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**AGRICULTURAL DEVELOPMENT IN PAKISTAN:  
OBSERVATIONS ON THE POLITICAL ECONOMY OF SECTOR  
PLANNING**

by

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## PREFACE

It was my original intention to provide in this summary document a relatively comprehensive sector study done from a political economy point of view. Unfortunately, these efforts have not been as productive as I had hoped. The reasons are several, but chief among them has been the problem of developing an operational theoretical framework. Symptomatic of this difficulty was the inability to find an appropriate audience to whom the remarks made in the study could be addressed. With everyone inside the "system", who was assumed to be the agent of change? Was I addressing the Government of Pakistan, attempting to persuade them of the rightfulness of a particular course of action? If so, how could this "view from the top" be reconciled with the AID Mission's needs when many of the recommendations to the Mission were of the form: Do not support such and such a program because the Government does not have the intention or capacity of implementing it?

The issue of audience has been resolved essentially by addressing the work to the AID Mission staff of Pakistan. Over a period of several years I have had the opportunity to present ideas to this group in both formal and informal ways and have gained a good many useful insights into the complicated business of trying to respond to a host country's needs and wishes while being constrained by U. S. needs and wishes. In the process, I have come to see societies and social change in a less monolithic and

deterministic way than I perhaps otherwise would have.

The thrust of the essay's argument is that rural development activities in Pakistan encompass a range of capital/institutional ratios and at this point in the country's history. AID would do well to work with projects in which this ratio is rather high. Recent research by the Rural Development Committee at Cornell University suggests that a large number of activities commonly associated with rural development are difficult, if not impossible, to carry out in the absence of local institutions. In turn, local institutions in which a substantial portion of the population participate are difficult to establish in the presence of serious inequities of resources and power at the local level. Since this is currently the situation in most of Pakistan, an institutional avenue to development activities is largely closed.

One could counter that, precisely because of the lack of effective organizations to carry out rural development programs, AID should be working to strengthen the Integrated Rural Development Program, the People's Works Program, and various other field organizations. It is well to observe at this point that simply because there is a problem does not mean that those concerned with it have the resources or the ability to find a solution.

No summary essay would be complete without a note of appreciation to the various personnel in USAID that made the studies cited in the Appendix to the Preface possible. Especially important were the long-standing interests of Joseph Wheeler and Leon Hesser. Although at times the

investigation ranged rather far from the immediate concerns of Pakistan, they were always willing to extend the benefit of the doubt and an open mind to the relevance of the arguments that were being advanced.

Carl H. Gotsch  
Beirut, Lebanon  
October, 1975

WORKING PAPERS AND POLICY MEMOS  
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Working Papers

1. "Technological Change and the Distribution of Income in Rural Areas" (Gotsch)
2. "Technology, Prices and Incomes in West Pakistan Agriculture: Some Observations on the Green Revolution" (Gotsch)
3. "Notes on the Current Status and Future Development of West Pakistan Agriculture" (Gotsch)
4. "A Field Survey of Small Farmers in Sahiwal District of Pakistan" (Naseem)
5. "Credit Availability and the Viability of Small Farms in the Pakistan Punjab" (Naseem)
6. "Tractor Mechanization and Rural Development in Pakistan" (Gotsch)
7. "Field Survey of Large Farmers in the Pakistan Punjab" (Ahmad)
8. "The Economics of Tractor Mechanization in the Pakistan Punjab" (Ahmad)
9. "A Subjective Theory of Share Tenancy" (Warr)
10. "Temporary Migration of Workers and the Return Flow of Remittances" (Mohammed, Butcher, Gotsch)
11. "Alternative Patterns of Mechanization in the Pakistan and Indian Punjabs" (Gotsch)
12. "Regional Economic Imbalances and Movement of Labor Among Regions: A Case Study of West Pakistan Frontier Migrants" (Mohammad and Loomis)
13. "Economics, Institutions and Generation of Employment in Rural Areas" (Gotsch)

14. "Population and Economic Development in Pakistan" (Burki)
15. "Technological Indivisibilities and the Distribution of Income: A Mixed Integer Model of Pakistan Agriculture" (Gotsch)

Policy Memoranda

1. "Priority Issues in Rural Development: Technology and Land Reform" (Gotsch)
2. "Land Leveling (Planing, Forming) Once Again" (Gotsch)
3. "Rural Development in Pakistan: Roles of U. S. A. I. D. " (Gotsch)

The programming studies have been collected in "Linear Programming and Agricultural Policy: Micro studies of the Pakistan Punjab," Food Research Institute Studies, Volume XIV, No. 1, 1975.

## Chapter I

### THE POLITICAL ECONOMY OF SECTOR ANALYSIS

Sector studies have become a major planning tool both in foreign aid organizations and in national planning agencies. This report is conceived along similar lines, but because it is as much concerned with implementation as advocacy, it also contains considerable discussion of the relationship between Pakistan's political and social institutions and the efficacy of the measures being proposed. Adopting such a political economy perspective is a deliberate move away from the trend toward more elaborate modeling techniques being advocated in some quarters. To do so is not to denigrate the need for better quantitative frameworks; however, there is increasing evidence that such approaches miss much of what is crucial in formulating a viable sectoral program. It is not the inadequacy of technical analysis regarding the benefits and costs of agricultural research organizations, the functioning of irrigation systems, the development of intermediate technology or the establishment of appropriate factor prices, that is the primary stumbling block to better policy. The impediments to change lie elsewhere, particularly in the inconsistency between the "technical" recommendations and the institutional environment into which they are to be introduced. Traditionally, those who generate knowledge on technical issues have been content to let the matter rest there, declaring that it is the "decision-makers" role to select among "options". There is superficial virtue in this argument for it seems to insure the detachment and objectivity without which professional analysis may become simply a tool of

rationalization. Such a modus operandi, however, is difficult to apply in practice. The gap between the technical analysis and its political and social implications is often too great to be bridged without substantial interpretive analysis. This is particularly true in the case of long-term planning where the cumulative interaction between economic policies and social institutions is most readily apparent. Virtually every economic policy strengthens or weakens some interest group or social class. These elements of the society are in turn more or less able to influence the rules of the game under which subsequent policy decisions are made. Indeed, many "technical" problems are problems only because of the institutional environment within which solutions must be sought.

Before beginning to examine the details of the various issues that a more politically oriented sectoral analysis poses, a few words regarding the general nature of the argument are in order.

### General Overview

That the agricultural sector has and will continue to play an important role in Pakistan's development is undisputed. All of the "contributions" typically mentioned in this regard are valid: food for the population, creation of demand for products from the non-agricultural sector, a source of foreign exchange, etc. If there were any doubts on this score, the recent boom in world commodity prices and the future outlook for agricultural raw materials has settled the issue.

Maximizing this contribution will require sensible development policies. The list is becoming as familiar as the contributions. For example:

1. A reliable supply of purchased inputs: fertilizer, seeds and fuel must be insured.

2. A research system capable of adapting improved plant materials to the Pakistan environment must be developed.

3. A price policy that promotes resource allocation in accordance with the country's basic comparative advantage is fundamental to sustained growth.

4. A capacity to deal with the longer term problems of water management and land reclamation must be developed.

Pursuing these and other similar policies will involve substantial administrative difficulties. However, what is significant about them, is that they must be solved regardless of the type of structural transformation that the agricultural sector ultimately undergoes. That is, every efficient strategy will require a price policy that exploits the country's comparative advantage, insures that the desirable purchased inputs needed to increase yields are available, and provides for productivity-increasing research. As such, they do not pose - at least sharply - the difficult political choices that are the basis of alternative development scenarios.

The difficult questions on which alternative strategies depend are centered around the structural change that affects and is affected by the growth process. There are three major dimensions that are of

concern: (1) changes in the relationships between economic and social classes in the countryside, (2) changes in the relationships between regions, and (3) changes in the relationships between the town and the country. Each of these issues is fundamentally a distributive question and hence produces political-economic choices that reflect the power of various constituencies in Pakistani society.

Although the data are not as detailed as one might like, there is considerable evidence that the above mentioned structural changes have been occurring rapidly in Pakistan over the past decade and half. For example, the share of agriculture in the gross international product has declined from 48.2 percent in 1959/60 to 37.7 percent in 1972/73. Closely associated with this shift has been a decline in the portion of the rural population from 77.5 percent to 74.3 percent over a similar time period. (In both cases, of course, absolute magnitudes have increased over the decade of the 1960's).

There is also ample evidence that the economic disparities between regions have increased over this period. Given the nature of the agro-climatic environments in Baluchistan, N. W. F. P., Punjab and the Sind, this is hardly surprising. However, to the rapid growth in agriculture must be added the impact of industrialization. Were it not for the presence of the port city of Karachi in the Sind, the regional discrepancies in growth of G. N. P. would be greater still.

Last is known about the structural changes that have occurred at the micro level. The studies that have been done show some land agglomeration and tenancy displacement. Just how much is still an open question. A priori reasoning suggests, however, that the divisibility of improved cereal varieties and fertilizer have permitted small farmers to maintain and even enhance their absolute levels of income. Where difficulties have arisen, they have involved the introduction of mechanical equipment and the displacement of tenants and landless labor.

#### Implications for Development

At this point, it is well to ask the straightforward question: Why be concerned about the past pattern of structural transformation? Granted that it has been accompanied by substantial inequities in terms of the distribution of the benefits of growth, why should this typical result prompt a concern about the ability to implement programs whose distribution of income is more equitable than the distribution of wealth?

There are, of course, several possible responses. One would be to put the issue on a moral plane and simply declare that it is "bad" to follow a pattern of development in which the already disadvantaged classes bear the brunt of the human costs associated with the structural transformation process. "Social justice" demands something more.

Except where it is clearly rhetorical, most political leaders find such reasoning uncomfortable and tend to be more impressed by the need for equity in the development process when cumulative disparity is linked

to an expression of political dissatisfaction and the ouster of incumbents from office. (A variation of this argument can usually be heard from a larger group that does not hold public office when a plea for reform is justified on the grounds that failure to deal with certain types of inequities may threaten the entire system ).

Whether it be politicians or non-office holding groups who are beneficiaries of the current form of economic and social organization, the problem of structural transformation is seen as a pragmatic need to "manage" change. Reforms are therefore likely to occur only where credible threats to the status quo exist.

Unfortunately, the "rural political pressures" argument for a more equitable development process is by no means easy to establish. First, there is the possibility that the industrial sector will grow rapidly enough to absorb the most serious tensions of the countryside - the classical development scenario. Second, those most seriously affected by the structural changes that growth inevitably produces are likely to be the most powerless segments of the rural community in political terms. Consequently, conditions may become extremely difficult for these weaker groups before the pressures to affect the course of development actually are felt.

It would be comforting at this point if it could be argued that there has been an expression of concern in official circles about the problem of structural change in Pakistan. Unfortunately, once the issue of implementation is raised, the question of the source of political and social pressures for

change must be faced squarely. That is, the choice of a particular course of action involves not only an approval of its benefits in terms of increased general welfare and the belief that a more equitable distribution of income is "good", it requires a plausible argument regarding the ability of the authorities to implement the program. Where this involves activities that do not enhance the already existing distribution of wealth, it also necessitates a political scenario in which the ability by various constituencies to press their demands through political means is taken into account.

Subsequent discussions of the points raised above should not be interpreted in a deterministic way. The tumultuous events since 1970 have underscored the tenuous nature of all political predictions about Pakistan. However, any serious advocate of a course of action must, in the final analysis, place subjective probabilities alongside events when making recommendations that involve political feasibility. Before the dice are cast, however, it is important to be clear about the implications of the statements to which such probabilities must be attached. A framework for examining the relationships among the more obvious variables in a sectoral program is suggested below.

#### A Framework for Assessing Sectoral Development Programs

Creating a framework within which to examine problems associated with the implementation of various types of development programs requires the specification of causal relationships among some rather dissimilar variables. Among the most important are the characteristics of the technology

being employed, the distribution of control over resources (particularly land), local political and social institutions, the structure of the government bureaucracy, and the perception of the national political leadership about the constituencies on which it must rely to remain in power.

It is too much to ask that these variables be related in a rigorous, quantitative structure. However, considerable analytical headway can be made by simply assuming that people - individuals or groups - act in accordance with self-interest. The exercise then consists of introducing a variety of potential program activities into the initial environment and reasoning about the first-round and ultimate effects of these changes in the system. That is, about both how the programs affect the environment and are in turn affected via various "feed back" mechanisms. Among the most important activities to consider are: (1) insuring the supply of improved agricultural inputs, (2) pursuing an appropriate price and incomes policy, (3) providing communal services such as extension, credit, education, and health facilities that small farmers cannot easily provide for themselves, (4) creating a farming structure that facilitates intensive agriculture, i. e., agrarian reform; (5) developing the necessary physical infrastructure, and (6) accelerating non-agricultural development in the rural areas. Each of these potential activities has a different distributive effect and thus interacts differently with the social and political environment. Each can also be implemented at different levels of intensity, resulting in further variation in potential distributive effects.

Examining half-dozen types of development programs through the lenses of such a "system" produces a large number of possible outcomes. How are these to be related to the notion of alternative "strategies"? Or, to put the issue more directly, in what sense are there "alternatives"?

Alternative strategies, in this essay, are basically determined by the extent to which the overall program has income distribution effects that are inconsistent with the existing distribution of material wealth. This implies that scenarios are differentiated by the degree of political mobilization that is required to overcome the interests of those who are the holders of scarce resources and who would expect to be the likely beneficiaries of a market-oriented development process. In the course of describing these alternatives, it will become evident that certain types of development activities may be internally inconsistent. For example, a subsidized credit program, ostensibly aimed at small farmers, may in the presence of a significant disparity of holding sizes simply lead to an increase in the rate of tenant displacement. The mechanism is one in which the credit ends up in the hands of the larger farmers by virtue of their influence over government institutions at the local level, credit which is in turn used to finance the purchase of tractors.

Arguments such as the above are not tied to the specific conditions that exist in Pakistan, but flow directly from the promotion of self-interest in what is essentially a reasonably competitive capitalist system. Wealth (especially in land) and power are to a considerable degree substitutes

within such systems and constitute basic reference points in assessing the impact of the "system" on various kinds of development activities.

### Organization of the Report

The basic themes introduced above have been elaborated in the following pages under two sections: A Historical Perspective, and Assessing Sectoral Development Programs.

Chapter II begins the section on past performance with the presentation and interpretation of selected, aggregate statistics on the sources of growth. The purpose of these comments is to provide some quantitative reference points for extrapolation and to underline the high degree of variability that is obscured by the trend figures traditionally used as the basis for discussing agriculture's contribution.

Chapter III takes up the issue of structural change at both the aggregate and regional level. Data are presented on such indicators as the share of agriculture in GNP, the share of the rural labor force in the total labor force, regional output shares, etc. In addition, a number of studies are reviewed that present material on the distributive effects of the growth at the micro level. These include several field surveys done under the auspices of the project as well as a review of selected materials obtained from other sources.

Chapter IV reviews government policy during the past decade and a half. The comments are by no means exhaustive but rather seek to highlight

key decisions that provide a perspective (1) on the relationship between policy and structural change, and (2) on the forces that lay behind policy parameters. Although Pakistan's political structure has been shaken by the tumultuous events of the past few years, it must be remembered that what has happened cannot in any sense be characterized as a revolution. Consequently, in many areas, the pattern of past policy decisions still offers useful guidelines for the future.

In Chapter V, the framework within which alternative scenarios are to be analyzed is elaborated in more detail. Each of the variables - and their relationships to each other - is examined and the assumptions about the "model's" behavior are discussed. (The word "model" is here used in the sense of an organizational schema and not in the sense of the rigorous mathematical statements that one has come to expect in economics.)

Chapter VI takes up a series of activities usually associated with rural development and examines, within the framework developed in Chapter V, their relevance for Pakistan. Distinctions are made between those activities that are fundamental to any growth strategy and those which have major implications for structural change as well as growth.

The last chapter relates the various elements of alternative strategies to the continuing role of AID. Obviously, the activities in which an agency of the U.S. Government can enter are considerably narrower than those that might be undertaken by a national government. That is, AID's policies involve not only the question of what the host government believes

needs to be done, but what stipulations the U. S. Government has attached to the expenditure of funds. Particularly relevant in this regard will be the recent Congressional mandate that AID seek to work with the "poor majority" in its development efforts.

## Chapter II

### RECENT PERFORMANCE OF THE AGRICULTURAL ECONOMY

#### Introduction

It is not the purpose of this chapter to provide a detailed examination of the magnitude and sources of growth over the past decade. However, some review of what has happened in the recent past is necessary to put subsequent sections on future developments in perspective. It is important to note, for example, that while growth has been significant, there have been substantial year to year fluctuations that have distorted conclusions of performance based on short-run estimates. Moreover, in addition to aggregate fluctuations, the data show substantial variations in the year to year mix of crops that have been grown. This is in part related to the same causes that produced the changes in the value of total output, e. g., in year X the wheat crop increased or decreased significantly. However, some part of the change in relative magnitudes also reflects attempts by Pakistani farmers to shift resources in the direction of the most profitable alternatives, a result that points anew to the need for a constant monitoring of the commodity price structure.

As indicated earlier, substantial variations in performance also exist regionally. Further disaggregation of the data show that there is as much variation among districts within regions as among provinces. The reasons for this disparity are familiar ones involving the agro-climatic

environment. In the case of the Punjab, the rain-fed districts of the north have fallen well behind the irrigated areas of the Plain. In the case of N. W. F. P., the irrigated valleys of Peshawar and Mardan districts have experienced increases in output similar to those of the irrigated areas of the Punjab and the Sind.

To some extent, increases in output by farm size, when measured at the national level, are also affected by the same causes that determine regional disparity. This is because farms in rain-fed districts tend to be smaller than those in the irrigated central plains. In addition, except in the higher rainfall areas, the risk of introducing improved technology is substantial and hence one would expect the rate of adoption to be considerably lower.

In the case of areas where an adequate and reasonably certain water supply exists, the preponderance of the evidence suggest that small farmers were not far behind their larger neighbors in adopting new seeds and fertilizers. Since approximately 35 percent of the cultivated area is in operational holdings of less than 12.5 acres, this participation in the so-called "seed-fertilizer" revolution has been an important source of aggregate output increases.

On the input side, data on private tubewell installation show a continuation of the strong demand for supplementary water that characterized the decade of the 60's. Given the periodic shortages of electricity and diesel oil that have prevailed during the past few years, it is difficult to

move from numbers of wells to the amount of water actually pumped. But the increases in cropped acreage as shown in the disaggregated growth estimates testify to the important role that increases in the water supply continue to have on the growth process.

