna (25) calculated price elasticities of acreage for India and Pakistan Punjab in 1963, as 0.08 for irrigated wheat in the short run and 0.14 for long run. For un-irrigated areas, the long run elasticity was 0.22, while the short run elasticity was insignificant. This shows that manipulation of price policy would bring favourable results. These studies were however, carried out before the introduction of new technology, and would have to be amended in the light of new experience.

Before 1967-68 price fluctuation was very common and this created uncertainty. In 1967-68, when the new technology was started, the Government of West Pakistan fixed a support price of Rs.17 per maund, and the Food Department was asked to procure as much wheat as offered by the farmers. The West Pakistan Food Department procured 18% of the total production and this proved an important factor in stabilising

wheat prices in 1967-68. The Food Self Sufficiency Plan (38) fixed a

wheat production target of 5.4 million tons for 1967-68, against which

the actual production was 6.317 million tons (36). The support price

has now been reduced to Rs.15 per maund (1969) and its impact will be

seen only on 1969-70 crop, the target for which is 7.0 million tons.

Decrease in support price means that marginal revenue will intersect

marginal cost at a lower level, and the point of profit maximisation

would be settled at lower output. Due to application of new inputs,

however, yields are increasing, and this shifts the marginal cost

curve to the right. This could nullify the effects of decrease in

support price, and output may not reduce, but the reaction of farmers

can be seen when 1969-70 crop is planted. Reasonable support prices

based on some parity ratio, which gives satisfactory purchasing

power, are however, essential for achieving higher production targets,

so that the farmers get adequate returns for their efforts. In addition,

frequent changes in support prices should be avoided, as it creates

uncertainty. If the present support price does not give satisfactory

results, it should be modified.

Technology: Supply function can change, as a result of technological

developments. Improved technology will shift the supply curve to the

right, as a given product price will result in more production of wheat

than the previous level. A low level of technology brings smaller out-

put per unit, and this was the case of West Pakistan up to 1966-67.

The low yielding wheat varieties in use in West Pakistan were developed

in the 1930s (4) and after that, little attention was paid to improve

them. With the passage of time, deterioration occured in these varieites

and wheat yield further decreased. The wheat yield per acre in 1948-49

was 838 lbs (32) and in 1966-67 it was 723 lbs (36), a decrease of 16

percent. Due to bad management, water-logging, salinity and soil erosion,

the fertility of land also deteriorated, which could have been regained,

if modern methods had been used, but this was also ignored. The methods

of cultivation were age-old, and control of plant diseases was neglected.

The existing wheat varieties were not fertilizer responsive, disease

resistant and were not able to bear the burden of additional grains

due to long stem. In fact yield decreased, when heavy doses of fertili-

zers were applied. The decrease in yield reduced the supply of wheat

and the growing demand could not be met, leading to food shortages.

This gave an impetus to search for new technology.

In 1962 high yielding wheat varieties were imported from Mexico

and the Ford Foundation provided technical personnel for the breeding

program. These varieties did well under Pakistani conditions and

remained under test up to 1966-67, when they were introduced on some

farmers' lands. They are highly fertilizer responsive, disease resistent

and strong enough to bear the burden of additional grains. In some cases

their yield was about four times more than the local wheat varieties. The

water requirement of Mexican wheat varieties is, however, more than the

local varieties, and it can absorb more fertilizers. New inputs e.g.

chemical fertilizers, tubewells, pesticides, etc., were also tested and

found productive. The new technology which included high yielding wheat
varieties, fertilizers, tubewells, pesticides, improved cultural practices
etc. gave spectacular results, and the Agronomists forecasted that wheat
production could be doubled in 4-5 years. A food self sufficiency
plan was started by the Government of West Pakistan with major emphasis
to popularise the new technology, with proper implementing procedures.
The farmers responded well to it, and it is being followed at a good
speed. In 1967-68, 3.0 million acres were cultivated with the new
varieties, and a yield of this acreage was 2.9 million metric tons (41)
which means a yield of 2150 lbs per acre. Thus the yield increased by
200 percent, over 1966-67. The new technology has, however, not been
established firmly, so far, and more agronomic research will be needed
for the future, so that the obstacles faced during the initial stages
are removed. A major portion of the wheat supply probably can be
forthcoming from the new varieties, and therefore, more emphasis should
be given to them.

The new technology has demonstrated, that for many farmers the
supply curve has been shifted to the right, and through its effect upon
the production function, has averted for sometime, the decline in yield
through the law of diminishing returns, and the use of successively
poorer land inputs. Excess supply, as the technology becomes widespread,
could reduce prices, if the demand does not expand, and this could hamper
the growth of new technology. ---
-----Similarly the new technology could receive a set-back as a result

of occurance of diseases or non-availability of new inputs in required

amounts and at the required.time. More research is also necessary to

find out suitable varieties, of hard wheat, which is more nutritive,

and fetches a better price in the international market.

Agriculture inputs: The new technology requires a number of inputs,

land, labour, seed, fertilizer, water, pesticides, etc. In the short

run, land is a fixed input, and all others are variable inputs. Farmers'

profits are maximised when marginal factor cost is equal to marginal

value product. When resources are complementary, then there is no choice

to alter the combination required. When the inputs are substitutes to

each other, then the farmer can change their employment, depending on

their price ratios. Application of fertilizers gives better results in

irrigated wheat fields and in this sense water and fertilizers become

complements. The decision maker has however, the choice to adjust the

quantities of fertilizers and water depending on product and factor

prices. In rainfed areas, the farmer has to depend on the vagaries of

nature, and conditions are not certain, which could limit the extensive

application of fertilizers. The new technology, however, has made it

possible to substitute fertilizers and water for land.

Because many farmers
/consider input prices high, and to encourage farmers to gain

experience in their use, the Government of West Pakistan subsidizes

them so that the new technology can spread, and production targets

achieved. The rate of subsidy on fertilizer is 35%, on improved seed

at Rs.2 per maund or 12%, on land development operations at 25-40%,

on plant protection at 75%, on tubewells at Rs.2500 per tubewell, and

also sale of lining pipes on the cost basis. In 1967-68, the total

amount of subsidies for these operations was Rs.203.1 millions (40).

These subsidies, however, mainly go to the distributors and manufacturers

and not to the farmers. Due to factor in-efficiencies, the cost of

production of domestic fertilizers is higher than the imported ferti-

lizers. The Government provides subsidy in order to sell this ferti-

lizer at a price fixed by it, and in this case the entire subsidy goes

to manufacturers. In addition, as the supply of many inputs does not

match the increasing demand, distributors sell them in the black market

and the farmer gets little benefit from the subsidy program. The West

Pakistan Government also provided an amount of Rs.273.00 million for

institutional credit, in 1967-68 and Rs.1363.5 millions have been

provided in 3rd plan. The fertilizer sales increased from 79500 nutrient

tons in 1965-66 to 189800 nutrient tons in 1967-68. In 1964 the number

of private tubewells was 25000, in 1965 it increased to 31600 and in

1967 to 54400. Additional water and fertilizers made a substantial

contribution in increasing the wheat production.

Farmers net revenues have improved considerably as a result of

application of new inputs. If we keep land, labour and weather constant

and examine the impact of new inputs, it is possible to make the follow-

ing tentative conclusions:

i)   As a result of greater fertilizer response the new wheat varieties

require additional irrigation. Combined with water when one nutrient

pound of fertilizer is applied to the new varieites, it gives thirteen

lbs of additional wheat (39). Despite the additional cost on new inputs,

the farmers net income would increase. For example the fertilizer

application suggested for the new wheat varieties is 109 lbs (nutrient)

equaling 5 bags, and the price per bag is Rs.11.5. The additional yield

would be 1417 lbs or additional income of Rs.258.00 at the support price

of Rs.15 per maund. The cost of fertilizers used comes to Rs.57.5 and

cost of additional water if it is obtained from canal, would be zero,

and   if it is supplied by the tubewell, it would vary from Rs.7 to 12

for 6 acre inches of water or on the average Rs.10 per acre. (30) This means

that with tubewell irrigation the additional cost of wheat cultivation would be

Rs.67.5 against the additional returns of Rs.258.00. Thus there is a

large scope to expand application of fertilizer.

ii)   Similarly additional output is 106 lbs when 2-3 sprayings of

curative and preventive measures are carried out under plant protection.

The additional benefit comes to Rs.19.5. In the past this facility

was provided free by the Government, but now 25% of the cost is recovered

from the farmers, which is estimated at Rs.5 per acre for 2-3 sprays.

Even here the additional returns are more than the additional cost.

These factors have raised the demand for inputs; the limited supply

and changes in public policy mean that input prices are going up, which

reduce the farmers gain.

