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RURAL EMPLOYMENT IN PAKISTAN: MAGNITUDE  
AND SOME RELEVANT STRATEGIES

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## RURAL EMPLOYMENT IN PAKISTAN: MAGNITUDE AND SOME RELEVANT STRATEGIES

In recent years the emphasis in economic development and planning has shifted from a policy of growth maximization to ~~that of~~ economic growth with redistribution. Any comprehensive development strategy seeking, to hasten the process of elimination of mass poverty must, therefore, attack the basic issue of economic development simultaneously from both growth and redistribution fronts. Since insufficient and unequal access to productive employment is one of the major causes of income inequality and persisting poverty in a majority of the less developed countries, the creation and expansion of productive job opportunities would be both a means of accelerating economic growth and device of alleviating mass poverty. Because a major proportion of the poorest of the poor in terms of income and availabilities of social infrastructure and modern amenities of life resides in the rural areas and because the small urban industrial sector is unable to absorb the rapidly growing labour force, the rural employment strategies or a growth strategy with strong employment effects rather than just any growth strategy, must be accorded higher priority in both the formulation of long-term development plans and the operational decisions embodying day-to-day policy changes.

In spite of the importance of the rural sector for employment, the development policy of Pakistan has been more heavily oriented towards growth maximization through urban industrialization than towards employment in general and rural employment in particular. Although employment generation has been one of the

~~Goals~~ of every development plan, it has been subservient to growth and was to be achieved indirectly through growth maximization. It thus follows that a study of rural employment strategies in Pakistan is necessarily a study of the overall development strategy. It is in this context that the present paper has been written. More specifically, this study is intended to elaborate the magnitudes and trends of employment in the rural sector for determining the relevance or irrelevance of rural employment policy of Pakistan. In order to realize its above-mentioned objectives the study extends over seven separate but necessarily interlinked sections as follows.

Section 2, preceded by introductory Section 1, includes a review of the extent and intertemporal trend of poverty in rural Pakistan. As is usual, mass poverty is studied under alternative assumptions about the arbitrarily defined poverty lines. The available data with some reservations, indicate a consistently declining trend in rural poverty over time. This conclusion follows from both income and expenditure approaches of poverty. The trend in poverty, however, seems to be highly sensitive to the definition of the poverty line. At very low and very high levels of the poverty line, one is likely to get opposing results. It, therefore, seems necessary to study income-distribution trend for substantiating the relevant conclusion of poverty. This is done in terms of income concentration ratios for various years of the Sixties and the Seventies. Apart from the changes in asset distribution, two of the major reasons for the trend in rural poverty are changes in wage rates and those in employment level in the rural areas.

Some estimates of the magnitude and trend of rural employment and under-employment have been presented in Section 3. Due to the lack of alternative sources of data on rural employment, dependence on labour force surveys of the Government of Pakistan has been inevitable. According to the labour force survey statistics, Pakistan's rural sector seems to have maintained a full-employment situation from 1963-64 to 1974-75, the rate of unemployment during these years having varied from only 1.3 percent to only 1.8 percent of the total labour force. Another study, although it does not cite unemployment rate, has also maintained that open unemployment has been absent in the rural areas of Pakistan [45]. The unemployment rates do not show any consistent trend and thus reflect a corresponding lack of any significant intertemporal trend in employment. Likewise the under-employment estimates are low and do not show any consistent trend of improvement or deterioration over time.

From the unprecedentedly low rates of unemployment reflected by labour force survey statistics, it is, however, not difficult to see the dubious nature of these sample surveys. In fact, the high levels of employment seem to be one of the reasons for lack of any significant trend in employment and under-employment, because at very high levels of employment any addition to labour force is reflected as an equal addition to the number of employed persons without significantly changing the proportion of employment. It, therefore, seems necessary to explore the trend of rural employment through alternative approaches. One of such approaches could be to look at the rates of growth of job opportunities in the agricultural sector

as the single largest employer of rural labour force. Although employment statistics for agriculture are not available, the growth of job opportunities could be approximated by adding; (1) the rate of growth of crop acreage over time (2) the growth rate of labour intensity (labour input per acre) due both a) to the direct rise in labour input per acre and b) to an increase induced by changes in cropping pattern. To the growth rates of agriculture must be added the growth rates of jobs in the rest of the rural sector to appraise the employment situation in the rural sector. One of the most important conclusions that follows from the above analysis is that the rural labour market has considerably tightened over time and has important implications for the rural employment strategies and economic development in Pakistan.