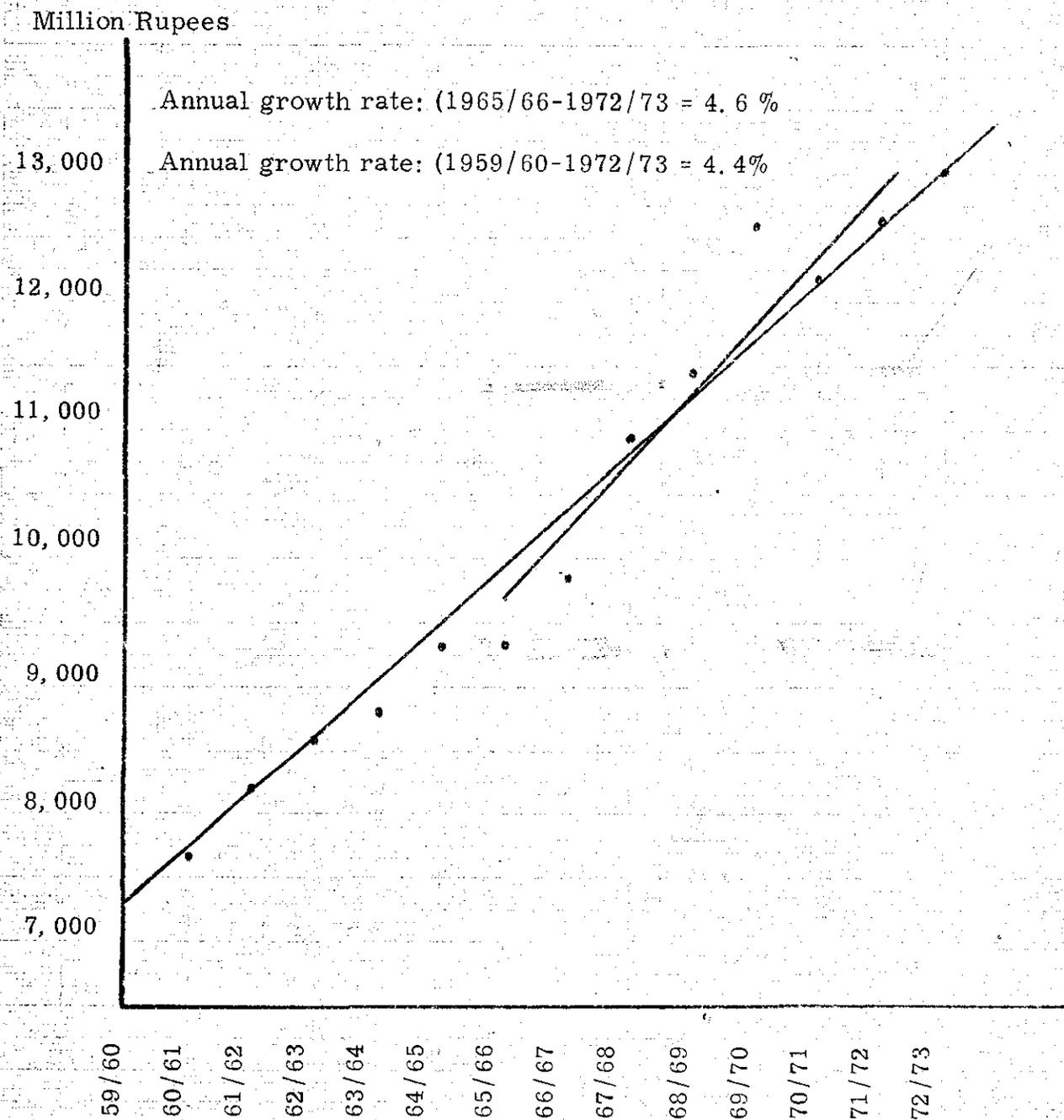
Use of the other crucial ingredient of the "green revolution", i. e., fertilizer, has also increased enormously in recent years. After the sharp dip in consumption in 1970/71, use in 71/72 and 72/73 has shown a continuation of the rapid increases experienced in the late 1960's. As subsequent comments on the role of public policy will indicate, however, the government agencies responsible for supplies have had problems in recent years in developing a system of monitoring, projecting and stock piling that can insure that demand will consistently be met. Hence impressive as they are, the figures probably continue to reflect supply constraints.

The following paragraphs elaborate these and other comments on the magnitude and sources of growth in more detail. Again it should be noted that the treatment is by no means exhaustive and intended only to provide guidelines within which subsequent projections can be evaluated.

#### Output Statistics: Trends and Recent Events

Aggregate value added in agriculture: According to official statistics, total value added in agriculture has increased by approximately 4.4 percent over the 12 year period, 1959/60 - 1972/73. Measured over a shorter period, 1964/65 to 1972/73, the figure is 4.6 percent - not appreciably higher. As the regression lines and scatter diagram of Figure II.1

Figure II. 1. Gross Domestic Agricultural Product of West Pakistan at Constant Factor Costs (1959/60 prices)

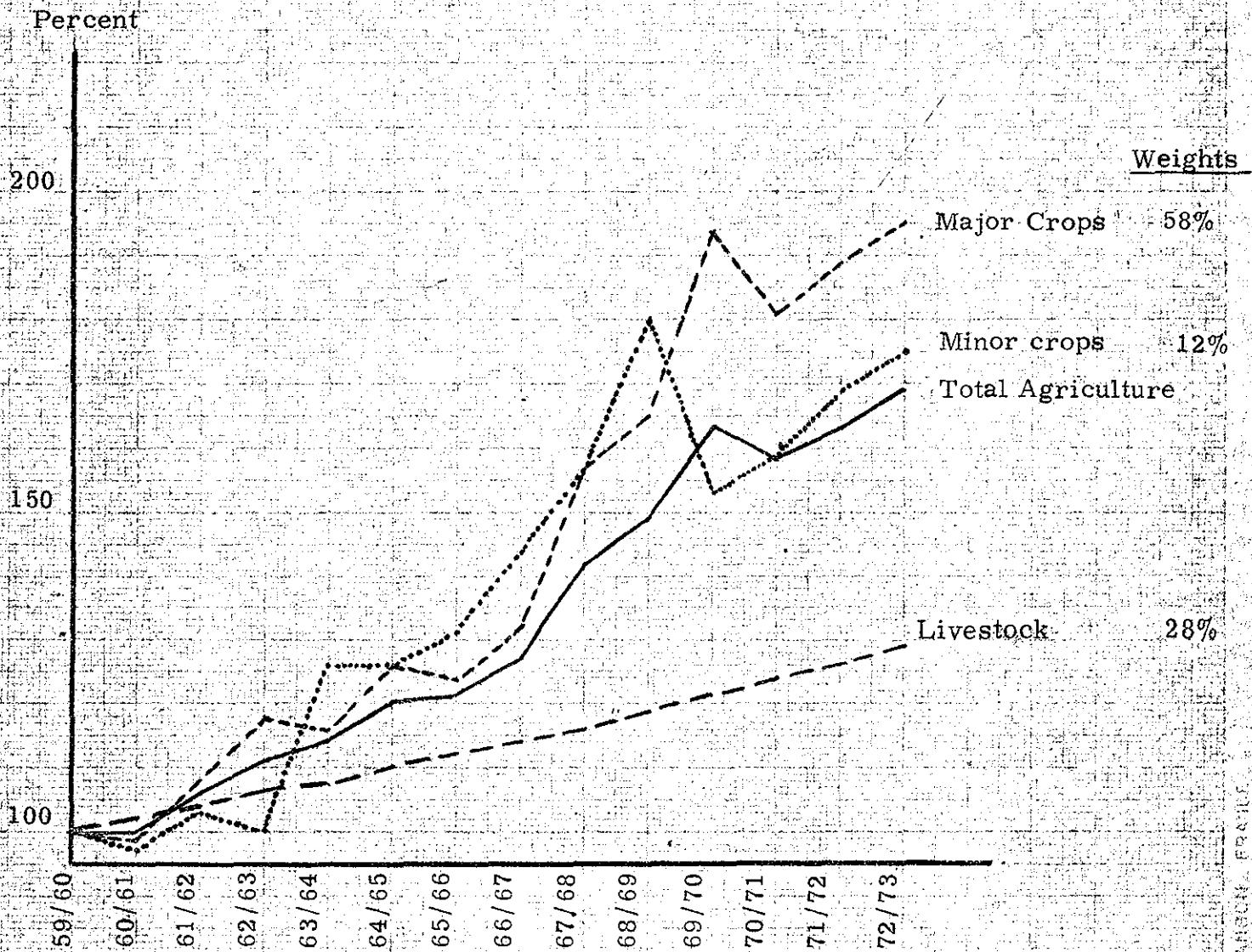


Source: Government of Pakistan, Pakistan Economic Survey, 1972-73, Islamabad, June, 1973

show, this result stems from an appreciable decline in output during 1970/71 and 1971/72. These latter two years, although they are not significantly removed from the long run trend of 4.4 percent, were indeed a shock after the rapid acceleration of growth as measured over the 1965/66 - 1969/70 period. This period, coinciding with the Third Five Year Plan, saw agricultural output increasing by over 6 percent per annum, although as the data show, at least a portion of this "growth" was more in the nature of a recovery from the drought years of 1965/66 and 1966/67. Under any circumstances, when this performance is matched against an estimated increase in the farm population of this period of approximately 2.5 - 2.8 percent per annum, it is clear that the output increases that have accompanied the green revolution have more than kept pace with the rate of population growth.

Value added by sub-sector: National income data are extremely crude measures of economic performance. Ordinarily such criticism is directed at the distribution issue. In the Pakistan case, however, it might also be directed at the extent to which a single measure for growth is misleading on its own terms. Figure II.2 shows, for example, the indices associated with growth in the major sub-sectors: major crops, minor crops and livestock. (Table II.1 provides annual growth rates calculated from linear trend estimates.) What is immediately apparent is that the over-all performance of the economy as measured by the growth rate in GDP is significantly influenced by a low and constant rate of growth in the livestock

Figure II. 2. Indices of Gross Domestic Product in Agriculture by Sub-Sector



sector. Because this sector contributes a weight of nearly 1/3 to the value-added estimate, the general conclusion, based on the official national accounts data, must be that the livestock sector has been a drag on the agricultural economy.

Yet there is considerable evidence that this has not been the case. For example, fodder acreage has shown a steady increase during a period when rapid increases in motorized transport and mechanical tillage have been taking place. Also, as comparison of constant and current price indices show, until 1972/73, prices have risen more rapidly in the livestock sector than in the major crops sector suggesting that a priori expectations about demand pressures generated by increasing incomes are being fulfilled.

As Timmer and Gotsch pointed out in 1968, there is little or no basis for the estimate of livestock's contribution shown in the National Accounts. According to their calculations the rate of increase was probably in excess of 4 percent per annum rather than the 2 percent that has been officially reported. Because of the weight of livestock sub-sector, such an adjustment would have a significant impact on the estimate of sector growth, raising it from 4.6 to approximately 5.1 percent.

Table II. 1 Growth Rate of Gross Domestic Product in  
Agriculture by Sub-Sector

Sector	1959/60 -1972/73		1965/66- 1972/73	
	Rate (%)	$\bar{R}^2$	Rate (%)	$\bar{R}^2$
Agriculture	4.4	.96	4.6	.90
Major crops	5.7	.93	6.3	.87
Minor crops	4.7	.92	3.2	.70
Livestock	2.0	1.00	2.0	1.00
Fishing	6.3	.75	3.3	.21
Forestry	5.7	.90	3.4	.57

The most important component of the official production estimates are the 11 so-called "major crops". In 1972/73, these comprised approximately 60 percent of the value added and hence their performance tends to dominate the index.

While all 11 crops continue to be important in terms of their absolute contribution to agricultural output, it is clear from Table II. 2 that a number of significant changes have taken place with respect to their relative importance. For example the dominant crops of wheat, rice and cotton have continued to set the pace with respect to increased output, partly at the expense of sugarcane, coarse grains and legumes. (The latter development in particular has been of some concern among nutritionists.)

Figure II. 3 indicates, however, that any description of the long run shifts in the cropping pattern misses a great deal of short term variation. In recent years particularly, there have been drastic changes in the relative

Figure II . 3. PRODUCTION INDICES FOR MAJOR CROPS  
(1959/60 = 100 )

Percent

250

200

150

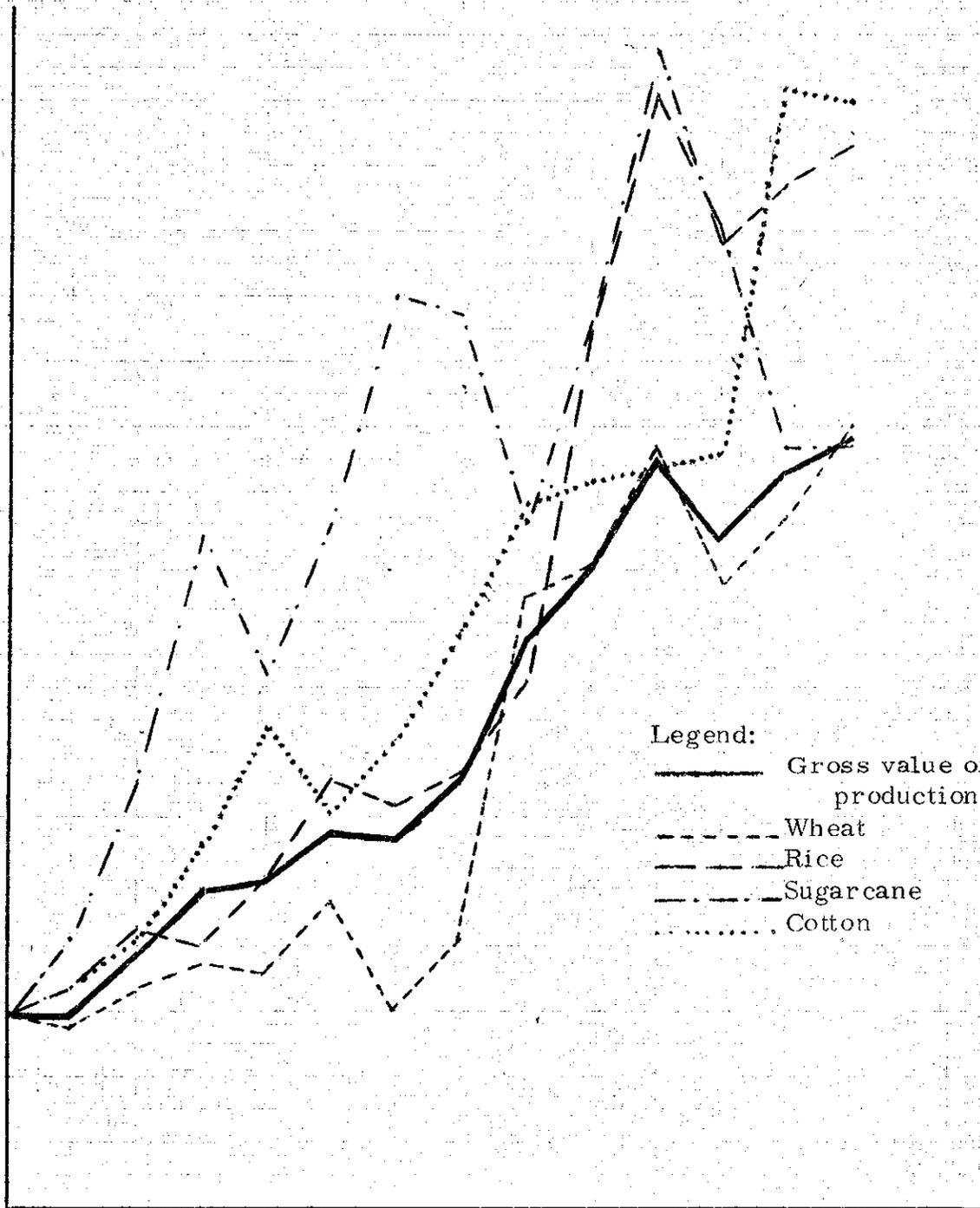
100

Legend:

- Gross value of production
- - - Wheat
- - - Rice
- - - Sugarcane
- ..... Cotton

59/60 61 62 63 64 65 66 67 68 69 70 71 72 73

Time



importance of the major crops. For example, 1971/72 was indisputably the year for cotton; total output increased by approximately 30 percent. But at the same time, there were substantial declines in the output of other major crops including wheat and rice.

In 1972/73, the output of most major crops was still below or equal to the levels achieved in 1969/70. Rice, after declining drastically in 1970/71, showed some increase in 1972/73 but was still below the 1969/70 mark. Sugarcane continued to be well below the 69/70 figure. However, the 1972/73 cotton crop was only a little bit smaller than the bumper 71/72 crop and with some help from wheat, was sufficient to establish a new index record of value-added in agriculture at 188 (1959/60 = 100).

Table II. 2 Annual Growth Rates of Major Crops

Crop	1959/60-1972/73		1965/66-1972/73	
	Percent	R <sup>2</sup> of linear trend equation	Percent	R <sup>2</sup> of linear trend equation
Wheat	5.9	.81	7.4	.72
Cotton	6.6	.92	7.2	.86
Rice	7.5	.88	8.7	.80
Maize	3.9	.76	3.0	.33
Sugarcane	4.3	.60	- .5	-.01
Gram	-1.9	.09	-1.1	.09
Oilseeds	2.2	.39	5.9	.74
Jawar	2.4	.73	2.1	.46
Bajra	.6	.04	2.4	.30
Barley	- 2.0	-.10	2.6	.40

Two important conclusions emerge from these figures that will be dealt with in greater detail at various points throughout the paper. The first is that Pakistani farmers are highly conscious of relative profitability. As subsequent analysis shows, leaving weather aside, there have been significant changes in the price structure that point decisively in the direction of the results presented above. The second point follows in part from the first. With fluctuations of this magnitude in food grain production clearly a possibility, and with increasing participation in world agricultural trade, prudence dictates that Pakistan give a high priority to improving its monitoring system for crop outlook. Undoubtedly, some storage facilities will be a part of such a system but at the moment the delay in getting sound information from the field on which to base trade initiatives is too great. Failure to develop such a system in which political leaders have confidence will be a serious impediment to moving away from self-sufficiency targets in food grains and in the direction of growing those commodities in which the country has an international comparative advantage.

Regional and district growth estimates: No value-added time series have been calculated for the various sub-national units in Pakistan, but their growth can be approximated by looking at the growth in output of the major crop sector. Table II.3 shows that the most dynamic province is the Punjab and the least N. W. F. P. To those familiar with Pakistan, this will come as no surprise. N. W. F. P. is, for the most part, mountainous with relatively little rainfall. From an agricultural point of view, it is an

inhospitable environment. Only a few parts have been able to take advantage of the new high yielding varieties.

Sind is somewhat different, since some areas have produced rapid increases in output traceable to new rice varieties. However, the phenomena has not been widespread enough to pull the entire province up to the level of Punjab.

The high growth rate indicated for Baluchistan is misleading. Data for the province show substantial year to year fluctuation and hence there is little reason for confidence that the estimate represents any sustained growth process ( $\bar{R}^2 = 0.2$ ). Indeed, inspection of the regression analysis indicates that the figure of 7.5 percent is largely a matter of two relatively good harvests in the late 1960's.

The disparity in growth rates between districts is every bit as great as the disparity between provinces. Disaggregation of data for the Punjab shows, for example, that the areas characterized as being poor, old and settled have a significant decline in output recently while other relatively homogeneous areas have shown handsome gains. (Table II. 4) Much the same picture would emerge in N. W. F. P. if the districts of Peshawar and Mardan were combined and compared with the rest of N. W. F. P. These districts also reflect the provision of additional irrigation water through both public and private irrigation systems.

Table II. 3 Agricultural growth and productivity in major crops, by province, West Pakistan (1960-1970)

	Annual Trend Rates <sup>a</sup> 1969-70 (percent)	Gross Value Product Per Farm Worker <sup>b</sup> 1967-68 (Rs.)	Gross Value Product Per Cropped Acre 1967-68 (Rs.)	Proportion of Total Production 1967-68 (percent)
West Pakistan	5.9	783	172	100.0
Northwest Frontier Province <sup>c</sup>	3.8	522	147	7.8
Punjab <sup>d</sup>	6.1	740	191	70.9
Sind <sup>e</sup>	5.8	1,447	148	20.4
Baluchistan <sup>f</sup>	7.5	231	40	0.9

<sup>a</sup>Trend equation was  $\text{Log } Y = a + b \cdot \text{time}$ .

<sup>b</sup>Rural labor force based on projections from the 1951 and 1961 Population Census.

<sup>c</sup>Contains Peshawar and D. I. Khan Divisions.

<sup>d</sup>Contains Rawalpindi, Sargodha, Lahore, Multan, Bahawalpur, and Khairpur Divisions.