Wheat production in 4th plan: Production targets are fixed by the

Government in five year plans and then policies are formulated to achieve

them. Some preliminary work on preparation of the 4th plan, starting

from 1970-71 has been done. The Ford Foundation Advisors forecasted

that a target of 13.0 million tons can be achieved by 1975. The West

Pakistan Planning and Development Department recommended a target of

10.5 million tons by 1974-75. The Pakistan Planning Commission

recommended a target of 9.0 million tons, and the agreed target for wheat

production by 1975 has now been fixed as 9.5 million tons. The wheat

production in 1968-69 according to the West Pakistan Planning and

Development Department is 6.5 million tons, an increase of 3 percent

over the previous year, despite not very favourable weather. For a

higher target we would have to accellerate the rate of spread of new

technology in wheat production. It however, appears, that there are

some constraints on production and consumption, which might influence

the wheat production during the 4th plan, as shown below:

i)   It may be difficult to maintain the high yields of new varieties

due to seed mixing, diseases, and inset attacks. The Government cannot

handle seed distribution and plant protection operations on full coverage

basis and this may hamper production.

ii)   Large quantities of fertilizers may not be available, due to

less imports as a result of balance of payment problems. Similarly

water in large quantities may not be found due to limited supply in

rivers and un-suitability of ground water.

iii)   The West Pakistan Government is giving subsidies on almost all

inputs. For larger input quantities, larger funds would be needed. If

production increases, the Government would have to purchase large

quantities of wheat under the support program, which would involve

huge expenditure on purchases, infra-structure, storage etc. It might

not be possible for the Government to earmark large sums of money to

finance these operations, hampering wheat production. If the subsidy is reduced, the input prices would go up and the farmers may not use them, which will influence the wheat targets.

iv)   So far the new varieties have mainly been cultivated by bigger land holders. In West Pakistan 41.5 percent of wheat area is cultivated by small-land holders having size of less than 12.5 acres. These farmers have capital limitations, and they may not adopt the new technology without cheap credit facilities. Although the new technology is more profitable, we cannot ignore the poverty and lack of finances of such farmers, who constitute 72% of total wheat farmers.

v)   Domestic wheat demand is less elastic, and possibilities of exports are not bright, due to various reasons. If the wheat prices decline, there will be a slight increase in wheat demand, as the price elasticity is 0.3 only. There will, however, be some shift in consumption to wheat from coarse grains when wheat prices are low, and the reverse could happen, if wheat prices go up. Excess supply would reduce the prices if the demand does not expand, which will influence the farmers income adversely. In this case the incentives to produce wheat would be reduced and the higher target may be difficult to achieve. The support price has been reduced to Rs.15 per maund from Rs.17 per maund and this will influence the wheat production.

vi)   Due to low income elasticity of wheat demand also, the domestic consumption would not expand much. Increase in income may shift the consumption pattern to superior goods and this would also influence the wheat prices.

In the light of these constraints, a large wheat target may not be feasible, but the target also should not be so low as not to bring self-sufficiency to the whole country. The best course is to keep the target flexible so that if the export possibilities become bright the price level is suitable and the farmers are encouraged to expand: We could increase or decrease the target as the circumstances permit. If the goal is to achieve self-sufficiency in wheat only, we need about 7.915 million tons in 1971 (6.915 for West Pakistan and 1.000 for East Pakistan), and 8.861 million tons in 1975 (7.861 for West Pakistan and 1.000 for East Pakistan). A margin for food reserves should also be maintained, so that it could be used in adverse conditions. West Pakistan should, therefore, aim at a production target which could fulfil these needs.

A target of 9.5 million tons will not bring self-sufficiency as after giving a margin of 10% for seed, feed and wastage, only 8.550 million tons would be left for human consumption, against the demand of 8.861 million tons/ and instead we would have to depend on imports. The production target would, therefore, have to be enhanced slightly, and even more to build a reserve. For achieving a higher target, it is essential to remove the constraints outlined above.

Wheat surplus in 4th plan: After estimating demand and supply of wheat, now we turn to make an estimate of wheat surplus/deficit in West Pakistan. The wheat demand has been taken here on the basis of two variables only e.g. population and change in income. Demand for East Pakistan is included in this estimate also. A margin for seed, feed and wastage at

the rate of 10% has been assumed. Food reserves equal to highest import level should be kept, so that in adverse conditions, these reserves could be utilized. The highest wheat imports in West Pakistan were 1.565 million tons in 1966-67, and the reserve should not exceed this ammount. As sufficient storage accommodation might not be available in the initial period of 4th plan, it would be advisable to build up the reserves as storage capacity is increased. We may therefore, keep the spreading of this target flexible, and let the Food Department decide when it could be able to build up the reserve target within Fourth Plan. If the production for 1969-70 is 7.00 million tons, then the fourth plan can start with a production target of 7.5 million ton in 1970-71, and an increase of 0.500 million tons may be achieved every year over the previous one. In the light of this we could estimate the surplus deficit as under:

Wheat Demand

	1971	1975
	Thousand tons	
i) Demand for West Pakistan (average of three population projections).	6915	7861
ii) Demand for East Pakistan.	1000	1000
Total.	7915	8861

Wheat Availability

iii) Total production.	7500	9500
iv) Seed, feed and wastage at 10%	750	950
v) Net availability.	6750	8550
vi) Surplus/Deficit.	-1165	- 331

The wheat deficit would increase, if food reserve is also included.
As we have already suggested, the production target should be kept
flexible, and may be reviewed every year in the light of circumstances
available. The objective should however, be to achieve self-sufficiency
in the whole country, and to build up a food reserve.

This analysis indicates that the target is too low, dealing with
the average of the three estimates of the demand for wheat. But before
concluding this section, we should be more precise, using each of the
three population projections. With the low population projection the
deficit for 1971 is smaller (-1028) and disappears for 1975. However,
with the high population projection the deficit for 1971 increases
(-1336) and more than doubles for 1975 (-701). Adding to this the need
to build up reserves, it is evident that the target should be raised,
and that the bulge in the expansion should be in the first years of
the plan, if possible; as self-sufficiency is reached and the reserve
stock is largely in existence, production stability would be desirable,
with production formerly going into stockpile, now supplying the
additional population.

Chapter IV - Wheat Export Potential

So far we have studied the domestic demand and supply of wheat in West Pakistan. Our analysis, however, would be incomplete, without examining the international wheat situation. An agriculture surplus over domestic needs nearly always plays an important role in economic development and its increase does not only boost the domestic economy, but also increases the foreign exchange earnings of a country. Almost all developed countries made a start in economic development by exporting agriculture produce in exchange for capital goods. Pakistan's balance of payment situation can improve, if the exports are increased and agriculture can play an important role in this connection. So far, West Pakistan/has exported cotton, wool, rice, hides and skins, and fish. When self sufficiency in wheat is attained, it is possible that surplus wheat would be produced, which could be sold in the international market too. The objective of this chapter is to appraise this possibility.

Comparative advantages in wheat production: International trade takes place on the basis of comparative advantage in producing goods by various countries. Efficiency in resource allocation determines the production possibilities of various goods, which could be offered for sale in the international market. So far West Pakistan had comparative advantage in cotton and rice and they were the major agriculture exports. If the factor combinations become efficient in wheat production, as compared with other crops, West Pakistan would have comparative advantage

in wheat exports. The new technology has changed the production
functions for wheat, resulting in increased productivity. Now a
question arises, is it profitable to export wheat and how would this
affect the traditional exports? Product and factor prices could
provide us some assistance in this connection to find out which crop
could bring more foreign exchange earnings per acre of land using
the scarce resources of fertilizers and water: The Preliminary
Analysis of Fourth Five Year Plan, prepared by the West Pakistan Planning
and Development Department (37) has made some assumptions about fertilizer
requirements, yield and export prices for 4th Plan, and we can use them.
We can also assume, that/at present canal water is supplied, and if
additional water is needed as a result of application of fertilizers,
it would be available from tubewell only. The comparative advantage in
wheat, maize, rice and cotton are shown as under:

Comparative cost and income per acre

Additional: Cost, per acre. of fertilizer and water	Cotton(American) (Lint)	Rice(IRRI) husked	Maize	Wheat (Mexican)
	Figures are in Rupees.			
i) Cost of additional chemical fertilizers at 2 bags per acre.	23.00	23.00	23.00	23.00
ii) Cost of additional water (Tubewell)	–	–		10.00 (29)
	34.00	33.00	29.00	39.00

Additional: Income per acre

	Cotton(American) (Lint)	Rice(IRRI) husked	Maize	Wheat (Mexican)
i) Yield increase due to contribution of above factors.(lbs)	165	460 (15:1)	782 (17:1)	598 (13:1) **
ii) Export prices FOB Karachi per ton	2000.00	600.00	240.00	240.00
iii) Export earnings per acre.	147.00 *	230.00	84.0	64.00

    *   The cotton field would also produce 330 lbs of cotton
seed which would fetch an additional income of Rs.80
per acre, at Rs.20 per maund, making the total earnings
to Rs.227 per acre.

    **   Figures in brackets are grain nutrient ratios.

We can infer from this, that factor endowments are more efficient
in rice, cotton and maize production than in wheat, as earnings per
acre are more in the case of rice, cotton and maize than in case of
wheat, if scarce resources of fertilizers and water are used. Rice
is sown in summer, after wheat is harvested and wheat is sown usually,
when rice is harvested. There is thus no significant clash. Cotton
however, has a clash with wheat, as its picking continues up to
January, while the sowing period for wheat is October-November.
Although factors of production appear more efficient in cotton than
in wheat, second crop in cotton fields cannot be cultivated except
fodder. On the other hand rice or maize can be combined with wheat,
as a second crop. In any case the demand for cotton/also appears less
elastic in the international market, and if supply is increased, it
might deteriorate the terms of trade. There are unsold stocks of
cotton with most of the exporting countries (4 4), and some stocks
have also accummulated in Pakistan. Similarly during 1968 rice prices
declined, as a result of an increase in supply (45). It, however,
appears that West Pakistan has more potential to compete effectively
in rice exports than in either cotton and wheat, because even at
somewhat lower prices, rice could bring more income per acre than
either of these crops. West Pakistan should therefore, expand rice

exports, but this would not affect wheat, as there is no clash in sowing and harvesting periods, and instead the same field can produce both crops.