Section 4 provides a list of factors, such as population growth, cultural and ecological barriers and international organizations and government policies including, national employment, fiscal and monetary matters, price, investment, health and population with their possible effects on rural employment.

How and in what ways the above factors and government policies have been instrumental in changing rural employment situation in Pakistan is discussed in Section 5. Apart from the role of rural public works programmes, educational policy, migration and rural industrialization, the section also discusses in detail the contribution of the Green Revolution technologies to rural employment.

All questions related to policy formulation, policy management and responses of the rural unemployed have been grouped into section 6 of this study. Due to the lack of relevant information, the major emphasis of the section is centered on Pakistan government's process of policy formulation.

Finally, Section 7 outlines some of the major findings of this study and suggests policy options available to Pakistan. Among the recommendations made, the most important one is that which relates to the revival of Green Revolution technology through appropriate policies. Past experience in Pakistan has shown that the Green Revolution technology has been responsible for both acceleration of economic growth and generation of profitable employment opportunities in the rural and urban areas.

## *2. Magnitude and Trend of Rural Poverty*

Due to low levels of income per capita and skewed income distribution, abject poverty reigns in most of the less developed countries. The pity of the situation, it is argued, is that poverty has continued unabated despite great strides in economic growth. This has been so not only because a vicious circle of poverty has operated to limit the contribution of the under-nourished, ill-fed and uneducated masses to economic development but also because of the lack of emphasis on poverty in the economic development literature. As a consequence of this neglect, the concept of poverty and country - specific poverty studies have remained foreign to economic development literature until recently.

The attempts to quantify poverty in Pakistan as a part of the world-wide phenomenon have resulted in two recent major studies [4:55]. Although both these studies followed necessarily the same approach and used data from Household Income and Expenditure Surveys [57;60;65;66;67;68], the latter study seems to be more comprehensive in many respects. It provides an extended coverage of the time profile, treats income as a measure of poverty in addition to consumption expenditures so treated in the former study and discusses poverty under four, as against Naseem's two, well-defined poverty lines. Appendix Table 2A presents the magnitude and trend of absolute and relative rural poverty in Pakistan, based on data given by [4].

Three major conclusions follow from Appendix Table 2A. In the first instance, the extent of rural poverty, absolute or relative depends on whether poverty is measured by income or by expenditure. In general, the proportion or volume of poverty stricken rural population is lower when poverty is measured by some minimum level of annual per capita expenditure rather than when it is measured by a corresponding level of income. The reason for this tendency may be that either the low income groups are chronic dissavers and run into debt to meet their minimum consumption needs or their incomes are understated relative to their expenditure. Secondly, the extent of poverty, absolute or relative, varies directly with the level of a predetermined poverty line. For example the number of poor persons in 1963-64 was between 10 million and 13 million if an annual per capita expenditure level of Rs. 225.0 was chosen as



the poverty line for that year but increased to 31-32 million at the poverty line of Rs. 350.0. In relative terms, the corresponding figures for the two poverty lines were 26.0-33.5 percent and 80.0-83.0 percent. Thirdly, there seems to be no consistent intertemporal trend in rural poverty. At low levels of poverty lines, rural impoverishment seems to have declined appreciably but the reverse of it appears to be the case at higher levels of the poverty lines. The implication is it seems to be that poverty among the poorest of the rural poor has been on the decline but the same can not be said about the general state of poverty without reference to changes in rural income distribution.

One of the problems with poverty studies is the arbitrary definition of the poverty lines and the sensitivity of poverty to the choice of those lines. While most poverty studies are marred by the multiplicity of poverty lines, it is usually not quite clear as to which of the poverty lines would most appropriately define the state of poverty without the involvement of subjective judgements. Depending on the norms of subjective valuations, the conclusions of various studies about the state of poverty are likely to be conflicting. To avoid the problem of subjective valuations, poverty studies are often supplemented by an analysis of income distribution and changes therein. Although the precise magnitude of poverty does not emerge from an analysis of income distribution, changes in income distribution are helpful in tracing the trend of mass poverty. Since an improvement in income distribution is consistent with more

than average growth of the incomes of the poor, it follows that the more egalitarian the income distribution is, the lower the magnitude of poverty will be.