<sup>e</sup>Contains Hyderabad and Karachi Divisions.

<sup>f</sup>Contains Quetta and Kalat Divisions.

Source: Ali Mohammed and Ralph A. Loomis, "Regional Economic Imbalances and Movement of Labor Among Regions: A Case Study of West Pakistan Frontier Migrants," Working Paper No. 12.

Table II. 4. District Growth Rates in the Gross Value of  
Production by Ecological Region  
within the Punjab

	1951/52 -1959/60		1960/61-1969/70	
	Percent	R <sup>2</sup>	Percent	R <sup>2</sup>
Canal colonies (Shapur, Lyallpur Jhang, Multan, Sahiwal)	2.1	.41	7.2	.94
Western areas (Muzaffargark, D. G. Khan, Manwali)	3.1	.29	7.7	.93
Poor, old, settled (Rawalpindi, Jhelum, Gujrat, Campbellpur)	2.6	.20	-5.8	.21
Rich, old settled (Lahore, Sheikhpura Sialkat, Gupraiwala)	2.1	.35	5.6	.85

### Sources of Growth

The logical question that follows a description of growth magnitudes concerns the source or reason for the observed results. As a first step in this direction, changes in the gross value of output in the various areas have been partitioned into yield, acreage and cropping pattern effects. These in turn can be linked to particular inputs to provide a first approximation to the nature of the growth process.

Partitioning growth: Table II. 5 presents calculations showing a breakdown in the value of gross output (major crops) for two time periods. The figures indicate that while there may be relatively little to differentiate the early and late sixties with respect to aggregate growth, there is little doubt that different growth processes were at work. For example, the increases in output that occurred from 1960 to 1965 were heavily dependent on the area effect, (39 percent). By contrast, the growth in the 5 year period (1966-71) was dominated by increased yields and changes in the cropping pattern. The former (yield) effect is to be expected given the substantial improvement in the yields of wheat and rice resulting from the introduction of improved varieties and the application of significantly higher dosages of fertilizer.

Table II.5 Disaggregation of the Gross Value of Major Crops -  
All Pakistan

	Change 1960/61-1965/66		Change 1965/66-1970/71	
	Rs. mil.	Percent	Rs. mil.	Percent
Gross value	1,198	100	2,253	100
Area effect	464	39	468	21
Yield effect	420	35	1,368	61
Cropping effect	184	15	200	9
Interaction	130	11	217	10

The large positive cropping pattern effect is interesting because it again suggests that the variations in the crop mix are not a random weather phenomena, but represent an adjustment by farmers to changes in the profitability structure.

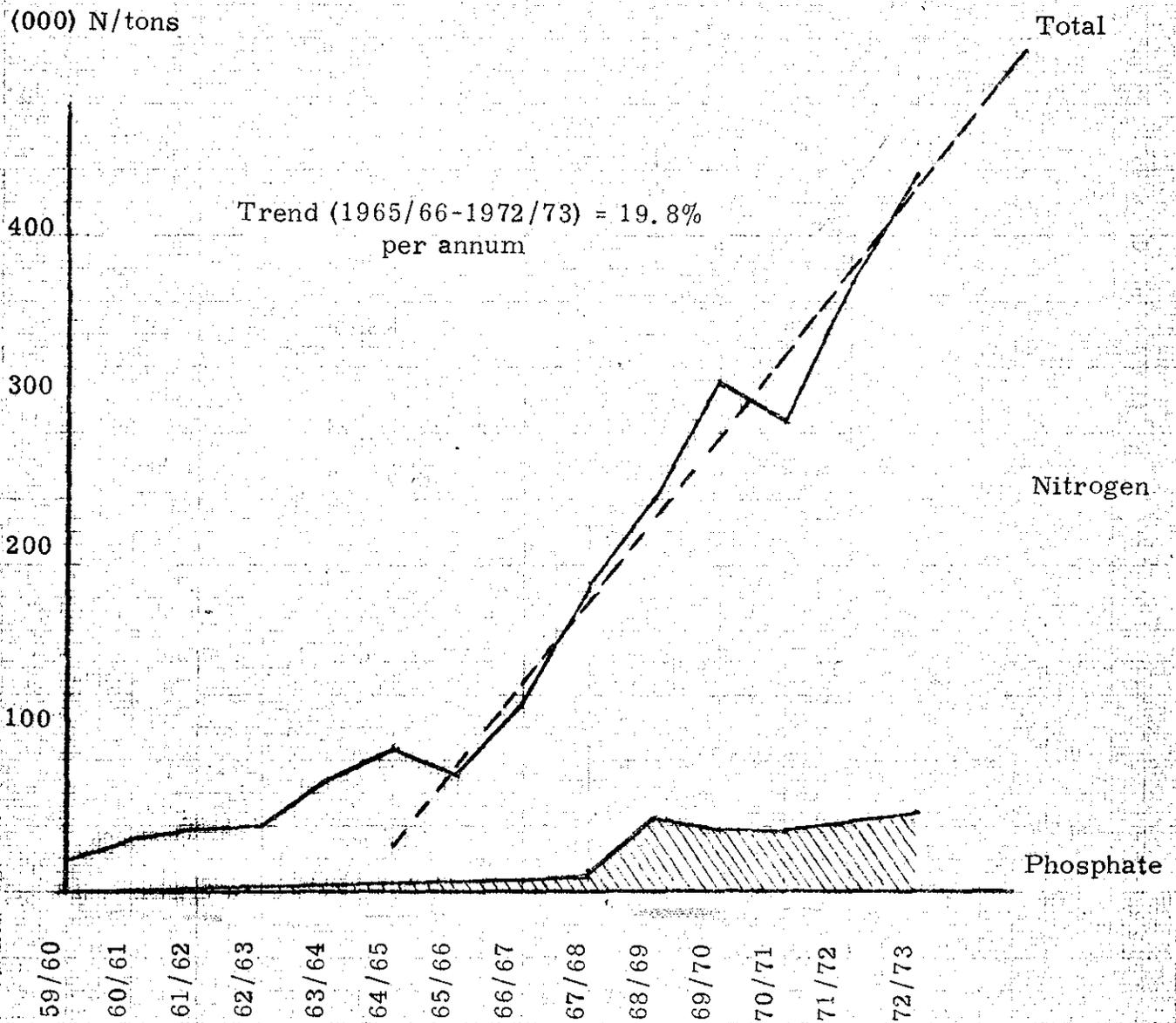
A disaggregation of growth in a number of selected districts (not shown) produces familiar results. In those well watered areas (e.g. Lyallpur, Lahore, Sahiwal, Multan,) growth is substantial in both periods, and the partitioning demonstrates the cumulative effects of the adjustments that farmers have been able to make: more acreage (absolutely and relatively) under high value crops. Those areas less favored in terms of water availability and cropping alternatives show no consistent pattern, i. e. , at times there has been a growth in acreage that has been cancelled out by a decline in yield. On other occasions, it has been the reverse.

Purchased inputs: To some extent, the partitioned effects can be associated with the provision of non-farm inputs; principally water, seeds, fertilizer, and pesticides. For example, seeds, fertilizer and pesticides can be expected to effect output by increasing yields. Additional supplies of irrigation water, however, are more complex in their effects. Water makes possible increases in the acreage cropped, and tubewell-produced water also adds flexibility in water use. The result is a variety of new, higher-valued crop combinations. In addition, the traditional under-watering practiced in areas where water is scarce suggests that large increases in irrigation supplies probably also increase yields directly. When used in combination with higher dosages of inorganic nutrients and improved seeds, this is sure to be the case.

Figure II. 3 describes the increases in fertilizer use since 1960. It shows that from only 20 thousand nutrient tons in 1959/60, offtake has been increased by a multiple of 20, i. e. to 400 thousand tons. Most of the increase has occurred since 1967/68 and is clearly related to the introduction of the higher yielding varieties (HYV).

The graph also shows the source of the concern among agriculturalists that a highly unfavorable ratio of phosphatic to nitrogenous fertilizers has developed. Indeed, many knowledgeable scientists attribute at least a part of the recent decline in wheat yields to the failure to replace residual soil phosphates that were exhausted during the first spectacular years of the "green revolution."

Figure II. 4. Consumption of Fertilizers



Relatively speaking, the accuracy of the fertilizer data is substantially greater than that available about other inputs. However, by using rough estimates of per unit tubewell discharges, it is also possible to reach some conclusions about the order of magnitude of increased water supplies from this source. Table II. 6 gives figures for total tubewells installed from 1964/65 to 1971/72. Given that the roughly 10,000 energized public sector tubewells are more than one cusec wells, and that a number of the private sector wells are less, an estimate of 100,000 cusecs of installed capacity is probably as accurate a figure as one is likely to get. Assuming that each well were to operate between 1,500 and 2,000 hours per year, it would mean an increase of roughly 12-15 million acre feet over the 55-60 m. a. f. of canal water normally supplied. This means that, for the whole of Pakistan, there has been an increase in water availability of something on the order of 25 percent. (Since only a portion of the country has access to groundwater, in many areas the additional groundwater has added 50-100 percent to water availability.) The crucial character of water availability is demonstrated by noting, that canal supplies fell from 60.8 m. a. f. in 1969/70 to 56.1 m. a. f. in 1970/71 and 55.2 m. a. f. in 1971/72. Both of the latter years, as can be seen from Figure II.1, were bad to mediocre in terms of the value of output.

Khan demonstrates the importance of groundwater in an interesting and different way by comparing data on farms with and without tubewells for 1970/71 and 1971/72. As Table II. 7 indicates, instead of a decline in area cropped that would have been expected as a result of the low water availability in 1971/72, tubewell farmers actually increased their area by 25 percent.<sup>1/</sup>

Table II. 6. Pakistan: Total Number of Public and Private Tubewells Installed 1964/65 - 1971/72

Year	Public Sector Tubewells		Total	Private Sector Tubewells	Total Tubewells
	WAPDA	Irrig. Dept.			
1964/65	2097	1183	2280	30990	33,270
1965/66	2477	1234	4111	38947	43,058
1966/67	3632	1429	5061	47817	52,878
1967/68	5030	1343	6373	58963	65,336
1968/69	6204	1593	7797	73205 <sup>1/</sup>	81,002
1969/70	6766	1853	8519	79233 <sup>2/</sup>	86,751
1970/71	7677 <sup>4/</sup>	1853 <sup>5/</sup>	9530	84642 <sup>3/</sup>	94,172
1971/72	7677	1853	9530	93000 <sup>3/</sup>	102,530

1/ Indus Basin Review Table B.13

2/ West Pakistan University of Engineering and Technology, Lahore  
"A Study of the contribution of Private tubewells in the development of water potential in Pakistan" number to December, 1969

3/ Estimated - Based on ADBP tubewells installed up to June 1972.

4/ WAPDA installation figures from WAPDA.  
(Number of tubewells still to be energised in late 1972: 2,400)

5/ Irrigation figures from Water Resources, Planning Commission.  
Number of wells still to be energised as at 31/3,800 (Planning and Development, Lahore)

Table II. 7. Percentage Change of Area Cropped in the  
Tubewell & the Non-Tubewell Sectors in Punjab\*

- million acres-

	Tubewell Farms		Non-Tubewell Farms		Percent change in 1971/72 over 1970/71	
	1970/71	1971/72	1970/71	1971/72	Tubewell Farms	Non-Tubewell Farms
Wheat	3.31	3.67	5.04	4.55	+10.9	-9.7
Rice	0.90	0.86	0.88	0.78	-4.4	-11.4
Maize	0.16	0.18	0.42	0.39	+12.5	-7.1
Cotton	1.07	1.33	2.16	2.34	+24.3	+8.3
Sugarcane	0.27	0.23	0.89	0.71	-14.8	-20.2
Other	0.98	2.17	6.81	4.93	+121.4	-27.6
Total:	6.69	8.44	15.20	13.70	+26.2	-9.9

\* un-irrigated area is excluded.

A third ingredient of recent growth has been the area under improved seeds; Table II. 8 shows the rapid acceleration that occurred in the late sixties and early seventies. However, it is apparent that the impetus has slowed in recent years and, in the case of rice, the acreage under IRRI varieties has actually declined. This point will be raised again in a subsequent section on long run growth potentials. For when the area under improved wheat varieties is compared with total wheat acreage, it appears that approximately 75 percent of the wheat land is now under HYV. When the acreage

that is unsuitable for such varieties because of low rainfall is subtracted, the percentage is even higher. Similarly, IRRI rice now occupies nearly 60 percent of the acreage devoted to rice. When prime basmati or long stemmed rice tracts are subtracted, the acreage under rice likely to go under HYV has now also been largely planted. Indeed, much of the agricultural research that is being done is - and must be - aimed at maintaining breakthroughs rather than expecting to discover new ones.

Table II.8. Area and Production Under Improved Varieties

Year	Wheat			Rice		
	Acreage (000) acres	Production (000) tons	Yield md/acre	Acreage (000) acres	Production (000) tons	Yield md/acre
1967/68	2,365	2,200	25.3	10	12	33.4
1968/69	5,850	3,875	18.0	761	642	23.0
1969/70	6,626	4,678	19.2	1,239	1,010	22.2
1970/71	7,730	4,700	16.6	1,360	1,042	20.9
1971/72	8,120	5,180	17.4	1,800	1,386	20.9
1972/73	8,250	5,480	18.1	1,593	1,226	21.0

Least reliable of the purchased input data are those associated with plant protection. Although the figures in Table II.9 show a steady increase in area covered, the effectiveness of this coverage remains open to question. However, discussions with a number of agriculturists have indicated that many of them attribute to improved plant protection measures a partial explanation for the substantial increase in cotton output.

Table II. 9. Area Covered with Ground and Aerial Plant Protection Measures

	Ground operation (000) acres	Aerial operation (000) acres	Total (000) acres
1965/66	2,260	2,490	4,550
1966/67	1,895	2,040	4,140
1967/68	1,072	1,208	2,822
1968/69	1,744	1,641	3,130
1969/70	1,489	1,625	3,369
1970/71	1,614	625	1,697
1971/72	2,100	551	2,446
1972/73	2,060	376	2,636

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Agricultural Growth by Farm Size

There has been no effort in Pakistan to engage in a systematic monitoring of agricultural development at the micro level comparable to, say, the All-India Farm Management surveys. As a consequence, the information that is available on increases in output by farm size is fragmentary, consisting largely of work done to fulfill the requirements of M. S. or Ph. D. degrees. Fortunately, there has tended to be enough agreement among these studies on several basic issues to permit some general conclusions to be drawn. First, it is clear that in the Central Plain the major bottleneck to a proportional contribution has centered around the "lumpiness" of the tubewell technology. Although a substantial market for water has developed, several studies have shown that the amounts of water purchased were well

below what the value of supplementary irrigation would dictate. This can be related directly to the policy of monopoly pricing that the spatial characteristics of tubewell location make possible. Indeed, there appears to be very little difference in the rate of return on a tubewell that is being fully exploited by its owner on his own lands and the rate that can be obtained by selling water at current prices. However, the amount of water actually pumped in the latter case is considerably less.<sup>2/</sup> Empirical results that support this conclusion are reported by Naseem in his study of small farmers in Sahiwal District.<sup>3/</sup>

Second, almost all studies show that in the areas where canal water is reasonably certain and where ground water is available to further reduce risks, differences in the adoption rate of indivisible technology such as improved seeds and fertilizer among various farm sizes has been relatively small.<sup>4/</sup>

The above findings are consistent, not only with those of other similar irrigated areas outside Pakistan, but with the contrary findings that are coming to light in investigations of ecologically marginal wheat growing areas in the Arid Zone. There, it has been demonstrated that farm size has been a significant variable in the diffusion process, a finding that is related to the much higher levels of weather-related risk that underly agricultural production.

A third possibility with respect to differential increases in the contribution of value added by farm size could arise from the process of mechanization: fodder acreage released for alternative crops, increased yields,

shifts in the cropping pattern, increased cropping intensity, etc. The following chapters go into these questions in greater detail; however, the available evidence suggests the following conclusions about mechanization:

1. There has been little or no yield effect.
2. The very large farms, 75-acres and over, have probably not increased cropping intensity as a result of mechanization. The impetus to obtain tractors was fueled by distorted economic policies and the desire to resume land for self cultivation.
3. Farmers in the 30-50 acre category who purchased tractors appear to have reached relatively high cropping intensities (in the rice areas approaching double-cropping), partly as the result of having a large supply of power.
4. A considerable portion (20%) of the lands being farmed by all size groups having tractors, was formerly unreclaimed land. These lands represent an addition to the amount of acreage available for cropping and hence important contribution to growth. (If this growth in acreage were attributable to mechanization, it would also insure a high social rate of return to tractors.)

In comparing "before" and "after" models of mechanization without reclamation, the rate of return at social accounting prices varies from negative in the areas without supplementary water to approximately 30 percent in the tubewell areas. Much of the pressure for mechanization has come as a result of profits attributable to distorted factor prices, and the

possibility of capturing the productivity gains of improved seeds and fertilizer by cultivating the land under self management.

In summary the evidence suggests that the crucial element in differential contributions of growth by farm size continues to reside in the ability to increase the supply of supplementary water. Tubewells continue to be the basis for increased cropping intensity; they also insure, in areas where canal water is uncertain, that the risk element does not enter unduly into the diffusion of divisible technology in the form of HYV and fertilizer. Lastly, the demand for tractors has been encouraged by a high rate of private return, often in cases where the social rate of return was quite low.

#### An Anatomy of the Green Revolution

From the foregoing observations, the following scenario is a plausible reconstruction of agricultural growth during the decade of the 60's.

1. The beginning of the green revolution can be dated somewhere around 1960. Undoubtedly aided by several good weather years, this period nevertheless marks the use of discernible quantities of fertilizer and the spread of privately installed tubewells. As would be expected, (a) an important growth element was increased acreage under crop, and (b) sugarcane, a crop with high water and fertility requirements, benefitted most from these inputs and became the cutting edge of the increased output.

The distributive effect of this period was overwhelmingly in favour of the larger farmers since (a) tubewells are "lumpy" inputs requiring significant capital investments, (b) the percentage of cash crops on large

farms unconstrained by subsistence requirements is much larger, (c) fertilizer stocks were short and adequate supplies required the use of influence.

2. This initial impetus -- which established the approximate trend line for the decade -- was interrupted by two drought years, 1965/66 and 1966/67. Although these years saw a significant decrease in output as a result of weather, the impact on the use of inputs was less severe. Indeed, there is undoubtedly a good deal of truth in the argument that the prolonged drought stimulated the installation of tubewells as nothing else could have done.

3. The year 1967/68 was the year of Mexi-Pak. The Government launched an all-out campaign, sometimes bordering on coercion, to diffuse the Mexican wheat seeds as widely as possible. Good weather, a record off-take of fertilizer and the water from some 60 thousand tubewells boosted wheat output from an average of 3.8 million tons, obtained during the first part of the decade, to 6.3 million tons, an increase of 65 percent. Although certain other crops, notably sugarcane, suffered in the process, the net result was a recovery from the slump caused by the drought plus an increment that re-established the trend value for the earlier period.

4. In 1960/70 rice, sugarcane and cotton again emerged as the leading growth crops. Due to the over-evaluation of domestic prices (200 percent above world prices) cane, in that year, continued to be more profitable than all other crops when supplementary water supplies were available. Growth therefore continued to be the response to a disequilibrium condition that began with the

introduction of tubewells. Because of the lack of improved sugarcane technology, the growth was associated with large increases in sugarcane acreage. The output of rice has also increased rapidly, particularly in the Province of Sind. However, unlike sugarcane, its comparative advantage was tremendously enhanced by rising productivity. Yields in the two years ending in 1969/70 increased by 44 percent over their 1967/68 level.