Wheat-rice or wheat-maize rotation would, however, clash with cotton-fodder rotation. As wheat-rice field gives more earnings than cotton-fodder, this may affect cotton production and its exports. Incidentally rice cultivation districts do not produce much cotton, and the shift in area from cotton to rice may not be serious. Rice cultivation is mainly concentrated in Lahore, Khairpur and Hyderabad Civil Divisions, where 83% of rice area of West Pakistan is located. On the other hand, these divisions have only 30% of the Provincial cotton area. If it appears that cotton production is decreasing as a result of shift in area from cotton to rice in these divisions, efforts should be made to make up the deficiency in other districts, where less profitable crops are sown. Maize-wheat rotation brings lesser earnings than cotton-fodder, and some of the wheat area can be transferred to cotton production, if wheat becomes surplus, so that cotton production is not influenced. The policy should be that wheat and maize exports should not jeopardise the cotton exports, but rather that cotton exports should expand. Before resorting to wheat exports, however, we should study the international market for wheat.

World Wheat Situation: The world wheat situation is not favourable, as wheat exports are decreasing and prices are declining. For the

two crop years 1966-68, world wheat production, at 300 million tons, was 28 percent above 1960-64 average, due to both yield and acreage changes. According to U.S. Department of Agriculture (46), there was a carry over of 2.4 billion bushels or approximately 64.3 million tons (one bushel = 60 lbs) in April, 1969. The demand elasticities for wheat are less than one, and the only substantial increase in use is anticipated as a result of the increase in population. In a situation when demand is inelastic, and there is already excess supply, further increases in supply would depress the farm incomes. The Food and Agriculture Organization, UNO (13) projections made in 1966-67 indicate, that in 1975 the world wheat production would be 304 million tons, and consumption would be 293 million tons on low Gross Domestic Product assumption, giving a surplus of 11 million tons. If a high Gross Domestic Product assumption is taken, the surplus in 1975 would be 30 million tons. The F.A.O. projections, however, appear on the low side, as they were made before the introduction of new wheat technology in Pakistan, India and other countries. If this factor is taken into consideration, the extent of the wheat surplus would be much more than the F.A.O. estimate. In any case excess supply is expected and as demand is less elastic, prices would decrease. Thus it appears not profitable to plan for large wheat exports from West Pakistan, but it might be possible to make small exports to nearby countries.

Wheat Prices: If wheat exports are carried out, then it is pertinent to study the international and domestic price level. This can provide

us another tool to evaluate the competitiveness of West Pakistan wheat

in the international market. The producer prices for wheat in West

Pakistan at 1969 support price level/ comes to $84.40 (at official rate)
of Rs.15 per maund

per ton. Against this, producer prices in the wheat exporting countries

(24) are indicated below:

Country	Wheat producer prices (1966-67 figures) U.S. dollars per meteric ton.
Argentina	37.25
Australia	58.24
Canada	72.00
France	87.15
Mexico	73.10
U.S.A.	59.52
U.S.S.R.	65.56
Pakistan (1969)	84.40 (official exchange rate)

This shows that the producers in West Pakistan get higher prices

than many other countries, from which we could infer that marginal cost

of wheat production is more in West Pakistan than in many other

countries, perhaps due to low technology. Pakistan currency is, however,

over-valued, as in the free market one dollar is equal to 9.0 rupees, in

which case the producer price in West Pakistan comes to about $45.00.

If the official exchange rate is maintained, the lower price for wheat

in the international market may hurt more wheat farmers in West Pakistan,

than anywhere else. Less price and higher marginal cost curve would

fetch a lower output, and in this case the farmers may like to divert

production possibilities to alternative uses, where the returns may be

more. To keep farmers producing just the amount needed to keep Pakistan

self-sufficient in wheat, and to maintain reasonable reserves, will require price and production policies carefully calculated to the long run demand and supply relationships--a delicate balancing effort, even if the complicating political pressures of producers and consumers can be ignored. If technology improves and productivity increases, or if cost is reduced, then the wheat farmers may produce more at lower prices, and the competitive capacity of West Pakistan in international market would increase.

As most of the exporters work on two price schemes, the producer prices are different from export prices. Our next step is to examine the export prices for wheat being received by various exporting countries, so that we could estimate the price that West Pakistan can receive for wheat in the international market. The average prices for export of wheat for different countries for the period 1961-62 to 1965-66 and actual for 1966-67 (24) are shown below: (Prices are F.O.B. exporting ports, U.S. dollars per metric ton)

Country	Quality	Average 1961-62 to 1965-66	1966-67
Argentina	No.1 hard wheat	60.48	58.65
Australia	Soft wheat	59.49	63.02
France	Soft wheat	60.78	66.50
Italy	Soft wheat	60.34 *	63.63
Mexico	Hard wheat (red)	62.93 **	58.83
Canada	Hard wheat	67.65	72.02
Sweden	Winter wheat	56.26	64.77
U.S.A.	Hard wheat	63.36	67.24
U.S.S.R	Soft wheat	69.83	66.51

* 1962-63 to 1965-66 average
** 1963-64 to 1965-66 average

The average price of wheat sold by Argentina, Australia, France, Italy and Mexico which is similar in quality with Pakistani wheat, comes

to near about $60.00 per metric ton. The price fixed by the West Pakistan

Government for support is RS.15, or $3.16 per maund, against the world

price of Rs.10.46 or $2.19 per maund (Rupees have been converted in U.S.

dollars at official exchange rates). The quality of West Pakistan wheat

is, however, not satisfactory, as it is not clean, and contains foreign

matter, which would influence the prices adversely. It may, therefore,

fetch a lower price, may be $58.00 per ton, which means Rs.10.3 per

maund. If this is the wheat export price, then the farm-price would be

less than this, as a margin has to be given to marketing cost.

Domestic producer prices: As lower prices influence the production

adversely, an F.O.B. price of $2.11 or Rs.10.3 (at official exchange rate)

per maund may depress the farm income and wheat output both. If, however,

surplus wheat is produced, then it has to be disposed of, whatever the price

may be, as domestic demand is inelastic. Almost all wheat exporters work

on two price theory i.e. domestic price is different to the export

price. This is done to protect the interests of farmers, so that farm

income is not depressed. The price discrimination model can only be

applied, if the demand elasticities are different in the two markets. In

a less elastic market, more prices can be charged, and in a more elastic

market, lower prices are recovered, but the marginal revenue should be

equal in both markets. In order to equalize both the export and domestic

prices, many countries give a subsidy on exports. West Pakistan also can

use this method, provided its resources permit.

We have shown that the support price now given in West Pakistan is

Rs.15 ($3.16 at official exchange rate) per maund, against the F.O.B.
price of Rs.10.30 ($2.11) per maund. This means that the price at farm
level would be Rs.7.30 per maund (10.3 - 3.0), Rs.3 (14) per maund being
the marketing cost from the farm to the Port level. Trade thus is not
possible if the difference in prices is so wide. Moreover, if producer
prices are reduced in consonance with international prices, the wheat
supply would reduce and there might not be any surplus. In order to main-
tain the tempo of progress, achieved in the past few years, there are
forces which would urge that West Pakistan work on a two price theory,
if there is any surplus production. If this is resorted to, then a
question arises, how we can operate with different domestic and export
prices.

An F.O.B. price of $2.11 per maund or above 18 or 19 rupees at a
much devalued exchange rate would make it barely possible to export wheat
without any export subsidy, two price system or decline in price guarantees.
In view of the probability that the 1961-66 export prices are higher than
current prices, it is clear that wheat exports are, at last, marginal to
the West Pakistan economy at present price ratios. Fixation of value of
foreign exchange in the free market, of course, would also make rice and
cotton more attractive and profitable exports depending on demand and supply
elasticities. So the export question depends upon whether Pakistan wheat
farmers can and will produce a surplus at prices significantly less than
15 rupees per maund, possibly as low as 11 or 12 rupees, or with some

systems of export bonuses or two price system. If the answer is no,

then the cost of making West Pakistan an exporter will be too costly

to the nation, whatever subsidy system might be devised.

Methods to improve primary market prices: There are three ways to make

producer prices in West Pakistan competitive in the world market as

explained below:

a) Cost Reduction: Per unit cost can be reduced either by increasing yield

with same cost, or with same yield with lesser cost; or by increasing yield

rapidly, while cost increasing less rapidly. For achieving this, technology

would have to be improved further. There may be some inefficiencies in

factor combinations, or management. Efforts could be made to locate and

remove them. Economies of size and specialization can also reduce cost,

but this could lead to concentration of holdings which may not be politi-

cally acceptable. Some of the economies of size can be achieved by coopera-

tive efforts of small farmers. In any case, concentrated research is

needed to find out ways to reduce cost. This may, however, take some time,

as the farmers are not well trained now in the new technology. If per unit

cost is reduced, the farmers' income would not be so much affected by

lower prices and the wheat would become competitive in the world market.

b) Subsidy to producers: Many countries give subsidy to the domestic

farmers for the surplus wheat, procured for export to foreign countries.

Some Western European countries provide maximum subsidies to produce wheat

surplus. They protect the domestic agriculture, on the plea, that self-

sufficiency is essential because during war days, imports are not possible.