The problem of income distribution can be approached by reference to either the size distribution of incomes or functional distribution of incomes [46, pp.44-46]. Both the approaches have been used in studying income distribution in Pakistan. The conclusions of these studies are summarised in the following paragraphs.

The size distribution data available in the Household Income and Expenditure Surveys [57;60;65;66;67;68] have been analysed in a number of studies including [4;11;12;41;43]. One of the inevitable conclusions of the size distribution studies has been a sharp decline of income inequality in the rural areas of Pakistan during the Sixties and early Seventies as is clear from the data presented in Appendix Table 2B.

On the other hand, there has been a flood of literature on functional distribution of income - for example, [5;17;23;24;25;52;56] - that has, on the basis of theoretical arguments, anticipated a deteriorating trend of rural income distribution for Pakistan. Anticipation of deteriorating income distribution is based on growing income disparities between small and large farmers, the poor and prosperous regions and the rural landless peasants and land owners. It has been argued in the above-mentioned studies that large farmers, because of their financial superiority, are capable of employing modern technology, thereby

effecting a manifold increase in their incomes. Most of the large farmers utilizing their considerably increased incomes have expanded the size of their operational holdings. By contrast, financial constraints prevent small farmers from using modern inputs, with the result that incomes of such farmers tended to stagnate. Thus both increasing and concentration and phenomenal rise of productivity on large farms contribute to widening income disparity among the land owners. Because the success of seed-fertilizer technology depends critically on water, productivity gains in the prosperous Punjab province resulting from a high concentration of tubewells, are likely to be more pronounced in that province than in others. Likewise, the production of unirrigated areas, i.e. those lacking an assured water supply, will be least affected. Modern technology, while it has raised farm incomes, has had no effect whatsoever on the incomes of the landless peasants. In fact, the new technology carries the seeds of displacement of both tenants and labour and can also result in a reduced labour demand because of cropping pattern shifts towards wheat.

The conflicting conclusions of size and functional distributions of rural incomes, led Chaudhry [11] to investigate the legitimacy of the arguments underlying the functional distribution conclusion. His analysis<sup>1</sup> has shown that the theoretical reasoning underlying the functional distribution studies

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<sup>1</sup> Most of the arguments in the following three paragraphs are summary statements of the detailed analysis included in Chaudhry's Ph.D Thesis [11]. For further details and empirical support, the readers are requested to refer to the above source.

has no empirical appeal in the context of Pakistan. Taking up the case of small and large farmers, Chaudhry [11, pp.36-84] has pointed out that it is difficult to accept the implications of financial-superiority argument because of conspicuous luxury consumption of the large farmers. There are no significant differences in fertilizer use and adoption rates of high-yielding varieties between small and large farmers. Although the ownership of tubewells and tractors may be concentrated on large farms, the institutions of contract ploughing and water sales from tubewells have made their use quite widespread irrespective of the farm size. By contrast, the small farmers are characterised by higher availability and use of traditional inputs, especially labour [29, p.261], enabling them to cultivate land much more intensively than large farmers. The net outcome of these parallel practices is that small farmers have outperformed the large farmers in productivity. This, coupled with improving land distribution between 1960 and 1972, as shown by the agricultural census data is conducive to a considerable narrowing of small and large farm income differentials.

Likewise, the argument that inter-regional income disparities have been exacerbating seems also to be empirically untenable. This is clearly shown by the changes in provincial distribution of value added in the crop production sub-sector of agriculture. Between 1959-60 and 1964-65 the growth rate of value added in Sind has been the highest and is followed by that in the Punjab, Baluchistan and the NWFP respectively. Over the period from 1964-65 to 1969-70, the growth rates of value added