5. 1970/71 and 1971/72 were disappointing years involving substantial retreats in output from the 1969/70 peak. A combination of events, including the trauma of war, resulted in significant declines in all major crops except maize and cotton. The latter, capitalizing on unprecedented prices and unusually favorable summer weather, registered a gain of 35 percent in production over a period of 2 years.

6. 1972/73 and 1973/74 mark new highs in agricultural output and continue the long term trend of approximately 4.5% per annum. The 73/74 cotton crop was down approximately 7% from the all-time high of 1971/72. Rice and sugarcane increased in acreage and the former reached an all time high in output. Wheat also achieved a new record with an estimated 8.3 million tons - nearly 15 percent of the previous level achieved in 1972/73.

From this brief description, it is apparent that the green revolution in Pakistan was a revolution carried out largely by farmers. Government activities and government institutions sometimes played a crucial facilitating role, but were never called upon to provide the initiative in either the early phases in which the production of water was the essential element nor in

the latter stages when yields were significantly increased through the application of improved seeds and fertilizer.

#### FOOTNOTES

1. The fact that both wheat and cotton have increased suggests that tubewell farmers are beginning to engage in substantial amounts of double cropping. Table taken from Mubasher Lal Khan, "Current Agricultural Situation, Problems and Prospects," Ministry of Agriculture, mimeo, 1973.
2. For computations, see Carl H. Gotsch, "Tractor Mechanization and Rural Development in Pakistan," International Labor Review, February, 1973.
3. Mohammed Naseem, "A Field Survey of Small Farmers in Sahiwal District, Pakistan," Working Paper No. 5.
4. The relevant literature, in addition to the Naseem study, is summarized in Refugio Rochin, "The Impact of Dwarf Wheats on Farmers with Small Holdings in West Pakistan: Excerpts from Recent Studies," The Ford Foundation, Islamabad, April, 1971, mimeo.

### Chapter III

## AGRICULTURAL GROWTH AND STRUCTURAL CHANGE

### Introduction

The process of economic growth involves two simultaneous phenomena. The first, to which the major portion of Chapter II was addressed, can best be characterized as accumulation, i. e. as the way in which important economic and social variables change - individually - relative to a previous time period. (An exception were the comments made on changes in the cropping pattern.)

Chapter III deals with a second intrinsic aspect of economic growth, namely, with changes in the variables often used to describe the agricultural economy relative to each other. This - essentially distributive - process will be called structural change and is assumed to occur at several levels of aggregation, e. g. sector, region, and village.<sup>1/</sup>

The range of issues that have been investigated under the rubric of structural change is extensive. At various times, writers have concerned themselves with changes in sector relationships, aggregate savings rates, size of markets, size of farms, factor proportions in production processes, population growth, rural-urban migration, political organizations and religious behavior. The discussion in this report, however, will be considerably narrower than the above and will deal primarily with those aspects of the structural change process that have observable economic consequences for those who are caught up in them. (In the Pakistan case, for example, it does

not deal with the fact that the cultural traditions rooted in the orthodox Islamic faith are in the process of being altered profoundly and that there is every reason to suspect that this "modernizing" trend will continue.)

The changes in the structure of the economy mentioned above are at the same time the result of, and the necessary conditions for, sustained growth. For some groups, the process will be rewarding in that it will mean a substantial enhancement of the value of the assets they currently hold; for others, these same forces will be exceedingly damaging.

Chapter I argued that, given the large portion of material and human capital that may be fixed or have relatively low opportunity costs in a traditional rural society, the pace of structural change is an important ingredient in determining the extent and type of social tensions that exist. For example, when change is reasonably slow so that generational mobility can provide the necessary adjustments in the labor market, the effects are much less noticeable than when groups who have already committed themselves to certain careers are forced to alter jobs and lifestyles at middle age. (It is this latter situation that gives rise to the half-facetious comment that without fixed assets, there would be no politics.)

In unplanned economics, market mechanisms are relied upon to insure that various parts of the structural change process "mesh". These do not always work smoothly. For example, a common phenomenon in advanced countries has been a demand for labor in the urban sector so strong that it literally pulled people, young and old, from the rural areas. Such

dislocations, while undoubtedly having some undesirable side effects on both the rural communities left stranded by the exodus and the urban communities unprepared for the influx, still have had the virtue of creating a labor force that is productively employed and for which a reasonable degree of material prosperity is assured.

But an equally prevalent scenario is one in which large numbers of people are made redundant by a decline in the demand for labor in the countryside. In both cases, migration occurs because of a divergence in opportunities between the rural and urban areas. But in the first case, the presumption must be that most people would be materially better off as a result of the transformation process. In the second case, no such statement can be made. It is primarily a "push," not a "pull," phenomenon. The failure of the system to produce rates of change that "mesh" will seriously affect the welfare of those whose wealth in terms of capital (human and material) has significantly depreciated. What is an "acceptable" human cost to pay for such growth is very much a matter of the value system of the observer. However, preserving a strict status quo is difficult to imagine, even by those who hold what might be called a "no-growth" position. The inexorable impact of increasing populations on limited land resources dictate that some sort of structural change must take place. What is at issue is the speed with which it occurs and the distribution of the human costs of dislocation among various groups and social classes in the affected communities.

In the following paragraphs, a number of observations are made that describe the changes that have already taken place in Pakistan over the last decade and a half. The data are noticeably better at the aggregate level than at the level of the rural community. However, there are again a number of micro studies that provide some limited evidence on the directions of change.

#### Aggregate Data on Structural Change

Sectoral relationships: One of the statistics most often cited as an indicator of development - and the extent to which the general structure of the economy has been transformed from an agrarian to an industrialized one - is the sectoral breakdown of GDP. The basic mechanisms, heavily dependent on the decreasing relative demand for food as incomes rise, are well established and have been observed in both time series and cross-sectional studies.

Figure III.1 provides the data for Pakistan. In 1959/60, nearly half of the country's GDP was contributed by agriculture. By 1971/72, largely as a result of the rapid growth in large-scale manufacturing, agriculture's share had declined to 38 percent.

Population by sector:<sup>2/</sup> A second important statistic useful in describing the stage of a country's structural transformation is the share of the population residing in rural areas and linked closely to production in the agricultural sector. Typically, this will be higher than the share of agriculture in GDP both because of the lower productivity of labor in the

agricultural sector and because some considerable portion of the labor force residing in rural areas is not engaged in agriculture or agriculturally-related pursuits.

Table III.1. Distribution of Pakistan's Population

Type of Residence	1951		1961		1972	
	Millions	%	Millions	%	Millions	%
Metropolitan areas (3)	2,151	6.4	3,549	8.3	6,309	9.7
Medium cities (16)	1,647	4.9	2,640	6.2	4,086	6.3
Large towns (20)	636	1.9	888	2.1	1,367	2.1
Other urban	1,585	4.7	2,577	6.0	4,902	7.6
Total urban	6,019	17.9	9,654	22.5	16,664	25.7
Total rural	27,761	82.1	33,226	77.5	48,226	74.3

Table III.1 provides a breakdown of the data on residence for the three most recent census years: 1951, 1961, and 1972. These show clearly that while there has been a substantial increase in the absolute number of rural residences, there has been a significant decline in the relative size of the rural population.

It is obvious that substantial urban migration has taken place during the 1960's and early 70's. However, many of the casual arguments that seek to relate population pressures to political tension depend very much on the kind of migration that has taken place. For example, Ali Mohammed notes

that part of the increase in city size are the result of traditional patterns that have existed for decades. A particularly interesting case is that of unskilled labor from certain districts of N. W. F. P. moving to Karachi in search of jobs in the construction industry. Similarly, the districts of the northern Punjab continue to supply large numbers of recruits to the Armed Forces. (The earnings remitted in both these cases are a major factor in the welfare of the labor-exporting area.)

However, recent years have established new patterns of migration from the agricultural areas to the towns and cities. For example, S. J. Burki's survey of a number of smaller urban areas shows that these towns have grown at rates that suggest nearly 30 percent of their growth is attributable to immigration.<sup>3/</sup> Unlike the unskilled laborers that constitute the bulk of the migrants from the mountainous areas of NWFP, migrants to urban areas from neighboring agricultural areas comprise a much broader spectrum of the population. Small landlords, tenants and skilled artisans as well as landless laborers have been a part of the influx. (As subsequent sections indicate, this kind of diversity is consistent with the changes that have taken place in the agricultural economy.)

#### Micro-Level Transformation

Previous comments have been directed largely toward those aspects of the structural transformation process that encompass the relationships between the rural and urban areas. Equally relevant questions can be raised about the changes that have taken place within the rural sector itself. While

Table III.2. Growth of Survey Towns and Proportion of Migrants in Their Populations, 1951-69

Town	District	Population			Rate of Growth		Migrants	
		1951	1961	1969	1951-61	1961-69	Number	Percent of Population
Haripur	Hazara	7,979	10,217	12,200	28.0	19.2	3,420	28.0
Charsadda	Peshawar	27,048	37,396	49,300	38.3	31.7	6,730	13.7
Gujarkhan	Rawalpindi	8,496	11,529	15,700	35.7	35.8	4,890	31.1
Gojra	Lyallpur	20,409	29,665	43,200	45.4	45.7	10,100	23.4
Jarnawala	Lyallpur	17,969	26,953	39,600	50.0	46.8	11,300	28.5
Kot Radha Krishna	Lahore	8,657	10,536	12,100	21.7	14.8	1,730	14.3
Kamoki	Gujranwala	5,588	25,124	40,300	61.5	60.4	14,800	36.7
Sangla Hill	Sheikhupura	9,379	13,738	19,200	46.5	39.4	3,890	20.3
Daska	Daska	15,375	20,406	27,600	32.7	35.3	7,420	26.9
Pasrur	Sialkot	9,403	10,836	12,000	15.2	19.8	1,280	10.7
Burewala	Multan	15,372	34,237	61,800	122.7	80.4	17,800	28.8
Rohri	Sukkur	13,243	19,072	24,200	44.0	27.0	6,800	28.1
Larkana	Larkana	33,248	48,008	63,900	44.4	33.2	13,300	20.8
Total		202,166	297,772	421,100	47.3	41.4	103,460	24.6

Source: Shahid Javed Burki, "Migration, Urbanization and Politics" in Population, Wriggen, (ed), 1974.

there is little doubt about the general direction that the changes in such basic elements of structure as the distribution of farm size and the size of various social groups have taken, there is relatively little hard evidence about overall magnitudes. Only the most rudimentary accounting accompanied the land reform measures of 1959 and 1972 and hence no authoritative statement can be made about its effects or the effects of the government's land consolidation program. Because of the lack of an agricultural census that enumerated the distribution of landownership, no help can be obtained from that quarter either. The best that can be done is to examine several limited surveys to underscore the direction - and in selected cases - the rapidity, with which change in the micro structure has taken place.

IBRD mechanization survey: Important evidence regarding the impact of mechanization on the size of operated holdings is contained in a survey of tractor owners carried out for the IBRD by the technical staff of the Agricultural Development Bank of Pakistan.<sup>4/</sup> Perhaps the principal result of the survey is that after the introduction of the tractor, average farm size (operated) grew by a factor of 2.4. Table III.3 shows the breakdown of the sources of the increase.

Table III.3 Sources of Increase in Farm Size in IBRD Tractor Mechanization Study

Land previously uncultivated	22 percent
Land previously rented out	42 percent
Land newly rented in	24 percent
Land newly purchased	12 percent

Although labor used per operated holding grew, this was not a product of increasing intensity, but of increases in the number of acres cultivated. Labor per cultivated acre dropped by some 40 percent. Estimates of full-time jobs displaced by each tractor varied from 7.5 to 11.8 depending upon assumptions about the amount of labor supplied by tenant families.

Burki survey: A second piece of evidence regarding the extent of changes in the size structure of holdings is to be found in a series of field surveys done under the supervision of S. J. Burki in 1969.<sup>5/</sup> After tabulating the results of several hundred interviews done in 27 villages of the Punjab, he concludes:

"...of the total land held by the farmers owning between 50 and 100 acres, as much as 19.2 percent was acquired through purchases in the 10 year period between 1959 and 1969...the owners of less than 10 acres and between 10 and 25 acres held respectively 12.2 percent and 6.9 percent less land in 1969 than they did a decade earlier. The big landlords, with holdings of more than 100 acres, also **lost** 15.7 percent of the land in the same period. The principal beneficiaries were the middle landlords, with the 50-100 category having acquired 19.2 percent of the total land transfers."

These data suggest that a pattern typical of advanced countries is being followed in Pakistan also. Medium landlords, seeking to increase their holding sizes in order to utilize fully lumpy mechanical technology in the form of tubewells and tractors were the most aggressive group in acquiring additional land. Their smaller neighbors, unable to reduce unit costs without access to the technology, often found it advisable to rent out or sell their land and move to the city. The larger landlords were not confronted with the same incentives and hence tended to be less active in increasing farm size.

Eckert employment survey<sup>6/</sup> In addition to studies that provide

evidence on shifts in farm size, some work has been done regarding the changes that have taken place in the relationship of various social classes to the production process. In a detailed report on conditions in the Punjab, Eckert reaches the conclusion that the following classes in the rural areas face the greatest difficulty.

1. Temporarily hired landless labor: This group is estimated to number nearly two million households. They averaged 135 days of work in 1971; annual household income averaged Rs. 175.
2. Permanent hired landless labor: Estimated at 1.3 million in the Punjab, household income for this group was Rs. 193 per year. However, they received a substantial amount of income in kind.
3. Tenant farmers: In addition to the uncertainties of displacement, tenants are vulnerable to a continued upward pressure on rents as more and more landless compete for less and less land. Eckert estimates that there are over 4 million families in this category. There is no reason to expect that over time their position will improve relative to landless labor.
4. Small farmers: The Census of 1960 suggests that some 20 million households live on operated holdings of less than 7.4 acres. These farmers are often among the poorest families in the village since the social status associated with land holdings often acts as a deterrent to part-time labor on neighbor's fields. With increasing

self-management on the part of the larger farmers, many have found it increasingly difficult to rent in enough land to provide a minimum size holding.

5. **Artisans:** The traditional artisans class has been declining in size for several decades, both as a result of increasing monetization of rural transactions and greater access by rural people to small towns where cheaper and better quality goods are available.

The Eckert survey, although it is limited to the Punjab, is extremely useful in thinking about the process of rural transformation since it identifies specifically those groups whose welfare will be most seriously affected.

#### Conclusions :

The failure of the Agricultural Census of 1960 to report data on the distribution of land ownership doomed forever the possibility of establishing with any precision the rapidity of the process of land consolidation during the decade of the 1960's. Even if some future economic historian attempted to go back into the revenue records in which land transactions are recorded, the various subterfuges employed to circumvent the land reform would be his undoing. Under any circumstances, the issue is partly academic. From a policy point of view the process - whatever its magnitude - has at least partially run its course.

In the following chapter, it will become clear that Government economic policy actively supported a growth process that had implicit in it a high rate of structural change. Moreover, there appears to have been

little concern for the inevitable human costs that accompany such rapid changes in residence and employment. While the tangled web of circumstances makes it difficult to distinguish the causes of political unrest at the turn of the decade, there are grounds for thinking that no small role was played by the type of development process that had gone during the 1960's.<sup>7/</sup>

FOOTNOTES

1. This definition of "structural change" leaves the term "structural transformation" for the general process by which agrarian societies are transformed into urbanized, industrialized ones. "Development" then becomes a structural transformation process of which the user of the word approves.

For a time series analysis of accumulation and structural change in a number of important countries, see Simon Kuznets, Modern Economic Growth. Cross sectional or cross country analysis of similar problems can be found in a series of papers by Hollis Chenery and his associates. Cf Hollis Chenery, et al., "Uniform Analysis of Development Patterns," Project for Quantitative Research Report No. 148, mimeo, 1970.

2. This section is based largely on S. J. Burki, "Population Growth and Economic Development in Pakistan," Working Paper No. 14.
3. For a detailed discussion of changes in the distribution of Pakistan's population, see S. J. Burki, "Migration, Urbanization and Politics in Pakistan" in Wriggens (ed.) Population, 1974.
4. McInerney, J. P., and G. F. Donaldson, The Consequences of Farm Tractors in Pakistan: An Evaluation of IDA Credits for Mechanization of Farms in Pakistan, 1966-1970, IBRD, unpublished draft, March, 1973.
5. S. J. Burki, "Development of West Pakistan's Agriculture: An Interdisciplinary Explanation," in Rural Development in Bangladesh and Pakistan, Stevens, et al. (eds.), Hawaii University Press, 1975.
6. Jerry B. Eckert, Rural Labor in Punjab, Planning and Development Department, Lahore, 1972, mimeo.
7. Shahid Javed Burki, "Social and Economic Determinants of Political Violence: A Case Study of the Punjab", The Middle East Journal.

## Chapter IV

### THE ROLE OF GOVERNMENT PROGRAMS AND POLICIES

Before turning to a discussion of potential rural development scenarios for Pakistan over the next decade - and the role AID might play in them - it is useful (1) to gauge the extent to which government policies have encouraged the type of structural transformation process that has been observed, and (2), where these seem to have been important but undesirable, to offer what might be called the standard antidote. The latter consists primarily of admonitions to correct some of the more obvious kinds of price distortion, to strengthen the institutions that serve the small farm sector, and to consider the far reaching benefits that would be associated with measures of agrarian reform that would lead to a small owner agriculture concentrated on the 10-20 acre farmer. No effort is made at this stage to raise the critical question of the feasibility of implementing such policy suggestions. Rather, they reflect simply the kinds of activities that ought to be undertaken if "rural development" were to be defined, however crudely, as a program designed to improve the well being of the majority of the inhabitants of the rural area. The discussion of how these suggestions are likely to fare in the reality of Pakistan's social and political environment is reserved for Chapter VI.

### The Supply of Improved Agricultural Inputs

The first question that might be asked regarding the Government's role in agricultural development has to do with the provision of the inputs that have been identified as being crucial to the increases in output described in Chapter II. Two sets of problems can be distinguished: (1) those related to the procurement and distribution of an adequate supply of "standard" improved technologies that were already reasonably well understood and (2) those related to the creation or adaptation of essentially new technology to the Pakistan environment. The first category would include making fertilizers available, obtaining the necessary pesticides, importing the seed of improved varieties for direct sowing, etc. The second would comprise various kinds of research and development activities including basic biological research, adaptive work on improved genetic materials imported from abroad, and engineering work on mechanical technology. Included also would be research on the proper cultural practices for incorporating "standard technologies" into the existing agricultural regime, e. g. fertilizer trials and tractor tests. Both facets of the problem are discussed in the paragraphs that follow.

Mechanical technology: The first real technological breakthrough after Independence came in the area of improved methods of providing supplementary ground water. Initially, tubewells were installed under government auspices as schemes for dealing strictly with water-logging and salinity (e. g. the Rasul scheme) or, in the case of Salinity Control and

Reclamation Project I, to provide substantial additions to the historical canal supplies. But as the data on water availability shows, the program produced only a small portion of the increased supplies utilized in the 60's. The remainder was produced by equipment manufactured and installed by the private sector.

The policy struggle between the proponents of public and private groundwater development has by no means been resolved. Some of the broader issues involving groundwater management, withdrawal efficiency and the distribution of farm incomes will be treated in more detail in Chapter VI. However, from a purely technological point of view, the failure of the Government to adopt a program aimed at improving the efficiency of locally manufactured equipment is unfortunate. Despite numerous suggestions, some originating from expatriate engineers working on the public tubewell programs, there have been no substantial research and development efforts in Pakistan aimed at improving the performance the pumps and motors that are being made in small shops throughout the agricultural areas. The methods of manufacture, the materials and the design, are all of pre-WWII vintage; hence there would appear to be considerable scope for technical improvement while retaining the simplicity and scale that makes these implements attractive.