If West Pakistan acts on this principle, it would have to give a subsidy of at least Rs.8 per maund (18 - 10) without devaluation. The support price is Rs.15 per maund, and Rs.3 is the estimated marketing cost from the farm to the Port, which makes the total cost as Rs.18 per maund. The F.O.B. price for export is Rs.10.3 at the rate of $58.00 per ton and the subsidy per maund would thus be Rs.7.7 or Rs.8, or Rs.220 per ton. If one million tons of wheat is exported, the total expense on this score would be Rs.220 million, which is a huge burden on the growing economy, and the present financial situation may not permit West Pakistan to resort to this policy.   '

c) Bonus scheme: The third alternative is to allow a bonus on the export of wheat, as is allowed for many manufactured and agriculture goods. The bonus rate varies from 10-50 percent for various commodities. In this case, the Government would not bear any expense, except that a foreign exchange bonus voucher is issued by the Central Bank of the country (7). These bonus vouchers are sold to importers who pass the charges on to consumers, who buy the imported goods that the bonus vouchers made possible. The present premium rate is 180 percent, but it is fluctuating and varies from 150 to 190 percent. If the premium rate is 170 percent and the Government decides to give a bonus on wheat exports, the domestic price at various bonus rates would be as under, keeping F.O.B. price of Rs.10 pre maund at Karachi:

Bonus rate, percentage	Value of bonus	Domestic bonus price	Farm price after deducting the marketing cost of Rs.3 per maund
0	0	10.0	7.0
20	3.4	13.4	10.4
30	5.1	15.1	12.1
40	6.8	16.8	13.8
45	7.65	17.65	14.65
47	7.99	17.99	14.99
48	8.16	18.16	15.16
50	8.5	18.5	15.5
60	10.2	20.2	17.2

It would be observed, that in order to maintain the present support price of Rs.15 per maund, the Government would have to give a bonus of 47% of the export value. If the support price is increased, a higher bonus rate would be needed to equalize the domestic and international wheat prices. As the yield of wheat increases, the Government may reduce the support price, in which case the bonus rate should also be reduced, so that export and support prices are equalized. Similarly if the premium rate comes down, then the Government would have to increase the bonus rate or the support price would be reduced. In the long run, when the new technology is established firmly, and adopted by majority of the farmers, the yield may go up and reduce the cost of production per unit. In this case both the support price and the bonus rate could be reduced. As this scheme does not involve any additional Government investment, it

would not influence the present spending policies much, but it would affect the consumers, as the prices of imported goods would increase.

Quality of Wheat: Dr. Madil (27) has indicated that the quality of West Pakistan wheat is not up to the international standard, as it contains some foreign matter, and also its nutritive contents are poor, as compared with others. West Pakistan produces medium hard and soft wheat, which is not considered of good quality. Medium hard wheat is produced by Argentina and U.S.S.R. and for bread making is mixed with the hard spring and winter wheats produced by Canada and U.S.A. The hard wheat has more protein also. Soft wheat which has also low protein contents, is produced by Western Europe, Australia, Mexico and also U.S.A. C.A. Hiscocks (18) has calculated the percentage share of various qualities of wheat in the export market and it is summarized below:

Year	Hard Spring	Hard Winter	Medium hard	Soft ,	Durum	Total
1960-61	32	26	17	21	4	100
1961-62	23	27	17	31	2	100
1962-63	22	25	19	32	2	100
1963-64	29	26	8	34	3	100
1964-65	21	27	13	37	2	100
1965-66	27	25	17	28	3	100
1966-67	31	17	14	34	4	100

It would appear that soft wheat is gaining importance and it is likely--due to appearance of and the expanding of exports of France and several other soft wheat producing countries. With usual premiums on hard wheat varieties, one way to improve the quality of wheat in West Pakistan, is to find a hard wheat variety which could grow in conditions

available in West Pakistan. Also Pakistan must adopt measures to ensure

cleaning and grading in the light of international standards.

Transport Cost: Transport cost plays an important role in international

trade, as some trade can primarily be based on transport cost, and has

little to do with factor endowments. The importing countries are interested

in C & F prices i.e. prices at the port of importation. It is therefore,

necessary that the price differences in trading countries should be wider

than the costs of transfer. Assuming that the cost of insurance and

handling charges etc. is same for all imported wheat from different coun-

tries, and same tariff rules apply to all, the C & F cost in an importing

country would vary for wheat imported from various countries due to

differences in transport cost. The variations in transport cost based

on average of 1965-66 to 1967-68 (24) for different countries are shown

below:

Exporting Country	U.K.	Hamburg Germany	Rotterdam Holland	Japan	India East Coast
			U.S. dollars per metric ton		
Argentina	12.29	11.30	10.86	–	–
Australia(West)	11.29	10.05	10.05	7.84	9.03
North Pacific	10.42	6.86	6.34	8.17	11.40
Canada	8.23	3.31	4.12	–	–
U.S. Atlantic	8.59	4.57	4.38	–	–
U.S. Gulf	9.00	5.04	4.87	–	15.08

The freight rates from Pakistan to various countries are shown below:

United Kingdom	$ 9.8
Iraq, Iran, Saudi Arabia, Persian Gulf States	$ 4-5
India (Rail from Lahore to Amritsar)	$ 2.0
Afghanistan	$ 2.0

If the export price of wheat from Pakistan is $58.00, India and
Afghanistan would have to pay $60.00 inclusive of freight. On the
other hand, if wheat is purchased by these countries from elsewhere,
they would have to pay $69 to $75 per ton. Similarly the Middle East
countries would pay a lesser C & F price for wheat imported from Pakistan.
Average C & F prices of 1967-68 (24) in some of the wheat importing
countries of Europe are also given below for further illustration:

		Importing Country	
Exporter	U.K.	Rotterdam	Japan
		U.S. dollars per metric ton	
Argentina	71.20	67.93	–
Australia	67.24	–	67.65
Canada (hard)	80.98	77.06	78.54
France	60.31	–	–
U.S.A. (soft)	69.09	–	–
U.S.A. (hard)	74.77	68.72	73.98

If the F.O.B. price Pakistan ports for wheat is $58 per metric ton,
and as mentioned above, the freight cost is $9.8 per ton, the C & F
cost in United Kingdom would be $67.8, which appears competitive with
Argentina, Australia and U.S. soft wheat. Similarly in Japan, Pakistan
could compete with Australia at this price. In any case, if Pakistan
cannot compete with the potential wheat exporters in developed countries,
it has a locational advantage for neighbouring countries, as all the
exporters are far away from these importers. Pakistan could thus exploit
this situation.

Chapter V - Price Policy and Its Implications

The equilibrium price of a commodity in the market economy is determined when demand and supply equates. If the price rises, more would be produced and offered for sale, and when the price is less, production would decrease, but more would be demanded. If the resources are not profitably employed in one industry, they would shift to other sectors, where prices are favourable and in this way equilibrium in supply and demand is again attained in the first industry, though at a different price. Prices influence production; at favourable prices production of a commodity would increase; and reverse would happen, if prices decrease. Change in production would influence employment and income of the resources employed in a particular industry. When income changes, the consumption and saving ratio would also change, affecting the consumption pattern and demand of a commodity. In perfect competition, automatic adjustment in prices and all other things is assumed. In agriculture, however, the conditions are not perfect, as the resources do not move as the prices change, demand and supply are inelastic, and knowledge of the producers is not perfect, with the result that when supply increases, equilibrium occurs at lower produce prices which results in a decrease in farm income with other problems. This necessitates fixing minimum prices for agriculture products in the interest of the whole society. Thus price policy can achieve many objectives and the purpose of this chapter is to study the wheat price policy in West Pakistan and its implications.

The objective of the price policy: We have seen that the new technology

is capable of increasing wheat production tremendously in West Pakistan, provided prices are favourable, wheat procurement is efficient and prices are fixed much before the sowing starts. As favourable wheat prices would lead to more production, the objective of the price policy in the initial stage should be to achieve self sufficiency. At a higher price of wheat, more area would be put under this crop, and more new inputs would be employed, resulting in more wheat production. The increased supply would remove the deficit in wheat and self-sufficiency would be attained. As product prices are favourable, and more inputs are used, the demand for inputs would increase and if their supply does not change, input prices would go up, which may discourage their use. It is, therefore, necessary that supply of inputs should be increased, if higher product prices occur. As wheat is the main diet in West Pakistan, a higher wheat price would hurt the consumers, and if wages go up, input prices tend to go up, which could reduce farmers gain. When self-sufficiency is achieved, the objective of the price policy should be changed to check over production, as domestic demand is inelastic and prospects of export are not good. At this point, it should be so formulated, that it helps in controling over supply and shifting resources to other crops, which could compete with wheat. The wheat price should, however, remain reasonable, so that it may not prove a dis-incentive to the producer. A lower price would benefit the consumers, but may also affect the demand for inputs, their production and employment. Since West Pakistan has already achieved self-sufficiency, now the policy makers should watch the situation closely.

Operation of the Price Policy: The support price for wheat in 1967-68 was Rs.17 per maund, and it was reduced to Rs.15 per maund, before the harvest of 1968-69 wheat crop. The effects of the reduction in support price can be seen only when the 1970 crop is harvested, although some ideas can be gathered from decisions at planting time--November, 1969. As shown in chapter 3, even at the support price of Rs.15 per maund, the additional returns are more than the additional cost of new inputs and this incentive is likely to encourage more production of wheat, shifting the supply curve further to the right. This could create a problem of over production, and the Government would have to buy stocks, tying up a substantial amount of money. It is estimated that at present the West Pakistan Government is spending about Rs.400 millions on this score. But some purchases have to be made, if reserve stocks are to be maintained. Favourable weather, ample supplies of inputs, and further adoption of new technology could provide supplies beyond that needed as reserves. As domestic demand is inelastic and export possibilities are not bright, such surplus stocks over the self-sufficiency level, cannot be disposed of and the tying up of Government money on wheat procurement would become a permanent feature. Measures would therefore, be needed to control supply.

A lower support price could reduce the difference between the additional benefits and cost of new inputs to some extent, and the farmer might slow down the use of new inputs. This means that the marginal cost would intersect the marginal revenue at a lower output level, and supply would reduce. The additional cost of five bags of fertilizers and tubewell water

comes to Rs.67.5 per acre and would give an additional production of 1417 lbs or 17 maunds. At the present support price of Rs.15 per maund, the additional income would be Rs.258 per acre. If the support price is reduced to Rs.14 per maund, the additional income would be Rs.238 per acre and if it is Rs.13 per maund, the additional income would be Rs.221 per acre. This shows that even at a lower support price, the difference in the additional cost and additional returns is significantly high, and a lower support price should not be a dis-incentive to modernization by the farmers. If double cropping is carried out, then the combined returns per acre would increase further, since the earliest date consistent with commitments to farmers to change the guarantee would be after the 1970 harvest, and before the 1970-71 planting period--say about September 1970. If not then, the change may be possible later in the 4th Plan, at a time, when the new technology has become widespread.