in the provinces of Sind, Baluchistan and the NWFP were in excess of those in the Punjab. While the Punjab's relative position during the first half of the Seventies remained unchanged, the NWFP emerged as the leading province in terms of growth performance. Since the Punjab is the richest province and also accounts for more than 60 percent of the rural population of Pakistan, it is natural to conclude that income share of the poorer 40 percent of the population has been rising over time. This, in other words, means that interprovincial income differences have been narrowing in Pakistan. Due mainly to irrigation development and the consequent movement of unirrigated area to irrigated area, it is implausible to compare production growth rates of the two areas for studying income distribution changes. Taking productivity growth as the relevant concept, it can be concluded on the basis of empirical evidence in Pakistan that productivity has grown more rapidly in the unirrigated areas than in the irrigated ones over the period from 1966-67 to 1974-75. While this may seem odd in view of the importance of water to crops, three factors seem to have been at work. First, while water is a limiting factor, the majority of the unirrigated areas in Pakistan seem to be endowed with sufficient rain to allow successful cultivation of new wheat varieties with higher yield potential. A study of 200 unirrigated farms in Hazara district [85, p.276] has shown that a doubling of wheat yields has occurred in the area with the introduction of high-yielding varieties. Secondly, mechanized cultivation with tractors may have been a promising means of

water conservation, thus adding to the yield-increasing potential of the unirrigated lands. For example, it has been shown by experiments [84] that a four-fold increase in wheat yields could occur in the unirrigated areas in contrast to a 10-20 percent measured impact of tractors in the irrigated areas. Thirdly, for successful maturity the dwarf varieties of wheat require gradual and slow temperature changes from the month of March onward. The unirrigated mountainous regions seem to be more suited to dwarf wheat from this point of view.

Similarly, the rural wage and employment situation, despite much literature to the contrary, seems to have improved considerably in Pakistan. While the detailed analysis of the rural labour market and its performance would be undertaken at an appropriate time and place, it is worth mentioning here that the increases in the incomes of rural landless have significantly been greater than those of the landowners contributing positively to equalizing income trend in the areas [11, pp.85-137].

Thus, had it not been for distortion of facts, the conclusions of size and functional distributions of income would have been consistent. It is this sharp improvement in rural income inequalities that preconditions the improvement in rural poverty without referring to imaginary poverty lines.

## 2. *Rural Employment, Unemployment and Underemployment*

A number of independent and supplementary approaches can be utilized to study the problem of employment [87, pp.15-51].

In Pakistan the employment measurement emphasis has been concentrated on gainful worker approach and more heavily so on labour force approach. The gainful worker approach, employed mainly in the 1951 and 1961 population censuses, classifies individuals as employed and unemployed without reference to a specific time period. It considers an individual gainfully employed if the individual concerned has a usual occupation and receives a direct or an indirect remuneration as a reward for labour in cash or kind. As used in Pakistan, the approach excluded all individuals specializing in household work but categorized unpaid family helpers assisting the household head in his occupation as gainfully unemployed. The gainful worker approach, however, was abandoned in the early Sixties with the evolution of labour force approach which has since been in vogue for preparing employment estimates reported in the labour force surveys of Pakistan [58:59 69 70:71:72:73]. The labour force approach, however, is nothing but a definition of the civilian labour force which in Pakistan is defined as an aggregation of all persons constituting non-institutional population aged 10 years and over who were categorized as employed or unemployed one week prior to the date of enumeration [36, p.3]. The employed constituted those who worked for pay or profit in cash or kind, and unpaid family helpers if they worked for at least 15 hours during the reference week. The unemployed included all such persons who during the reference week were either looking for work, or temporarily laid off, or assured of a job but did not start work and those who were not

looking for work believing that jobs were not available [87, p.26].

No serious attempt seems to have been made for measuring underemployment in Pakistan. All that is available in the labour force surveys is the employment status by the number of hours worked during the reference week which could be used to measure visible underemployment in relation to the number of work hours in a standard work-week. The survey data, however, could not be used to measure invisible underemployment that arises out of underutilization of the attained skills, abnormally low incomes and productivity of the working rural labour force.

Based on the above definitions, Appendix Table 3A presents the estimates of rural labour force participation rates and rural employment in addition to the two alternative estimates of underemployment, viz. the percentages of employed individuals (i) working less than 35 hours per week and (ii) those working less than 25 hours per week.