Another mechanical input that has been the subject of great controversy in Pakistan has been the tractor. In 1972, an estimated 25,000 had actually been imported, most of these being in the 35-45 horsepower range.

Although the major fault in the mechanization policy lies in the economic sphere, i. e. in factor price distortions, the decision to import only relatively large tractors was also detrimental to an orderly structural transformation process. Large farms, of course, beget large tractors and when agricultural officials were choosing the sizes to be imported, they had only the large farms in mind as potential users. But the converse is also true, i. e. large tractors beget powerful pressures to increase farm size. It is clear that at least some of the results in the studies on land agglomeration cited in Chapter II would have been different if tractor sizes had been different.<sup>1/</sup>

Chemical inputs: The second crucial element in the anatomy of the green revolution was the increased use of chemical fertilizers. Here the Government's record is spotty. On the plus side, there was the policy of substantial input subsidies at a time when the inorganic materials were first being introduced, a point dealt with at greater length in the next section. But on the minus side has been an unwillingness to remove subsidies when they were no longer justified and a periodic failure to employ a forward looking approach to the programming of supplies. Particularly in the mid-60's and most recent past, agricultural output suffered because of fertilizer shortages. Given a social benefit-cost ratio that is probably higher than for any other agricultural input, it seems hard to justify running out of fertilizer. Obviously, this does not imply that no thought whatsoever should be given to the opportunity costs of holding stocks, but the resources tied up in a fertilizer with a 3-4 month turnover are minimal compared to the losses

suffered by the economy when shortfalls occur.

Another area of concern with respect to the provision of fertilizers is the nutrient mix. It has been widely reported that at least part of the problem of declining wheat output in the recent past can be traced to the failure of farmers to apply enough phosphate. The effects of nitrogen fertilizer are, in part, dependent on the balanced availability of other nutrients. Where the soil's natural deposits are depleted as a result of intensive cropping, replacement of these non-nitrogenous nutrients is necessary for sustained increases in plant yields. Currently the N/P rates are on the order of 10:1 rather than the recommended 4:1.

A second continuing input problem for the Government is in the area of chemical pest control. Initially, pesticide materials were provided free of charge to farmers and were even applied by the Department of Agriculture. For a variety of reasons, this policy drew increasing fire in the late sixties. It was expensive, the work done by disinterested bureaucracy was haphazard at best, and its distributive effects were clearly regressive. Subsequently, changes in the policy were introduced to enable farmers to purchase and apply their own chemicals although these have continued to be subsidized. (In 1972, farmers in the Punjab were paying 50 percent of the costs of the material; in the other Provinces, subsidies continued at the rate of 75 percent).

The problem presented by the introduction of pest control measures is typical of many of the agricultural innovations that will play a role in

Pakistan's rural areas over the coming decades. Pesticides, including weedicides, are a highly divisible form of technology and hence well within the financial reach of most local farmers. However, the amount of information and management capability required to implement a program effectively is generally an order of magnitude above that required to plant improved varieties and to increase dosages of fertilizer. Consequently the network of agents and distributors who have also "sold" information in the process of selling fertilizer are likely to be much less satisfactory as a guide to farmer decisions. It would be hard to think of another area in which a vigorous program of up-grading the extension staff would be more beneficial.

Improved varieties: The Government of Pakistan is to be congratulated for seizing the opportunities to increase agricultural output afforded by the improved wheat and rice varieties. Partly as a result of technical assistance supplied by the Ford Foundation, the Rockefeller Foundation and AID, extensive imports were made to initiate the program, and a generally effective program of research was started in the mid and late sixties. As Figure II showed, 1967/68 witnessed an enormous increase in wheat acreage and wheat output. The seed for this rapid increase was obtained in part from imports and the Government mounted an effective program for getting the seed distributed.

Subsequently, Pakistani wheat and rice breeders, working within the framework of the international crop improvement centers in the Philippines and Mexico, made significant progress in adapting the new genetic

materials to Pakistani conditions. Experiment stations in several parts of the country were strengthened and a program of coordinated research began to emerge. Improved quality characteristics were bred into both wheat and rice varieties alongwith increased disease and pest tolerance.

Unfortunately, the embryonic research system was among the first casualties of the political turmoil that has characterized Pakistan's recent past. The leadership that had been supplied by several senior scientists was severely affected by death and by removal for alleged corruption. The staffs of the various Institutes, along with colleagues in other institutions, went for long periods without pay. Work was further hampered when small grants of discretionary funds were suspended as a part of the general cessation of foreign aid brought on by the war. The result of these setbacks has been to force Pakistan to begin anew in developing a research capability in this area. This includes not only a reinforcement of the major cereals team, but urgently needed improvements in research on oilseeds, cotton and pulses.

There has been considerable debate on how the new research system should operate. The types of issues raised include the appropriate levels of centralization, the structure of the incentive and reward system, the make-up of the research teams, etc. To date, the government has not moved with great alacrity to sort matters out. It is unfortunate that some of the more crucial organizational questions were not dealt with before the bloom of the green revolution wore off. To be sure, the failure to take

advantage of the early breakthrough to develop and properly institutionalize a research system is not something that can be laid only at the door of the Pakistan government. Much of what happened bears the imprint of foreign advice and foreign personalities. However, the country is now at a stage when the rather haphazard approach to research organization must be replaced with something more systematic.

Institutionalizing an effective agricultural research program will not be easy. Pakistan is no different than most other countries in finding it difficult to promote cooperation among various disciplines and research institutions. The factionalism that characterizes the country's bureaucratic and academic institutions makes progress doubly difficult. However, there is no alternative. Agricultural research, unlike a number of other institutions usually found in the agricultural sector, is a necessary condition for development. That is, regardless of the ultimate pattern of structural transformation the country chooses, progress will be stymied if new knowledge about improved methods and practices is not constantly fed into the system.

#### Agriculture price and income policies

It is impossible to take up all of the issues relevant to a description of the Government's past and present economic policies toward agriculture. The origin of some of the most significant determinants of the economic welfare of rural people lie well outside the rural sector, e.g., in the efficiency and structure of the industrial system, the incidence of tariff

policy, subsidies to urban labor through ration shop sales of food grains, etc. However, I shall deal in the main with the structure of prices as they directly affect agricultural inputs and outputs.

Input pricing: As indicated previously, Pakistan's use of input subsidies was a significant development tool during the 1960's. The Government correctly understood the need to make the profitability of unfamiliar inputs such as fertilizer and pesticides sufficiently high so that their diffusion would be assured. However, this policy was pursued long after its legitimate aims were fulfilled and has since represented a policy aimed at maintaining agricultural incomes rather than one of promoting innovation.

Devaluation (plus the rapid rise in world prices) has forced fertilizer prices drastically upward. Substantial subsidies have remained, however. According to Planning Commission estimates, they make up nearly 50 percent of the agricultural development budget.

Table IV. 1. Prices of Selected Fertilizers

	1969/70	1970/71	31/1/73	11/8/73
Urea (110 lbs. bag)	29	31	35	55
Ammonium sulphate (112 lbs bag)	13	17	17	25
Triple super phosphate (110 lbs bag)	20	20	26	34

Perhaps the most far reaching policy error on the input side was committed with respect to pricing tractors. As a result of several foreign currency loans, the cost of tractors in real terms to farmers in Pakistan

was less than what they cost farmers in advanced countries -- and this in the face of rural wage rates that are a fraction of those in developed countries. The result was a rate of return in areas with supplementary irrigation water on the order of 40 to 50 percent. (Curiously, in canal irrigated areas without supplementary water, the rate of return was estimated to be below the bank lending rate. Only when it was assumed that the purchase of a tractor was accompanied by the eviction of tenants was a return on investment obtained that would appear to be large enough to motivate machinery purchases.)<sup>2/</sup>

Output prices: The continuation of substantial subsidies, direct and indirect, on agricultural inputs can only be appreciated in the light of decision to hold down output prices. This decision, in turn has its roots in the desire to limit or moderate the rate of increase in the price of basic food stuffs and to provide raw materials to the export sector at prices that would make them competitive in world markets.

The issues involved in such decisions are, of course, intensely political and cannot be judged solely on economic grounds. However, it is clear that the subsidies projected, if continued, would create a heavy financial drag on the development budget as well as continue a policy of distorting relative prices. A great deal has been written about the distortions in relative prices between major commodities and their implications for the efficient use of Pakistan's land and water resources. Prior to the devaluation and the drastic fluctuation in world market prices, the argument concerning needed changes in government policy went as follows:

- (1) Relative prices of a number of commodities did not reflect comparative advantage of Pakistan's land and water resources. Wheat and maize, for example, were being subsidized at 50 percent above world market levels while sugarcane was pegged at approximately 200 percent above the then prevailing world sugar price. Rice and cotton, on the other hand were being sold at or below world market rates. It was argued that these distortions imposed an unnecessary burden on the economy and should gradually be adjusted to produce a more efficient allocation of agricultural resources.
- (2) Because the non-agricultural sector was also greatly distorted, it was recognized that simply lowering the supported prices of certain important commodities might have an undesirable effect on agricultural incomes. Consequently, recommendations on relative price adjustments were accompanied by suggestions that a general overhaul of the mechanism for allocating foreign exchange was required.

Little action was taken on these proposals until the recent past when the devaluation of the rupee significantly realigned the relative price structure both within the agricultural sector and between agriculture and non-agriculture. This occurred because no attempt was made after the devaluation - except in the case of sugarcane - to maintain the administered relative price structure that had grown up under the previous system of

prices. The result was that cotton prices, already growing stronger in world markets relative to wheat and rice in the 1970-72 period, increased still more in Pakistan. Second, an effort was made to hold down the wheat price because of its effects on the welfare of the poorer sections of the population. This was made possible, as on previous occasions, by the import of substantial amounts of PL-480 wheat. However, this combination of changes had its repercussions as farmers, many of whom are not yet double cropping, concentrated on increasing cotton output rather than devoting resources to cereal grain production.

Currently, with cotton and rice prices at record levels despite substantial export duties, plans are being made to increase wheat prices significantly, thereby returning to the pattern of the mid-60's. The reasoning is largely political, i. e., there is a substantial political risk in being a food deficit country. With high wheat prices and relatively low prices for rice and cotton, it is hoped that scarce resources in the form of land and fertilizer will be diverted in the direction of food crops. There is considerable concern of course that increases in the cost of food will be resented. However, the alternative -- the use of export earnings from the cash crops to purchase food on the world market -- is perhaps even more of a political risk.

The difficulty with raising the wheat price in the interests of self-sufficiency is that other crops whose price levels have been pegged to assure domestic production, will have to have their prices raised also.

Chief among these is sugarcane. After providing the cutting edge of growth in the early 1960's, recent years have witnessed a decline in output as farmers responded to the financial incentives of increased productivity in wheat and rice and the increased prices of cotton. So far, there has been no widespread breakthrough in yields and hence the sugarcane crop continues to represent a net drain on the agricultural economy in social terms. With the heavy fixed costs represented by the industry's processing mills, it is unlikely that the relative price structure will be altered downward in the near future.

#### Organizations Serving Agriculture

Almost every government tries to provide a rather broad range of services to rural people. Some of these can be linked to increased agricultural output only indirectly, e. g. medical care, education and internal security. Others, e. g. cooperatives and extension activities, are more directly related to the production process and hence can be expected to have a more immediate effect on sectoral growth. In the following discussion, only the latter dimension of rural service organizations will be commented upon.

Credit cooperatives: The fortunes of those who support cooperatives as major instruments of development in the majority of developing countries are currently at a low eb. Common sense suggests that the presence of profitable income opportunities associated with "lumpy" technology would tend to generate an interest in joint activities among small farmers. However, the evidence from Pakistan and elsewhere suggests that certain pre-conditions

are necessary for such organizational activities to take place. Aside from the question of social stratification at the local level - an issue raised in Chapter VI - Khan has noted that there are a number of environmental (agro-climatic) factors that might be considered as independent variables in an explanation of the difficulties encountered in building a viable cooperative program.<sup>3/</sup> For example, failure of societies is closely correlated with the inability to find a productive use for the funds borrowed by former members. This may be due to several causes: water logging, salinity, poor soil structure, inadequate rainfall, etc. Whatever the reason, in such marginal and uncertain environments, two things (related through time) tend to happen. First, there is considerable pressure to use funds for consumption. Second, those funds that are used for the purchase of inputs have a low and uncertain rate of return. The result is poor repayment records on the part of members, with a subsequent defaulting of the society as a group.

In Pakistan, there are also more widespread difficulties that arise out of a lack of administrative and managerial capacity at the local level. When a top-down style of organization is employed, cooperatives spring full-blown into existence and the process of developing local leadership is, for the most part, bypassed. Without managers from the outside to fill the gap until members develop enough experience to manage their own affairs, it is unreasonable to expect that the business acumen will be present to scrutinize loan applications, order requisite supplies and, in general, keep track of funds.

Considerations such as these prompt Khan to make the following comment about the history of the cooperative movement:

The main conclusion of the study at hand is that the sample farm credit cooperatives failed to achieve their objectives. A very pertinent question might be asked. Was it possible for the sample farm credit cooperatives to develop into viable units, and if so, how. The simple and straight forward answer would be that under the existing environment and the type of inputs, the sample cooperatives could never be expected to do any better. As a matter of fact, these cooperatives were destined to fail in achieving their objectives, right on the day they were organized.<sup>4/</sup>

Khan then makes a case for thinking of coops in development terms. By this he appears to mean organizations capable of implementing the elements of an integrated rural development program, e. g. the Comilla approach in Bangladesh. In addition to providing capital, such cooperatives, working with substantial inputs of managerial skills and funds from the government, would become the basic instrument for agricultural development. Inputs would be made available through this organization, but in addition outputs would be purchased, extension advice given, and, perhaps most importantly, communal activities would be undertaken that would make agriculture more productive. Examples of the latter would be the digging of drainage channels, enlargement of watercourses, construction of check dams and small catchment basins, etc.

There is merit to this suggestion. Such efforts at developing village-level cooperatives, supported by a tier of centralized services at say, a tehsil level, has been demonstrated in several developing countries. Indeed, the work now going on at the Academy of Rural Development in

Peshawar demonstrates the potential for such activities when they are pursued with adequate resources and by organizers with a good deal of insight into the motivations of rural people.

Most students of cooperatives in Pakistan have concerned themselves with measurements of the symptoms of cooperative performance: default rates and growth. Their findings with respect to the effectiveness of local organizations has been largely negative. Unfortunately, cooperatives cannot simply be written off as advocated by some proponents of market-oriented rural change. It is to this objection that Khan's study is addressed. On the one hand, communally organized institutions are a necessary condition for small farmers to participate in many types of improved agricultural practices. On the other they have had a rather dismal record of failure. Not only have they not involved small farmers, they have often been an expensive drain on the Government's development budget. The source of the dilemma is not hard to locate, but its resolution under Pakistani conditions is another matter.

Extension services: The description of the dynamics of the "green revolution" underscored the fact that the extension service played only a marginal role in the rapid agricultural growth that characterized the 1960's. The work of the lowest echelon, the Field Assistant, was consumed more by the demands of the larger farmers and an increasing amount of paperwork than by visits to the small and medium cultivators in his district. In many instances, the role of the local extension agent was primarily one of applying subsidized pesticides to farmer's fields. Indeed, given the low wages,

limited mobility and generally minimal qualifications of the lowest echelons, plus the inadequate motivation of their immediate supervisors, it would transgress the bounds of normal optimism to hope that contacting small farmers would become a part of the Field Assistants' normal routine.

Critics of the current extension set-up have also pointed out that the technical competence of the field staff is extremely limited. There are also not yet enough subject matter specialists at the district or tehsil headquarters to provide an adequate technical backup to the Field Assistants.

The twin problems of motivation and the development of expertise at the lowest level were dealt with in the rice improvement program to some extent by concentrating on a single crop and by drilling Field Assistants in a few crucial operations prior to the appropriate season. In this way enough of a technological base was generated to make extension agents credible and useful to farmers. Unfortunately, the difficulty of insuring follow-up to the training rests with a group (Agricultural Assistants) whose own motivation and skill is relatively limited. Many are city boys doomed to serve the Department of Agriculture only because their marks were too poor to permit them to enter the Foreign Service, the Finance Ministry or some other more prestigious agency.

To anyone familiar with the historical development of the Land Grant system in the U. S. , it is no surprise to learn that the larger farmers are already solving the "technology access" problem in their own way. Researchers at the Government stations and at Lyallpur University all report a

steady increase in the number of visitors inquiring about new varieties, optimal fertilizer dosages and improved cultural practices. Transportation and communications are, for this group, no problem and the lowest level of extension personnel is of little help to them. (The exception is the locally powerful figures who commandeer the Department of Agriculture's resources - including labor - for use on their own holding.) What this means is that there are unlikely to be any strong grass-roots pressures for improving the extension service. Those who are influential enough to make their wants felt by the bureaucracy do not need the lower echelons of personnel; those who need them have no way of influencing the organizations responsible for supplying their services.

Integrated Rural Development Program: The future of both the cooperative movement and the extension service is intimately connected with an important new Government initiative, the IRDP. Too little time has elapsed to provide evidence for judging the impact of the program even in the several areas where implementation has proceeded farthest. It is also difficult to generalize about the adequacy of the theoretical framework within which policies are being developed, for each Province appears to be going its own way. Critics of the initial program noted that it appeared to repeat many of the same mistakes of the village aid program of the 1950's. For example, it was envisaged that the IDRP would "integrate" a new tier of government services at the markaz level. The personnel were to be supplied by the line departments but coordination and supervision was to be

the responsibility of especially selected IRDP project managers. They were to be a personal catalyst; it was not envisaged that they would be given a substantial increment of resources with which to work.

In such a situation, it is hard to imagine how the line agencies would get very enthusiastic about the program. Its effects would produce nothing less than a severance of direct contact between the departments and their clientel.

The problem of bureaucratic control at the local level has been recognized by researchers at the Rural Development Academy in N. W. F. P. Instead of putting the local staff of the Departments of Agriculture, Health, Revenue, etc. under the IRDP project manager, they have received permission for the placement of staff at the markaz level. The affected departments have understandably been much more enthusiastic about broadening their own programs as long as they continued to share in the action. While this approach has had its costs in terms of weakening the project manager's ability to coordinate various development activities, there is now at least enough manpower at the correct level to assist in the organization of cooperatives and the planning of land development work. Whether in the long run the conceptual assistance from the Academy will be sufficient to pull the markaz level works together into a team remains to be seen.

#### Agrarian Reform

The most far reaching governmental activities with respect to the structural transformation of the rural sector are those that seek to redistribute

land. Two reforms aimed at creating a more equitable distribution of resources in the countryside have been undertaken, each with its own distinctive results. The first, the land reform of 1959 initiated by Ayub Khan, is considered by students of contemporary Pakistan to have been instrumental in weakening the power of the "feudal" land-owning aristocracy. Many of those affected owned whole villages in various parts of the country. While the effective implementation of even the 500-acre limit per individual imposed by the reform was to some extent avoided by loopholes in the legislation, there is considerable evidence that the reform and its after-effects was a significant step in the modernization of the country.

The second form, initiated under President Bhutto in 1972, is in some ways more ambitious than the first and seeks to limit holdings to approximately 150 acres of irrigated land or 300 acres of barani land. In addition there are a number of provisions that guaranteed tenants greater security and a somewhat larger share of the farm's revenues.

Observers differ with respect to the likely impact of the 1972 reforms. In part, this is because so few data exist on land ownership and land classification. It is therefore extremely difficult to ascertain how much cultivable land is potentially available for redistribution. It is also a matter of one's assessment as to how vigorous the Government is likely to be in pursuing the various claims and counter-claims through the extended litigation that has already begun.