Another measure to influence supply is to change prices of variable inputs. If the product price is favourable, and input prices are not high, more inputs would be used; the reverse could happen, if input prices are high enough. As profits are maximized when M.V.P. = M.F.C., cheaper inputs would give a higher output level. Low input prices should, therefore, be kept up to the level of self sufficiency. If over supply is noticed, discouragement of their use may be attained, through higher input prices, which could result in less production or slower rates of increase. The West Pakistan Government is providing subsidies on many inputs; if they are reduced, the input prices are likely to increase. In the case of fertilizers, the farmer often pays a black market price; if the subsidy

is reduced, and the fertilizer supply is increased, there could be little

effect on demand of fertilizers, provided prices remain near about black

market rates. It may be noted that the subsidy on chemical fertilizers

was started initially to popularize their use. As the farmers have

realized their importance now, the subsidy could be dispensed with alto-

gether or substantially reduced. Similarly, there is a need to rationalize

canal water rate in West Pakistan. Charges should be according to the

quantity of water used, as is being done in other countries. Similar

reductions in other subsidies could be considered. These measures would

increase the additional cost of wheat production, and reduce the farmers'

gain, and could result in less production of wheat or slower rates of

increase. Higher input prices, however, may discourage their use in

alternative crops to replace wheat, in case over production of wheat

occurs. This can be resolved to some extent by giving higher support

prices for such crops, lower prices to wheat, or by giving subsidies to

producers in some other forms.

Fixed inputs, e.g. land could also influence supply, if the area

under wheat is to be changed. When over production of wheat is taking place,

the objective of the price policy should be to encourage alternative

winter crops so that self sufficiency in them is also attained, and if

possible to develop exports. This would encourage shifting of resources

from wheat to other crops, such as oilseeds, pulses, vegetables, fruits,

cotton, sugarcane, sugarbeet, coarse grains and fodders, whose demand is

also growing rapidly as shown below:

Growth of population in 4th plan (10)... High population projection = 3.22
Medium   "   "   = 2.46
Low   "   "   2.07
Average   "   "   2.58

Growth of income in 4th Plan   ...   3 percent per capita per year (37)

Growth rate of demand = Population + income (income elasticity (1)

Pulses	...	2.58 + 3 (0.35)	=	3.63 percent per year
Milk	...	2.58 + 3 (1.04)	=	5.70 " " "
Butter	...	2.58 + 3 (1.37)	=	6.69 " " "
Fruits & vegetables		2.58 + 3 (0.78)	=	4.92 " " "
Mutton	...	2.58 + 3 (1.46)	=	6.96 " " "
Beef	...	2.58 + 3 (0.53)	=	4.17 " " "
Chicken	...	2.58 + 3 (1.82)	=	8.04 " " "
Eggs	...	2.58 + 3 (2.01)	=	8.61 " " "
Sugar	...	2.58 + 3 (0.78)	=	4.92 " " "

At present, returns per acre of most of these crops are less than
wheat, due to a low level of technology, and this could hamper shifting
resources from wheat to these crops. Their demand, however, is increasing
at a higher rate than wheat, and if supply is not increased, their prices
would go up, and this could make up the deficiency. Moreover if their
technology is improved while price incentives prevail, the farmers may
shift resources to these crops. However, double cropping could also influence
this process. If double cropping of wheat-maize/rice is carried out, the
per acre return would increase, and this might discourage shifting of
resources from wheat to other Rabi crops, even if wheat price is relatively
lower than other crops. This double cropping could also influence cotton
production. It is, therefore, necessary to take special care, while
fixing prices of various crops. Pakistan is importing edible oils,
and sugar and if the production of these crops increases, there would be

significant foreign exchange saving. Some of these crops would also help
in alleviating protein shortage, as their supply increases, and they come
within the reach of lower income groups. Similarly cotton exports can
be increased, and even new crops can be introduced in the export market
e.g. coarse grains, vegetables, fruits and animal products, provided
processing is carried out and quality is brought up to the international
level. Higher support prices for these crops, would, however, result in
higher consumer prices, which might create some other problems. If
technology is improved resulting in higher yield, then even a lower support
price may help shifting resources from wheat to these crops. If, however,
the support prices in wheat and competitive crops are increased in the
same ratio, there might not be a significant effect on resource shifting.
If it is decided to control wheat supply by reducing or shifting the area
under this crop, our next step would be to make an estimate of it and to
see how it could be utilized, which is discussed in the next section.

Alternative employment of land: The wheat production target for 4th plan
in West Pakistan is 9.5 million tons, and the yield of new varieties is
estimated as one ton per acre. This means that the area required for pro-
ducing 4th plan wheat target is 9.5 million acres. The area under wheat
in 1967-68 (36) was 14.785 million acres, of which 10.096 million acres is
irrigated. For 1968-69 the total area was about 15.00 million acres. This
shows that over 5 million acres would become surplus, if wheat production
is restricted to the 4th plan target of 9.5 million tons, and if all irrigated
acreage uses Mexi-Pak seed. We have pointed out in the previous chapter

that a wheat target of 9.5 million tons will not bring self-sufficiency
in the whole country, and build up a food reserves. If we give a margin
of 1.0 million acres (for 1.0 million tons) to make up the deficiency
and building food reserves, the total area needed for domestic needs would
be 10.5 million tons, in which case the surplus area would be 4.50
million acres. If the surplus area remains under wheat production, there
would be problem of excess supply, as the chances of expansion in wheat
demand are not good. In the light of this, it would be worthwhile to
achieve no more than self sufficiency in wheat, shift the surplus area
to other crops, and follow a policy of import substitution and diversi-
fication of trade patterns. Price policy would be manipulated to achieve
this objective. The possible alternative employment of this area is
discussed below:

i) As new varieties are more profitable in irrigated areas, the surplus
wheat area would mainly be concentrated in rain-fed zones. We should,
therefore, encourage crops in this area whose water requirements are less.

ii) Winter oilseeds could be one alternative. Pakistan imports edible
oils worth 110 million rupees and if oilseeds production is increased,
there would be considerable foreign exchange saving. The present consumption
of edible oils (26) is 400,000 tons against the domestic production of
200,000 tons. As the yield of these crops is very low, improvement in
technology is of paramount importance. Higher support prices could,
however, enable these crops to compete with wheat. Groundnuts have proved
a very productive crop in rain-fed areas, but its sowing season is April.

If a barley/gram-groundnut rotation is followed, it can replace wheat.
The average yield in 1967-68 (36) of groundnut was 15 maunds per acre and
the price in that year varied from Rs.20-25 per maund, meaning an income
of Rs.300-375 per acre, against Rs.105 (15 x 7) per acre from wheat.
This rotation has thus a very good scope to compete with wheat in rain-fed
areas. There may, however, be some difficulties of extension, as this
is a new crop with limited demand due to lack of interest among possible
processors. Experiments to grow sun-flower, safflower and soya beans
have shown encouraging results, and some area can also be put under these
crops.

iii) Rabi pulses e.g. Gram or Masoor combined with Maize, Jowar and Bajra
could be another alternative to replace wheat. Pulses contain much protein
and can be a poor man's meat. In this way protein shortage can be lessened.
Maize Jowar and Bajra could be used as feed for animals and a cattle
breeding industry could flourish. As the demand for animal products is
growing tremendously, it is necessary to increase the supply of these
products at a higher rate. As returns from these Rabi crops are very
low, as compared with wheat, measures would be necessary to improve technology,
so that yield is increased.

iv) Barley/ Gram/Fodder production for cattle breeding in Rabi and Maize/
Jowar/Bajra production in Kharif could be another possibility for cattle
breeding. Coarse grains have also some export potential, as there is some
demand of these commodities in developed countries. Here again improved
technology and higher support prices are needed to compete with wheat.
West Pakistan can, however, place some of the wheat surplus area under

these crops.

v) Some vegetables e.g. potatoes and fruits production is another possibility to replace some of the wheat area, depending on the extent of rain-fall and water requirements of these crops. Some rain-fed area, accessible to the markets, can be placed under these crops, so that marketing cost is reduced. If processing and preservation is carried out some of these crops may find an export market.

vi) Double cropping should also be tried in the wheat cultivation areas, which receive regulated irrigation water. Maize, rice, jowar, bajra, vegetables and cotton and sugercane if early maturing varieties are evloved, could prove excellent second crops to be combined with wheat cultivation. Double cropping can promote commercialization in Agriculture and would improve farm income. If small farmers adopt this method, they could increase their marketable surplus.

vii) If small irrigation projects are implemented in rain-fed areas, e.g. small dams, tubewells, wells, tanks etc. sugarcane, sugar beet , cotton, fruits and vegetables can also be grown in this area. Studies should be carried out to locate places for construction of small dams, and to test the ground water suitability.

The farmers of un-irrigated areas sow wheat mainly because it is a food crop and they do not want to depend for food on others, being one of the characteristics of a subsistence economy. The Government could provide food to these cultivators at subsidized rates, so that they could change the present cropping pattern and adopt the new technology. This subsidy can be justified on the grounds that these farmers have not reaped

the benefits of the new technology. If input subsidies, which are not utilized by these farmers, are reduced and food subsidy is started, there might not be any additional burden on Government treasury. However, the actual administration of such a program, whatever its social and economic justification, may be too difficult to warrant its use. Such a program, if effectively implemented, would not only increase the effective demand, but also would provide an incentive to produce other crops which are in short supply. A new cropping system in the rain-fed area, may also work for a better distribution of income in this area, and bring diversification of trade patterns, and import substitution resulting in foreign exchange saving.