It is evident from Appendix Table 3A that the labour force participation rates in Pakistan are among the lowest in the world and have declined over time from about 53 percent in 1966-67 to about 46 percent in 1974-75. This decline in participation rates seems to have been induced by a consistent rise in the proportion of student population from 6.6 percent in 1966-67 to 15.5 percent in 1974-75. The labour force survey data give an optimistic picture of rural employment as the level of employ-



ment has remained more or less constant at 98 percent. This constancy of rural employment implies that the rate of growth of employment has just sufficed to provide jobs to the growing rural labour force, with unemployment rates not exceeding 2 percent throughout the period under consideration. Likewise, the underemployment rates have been low and show no consistent trend of either improvement or deterioration despite year-to-year fluctuations. The only exception to the rule is provided by the underemployment in 1974-75 which was considerably lower than that in any of the preceding years.

Most of the Labour Force Survey data, however, may be insufficient for pinpointing the true picture of rural employment. This is because the labour force approach for measuring employment has distinct limitations, especially in a less developed country like Pakistan due to the operation of a number of factors. Firstly, it has repeatedly been pointed out in the literature that the labour force approach fails to capture changes in employment arising out of the well-known phenomenon of discouraged workers. It is argued that the bleak job opportunities tend to force many workers out of the labour force as the unemployed stop looking for work in response to disappointment associated with the non-availability of jobs [7, p.343] and [87, p.22]. The converse would hold if the jobs were plentiful. Thus the labour supply to a certain extent depends on its own demand. It is not difficult to see that the magnitude of employment would be overstated when there is slack labour demand but understated when there are better prospects

of finding a job. This would tend to dampen the inter-temporal trend of rural employment. Since the economic activity in the rural areas depends on nature, the discouraged worker phenomenon seems to have special implications for rural employment.

Secondly, the concept of employment was developed in the advanced countries of the world and can be applied with some precision to wage and salary-earning classes of the formal industrial sector of these economies. Direct transplantation of the concept in the less developed countries due to the insignificance of the industrial sector and wage - and salary-earning class is likely to cause problems of measurement. For example, it has been pointed out in the case of Pakistan [35, p.1] that the rate of unemployment is hardly a relevant concept where self-employed and unpaid family workers constitute nearly 80 percent of the labour force. The argument has also been made [87, p.23] that the concept of employment fails to yield satisfactory results because the employment arrangements in the majority of the less developed countries are of informal and short-term nature. The problem is compounded by the frequent switching and seasonality of jobs in the rural sector. For example, a housewife may be completely devoted to household work during a slack labour-demand period but may be actively engaged in farm work during the peak seasons of harvesting and sowing. Likewise, and depending on the work-load, a person may increase or decrease the intensity of work which is hard to measure with the prevailing concept of employment.

Thirdly, the rural household in Pakistan is a joint production unit where labour supply is joint responsibility of the household members. Depending on the social norms, some of the members of the household may be over-working, others may supply labour as and when needed and while still others may supply no physical labour but may have a supervisory role. For example, although exceptions may be there, it is considered socially undesirable in general to take full-time work from a working-age father in the presence of working-age sons. Thus, the time-disposition data on employment based on the interviews of each family member are likely to lead to overestimation of underemployment. On the other hand, many of the unpaid family workers may be dependents who may have taken up "escape jobs" in the rural areas for lack of wage-paying jobs elsewhere in the economy. This would tend to understate unemployment and overstate underemployment as measured currently.

Fourthly, the use of the reference week for measuring employment seems to be an inefficient means of determining employment status of the population. For example, it has been argued [87, p.22] that although a person can be categorized as fully employed for the reference week, it is quite possible that he may not belong to this category for the rest of the year. The above study has also shown that the reference week results may be deceptive as the use of a longer reference period normally produces much lower rates of unemployment.

Last, but not the least, employment estimates in Pakistan tend to be affected by the biases of respondents and field investigators. According to Shah [87, pp.31-32], most of the answers in the Labour Force Surveys provided by the male household head or his representative on behalf of himself and the rest of the family members result in under-reporting of female economic activities by a substantial margin. He also points out that the failure to translate survey schedules into local languages of various provinces has introduced a bias in the survey data. Similarly, the lack of proper education, training and supervision of the field staff, it is believed, may have been a factor in the misreporting of the actual rural employment situation.

In spite of its incompatibility with the socio-economic conditions in Pakistan, the labour force approach has a sound basic construct that must be retained for measuring employment effectively. This, however, is not to debar certain modifications that would be essential to make the employment concept more meaningful for a less developed country like Pakistan. A number of modifications in this direction can be suggested.