Even under the most optimistic assumptions, however, the overall impact of the reform on the structure of rural communities is likely to be small. Permitting individuals to keep between 150 - 180 acres in the irrigated areas is sufficient to keep intact the system of social relationships that currently exists in the villages. Without resuming land from much smaller units, say everything above 25-30 acres, neither enough land or enough redistribution of power will occur to alter the basic political complexion of the rural areas.<sup>5/</sup>

### Conclusions

The pattern of government policies reinforces the broad generalizations made earlier:

(1) The government was important in seizing the initiative when the new seeds made a "green revolution" possible. However, this was a highly personalized set of decisions and not a product of an institutionalized, systematic, approach to agricultural development.

(2) The economic policies that were followed were conducive to a rapid expansion of the new technology. By subsidizing both inputs and to some extent, outputs, agriculture became a profitable enterprise, especially for the larger commercially-oriented farmers.

(3) The institutions and organizations that are necessary to insure that the small and medium farmer had equal access to technology and resources either did not exist or did not function to that end.

FOOTNOTES

1. The experience of the Indian Punjab suggests that it is possible to have a modern mechanized agriculture based on much smaller farm sizes. See Carl H. Gotsch, "Alternative Patterns of Mechanization in the Indian and Pakistan Punjab," Working Paper No. 11.
2. For a detailed discussion of the economics of tractorization, see Working Paper No. 8 and Bashir Ahmed, "Farm Mechanization in Agricultural Development: A Case Study of the Pakistan Punjab," unpublished Ph.D. thesis, Michigan State University, East Lansing, Michigan. The relationship between profitability and tenant eviction is examined in Carl H. Gotsch, "Tractor Mechanization and Rural Development in Pakistan, International Labor Review, February, 1973.
3. Mahmood Ali Khan, Cooperatives Dilemma, West Pakistan Agricultural University, Lyallpur, 1972.
4. op. cit.
5. For a detailed discussion of the 1972 reforms, see Ronald Herring and M. Ghaffer Chaudhry, "The 1972 Land Reforms in Pakistan and Their Economic Implications: A Preliminary Analysis", Pakistan Development Review, Vol. XIII, No. 3, Autumn, 1974.

Chapter V

A "SYSTEMS" FRAMEWORK FOR INVESTIGATING THE  
POLITICAL ECONOMY OF AGRICULTURAL SECTOR PROGRAMS

Attempts to incorporate political and social considerations into an analysis of agricultural development programs increases substantially the complexity of the analysis. The difficulties arise, not only from the simple increase in the number of variables being considered simultaneously but also from the fact that the causal relationships between them are not clearly understood. However, it would add little to a broader perspective on sectoral development if the focus on the production system were dropped in order to concentrate only on the political behavior of various interest groups and social classes. Projections of the types of programs that can actually be implemented in the countryside must be accompanied by a more adequate description of the interaction between economic and political variables.

The attempt to develop a "system" in which most of the major elements are endogenous produces serious methodological problems of a general nature. These have been debated at great length by scholars in the several disciplines that have sought to utilize a type of structural-functionalist approach in the development of social theory. Many of the academic discussions may appear to be somewhat esoteric, but they underlie the question: From whose point of view is the analysis being conducted? If policies are recommended, who is assumed to be the agent of change? How is their willingness to initiate change to be rationalized? <sup>1/</sup>

Merely raising these issues points to the need to develop a framework of some sort for organizing the discussion in a way that it emphasizes the interplay of a substantial number of different mechanisms. The following paragraphs and figures seek to do this by developing a schematic representation of a rural sector model.

The rural production system: The most obvious place to start in assembling a framework is with the characteristics of the production sector. No analysis can dispense with it, for the appearance of inconsistencies between technology and the organization of resources is a fundamental force for economic and political change. Substantively, one might begin by simply examining the way in which output is produced and the incomes that are generated in the production process are distributed to the owners (controllers) of resources. Obvious components of such an investigation would be the magnitude and ownership (control) of resources fixed to agriculture,<sup>2/</sup> the technology embodied in and the availability of purchased inputs, the distribution of organizational credit, the presence of marketing services, the way information regarding improved cultural practices and new technologies is disseminated, and so on.

Figure V. 1 illustrates these relationships graphically. The rectangles measure the conditions or state variables of the system; the valves represent points of individual decision making; and the dotted lines show influences from exogenous sources. The structure is made dynamic by including a feedback from the "income" variable to the "resources" variable, a link that is assumed

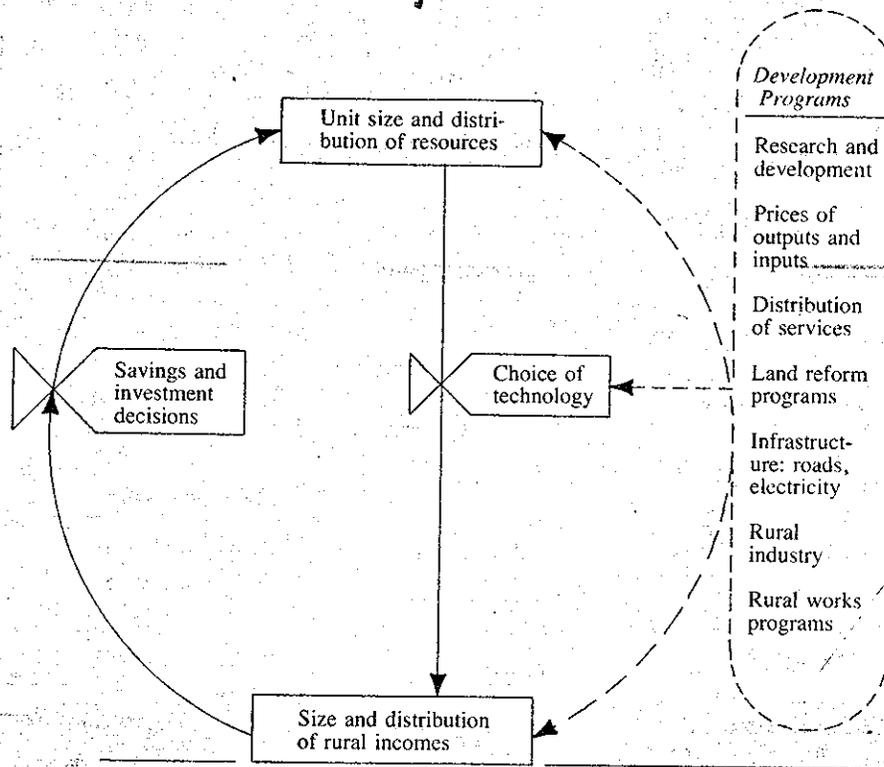


Figure 1. The Rural Production System

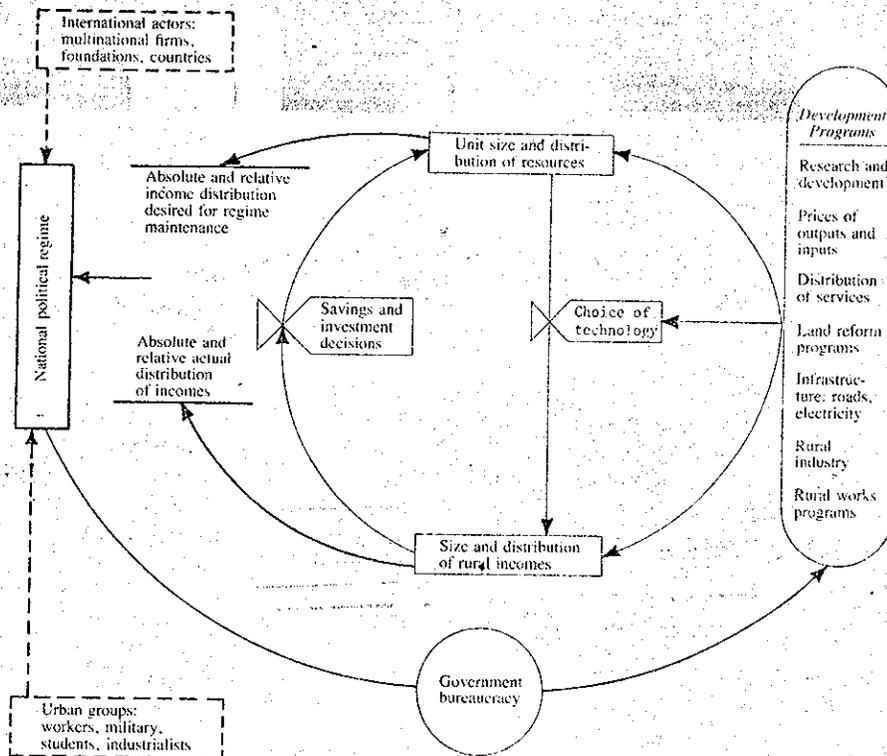


Figure 2. The National Political Regime, the Bureaucracy, and Rural Development Programs

to be controlled by the savings-investment decisions of individual members of the various economic classes among whom resources are distributed.

Investigating the interaction of investment decisions that affect the unit size of resources (e. g. holding size) and the choice of technology provides useful insights into the dynamics of different rural situations. For example, in areas where such highly divisible inputs as seeds and fertilizer have been the major impetus to the "green revolution", one would expect a significant increase in the productivity of the countryside, but no necessarily continuous further change in technology or the tendency to agglomerate land. Where holding sizes were relatively equal to begin with, the surplus produced by the new technology would be evenly distributed and thus would not permit the acquisition of land by some at the expense of others.

In situations where holding sizes were initially uneven, one would expect a somewhat more unstable situation. While everyone theoretically has access to the technology, the surplus generated by the larger holdings would obviously be greater in absolute magnitude than that available for investment by subsistence farmers. Consequently, the disparity of holding sizes could be expected to increase over time, albeit at a relatively slow rate.

The most dynamic situation, of course, is one in which both technology and the agrarian structure have unstable characteristics. Not only does the "lumpiness" of the technology imply that significant economies of size are present, but the size distribution of holdings is such that only some farmers will be able to take advantage of the technology. They, in turn, can be expected

to search for opportunities to rent land in or purchase land from small farmers as they attempt to reconcile or adjust holding size to technology. The interaction between these two conditions can be expected to create conditions in which changes in the holding size structure of the agricultural sector may occur rather rapidly.<sup>3/</sup>

Political regimes, bureaucracies and development programs: The dynamics provided by the adjustment process between technology and the agrarian structure provides a good deal of insight into the emergence of structural transformation problems in different agricultural systems. But it leaves unanswered questions concerning the types of technology to be created and diffused, or why the initial and continuing distribution of resources is what it is.

In most countries, both of these variables are closely identified with the activities of the State. Agricultural research, agricultural extension services, agricultural credit, land reform and the subsidization of unfamiliar inputs are all valid and necessary development activities well beyond the means of the individual farmer. Hence any structure used to organize and evaluate the potential for rural development activities must provide for information on the make-up of the national political regime and on the characteristics and capacity of the government bureaucracy that is to be entrusted with the design and implementation of the development schemes.

The inclusion of political roles in the structure obviously complicates matters immensely. For example, it raises the immediate question of how

the political actors actually perceive what has heretofore been called simply "the structural change problem". Do they see it primarily as a poverty issue where the threat to regime stability is seen in terms of absolute levels of income or nutrition? Or is the regime threat posed in terms of comparisons between various groups and classes inside and outside rural society? Perhaps even more significantly, do these perceptions about the problem change as attempts are made to implement rural development programs? That is, does a regime responding with a development strategy aimed at raising absolute incomes find that it has set in motion a dynamic process in which it must subsequently respond to relative deprivation? Is the regime's concern about agriculture even prompted by the situation of its rural constituency or are development programs primarily the outgrowth of the need to supply cheap food to a restless urban population?<sup>4/</sup>

Several elements of the regime's likely sources of concern have been included in Figure V.2. Included also are decisions on the direction and funding of research, the types of agricultural organizations and the economic policies relating to agriculture. In addition to the feedback loops that indicate the dynamics of political influence and resource flows, the concept of a "gap" between the actual income distribution and the distribution perceived by politicians to create the necessary regime stability, has been employed to provide a mechanism for relating perception to action.

A second area of investigation to which the structure points is the relationship between the national political regime and the bureaucracy. Separating the two groups in the structure implies that there is reason to suspect

that in the decision-making process, there may be fundamental divergencies of interest between the two parties. In such cases, use of the term "Government" would disguise a potential source of difference in system behavior.

Power at the local level: National regimes and central bureaucracies are most often the initiators of rural development programs. But there is a good deal of evidence that the forces that shape the actual performance of rural organizations are much more likely to be found at the local level. Consequently, no investigation of rural problems would be complete without introducing information on the characteristics of social stratification at the grassroots level and its linkages to the rest of the structure.

In Figure V. 3, the distribution of power is seen as a function of three elements, two of which are internal to the model. First, and typically most important, is the distribution of wealth that exists in a particular area. In agrarian societies this means primarily rights to the use of the land. It is a variable encountered earlier in the description of the production process and, in capitalist countries, is an important link between economic and political phenomena.

A second area of inquiry involves the extent to which national or regional political parties have sought to organize various groups or classes. Such efforts, at least in terms of conventional democratic participatory forms of mobilization, have proved to be extraordinarily difficult. However, some examples, particularly among the so-called "transitional" countries such as Tanzania, do exist.

A third source of influence on the distribution of power stems from non-wealth sources of status: tribe, caste, family and religion. While Weber's remark that "property as such is not always recognized as a status qualification, in the long run it is, and with extra-ordinary regularity," may be valid, much of the current attempt to initiate shortrun rural development clearly involves situations in which non-wealth sources of influences may be formidable.<sup>5/</sup>

Two avenues by which local elites may seek to influence the course of rural development programs are also suggested in Figure V. 3. First, there is the ability to influence programs directly as they are being implemented in the field. This includes the power to determine where such things as schools and roads are to be built, who is to be the demonstration farmer, and who is to be the chairman of the local cooperative. The second, but equally powerful mechanism for affecting programs and policies, is indirect influence through the national regime and the higher levels of the implementing bureaucracy. Indeed, as subsequent sections dealing with rural works and land reform suggest, much of the history of such programs can best be understood by the interplay between national and local perceptions of the problem of regime stability. Of particular interest is the lag structure between the time that central governments initiate various programs and when effective rural pressures are brought to bear for their alternation.

The foregoing structure involving the agricultural production process, the make-up and role of the national political regime and its associated bureaucracy, and the influence of the distribution of power among local

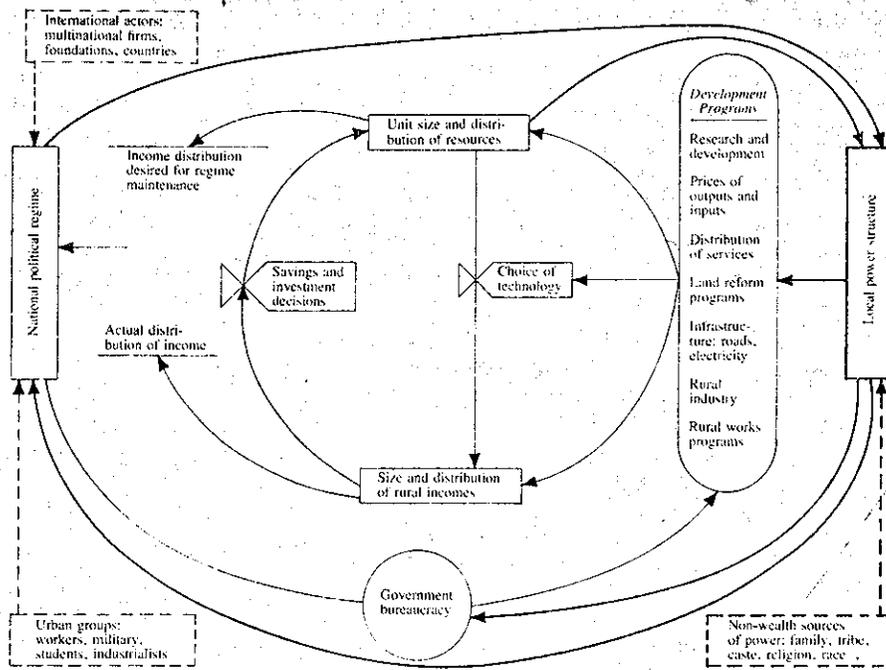


Figure 3. The Local Power Structure, the National Regime and Rural Development Programs

Dependency of National Regime on Rural Elites

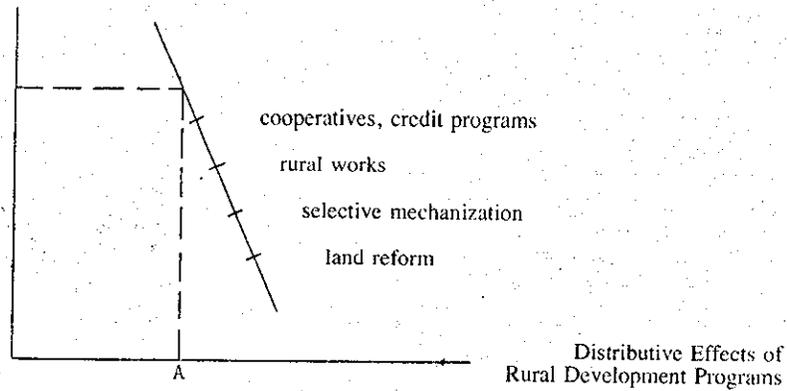


Figure 4. The Implementability of Rural Development Programs

groups is relatively value-free. These processes and these actors exist in some form in every country. What is important for rural development activities is how the system actually behaves when different institutional parameters (in this case those of Pakistan) are associated with it.

### Assessing the Viability of Development Activities

The basis for alternative rural development scenarios in a particular social and political environment lies in two kinds of diversity. The first of these has to do with the differences in the demands and effects on the environment among major programs. Research on new technology, for example, obviously raises significantly different issues in terms of both the allocation of resources and the importance of distributional side effects than those implied by a program of land reform.

The second kind of variation that makes choice interesting, is the potential for variation within programs. While it is true that land reform poses different issues than expenditures on research, there are many kinds of land reform. Evidence of this fact, for example, is that in many developing countries, reforms that attempted to isolate the agrarian elite have been successful; however, when they sought to lower ceilings to the point where the more numerous medium size farmers were threatened, implementation was stalled.

These two sources of variation can be thought of in terms of a two dimensional matrix, the rows identifying basic programs and the columns, the degree of change within a basic program area. The question now

becomes: Under what social and political circumstances is there a solid presumption that a particular proposal or sequence of proposals can be implemented in the form envisaged by the economic analysis?

To some, this line of questioning will appear to be static and self-defeating. It will certainly be difficult to accept for "can do" organizations (and individuals), few of whom are willing to admit that they are as much at the mercy of their political and social environment as they really are. Institutions are to be "created" and "changed," not submitted to. Moreover, the potentially self-serving character of decisions not to mount programs for those who are relatively powerless, is obvious. What better excuse to do nothing than the defense that nothing can be done? However, if the previous discussion on the source of difficulties in implementing rural development activities is correct, then a reasonably careful social and political analysis of the environment seems a necessary condition for implementation -- if for no other reason than the fact that over the years so many well intentioned remedies have in retrospect made situations worse.

An illustration of what such an analysis of "implementability" might look like is shown in Figure V. 4. Though it is extremely crude, it is meant to suggest that there is an inverse relation between the degree to which the national political regime is dependent upon local political elites for support and the distributive effects of the types of programs that can be implemented.