Effect on income distribution: Price policy influences the income distribution also. The producers of favoured crops obtain a greater share of the income than others, and similarly innovators benefit more than those who are later starters. The new technology in wheat was mainly followed by the large farmers and those too, who had controlled irrigation system. Due to capital limitations, risk in the adoption of new technology and nonavailability of inputs, the small farmers could not gain much from the price support and subsidies, with the result that problems of income distribution have widened. When the income is low, the purchasing power would be low, and consumption would be affected. This would influence the demand for industrial and agriculture products, and could lead to unemployment, when less is produced due to low demand. This would further worsen the conditions. Low purchasing power thus influence the whole economic system and it is essential to give adequate attention to this problem, before it becomes uncontrolable.

In West Pakistan (2) only 9.1 percent of total wheat farmers have holdings of more than 25 acres, and 28% whose holdings are 12.5 acres and more. Wheat farmers of under 5 acres, represent 49% and command about 9% of total wheat area. This means that these small farmers, who produce for their own consumption only, have not gained much from the new technology. Similarly wheat farmers in the barani area (rain-fed) have not benefited from the new technology, as the new varieties give better results when plentiful water and fertilizers are combined. As there are uncertainties about rain-fall, the farmers in this area do not take the risk of spending money on new inputs. Tenant farmers have their own problems, as in many cases, absentee landlords do not share the cost of new inputs, but share the product. As the gap in the income of large and small farmers is widening due to differences in earnings, this may lead to concentration of holdings in which case, the small farmers may migrate to urban areas. No doubt this will bring efficiencies in agriculture production, as economies of size can be exploited, and also the saving ratio would increase, which is very important for capital formation. At the same time, however, unemployment could increase in cities, where the non-agriculture sector may not be able to employ them at the present stage of development. Thus, some small farmers will remain in agriculture as low income agricultural laborers. To limit such developments, sound credit programs for small farmers, technical training, easy access to inputs, sharing of cost of new inputs by land-lords, security of tenure, provision of irrigation facilities in rain-fed areas etc. are some measures which could improve the lot of small and barani farmers.

The West Pakistan Government gives a number of subsidies on inputs, e.g. seed, fertilizers, mechanization, tubewells, plant protection etc. The objective is to firmly establish the new technology. The third plan allocation (34) for the whole Agriculture sector which includes Agriculture, Animal Husbandry, Forests, Fishers, Colonization etc. was Rs.1621.87 millions, out of which the allocation for direct subsidies alone was Rs.753.73 millions or 47% of the total allocation. As the new technology has mainly been adopted by farmers with large holdings, the benefits of it and these subsidies have mainly been reaped by them. In order to offset the gap created by these subsidies in the income of large and small farmers, it might be worthwhile to transfer some of the benefits of new technology to the small farmers by selling food at subsidized rates, but especially by encouraging them to improve their technology.

The land taxes in West Pakistan are proportional, but the benefits mainly go to the upper category of land-holders, and this is another factor, which is affecting the income distribution in the rural areas. The tax structure if made progressive, could bring some relief to the small farmers, perhaps by tax exemptions to small farmers or by levies according to the earnings of individuals. Thus fiscal policy could provide some help in reducing disparity in income, and improving the purchasing power of small farmers. The fiscal policy can also help in transfering agri-culture surplus to other sectors' development, which would result in increasing employment opportunities for accommodating surplus agriculture labour.

<u>Effect on Marketing</u>: Increases in production influences the marketing structure. As the marketable surplus increases, due to more commercialization in agriculture, more marketing facilities are required both for inputs and outputs. For moving the inputs to the farm, and output from the farm to the marketing centres, an efficient transport system is very important. Price incentives would be more effective if the new inputs are available at the appropriate time and place, and if the marketable surplus is sold without difficulty, which needs efficient system of distribution and collection. Adequate storage facilities are also needed for storing the reserve stocks, otherwise losses are likely to occur. For improving the quality of wheat, an efficient grading system is also required, which is particularly important if wheat is to be exported. An efficient marketing system provides an incentive to the producers and it would be worthwhile to improve it.

Chapter VI - Conclusions and Recommendations

In this study an attempt has been made to analyze the propsects and implications of wheat production in West Pakistan during the fourth five year plan. The conclusions and recommendations are summarized below:

1. A target of 9.5 million tons in 1975 will not bring self sufficiency, as after giving a margin for feed, seed, and wastage, only 8.550 million tons would be available for human consumption, against the demand of 8.861 million tons. A margin for food reserves is also required for adverse circumstances. It is, therefore, necessary to keep the 4th plan wheat target flexible, and the situation may be reviewed every year in the light of circumstances available. As domestic demand is less elastic and export possibilities are not good, the target should be that combination of price and production policy, which best aims at attaining wheat self sufficiency in the whole country. When this is achieved, the price and production policy may need a modification to control supply. Continuous economic research is, therefore, necessary to study the implications of price policy, costs and benefits of alternative policies and resource use, implications of input prices, distribution of income and potentialities for exports, etc.

2. Inspite of some yield increases in the last two years, the wheat yield in West Pakistan is still very low as compared with other countries. It appears that there are some inefficiencies in the production functions. The factor combination is not economic, and input manufacturing is expensive, for which Government has to give subsidies. In Japan (30), 2.4 lbs of wheat are required to buy one lb. of nitrogen, against which 5 lbs of

wheat is needed to buy one lb. of nitrogen in Pakistan, if no subsidy
is given. In spite of subsidies, the input prices are higher than
elsewhere in the world, and there is a need to examine this matter. To
make wheat cultivation competitive both cost reduction and yield increasing
techniques play a vital role; this can be achieved by proper allocation
of factors of production and by improvements in technology.

3. The support price should be fixed taking into consideration conditions
of demand and supply and also prices received by farmers and prices paid
by them for inputs and other purchases. In this way we could identify a
parity ratio that could provide more understanding before fixing a support
price. At present, the prices are fixed more or less arbitrarily without
any economic analysis. Of course, we will have to give consideration
to likely costs of production and reasonable profits, when possible.

4. As the international wheat situation is not favourable, West Pakistan
could consider the alternative of diversifying production and trade patterns,
instead of seeking major wheat exports. Import substitution crops appear
to be a more feasible program, which would bring foreign exchange savings.
At present Pakistan imports half her edible oils. When foodgrain self
sufficiency is achieved, and a need arises to reduce area under wheat,
oilseeds can replace wheat to some extent, as the growing season is the
same. Similarly some area can be shifted to sugarcane and sugar beets,
as sugar is presently imported. Exports can be increased by more
production of cotton and perhaps coarse grains, by putting more area
under these crops. Pakistan desperately needs to increase exports and/or

decrease imports. Price policy can help make some adjustments in this regard.

5. Disparity in income between large and small farmers is increasing, as the benefits of the new technology and subsidies are mainly going to large farmers and especially those in the irrigated areas. Sound credit program for small farmers, food at subsidized rates to cover the risk of adopting the new technology by small farmers, technical training, easy access to inputs, sharing of cost of new inputs by landlords in the case of tenant farms, irrigation facilities in the rain-fed areas, double cropping, tax exemptions etc. are some of the measures, which could help in alleviating the disparity in income. Fiscal measures could also help in shifting some of the agriculture surplus to assist the development of other sectors, which would create employment for the migrating agriculture labour.

6. Farmers have responded well to the new technology, but this is just a start and not the end. There are dangers from diseases and insect attacks on the new varieties which could deteriorate the yield. Constant research on such problems along with the development of new varieties is of paramount importance. Similarly, improvements in Agricultural Extension are needed.

7. The increased wheat target in the 4th plan will require much larger quantities of inputs. Improvements in the existing input distribution system are needed to handle the increasing quantities. Remote areas still do not get new inputs. During the third plan, the private sector became

a participant in the distribution of fertilizers, but since it works

on profit motive, and as demand in remote areas is not very large due to

ignorance and low income of farmers, and the not very favorable physical

environment, the private sector does not give much attention to these

areas. In such places, the Government agencies may have to handle the

distribution of inputs. Similarly, plant protection work is handled by

the extension staff. The work is so large that the extension staff can-

not handle it properly. In order to tackle this problem, either the

private sector should become involved or the farmers should be trained to

handle such operations. We should also try to make the farmers more self-

reliant so that their dependence on Government in every walk of life is

reduced. This can be done at least in plant protection operations.

Similarly subsidies in other inputs should be tapered off.

8. Due to more and more commercialization of agriculture, the marketable

surplus is increasing rapidly. The existing marketing structure cannot

cope with the growing needs. A proper marketing organization would help

in setting up new marketing centres, ware-houses, storage, transport,

quality control, handling of grading, enforcement of marketing rules and

regulations and reduction in fraudulent practices of middlemen.

9. If West Pakistan decides to export wheat, then the Government would

have to extend the Bonus Scheme to wheat exports also (or establish a more

realistic exchange rate). Before giving bonus, however, intensive

economic research is of utmost importance. The bonus may be given at about

50 percent of F.O.B. prices in the initial stages, so that West Pakistan

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Annuexure I

Background Information

Wheat is the most important agriculture crop of West Pakistan. It is the main staple food, constituting 70% of the total food availalbe. Sixty three percent of the calories consumed per head are obtained from it. In 1967-68 44% of the total area sown in West Pakistan was under wheat. It is thus the backbone of the West Pakistan economy.