As should be clear, one of the major problems in measurement of rural employment arises out of the seasonal nature of rural jobs. This tends to force individuals in and out of the labour force, reduce employment term and promote job shifting. According to Bardhan [7, pp.345-348], most of these problems could be eliminated by resorting to measurement of potential unemployment rate instead of unemployment rate currently in

vogue. He has defined potential unemployment rate as the ratio of the days spent in 1) looking and being available for work, 2) domestic work by a person in labour force and 3) domestic work by a person not in labour force but classified so in the past to the sum total of the days spent in above activities and gainful employment.

While the measure of potential unemployment rate offers a definite improvement over the current concepts, it fails, like any other time measure, to address serious cases of underemployment arising out of work intensity, low productivity and mismatch of acquired and job-specific skills [7, pp.346-348]. The potential rate measure should, therefore, be supplemented by more indirect measures with pre-specified norms of productivity, income and/or consumption. In addition, it has been recommended in the case of Pakistan [37, p.40] that the Labour Force Surveys be modified to include direct questions on underemployment, especially with regard to mismatch of acquired education and training with needed education and training for an effective performance of the job held.

It was pointed out earlier that the rural household is a joint supplier of labour. Measuring employment at individual level, therefore, makes little sense. Some comparison of actual hours of work with the available hours at the household level would prove to be more useful than current measures. Alternatively, overwork by some members can be adjusted against the 'underwork' by others. The adjustment, however, would require a concise definition of the work week and work year. At

present most of the government servants work 36 hours a week for about 33 weeks a year, or roughly 1088 hours a year. Thus any of the household member putting in more than 1088 hours a year or 21 hours per week could be considered gainfully employed.

Dissatisfaction with employment estimates may be attributed, at least in part, to biases of respondents and field investigators and to a lack of proper supervision. It need not be overemphasized that proper education and training of the field staff would greatly improve the situation. It can also be recommended [87, p.35] that survey questionnaires be translated into local languages of the various provinces and be directed to both male and female household-heads rather than to male household-head alone.

It is needless to say that a detailed occupational classification of the rural work force in line with that of the 1951 population census [82] is inevitable for appraising rural employment situation, studying impact of the green revolution technology on employment and framing of pertinent present and future employment policies. The current classification employed in the Labour Force Surveys is ill-suited for this purpose because of too much aggregation. For example, it has lumped together all such workers as farmers, tenants, landless agricultural labourers, gardeners, herdsmen, fishers, foresters, loggers, poultry farmers and bee-keepers, who account for as much as 70 percent of the labour force, under the category of

agriculture. Likewise, most of the remaining rural labour force has been classified as sales, services and production workers. Differentiation of occupations, at least by the broader categories provided in the 1951 population census, would be more helpful in finding solutions for the existing economic problems faced by the Pakistani labour.

The above analysis has been addressed to key issues in rural employment in Pakistan. It has been argued that rural employment data suffer from many drawbacks and can not be used for depicting the true picture of rural employment in Pakistan. Some modifications were suggested to improve the reliability of employment estimates. The recommended modifications, however, would be helpful only for future research but, for obvious reasons, could scarcely be of any use for an evaluation of employment in the past. For this purpose, we must look for alternative ways of assessing the employment situation. One such alternative would be the to study growth of job opportunities vis-a-vis the growth of labour force in agriculture, especially in the crop production sub-sector which accounted for more than 70 percent of the total value added in agriculture during 1970-80 and is one of the major sources of employment for the rural labour force.

The growth of job opportunities in the crop-production sub-sector is a function of the intertemporal changes in crop-land and labour intensity. The changes in labour intensity, in turn, can be attributed to changes in the cropping pattern and those in the physical input of labour per crop-acre.

Appendix Table 3B presents data on the intertemporal trends in cropland, cropping pattern and physical input of labour per crop-acre of various agricultural commodities. It is evident from the data in Appendix Table 3B that all three variables have tended to contribute positively and significantly to the growth of job opportunities in the crop-production sub-sector of Pakistan. Table 3.1, based on Appendix Table 3B, is designed to give precise magnitudes of the growth rates of job opportunities due to each of the above factors, for various time periods.