The X axis measures the distributive content of the program under the assumption that it is to be implemented and enforced in accordance with

the rhetoric that accompanies its initiation. Most innocuous are those programs that would enhance the position of smaller farmers through credit and extension programs; at the other extreme are programs that confiscate land and lead to a redistribution of property. In the first instance, one would expect a minimum resistance at the grassroots even though the enforcement of the objective might mean some income foregone to the elite groups. But at least from an economic point of view, <sup>the</sup> losses would be only minor. The latter (land reform) would of course be resisted mightily unless confiscated land resources were translated into substantial sums of capital. In between, one could expect to find such policies as selective mechanization, where the decision not to permit the tractorization of agriculture would be vigorously-- but not desperately -- resisted. Various price and fiscal policies would also be found in this intermediate category.

The Y axis measures the dependency of the national regime on the local elites for regime maintenance. As previous comments have emphasized, the notion of "local" has two implications: (1) that the decision-making processes are at the village level, and (2) that considerable geographic specificity is involved. Hence, with respect to the functioning of many rural development projects, "dependency" of the national regime is associated with a specific geographical area and not necessarily with aggregate grassroots influence.

Several observations and caveats might be made about the schema in Figure V.4. First, it illustrates the usual paradox of social reform,

i. e. the point at which change is most needed is also the point at which the ability to mobilize resources for resistance is most concentrated. For example, those areas in which land redistribution is a necessary prelude to any attack on the employment problem are also frequently those in which the dependency factor with respect to the national political regime is greatest.

A second and related observation might be that Figure V. 4 has transformed the dynamic emphasis of the earlier systems discussion into a rather static view of the problem. It misses the fact, for example, that implementing any of the redistributive programs in period  $t$  would, by previous arguments, alter the distribution of power at the local level in  $t+1$ . This in turn would lower the extent of dependence by the national regime on the elites and provide a constituency for an even more ambitious set of development activities aimed at small farmers, landless laborers and the like. Ultimately, one could at least theoretically envisage successful efforts to establish a political organization among the disadvantaged that would permit a frontal attack on the major sources of disparity, i. e. on the distribution of resources.

The foregoing framework provides a means of organizing material in such a way that attention is called to the interaction of economic, social and political forces in determining the system's path. It now remains to probe more deeply into the various major program areas and to determine, not only what the programs are like in terms of their output and distributive effects, but what gradations of change might be contained within a general heading. These findings must then be brought together with an analysis of the environment in which the programs are to be implemented in order that some judgment can be made about their political feasibility.

FOOTNOTES

1. These issues have been most clearly formulated with respect to rural development by Uphoff and Ilchman in The Political Economy of Change, University of California Press, Bekeley, 1971.
2. At a minimum, one would want to know how resources were distributed among laborers, who own only their labor power; tenants, who own labor and some capital (equipment); peasant proprietors, who own labor, capital and land; and landlords, who own only land.
3. This situation, which most closely describes the Pakistan case, has been explored at length in Working Paper 15.
4. I am indebted to Shahid Javed Burki for pointing out that rural development programs are frequently better served by a political analysis that alters the perception of politicians regarding their actual or potential constituency than by economic analyses that indicate the productivity of investments in rural areas.
5. There is little justification for treating this variable as being exogenous other than some concern for simplicity. As anthropologists and sociologists have pointed out for some time, one of the potentially detrimental characteristics of the commercialization of agriculture and the associated instability in the countryside, is that it undermines the cohesiveness of the rural community. Where great disparity of wealth exists, that may be all to the good.

Chapter VI

THE FUTURE COURSE OF AGRICULTURAL DEVELOPMENT  
IN PAKISTAN

In Chapter IV, the past performance of selected sub-sector programs in the rural areas was reviewed and a few brief recommendations were made regarding their future development. The latter, however, took as a starting point the conventional assumption that rational calculations relating costs and benefits were being made in the interest of some aggregate called "the Pakistani society". In the observations that follow, this perspective has been considerably modified. Projects and programs are now discussed primarily in the light of the interest groups that make up the political and social environment within which they will have to be implemented. I have tried to relate the general discussion to the framework developed in Chapter V. Three important nodes of interaction have been identified in the model where one can expect that many of the conflicting interests of various groups will be resolved: the national political scene, the government bureaucracy and the local administrative and/or development institutions. Obviously, these designations are extremely crude tools with which to work for within each there frequently exist such a myriad of conflicting interests that it is hard to suggest a qualitative outcome. Nevertheless, they will suffice to provide a screening device for examining the political economy of broad program categories.

### Insuring the Supply of Improved Agricultural Inputs

Chapter IV pointed out that the provision of improved agricultural inputs under any system of social organization could be broken into two aspects. The first involved insuring the actual physical availability of purchased inputs whose productivity had already been demonstrated under Pakistan conditions and whose presence or absence was a function of resource availability and/or bureaucratic coordination. This problem was distinguished from the research and development process itself in which researchers were trying to adapt new or existing materials to Pakistani conditions.

Chemical and biological inputs: From the perspective of the "top", there will always be questions about the amount of fertilizer and pesticide imports that the country really needs. Pakistan does not now produce sufficient amounts domestically to cover its requirements and hence there is a competition with other types of imports for scarce, hard-currency resources. To be sure, there is a growing recognition in all quarters that chemical inputs are a crucial element in keeping the price of food and raw materials down and consequently even those groups having a direct need of foreign exchange will find it desirable to insure that generally adequate supplies of fertilizer and pesticides are available. Indeed, rather than being part of a conspirational theory of interest group manipulation, shortages of fertilizer and pesticide inputs seem to be related much more to poor planning, poor coordination, and a consistent underestimation of the potential for agricultural growth on the part of most government officials. <sup>1/</sup> After

comparing the small losses that would have occurred though over estimation (i. e. the opportunity cost of capital associated with for 3-6 months storage) with the significant losses that occurred when sufficient supplies did not reach farmers in time, one can only wonder at the reasoning of those responsible for making the purchasing decisions. Indeed, it is hard to escape the conclusion that the whole procurement policy reflected a lack of feedback from the countryside as to what the actual situation was like.

(On the other hand, in 1972 and 1973, officials in the lower echelons of the regional Departments of Agriculture did convey estimates to the national Ministry of Agriculture that were well in excess of what was actually purchased. Both years witnessed substantial black markets in fertilizer.)

It should be expected that in Pakistan, the uneasy tensions that exist at the national level where the competition between chemical inputs and other claimants on foreign exchange is resolved and the adjudication of fertilizer and insecticide distribution rights takes place, will persist in the future. However, the ups and downs of insuring the supply of highly divisible inputs such as seeds, fertilizers and pesticides is unlikely to affect the structure of the agricultural sector significantly. Issues such as this one can be safely put in the category: "Vigilance Required." What is needed is administrative attention to detail, not political organization or resource redistribution.

Mechanical inputs: Tracing the impact of various types of mechanical inputs through the system is a good deal more complicated than looking at

the ramifications of programs designed to assure a supply of chemical and biological inputs. The fundamental reason is readily apparent. Many types of mechanical equipment contain an ability to alter profoundly the nature of the structural change process at both the local and national levels. The most frequently used example involves the introduction of tractors. Inevitably, whether in the short or medium run, tractorization leads to land agglomeration and hence to structural change at the micro level. As the process becomes widespread, labor tends to become redundant in the countryside and the aggregate structural transformation process involving a movement from the rural areas to the urban centers is affected.

As previously indicated, processes that disturb the underlying structure of the economy can be expected to have substantial distributive effects. Beginning again with a view from the top, there are those of the industrial classes who continue to be interested in measures that act to hold down the costs of raw materials or wage goods. Thus, in so far as mechanization is associated with increased cropping intensities and improved yields, they would be its supporters. Other aggregate effects, such as enough migration from rural areas to put a downward pressure on wage rates, would also be welcomed.

However, against these global considerations must be set two aspects of the process which produce a tension between the urban and rural constituencies of the national political leadership. The first arises out of the ever present necessity to allocate scarce foreign exchange.

When the issue becomes tanks or tractors, a powerful check has been introduced to the rapid build-up of agricultural machines. Indeed, in Pakistan, as in other developing countries, accelerated (and often inappropriate) tractorization has almost always been associated with hard currency loans earmarked specifically for agricultural machinery. Unfortunately the way in which such commitments are developed institutionally, permits sector policy makers to elude not only the internal budgetary allocation process but to a considerable extent, the foreign aid allocative mechanism as well. (When IBRD or AID sends out a team to look at mechanization, they get back a mechanization project!) In such a situation there is little at the national planning level that creates hurdles for inappropriate projects.

Particularly in recent years, there has also been increasing concern about the impact of agricultural mechanization that derives its rationale largely from political considerations. To some extent the lessons being applied have been drawn from developed countries, particularly the U. S. Beginning with the investigations of the Watts' riot, a line of causality has been established that relates the explosive conditions in the ghetto to the "push" effect of the rapid mechanization of American agriculture in the post-war period. Although exact parallels cannot be drawn, there is enough similarity between this situation and the one obtaining in Pakistan to draw attention to the disturbance potential of those who are being displaced from the land.

The crude examination of the national interests associated with a program of providing sophisticated mechanical technology suggests that the pressures to restrict the indiscriminate introduction of new equipment are likely to be relatively weak. Indeed, the most significant deterrents to inappropriate mechanization probably lie in those institutions that have in the past provided the necessary foreign exchange. This is an important point because there is virtually nothing at the grass roots level that can be expected to counter a "private gain" interpretation of the need for tractors, combines and the like. The ability of the landless to organize locally in their own (and society's) interest against those who have purchased the machinery needed for tenant expulsion and self-management, is extremely limited and nothing much can be expected to come of their protests.

How strong are private interests in tractor mechanization?

Judging from estimates made in the course of this study, the price relationships obtaining in the late 1960's provide a rate of return on tractors of approximately 50 percent in the irrigated areas. After the currency reforms of 1971, this dropped somewhat as the cost of tractors went up significantly. (The profit rate calculated under 1970 prices does not include the inevitable bribe and hence the actual difference was probably less than the calculations suggest.) But other important considerations of both an economic and social nature have undoubtedly been a part of the decision by individual farmers to introduce tractors. Resumption

of the land for self-management, for example, has not only made it possible to appropriate the entire increase in productivity obtained from the see-fertilizer-water revolution, but has provided insurance against certain types of land reform measures as well. (The simple formula: "Land of those who till it," could obviously not be applied by agrarian reform authorities.)

While tractors are more complicated than fertilizer to trace through the "system," the social and political impact of programs designed to produce water by mechanical means are perhaps even more difficult to assess. To be sure, there is a much greater agreement about the technology itself in terms of generating benefits for virtually the entire rural population. There is no question, for example, that supplementary water supplies tend to create higher cropping intensities and hence increase the demand for labor. Where the political problem arises is in the determination of the mechanisms by which the innovation is to be controlled. Initially, i. e., in the late 1950's and early 1960's, the program for tubewell development, insofar as the government policy was concerned, was entirely in the public sector. An elaborate plan, whose cost was expected to run into several billion dollars, was developed that would provide for the implementation of a large number of irrigation and vertical-drainage schemes. It was only subsequently learned that farmers had for some time been installing tubewells on their own and that, in many of the high priority areas, more than 50 percent of the land was already receiving supplementary water.

Initially, the larger farmers of the area were exceedingly anxious to have public sector programs. Although the small one-cusec pumps being installed privately were cheap by Pakistani standards, the water such pumps produced was still costly relative to the charges levied on surface supplies. As a consequence, the larger farmers reasoned that their influence was sufficient to keep water from public tubewells below cost and that this was clearly a desirable alternative to providing their own wells. (The policies of the Government in the areas that were actually developed indicates that they were quite correct in their assessment.)

The unfamiliarity of agriculturalists with the nature of the innovation itself, however, proved to be their undoing. For it shortly became apparent that the government schemes, while they did increase the overall water supply, neither produced as much additional water as could be used effectively or permitted the management flexibility that private tubewell ownership made possible. As a consequence of this understanding, support developed at both the grassroots and national level in the mid-60's for a private sector tubewell program. In opposition was the substantial Pakistani bureaucracy that had grown up around planning of such a program plus the vested interests of some half-dozen international consulting firms who saw the potential profits associated with implementing the public sector program being jeopardized.

Concessions were made on both sides in the formulation of the Third Five Year Plan, but the drastic changes in policy occurred only when the Pakistan-Indian war of 1965 resulted in a cut-off of foreign aid. It had been the rather substantial sums of hard currency being supplied by foreign donors, earmarked specially for water development, that had kept the public sector program afloat. Once it was clear that these were no longer in the offing, the whole program was phased down rapidly. (The unusually heavy demands for foreign exchange generated by the subsequent hostilities with Bangladesh also accelerated the process.) Even the agency responsible for tubewell development and reclamation was largely dismantled and its activities assigned to traditional "agricultural" ministries.

The issue of public vs. private sector water development has by no means been laid to rest. For one thing, there are a number of legitimate technical reasons for favoring public sector programs in areas where private enterprise cannot be expected to manage resources in the interests of even the most powerful elements in the rural society. These include such problems as drainage, salinity control, and salt intrusion in the fresh water aquifer. In addition, the distributive issue is here fully as acute as in the tractors case. Tubewells are lumpy inputs and few farmers below 12-15 acres can afford one. (As the water table declines the farm size issue will become more pronounced since the turbine pump wells cost 4-5 times as much as a simple centrifugal pump.)

On the other hand, where the wells have been installed in the public sector, the management problems that have arisen have been difficult to overcome. These run the gamut from an inability to make timely repairs on pumps and motors to the outright extortion widely practiced by pump operators. As in so many other situations, nationalization of the means of water production has not meant that social justice has been served. Were it not for the time-honored wara bundi system of irrigation in which extremely strong legal and social sanctions insure that the irrigation rotation is related to the land farmed, putting the development of supplementary tubewell water under government control could easily have led to the worst of all worlds, i. e. one in which development institutions are the preserve of the wealthy.

#### Agriculture Price and Income Policies

The recent drafting of a resolution of no-confidence in the Government's agricultural program by the Punjab Farmer's Organization illustrates the complexities of analyzing the political economy of agricultural price policy. As in the case of the introduction of output increasing technology, there is general agreement at the national level that there ought to be sufficient incentives to keep farmers investing in their own production facilities. However, higher prices for farm products obviously mean higher prices for raw materials, (e. g. cotton) as well as higher prices for the most important component of the average Pakistani wage earner: the market basket of food. Under these circumstances, it is almost

inevitable that various forms of taxes and subsidies should be introduced that seek to soften the effects of using market prices as a guide to resource allocation. For example, in Pakistan, the recent past has been marked by the attempt to keep output prices down by (a) procurement policies for food grains in which the government bought at less than market prices and resold in the ration shops after absorbing some of the normal storage costs and (b) by putting a substantial export duty on such crops as rice and cotton.

The result of such a policy was obviously favorable to the urban consumer but detrimental to the farming community. In an effort to placate the latter, significant subsidies were given to agricultural inputs. For example, in 1972/73, the amount granted on fertilizer alone consumed approximately 200 million rupees or on the order of 50 percent of the Agriculture Development Budget!

The political economy that prompts such measures is well known to students of both developed and developing countries. On the output side, almost everyone in the agricultural sector is in favor of higher prices. It is an issue on which the agricultural elites can be sure of bringing to bear on politicians participating in national decision making, the maximum amount of influence in their struggle with urban consumers over the possession of the agricultural surplus.

A moment's reflection suggests that for a large portion of Pakistan's farming population, the effect of higher or lower prices - at

least in the cereal crops - is of little significance. One must have wheat to sell i. e. a marketable surplus, in order to be affected by price. The same is true of subsidies on inputs. Benefits can only be realized when fertilizer or pesticides are actually utilized. Nevertheless, when viewed from the bottom up, there is likely to be unanimity among the farming population about the merits of policies that promise higher output prices and lower input prices. It is too much to expect that small farmers will realize that their short run interests are not terribly well served by such policies and that in the long run they may actually be harmed. Historically, in advanced countries, the surpluses that have accrued to the larger farmers have fueled the changes in technology and the land agglomeration that ultimately forced tenants from the land and prompted the small land-owner to give up farming and move to the urban areas. (Students of U.S. agriculture have argued for years that both the level and the certainty associated with prices received by farmers during the 1950's and 1960's were an extremely important element in explaining the very rapid rate of mechanization. Even in retrospect it is difficult to decide whether in the long run such structural changes have positive welfare considerations. Consequently, the sometimes uncritical support by the majority of farmers in the short run for a more profitable agriculture is wholly understandable.)

Agricultural price policy is, for the most part, fought out in the national political areas. The protagonists have already been identified and it remains to assess their relative strengths. For example, in certain

countries where a substantial agrarian reform has taken place but no grassroots political organizations have been created, the relationship is one in which the urban interests clearly dominate. The same is true in areas that have remained excessively feudal, although the mechanisms of rural-urban isolation are different. However, in the irrigated areas of the Punjab, neither of these conditions hold and the interests of a rather broad-based rural elite is an important national force. As Burki has pointed out, it was this group to whom Ayub Khan turned in consolidating his political hold on West Pakistan in the mid-1960's.<sup>2/</sup> Subsequently, the Bhutto administration has also found it necessary to come to terms with the medium and larger farmers as evidenced by the significant increase in agricultural prices in 1974 and 1975. The latter followed on the heels of formal meetings of the larger farmers who showed an increasing awareness of the need to organize in order to promote their economic and political interests. (In looking at those involved, one is reminded strongly of the constituency of the American Farm Bureau.)

The increasing degree of organization among the agricultural elite makes difficult the process of capturing for development purposes, a portion of the increased productivity that has occurred in the agricultural sector. Mechanisms for direct taxation are weak, and while improvements in the ability to collect higher levels of land revenues are being studied, it is unlikely that these will be implemented effectively in the near future. This in turn implies that the sharpening struggle over the terms of trade

between agriculture and non-agriculture will continue, with the farmers in a position to give a good account of themselves.

Relative prices are also a political issue in Pakistan. For example, commentators on the agricultural scene have for years pointed to the social inefficiency of producing sugarcane. Even under optimistic assumptions concerning yields, researchers have consistently found that agricultural resources would better be devoted to competing crops such as cotton, rice, and wheat. Failure to implement a more rational (efficient) set of relative prices results, not from the interests of farmers, but from the interests of sugar mill owners. By affording significant protection to domestically produced sugar, substantial profits have been realized by those lucky enough to receive construction licenses for mills. If past history is a guide, these interests are too well entrenched to permit much price rationalization to take place.

#### Improving the Effectiveness of the Organizations Serving Agriculture

It is to be expected that as sub-sector development programs move away from the distribution of divisible inputs appropriate to the large majority of the farming population, their implementation is increasingly related to the dispersion of political power within the rural sector. This trend continues when the programs being considered are those whose successful implementation would not only affect the "game," but the "rules of the game" as well. (The most classic case of the latter is land reform.)

A subsequent section takes up in greater detail the role of agrarian reform as a determinant of rural development scenarios. Before going into this ultimate of questions with respect to the political economy of agricultural development, however, it is important to appreciate the potential role that rural organizations can play in altering a predictable pattern of development whose ingredients would otherwise consist of markets, technology and the distribution of scarce resources. Like all changes brought about through institutional means, there is no guarantee that the effects will be desirable. More powerful local organizations may not improve access to technology or lessen the skewness of the distribution of rural incomes. Institutions are, in this respect, like lenses. They may be used to either mitigate or exacerbate the impact of market forces on various social groups in the community. Important determinants of precisely how these effects are likely to work themselves out include the links between national leaders and the group to be affected, the size of the group, the characteristics of the local bureaucracy and the type of service being offered.