The soils and climate of West Pakistan are quite suitable for wheat cultivation. West Pakistan is situated in a low rainfall area, but this deficiency has been made up by providing irrigation. The table below[5] shows the area irrigated in 1964-65 in West Pakistan:

Source	Area Irrigated in Million Acres
Canals	22.142
Tubewells	1.383
Wells	2.390
Tanks	0.031
Others	2.474
Total	28.420

The area under wheat in 1967-68 was 14.785 million acres, of which 10.096 million acres were irrigated. In 1966-67, 13.192 million acres were under wheat, out of which 9.141 million acres were irrigated.

According to the Agriculture Census[2] the total number of farms in West Pakistan was 4,859,983 with an area of 48,929,583 acres. Fifty percent of the farms had a size of less than 5 acres per holding, and had 9% of the total area under cultivation. Forty one percent of the area was owned by 7 percent of the farmers, and the size of the holdings was more than 25 acres. Seventy eight percent of the farms had only 31% of the area, and the size of holdings

did not exceed 12.5 acres. Thus, West Pakistan has a serious problem of concentration of holdings.

The number of farms sown with wheat according to the 1960 Agriculture Census was 3,179,195 and the area under cultivation was 13,030,529 acres. Twenty three percent of the wheat growing farms had a size of less than 2.5 acres; 31% of these farms had a size of 2.5 to 7.5 acres. Forty two percent of wheat area was on holdings of the size of less than 12.5 acres, and 58% on holdings having an area of 12.5 acres and more.

The main concentration of wheat is in the Central region, which comprises Rawalpindi, Lahore, Sargodha, Multan and Bahawalpur Civil Divisions.[5/] This region grown 72% of the total wheat area in West Pakistan, and has 75% of the irrigated wheat area of the Province. The Southern region, which comprises of Hyderabad, Khairpur, Karachi, Quetta and Kalat Divisions grows 18% of the total wheat area, and has 20% of the irrigated area of the Province. The Northern region, which consists of Peshawar, Dera Ismail Khan and Malakand divisions has 10% wheat area, and 5% of the irrigated area.

Appendix No. 1

Number and Area of Farms Classified by Tenure & Size in/Pakistan

Size of Farm (acres)	No. of Farms				Farm area (Acres)			
	Total	Owner Farms	Owner Cum-Tenant	Tenant Farms	Total	Owner Farms	Owner Tenant Farms	Tenant Farms
Under 1.0	742,216	460,890	35,478	245,848	334,356	198,460	21,414	114,482
1.0 to under 2.5	855,732	414,252	95,384	346,096	1,345,475	648,034	161,123	536,318
2.5 to under 5.0	805,984	327,468	145,397	333,119	2,911,101	1,167,384	533,687	1,210,036
5.0 to under 7.5	580,952	202,281	121,434	257,237	3,545,720	1,226,443	747,458	1,571,819
7.5 to under 12.5	758,703	231,792	171,228	355,683	7,356,971	2,242,022	1,666,644	3,448,305
12.5 to under 25.0	728,909	219,607	168,968	340,334	12,533,019	3,746,685	2,922,337	5,863,997
25.0 to under 50.0	285,882	93,674	70,712	121,496	9,467,641	3,113,601	2,381,671	3,972,369
50.0 to under 150.0	87,624	38,918	22,946	25,760	6,538,883	3,008,591	1,692,802	1,837,490
150.0 and over	13,981	8,854	2,710	2,417	4,896,411	3,371,685	884,458	640,268
Total	48,59,983	1,997,736	834,257	2,027,990	48,929,583	18,722,905	11,011,594	19,195,084

Source: Agriculture Census 1960, Pakistan, Vol. II

Irrigated Wheat Acreage Classified by Size of Farms

in West Pakistan

Size of Farm (acres)	Farms Reporting Wheat		Irrigated Wheat Farms	
	Number	Area Under Wheat (acres)	Number	Area Under Wheat
Under 1.0	266,691	108,430	115,032	47,227
1.0 to under 2.5	472,275	480,626	274,628	263,522
2.5 to " 5.0	545,030	1,054,463	335,262	597,166
5.0 to " 7.5	426,446	1,254,487	282,859	757,119
7.5 to " 12.5	588,279	2,511,535	420,795	1,626,378
12.5 to " 25.0	588,668	3,874,166	444,568	2,618,798
25.0 to " 50.0	226,284	2,465,117	168,288	1,645,459
50.0 to " 150.0	57,470	1,027,209	34,319	555,488
150.0 and above	8,052	254,496	4,936	163,220
Total	3,179,195	13,030,529	2,080,687	8,274,377

Source: Agriculture Census, 1960. Pakistan, Vol II

Appendix No. 3

Area & Production of Wheat in West Pakistan

Year	Area (Thous. acres)			Production (thous. tons)	Yield		
	Irrigated	Un-Irrigated	Total		Mds.	Lbs.	
1948-49			10591	3974	10.2	838.4	1 Md= 82.2 lbs.
1949-50			10336	3862	10.2	838.4	
1950-51			10799	3930	9.9	813.8	
1951-52			10148	2961	7.9	649.4	
1952-53			9432	2367	6.8	559.0	
1953-54			10416	3587	9.3	764.5	
1954-55	Not Available	Not Available	10530	3136	8.1	665.8	
1955-56			11172	3317	8.0	657.6	
1956-57			11587	3581	8.4	690.5	
1957-58			11388	3508	8.4	690.5	
1958-59			11933	3845	8.8		
1959-60			11964	3711	8.4	690.5	
1960-61			11560	3773	8.9	723.4	
1961-62			12191	3910	8.7	715.1	
1962-63			12512	4123	8.9	723.4	
1963-64	7834	4483	12317	4118	9.1	748.0	
1964-65	8505	4693	13198	4546	9.1	748.0	
1965-66	8751	3987	12738	3854	8.3	682.3	
1966-67	9141	4064	13205	4266	8.8	723.4	
1967-68	10096	4689	14785	6317	11.6	953.5	

Source: a) Up to 1955-59, Planning Commision, Pakistan Handbook of Agriculture
Statistics.

b) From 1959-60 to 1967-68, Planning & Devel. Bd., West Pakistan, Performance
Statistics.

Projections of Population by Various Agencies
in Pakistan.

Figures are in Millions

Year	United Nations 1964				U.S. Bureau of Census 1965				Pakistan Planning Commission			FAO	Mohd Khalid Hayat Khan	Dr. S.A. Abbas		Census Organization of Pakistan, 1961, revised in 1967		
	Constant	High	Low	Medium	Constant C.M.	Declining C.M.	Constant D.M.	Declining D.M.	Low	Med.	High			Med.	High	High	Med.	Low
1961	92.6	92.6	92.6	92.6	-	-	-	-	92.0	99.0	100.0	-	93.49	101.5	104.0	93.72	93.72	93.72
1962	-	-	-	-	-	-	-	-	-	-	-	104.73	-	-	-	-	-	-
1965	-	-	-	-	-	-	-	-	-	-	-	113.11	-	-	-	-	-	-
1966	-	-	-	-	115.4	115.4	115.6	115.6	103.0	112.0	119.0	-	103.17	119.32	127.03	106.94	106.94	105.99
1970	-	-	-	-	-	-	-	-	-	-	-	129.30	-	-	-	-	-	-
1971	121.0	121.1	118.6	120.6	135.9	132.9	136.9	133.9	114.0	127.0	142.0	-	115.33	-	-	123.51	121.96	119.48
1975	-	-	-	-	-	-	-	-	-	-	-	146.66	-	-	-	-	-	-
1976	-	-	-	136.8	160.8	150.8	163.7	153.3	125.0	146.0	169.0	-	130.65	157.78	183.61	144.56	138.32	133.15
1981	161.7	158.8	146.3	153.6	191.4	173.4	197.6	178.5	-	-	-	-	-	-	-	171.56	159.62	151.18

C.M. = Constant Mortality

D.M. = Declining Mortality

Source: Population Projections of Pakistan 1961-1981, Govt. of Pakistan Census Organization.

Appendix No. 5

Population Of West Pakistan

	Male	Female	Total
			Figures in 000

High Fertility Projections

	Male	Female	Total
1961	229.60	199,20	428,80
1966	259,28	228,96	488,24
1971	296,72	265,87	562,59
1976	345,74	313,60	659,34
1981	410,75	376,31	787,06

Medium Fertility Projections

	Male	Female	Total
1961	229,60	199,20	428,80
1966	259,28	228,96	488,24
1971	291,94	261,31	553,25
1976	327,51	296,26	623,78
1981	375,86	343,22	719,08

Low Fertility Projections

	Male	Female	Total
1961	229,60	199,20	428,80
1966	257,19	226,97	484,16
1971	287,82	257,39	545,21
1976	318,80	288,00	606,80
1981	361,35	329,48	690,83

Source: Population Projections of
           Pakistan 1961-1981
           Govt. of Pakistan
           Census Organization

Annual Rate of Growth of Population in

West Pakistan

	Total	Male	Female
	High Fertility Projections		
1961-66	2.63	2.45	2.84
1966-71	2.98	2.73	3.05
1971-76	3.22	3.10	3.37
1976-81	3.61	3.50	3.72
	Medium Fertility Projections		
1961-66	2.63	2.45	2.84
1966-71	2.50	2.37	2.66
1971-76	2.46	2.25	2.48
1976-81	2.82	2.73	2.93
	Low Fertility Projections		
1961-66	2.45	2.28	2.64
1966-71	2.46	2.23	2.52
1971-76	2.07	1.97	2.18
1976-81	2.54	2.45	2.64

Source: Population Projections of Pakistan 1961-1981

Govt.   of Pakistan Census Commission.

Note

This data does not include figures for Frontier Region

Income Elasticities of Expenditure & Quantity in

Pakistan
(Rural and Urban Areas Combined)

Item	East Pakistan		West Pakistan	
	Expenditure	Quantity	Expenditure	Quantity
Rice	0.30	0.38	0.84	0.64
Wheat	0.25	0.08	0.21	0.24
Jowar	-	-	Non Significant	
Bajra	-	-	0.12	0.04
Maize	-	-	Non Significant	
Gram Pulses	0.50	1.58	0.23	0.22
Other Pulses	0.65	0.62	0.44	0.35
Milk	1.47	1.54	1.09	1.04
Butter	1.74	0.88	1.30	1.37
Ghee	4.02	3.53	0.79	0.67
Other Milk Products	2.50	1.25	0.89	-
Vegetable Ghee	1.35	1.26	0.50	0.47
Mustard Oil	0.85	0.77	0.63	0.61
Fruits & Veg.	0.70	-	0.78	-
Mutton	2.23	1.97	1.47	1.46
Beef	0.51	0.66	0.51	0.53
Chicken & Duck	1.40	1.23	2.00	1.82
Eggs	1.16	1.43	2.01	2.01
Fish	0.66	0.32	1.13	1.14
Other oils	2.38	2.17	-	-
Crystal Sugar	2.67	2.27	1.42	1.41
Sugar & Its Products	1.41	-	0.78	-

Source: Supply & Demand Projections of Agri Commodities in Pakistan by Dr. S.A. Abbas

Per Capita Foodgrain Consumption by Various Agencies
in West Pakistan.

Agency	Description	Year	Commodity	Daily per Capita Consumption (OZS)
1) Board of Economic Enquiry Lahore (Mr. Mohammad Shafi Gill)	Survey of Rural Areas	1954-55	Wheat	15.18 to 25.67
2) Ministry of Agriculture, Govt. of Pakistan, Dept. of Marketing	- " -	1959-60	Foodgrain	17.82
3) Committee set up by the Food Department, Govt. of West Pakistan	- " -	1959	Foodgrain	18.00
4) National Sample Surveys Central Statistical Office, Pakistan. (Second Round)	- " -	1959	Wheat Others Total	18.186 1.743 19.929
5) Board of Economic Enquiry, Peshawar	- " -	1961-62	Foodgrain	19.80

Appendix No. 9

Apparent Wheat Availability in

West Pakistan

Description	1964-65	1965-66	1966-67	1967-68	Average of 4 years
				Figures are in	thousand Tons
i) Wheat Production (Agr. Dept. estimate)	4546	3854	4266	6317	4746
ii) Corrected figure by increasing 20% due to initial under estimation	5455	4625	5119	7580	5695
iii) Allowance for feed, seed and wastage at 10%	546	463	512	758	570
iv) Net domestic supply	4909	4162	4607	6822	5125
v) Imports	1481	674	1565	1472	1298
vi) Total availability	6390	4836	6172	8294	6423
vii) Govt. stocks at the end of the year	253	119	110	866	337
viii) Total apparent comsumption	6137	4717	6062	7428	6086
ix) Population (1967-68)	-	-	-	49,977,000	49,977,000
x) Per capita apparent consumption	-	-	-	14.6	12.0

Source: Unpublished data, Planning and Development Boardand Agriculture
Statistics published by Agr. Department.

Wheat Production, Consumption (all uses), and Balance in the World

(Million Tons)

Region & Countries	1961-63 Average			1975 Low G.D.P. Assumption			High G.D.P. Assumption		
	Production	Consumption	Trade	Production	Consumption	Balance	Production	Consumption	Balance
i) Developing Countries	37.8	50.3	-14.2	53.1	74.8	-21.7	69.3	77.7	-8.1
Latin America	10.2	11.7	1.5	15.6	16.7	-1.1	17.1	17.3	-0.2
Africa	3.2	4.7	1.5	4.5	6.9	-2.4	5.7	7.2	-1.5
Near East	8.7	11.3	3.0	10.8	16.3	-5.5	14.0	16.6	-2.6
Far East	15.7	22.6	7.3	22.2	35.0	-12.8	32.5	36.6	-4.1
a) India	11.3	14.6	3.7	16.4	23.1	6.7	24.0	24.2	0.2
b) Pakistan	4.0	5.3	1.4	5.4	7.8	2.4	8.0	8.2	0.2
ii) Developed Countries	105.6	86.7	+14.2	143.1	104.8	+38.3	142.9	104.1	+38.8
Importers	51.0	63.6	12.5	68.3	75.0	-6.7	68.1	74.0	-5.9
Exporters	54.6	23.1	36.9	74.8	29.8	+45.0	74.8	30.1	+44.7
iii) Centrally Planned Countries	83.3	91.8	-9.3	107.3	113.1	-5.8	114.2	113.3	-0.9
World Total	226.7	228.8	0.7	303.5	292.7	+10.8	326.4	295.1	+29.8

Source: Agriculture Commodities Projections, FAO

Appendix No. 11

Course Grains, Production, Consumption (All Purposes) and Balance In The World

Million Tons.

Region	1961-63 Average			1975 Low G.D.P. Assumption			1975 High G.D.P. Assumption		
	Production	Consumption	Trade	Production	Consumption	Balance	Production	Consumption	Balance
Developing Countries	97.6	94.3	+3.4	136.0	136.3	-0.3	150.3	141.7	+8.6
Developed Countries	224.2	230.1	-2.2	308.2	313.0	-4.8	310.1	322.1	-12.1
Centrally Planned Countries	147.5	147.3	+0.2	196.3	195.6	+0.7	203.9	204.2	-0.3
World Total	469.3	471.7	1.3	640.5	644.9	-4.4	664.3	668.1	-3.8

All Grains Production, Consumption, (All Purposes and Balance)

Region	Production	Consumption	Trade	Production	Consumption	Balance	Production	Consumption	Balance
Developing Countries	135.4	144.6	-10.8	189.1	211.1	-22.0	219.5	219.4	+0.1
Developed Countries	329.8	316.8	22.0	451.3	417.8	+33.5	453.3	426.2	+27.1
Centrally Planned Countries	230.8	239.1	-9.1	303.6	308.7	-5.1	318.1	317.5	+0.6
World Total	696.0	700.5	2.0	944.0	937.6	+6.4	990.9	963.1	+27.8

Source: Agri.: Commodities Projections, FAO

Appendix No. 12

Export Prices Of Wheat In The Major Producing Countries

Country	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	Quality
Argentina, FOB Buenos Aires	60.39	61.45	60.71	66.46	58.47	55.32	58.65	No. 1 hard wheat
Australia, FOB Australian Ports	55.37	59.34	58.64	62.46	58.32	58.69	63.02	F.A.Q. bulk wheat
Canada, FOB, Fort William/ Port Arthur	62.19	66.28	66.88	69.18	67.68	68.23	72.02	No. 1 Manitoba Northern in bulk
France, FOB, French Ports	55.08	63.37	56.95	59.33	62.53	61.73	66.50	Soft Wheat
Italy, FOB Prices	--	--	58.79	64.06	59.97	58.53	63.63	Soft Wheat
Mexico, FOB Prices	--	--	--	68.68	60.80	59.30	58.83	Hard Red Wheat
Sweden, FOB Prices	54.83	59.94	50.32	58.34	56.75	55.95	64.77	Winter Wheat
USA, FOB Gulf Ports	61.73	62.83	64.30	66.14	63.93	59.52	67.24	No. 2 Hard
USSR, FOB Prices	70.87	68.69	72.08	71.59	74.26	62.51	66.51	Winter (ordinary) Soft Wheat

Metric Ton = 2204.62 Lbs.

Source: World Wheat Statistics issued by the World Wheat Council, London, (1968)

Freight Rates for Heavy Grain

U.S. $ per Metric Ton

Year From (Mean Average)	To United Kingdom						To Hamburg (Germany)						To Japan	
	Argentina River Plate	Australia West	North Pacific	St. Lawrence (Canada)	U.S. Atlantic	U.S. Atlantic Gulf	Argentina River Plate	Australia West	North Pacific	St. Lawrence (Can.)	U.S. Atla.	U.S. Gulf	Australia	North Pacific
1965-66	13.26	12.65	11.04	8.76	9.20	10.25	13.29	11.77	7.85	4.84	5.15	5.57	8.17	7.97
1966-67	11.67	10.49	9.44	7.55	7.92	8.29	10.19	9.79	5.99	3.42	3.81	4.20	6.52	7.71
1967-68	11.94	10.34	10.79	8.37	8.66	8.47	10.43	8.59	6.75	4.68	4.74	5.34	8.83	8.82
Total for 3 years	36.87	33.88	31.27	24.68	25.78	27.01	33.91	30.15	20.59	9.94	13.70	15.11	23.52	24.50
Average	12.29	11.29	10.42	8.23	8.59	9.00	11.30	10.05	6.86	3.31	4.57	5.04	7.84	8.17

From	To Rotterdam (Holland)						To India (East Coast)		
	Argentina Riv. Plate	Australia West	North Pacific	St. Lawrence	U.S. Atlantic	U.S. Atlantic Gulf	Australia West.	North Pacific	U.S. Pacific Gulf
1965-66	12.26	11.77	7.73	4.59	4.90	5.46	9.03		14.35
1966-67	10.03	9.80	5.80	3.34	3.57	3.96	7.85		13.44
1967-68*	10.28	8.59	5.48	4.43	4.68	5.13	10.20		17.46
Total for 3 years	32.57	30.16	19.01	12.36	13.15	14.61	27.08		45.25
Average	10.86	10.05	6.34	4.12	4.38	4.87	9.03		15.08

Source: World Wheat Statistics by International Wheat Council, London (1968)

* Average for 7 months only