Determining the direction of organizational effects requires a careful assessment of the weight of the various factors referred to in the previous chapter. The outcome is, of course, an empirical question, decided by the parameters of a given situation. The best that can be said is that, in the absence of rural organizations sincerely concerned with the needs of small farmers, their participation in the more complicated

aspects of agricultural change is likely to be minimal. Unfortunately, that is not a sufficient condition for developing and supporting rural organizations. History is replete with examples of well intended reforms whose only impact was to worsen the conditions of the group whose interests they were supposed to assist. In the following paragraphs, several of the more important sub-categories are examined for their likely future impact on agricultural development in Pakistan.

Extension services: Increased agricultural output during the 1960's was due largely to the initiatives of farmers and not to the presence of a cadre of motivated extension agents. That growth could take place under such circumstances was a fortuitous combination of a highly divisible technological package and the government's general agricultural policy. However, the unusual opportunity to revitalize the whole of the government's agricultural service that could have been a concomitant achievement was unfortunately missed. The next - and more difficult - problem of getting complicated packages of technology adopted by the medium and small farmers thus finds the institutional cupboard bare.

Moreover, there is little reason to expect the situation to change. From the viewpoint of the larger farmers, sufficient access to new technology is already being provided. Like their colleagues in the advanced countries, they have begun to go directly to subject matter specialists at district headquarters, to the Government's experiment stations, and to the university's researchers for their technical needs.

Consequently, except in the case of the several special IRDP areas discussed below, there is no real pressure to increase the quantity and quality of extension personnel that would be required to reach the majority of the smaller farmers. What manpower there is has been tied up by the larger farmers, either in terms of assistance in a quasi-management function, or exclusive utilization of the laborers available under Ministry of Agriculture auspices for plant protection activities.

Cooperatives: A second influential rural organization in most developing countries is the cooperative service. With some exceptions, these are usually organized from the top down with the government taking a leading role in supplying both resources and management. Farmers usually assist in both aspects by purchasing "shares" and by sitting as a local policy-making body.

The difficulties that have been encountered in Pakistan in using cooperatives as a development institution have been referred to previously and need not be repeated here. What must be emphasized, however, is that the uncritical support of a cooperative movement may make matters worse with respect to distributional equity. Most of the credit and other inputs that are channeled through cooperatives is subsidized in an attempt to insure that the local societies will have members. Subsidizing inputs is a tolerable policy provided that the subsidy actually finds its way into the hands of the intended target group. Otherwise, the subsidy is merely an addition to the surpluses already being generated by those who control scarce resources.

Where there are relatively large numbers of absolutely small farmers, and where the government sees its ultimate power base as being in the village, building rural institutions that provide services for the masses is feasible. Where these conditions do not exist, the task of building rural institutions is much more problematical. Nevertheless, success and failure are on a continuum and there are several promising starts in Pakistan that may represent models for emulation.

Integrated Rural Development Programs: The first, and by far most ambitious approach, is now widely known as the Integrated Rural Development Program (IRDP). Begun several years ago, the IRDP was part of the early rhetoric of the Bhutto Government aimed at redeeming promises made to the small farmers who supported him during the national election. The organization has continued to evolve over time, but its approach has been to increase the quantity and quality of government services at the markaz level (above the village, but below the tehsil) and thereby to provide the full range of services needed by small and medium farmers at distances that were convenient for them. Various departments were to second people to the IRDP project office which was to act as catalyst and coordinator of programs approved by a committee of local people. The private sector (e. g., fertilizer distributors, banks and commission agents) was also to be involved through such incentives as relatively costless land and buildings at the cite of the "Center", and discreet (and not so discreet) Government pressure.

Critics of the program who pointed out that the effect of depriving the line agencies of direct contact with their clientele group (farmers) would undermine grassroots cooperation have proved to be largely correct. To date, most Government agencies have simply ignored directives that would have placed their people at lower levels under the control of an IRDP officer. As a consequence, whatever value administrative integration at the markaz level might have had, has not been realized.

Whether or not the private sector responds beyond the minimum necessitated by pressures to show participation remains to be seen. That this is crucial for the IDR program is made conspicuous by the absence of innovation in the area of the communal organizations. A key IDR concept is that small farmers have not availed themselves of inputs of various types because of market imperfections. By simplifying borrowing procedures, by making equipment available for hire, and by providing for the sale of fertilizers and pesticides at the local level, it is expected that agricultural development can be accelerated in the area surrounding the markaz.

Such is the general approach of the IDR. In the N. W. F. P., however, a much more carefully crafted version is being put together under the auspices of the Rural Development Academy at Peshawar (PARDA). Guided among other things by the experience of Comilla, the accent in the Daudzai Project is on village organization and the development of a set

of institutions capable of responding to a variety of needs that require communal effort: roads, bridges, and minor irrigation works.

The Daudzai project also deviates from the general pattern in that attempts to integrate (control) the work of line agencies have been minimized. The experienced researchers there quickly ascertained that there would be difficulties with the initial IRDP formulation and, instead of asking the various Departments that deal with rural problems to give up control of their field level people in the interests of "integration," they simply asked that another layer of personnel from these Departments be added at the markaz level. Obviously, such a request had an excellent chance of approval since it potentially opens the way for a much larger departmental program as the pilot project is expanded. The question of how the group at the markaz level is to be welded into some sort of team remains to be resolved.

The academy's recent reports indicate that rural organizations can be created, even in the presence of some rather significant income inequalities, but that this requires a substantial input of human resources at the grassroots level. While the N.W.F.P. government has indicated that it intends to follow the PARD model, there is obviously a substantial gap between what can be accomplished at the level of the project and at the level of the province. This is a perennial problem, one that the individuals involved have faced before. One can only hope that the Government has the wisdom to proceed at a pace commensurate with the Academy's ability to generate additional capital.

Punjab Farmer's Association: Knowledge regarding the association of the medium and large farmers in the Punjab is vague. For some time, however, there has been a nascent movement among influential agriculturalists to develop a more organized and systematic agricultural lobby. This is an important phenomena for the number of fairly large farmers (50 acres and above) and the resources they control are substantial. To date, one of their most effective activities has been the application of pressure for a substantial upward revision in the price of procured crops such as wheat and rice. Success in getting their demands met on this issue have stood them in good stead with the agricultural community at large and have provided a sounder political footing for positions taken with respect to agrarian reform, the accelerated introduction of tractors, etc.

Conclusions: The conclusions regarding rural organizations that can be drawn from the foregoing recital are perhaps the following:

(1) Working through the present organizations to either (a) introduce new, more complicated agricultural technology at the farm level, or (b) diffuse existing technology among small farmers, will be difficult. In the case of the former, efforts will be hampered by the competence and motivation of the field staff to introduce new methods; in the case of the latter by the lack of access small farmers have to government services of any sort.

(2) Selective village organization can be done if the government is willing to invest the necessary human resources to do the job. The Daudzai project is a promising example although, in general, the IRDP must be

viewed with some skepticism.

(3) Efforts to provide widespread services to the rural areas are currently in some difficulty because of a lack of parallel political institutions than can be used to bring grassroots pressure on local bureaucracys and on national politicians. Without such institutions, specifically without political channels through which the masses can express themselves, mechanisms for improving the effectiveness of rural development organizations will be necessarily limited in scope.<sup>3/</sup>

#### Further Efforts at Agrarian Reform

The argument for agrarian reform as a "development" program is lengthy and complicated. Behind it lies a well documented model of rural change stressing that (1) under the right institutional conditions, small farmers are likely to be more productive than large ones, and (2) creating a broader base of rural participation will insure that the effective demand needed to sustain the industrial sector will be present. Greater equality in the distribution of land ownership, of course, does not necessarily insure the well-being of rural people. In Egypt, for example, considerable attention has been given both to reforms that lessened the skewness of land ownership and that provided for cooperative institutions to assist small farmers in gaining access to modern technology. At the same time, agricultural price and income policies, implemented through these same institutions, have led critics to charge that agrarian reform has been nothing but the creation of a system for exploiting the agricultural sector in the insterests of urban

consumers. It is easy to see how, with the larger, more influential farmers removed, failure to permit and encourage the new, small farmer class to organize itself, might indeed create such a situation.

Based on the current situation in Pakistan, it does not appear that an evolutionary scenario involving a significant redistribution of control over land resources is likely to be enacted. Given the current role of agriculture in providing an important source of foreign exchange (via exports and import substitution), it is unlikely that further efforts at subdividing land holdings will be undertaken, or even if used in the rhetoric of a political campaign, will actually be implemented. Conversations with Pakistani government officials suggest too much concern with the day-to-day problem of providing food enough to satisfy the urban population to permit even the more ideologically committed to advocate measures of redistribution that would seriously dislocate the production process in the short run. Indeed, most signs point to a scenario in which the current distribution of holding sizes will be permitted to respond to both the Muslim law of inheritance (fragmentation) and to market forces (agglomeration). Some further efforts may very well be undertaken to consolidate holdings, a process that would be consistent with the pressure for self-management and mechanization. Historically, such activities are regarded in East Punjab as having been instrumental in the emergence of the 15-20 acre farmer as an important rural entrepreneur. The same could also be the case in Pakistan. Farmers who own 10-15 acres scattered over several sites are clearly handicapped in adopting small-scale mechanical inputs.

In the future, some additional emphasis may also be given to legal institutions that regulate landlord-tenant relationships. Considerable effort was devoted to this aspect of the problem under the Bhutto regime's reform in 1972. Skeptics have suggested that, ultimately, these regulations have meant little since without an adequate political organization on the tenant's side, it has been almost impossible to implement the sanctions embodied in the legislation. Supporters of the administration have countered with calculations to show that the transfer of resources from landlords to tenants has been in the millions of rupees. Neither position is supported by any convincing empirical evidence.

The conclusion that one draws from these observations on agrarian reform is a negative one. Namely, there is little reason to expect further agrarian reforms to be introduced that will in fact have a significant impact on the political and social structure of local communities. This is not the same as saying that there will be no political and social changes in local communities, but rather than these will be associated primarily with market phenomena familiar from the Western experience. On the one hand, this will mean - for some - greater mobility and the freedom to pursue opportunities without being subject to traditional roles as determined by caste and family. On the other, the same impersonalization of relationships will remove the obligations that have accompanied traditional privileges.

The ultimate outcome of these processes is highly uncertain. What can be said with reasonable assurance, however, is that the failure to

redistribute resources will make it extremely difficult to attain the development objectives alluded to in the Government's rhetoric. Uphoff and Esman after surveying the rural development scene throughout South and Southeast Asia, make a pertinent comment:

"We found a nearly perfect association between greater equality of incomes and more extensive and developmental rural organization. All of the more organized cases had a ratio of more than 6:1 between the income accruing to the top 20 percent of the population and that going to the bottom 20 percent. With only one exception, the less organized cases had ratios of 8:1, 10:1, 12:1 and even greater. (See Table 11.) The relationship of cause and effect is, however, a complex one, and while local organization can support the implementation of policies for achieving greater equity, local organization cannot achieve this on its own. Moreover, relative equity in the ownership of assets, particularly land, appears to be a precondition for successful local organization, so that such structures are not dominated by privileged local interests who generally can and will divert resources to their own benefits and thus thwart widespread rural development." 4/

This description of the general case is also a description of the situation in which Pakistan finds itself.

### Conclusions:

The foregoing comments suggest then that the most appropriate working hypotheses with respect to the direction and magnitude of the pressures operative on the various sub-sector agricultural development programs is that they will not produce a significant redistribution of wealth and power in the countryside. It is obviously not a deterministic conclusion; it is to be interpreted simply as a statement describing a situation whose

occurrence has a high degree of probability. (Events in Ethiopia should be sufficient to discourage strong predictions.) In this respect, it is not different from a variety of other assumptions made in development planning that also embody substantial elements of uncertainty.

There is no way of escaping the criticism that postulating certain types of social change - or lack thereof - may indeed be self-fulfilling. The most frequently cited example is the assumption that institutions devoted to the interests of small farmers cannot emerge in certain technological-social-political situations. Operationally, this means that no efforts at creating organizations that could serve small farmer interests will be undertaken - and the diagnosis will turn out to be correct. What is a probabilistic statement becomes a deterministic one by the decision not to act.

There is no way out of this dilemma and one might argue that these were therefore grounds for undertaking the creation of such institutions regardless of the probabilities of success. Two considerations mitigate against such a position. The first is that all development efforts entail the use of resources - human and material - that might have been employed elsewhere. The second is that inappropriate institutional changes may be worse than doing nothing at all. They simply create another instrument sanctioned by the State to undermine the position of those it was ostensibly designed to serve.

The following chapter draws on these observations in discussing AID's role in Pakistan's rural development. From what has already been

said, it is apparent that the reality of the Pakistan countryside and the Congressional mandate to work with the "poor majority" will be in substantial conflict. What remains to be seen is how this conflict might best be dealt with in the context of limited resources and a desire to assist the country in maintaining its development momentum.

FOOTNOTES

1. It is difficult to give much credit to the theory sometimes advanced that fertilizer shortages have been the result of deliberate efforts to create commodity scarcities - scarcities that in turn became the basis of political patronage. While it is true that in the past when scarcities have occurred and fertilizer was rationed through the cooperatives, local notables reaped windfall gains by cornering the available supply at subsidized prices. Such activities seem to have been more the reaction to a scarcity situation than part of any pre-conceived plan for strengthening the hold of the government in the rural areas. If the latter objective had been the case - and certainly control over a profitable technology is an important element of government "coersion" in many developing countries - one could have expected a much more systematic approach in place of the rather chaotic situation that has obtained in local fertilizer distribution over the past decade. There have always been forces within the Ministry of Agriculture, the Department of Cooperatives and the Agricultural Development Corporation that have sought at monopoly on distribution, but this has generally been resisted at higher levels in favor of some sharing formula that also kept the private trade involved.
2. Shahid Javed Burki, "Development of West Pakistan's Agriculture: An Interdisciplinary Explanation" in Rural Development in Bangladesh and Pakistan, ed. Stevens, et. al. University of Hawaii Press, 1975.
3. Researchers at the Rural Development Academy are ambivalent about this conclusion and point out that, at least as far as the organization of small farmer, village level cooperatives is concerned, local political institutions have often served to coalesce opposition to the cooperative movement. Whether this is likely to be the case or not obviously is closely related to the degree of social stratification.
4. Norman T. Uphoff and Milton J. Esman, "Local Organization for Rural Development: Analysis of Asian Experience," Rural Development Committee, Center for International Affairs, Cornell University, Ithaca, November, 1974.

Chapter VII

AID'S ROLE IN PAKISTAN'S RURAL AREAS

In recent legislation, the Congress have given AID a mandate to direct its efforts wherever possible at improving the lot of the "poor majority." In so doing, it has joined other development institutions, notably the IBRD, in evidencing a greater concern about the long term implications of the kind of growth processes that were being encouraged in the Third World during the mid-1960's. The new-found concern for the distributive justice is no simple expression of concern for the welfare of the weaker sections of the rural community, but part of a coherent model of rural development that gives a somewhat more important role to broadening the base of effective demand in the economy.

Prominent measures that would be used to implement such a development strategy in Pakistan include the antidotes to past policies described in Chapter IV. The principals are simple. Small farmers must be assured a supply of productivity-increasing, highly-divisible inputs along with the knowledge to use them. Where technology is "lumpy" but absolutely essential to increasing output, (e.g. tubewells and pumps), they must either be organized to use the technology jointly or assisted in getting access to hire services. Perhaps most significantly, where such a small farmer class is unable to assert itself politically, activities should be initiated that redistributed the control over scarce resources in such a way that the small owner-cultivator becomes the pivot of structural change in the agricultural sector.

The model and the argument for its application has been put forward by S. H. Butterfield in a study entitled "A Practical Agency Approach to Rural Development." <sup>1/</sup> Well written, the document is no naive treatise on the virtues of a more equitable development process. The author is well aware of the role that politics play in sectoral programs and the paper contains a number of useful insights regarding the need to see the problem in a "systems" context, the anomaly of cutting back mission field staff at precisely the time when AID is becoming more people-oriented in its development approach, the need to resist institutional pressures to spend money when these do not coincide with the capacity to use resources effectively, etc.

Ultimately, however, the Butterfield essay deals with the problem at a level I have called the "general antidote" and hence needs to be disaggregated to the country level before it can be applied. When this is done in the Pakistan case, the dilemmas referred to previously reassert themselves. How does one alter the institutions required to implement the new Congressional mandate without first drastically altering the character of rural society? And if the latter is a prerequisite to implementing a greater concern for the "poor majority," what possible role can AID play in initiating such an obviously political undertaking? These are old questions, but such fundamental ones that they cannot be avoided in grappling with a specific country program. For over the decision hangs the now widespread understanding that it is indeed possible, by well-intended short-run intervention, to make the "poor majority" worse off in the long run.

What can AID do in responding to the Congressional mandate when the realities of the Pakistan situation have been taken into account? The general strategy is by now familiar: Concentrate on those programs that are required for rural development irrespective of the pattern of income distribution. Such efforts may be of little help in creating a more just society but they will at least minimize AID's involvement in development processes that run counter to the expressed wishes of Congress.

The specifics of such an approach are also familiar:

(1) Assist in insuring an adequate supply of divisible inputs such as fertilizer, pesticides and improved seeds. This may not be a terribly glamorous undertaking, but it is absolutely essential from both a distributive and growth point of view.

(2) Assist in the development of agricultural research capacity. Again a mundane task, it is nevertheless one in which an AID presence, complete with training funds, can make a significant difference. (Work in the R & D area could also include a concern for improvement in technology particularly adapted to the needs of small farmers, i. e. small pumps, tubewells and threshers.)

(3) The available evidence suggests that supplying new technology divisible enough to be used by the small farmer through market mechanisms is the most effective way of assisting the "poor majority." To date, little confidence can be placed in Government agencies whose mandate is ostensibly to work directly on the problem. The exception might be small, focused

efforts in which groups of individuals are actively working with a small farmer constituency, e.g. the Academy for Rural Development at Peshawar deserves support. However, requests to provide broad-based financing for the overall IRDP are another matter and need to be carefully evaluated to determine the extent to which the general program really reflects an application of PARD principals. History is replete with examples of rural development programs that were ostensibly extensions of pilot projects, when in fact key provisions that were crucial to the pilot's success were removed. At times, these changes were the result of a pilot project that could not be replicated on resource grounds. Cheaper shortcuts were mandatory. On other occasions, the classic "mutation" model prevailed: the distribution of benefits from the pilot project were inconsistent with the distribution of wealth and power at the local level. Since the country or regional program ultimately must reflect the local political situation to a considerable degree, changes in the pilot operation are then necessary to more closely approximate the latter.

(4) It is also possible to show a concern for the "poor majority" by certain kinds of infra-structure investments. For example, there is considerable reason to believe that rural electrification is a powerful stimulus to small-scale industry and to the use of intermediate ("fractional") technology on small farms. The costs of rural electrification are high, but again, it is one of those kinds of development activities that will be needed regardless of ultimate decisions about the most desirable form of rural institutions.

A similar case can be made for rural roads. Here there is theoretically an opportunity for having one's cake and eating it too. It is possible to construct roads using labor intensive means thus contributing directly to the welfare of the "poor majority" and at the same time to open up labor markets in the interior that have thus far been isolated from the national or regional economy. The latter point has frequently been overlooked, but observations made in the field by Albrecht and Naseem clearly indicate the severe impact of real distance on wage rates.

Critics of proposals to devote resources to infra-structure have noted that ultimately the greatest beneficiaries of such investments will be the traditional owners of tangible resources. As a generalization, that is undoubtedly true, just as it is in the case of such divisible technologies as improved seeds and fertilizers. However, the best that can be achieved in the Pakistan situation are improvements in the absolute welfare of those at the lower end of the distribution of income and much of the investment in infra-structure is likely to assist in that.

No economic adjustment mechanism is without its human casualties, but cheaper power in the countryside and additional labor mobility are likely to produce a development process that is generally viewed as desirable.