Table 3.1

*Annual Growth Rates of Job Opportunities in the  
Crop-Production Sub-Sector for Various Time Periods*

Time Trend	Annual Growth Rates(percent) of Jobs Due to Change in			
	Crop- land	Labour Input*	Cropping pattern	Total (1)+(2)+(3)
(1)	(2)	(3)	(4)	(5)
1962-63/1965-66 to 1966-67/1969-70	1.38	0.69	0.72	3.29
1966-67/1969-70 to 1970-71/1973-74	0.77	0.73	0.20	1.70
1970-71/1973-74 to 1974-75/1977-78	1.32	0.73	0.75	2.80
1962-63/1965-66 to 1974-75/1977-78	1.32	0.72	0.56	2.60

Source: Calculations based on data in Appendix Table 3B.

\*The reported growth rates have been based on the simple average of the weighted labour inputs for 1969-70 and 1975-76. Weighted labour inputs for the two periods, in turn, were calculated on the basis of proportionate area and labour input of the various crops.

It is clear from Table 3.1 that job opportunities in the crop-production sub-sector have been on the increase but the rate of their increase has varied from time to time with a maximum of 3.29 percent per annum during 1962-63/1965-66 to 1966-67/



1969-70 and a minimum of 1.70 percent during the following four years. The growth rate for the entire period amounted to 2.60 percent per year. This compares with the growth rate of 2.29-2.83 percent per annum arrived at in an independent study [11, p.105] for the period 1967-68 to 1975-76 based on widely different assumptions and methodology. Among the three factors, the increase in cropland made the maximum contribution to the growth of jobs due mainly to rising cropping intensity and increasing area under cultivation. The contribution of physical labour input as well as of cropping pattern, although less pronounced than that of crop-land, can by no means be regarded as insignificant. In fact and despite much literature to the contrary, the two factors, both individually and jointly, have been responsible for a sizeable proportion of the growth rate of job opportunities in the crop-production sub-sector throughout the period under consideration.

To appraise the employment situation in the crop-production sub-sector it is imperative to compare the growth rates of job opportunities with the growth rates of agricultural labour force. This, unfortunately, is difficult to accomplish for lack of consistent time-series data on agricultural labour force, especially for the most relevant period of late Sixties. For example, the agricultural labour force grew by 1.88 percent per annum between 1951 and 1961 [18, p.308]. But the labour force growth rate accelerated to more than 3.6 percent per annum for the intercensal period 1961-1972 [1, p.124]. The latter growth rate seems to be unbelievably high and has been regarded

by most of the experienced demographers [44, p.182] to be the result of distortions of data in the 1961 and 1972 population censuses. Thus the use of census data, unless adjusted for distortions, may not be feasible. Although the United Nation's estimates of agricultural labour force [95, p.67] may be of questionable purity the reported data may be relatively distortion-free because these estimates are nothing but government-supplied data adjusted for any distortions and unobservable abnormalities. Reliance on the U.N. estimates yields a growth rate of 1.66 percent per year for the agricultural labour force between 1965 and 1977. A growth rate of 1.66 percent per annum from the mid-Sixties to 1977 relative to that of 1.88 percent for the Fifties may make sense in view of the expansion of non-agricultural rural sector associated with the steep rise in agricultural output, rapid growth of jobs in the urban formal (large- and small-scale industry) and informal sectors [11, pp. 109-114] and accelerating trend in international migration of Pakistani labour, especially during the 1970s, resulting in an estimated 1.8 million Pakistani workers working abroad by January 1979 [20, Part I, p.10].

Thus, due mainly to a faster increase in job opportunities relative to labour force, employment situation in the crop-production sub-sector may justifiably be claimed to have been consistently improving during the Sixties and the Seventies. Since the crop-production sub-sector is one of the major sources of rural employment, a considerable tightening of the rural labour market may also be anticipated. In fact, it was reported

in 1974 [27, p.58] that most of the cultivators experienced difficulties in getting enough hired labour for various operations. The situation in recent years, as may be perceived on visits to rural areas, seems to have worsened. In my conversations with many officials of the Department of Agriculture, I was given the impression that most of the cultivators in the Punjab face severe shortages of manual labour, especially during the peak-demand seasons.

This unusual tightening of the rural labour market, at least in part, is reflected in the accelerating trend of the rates of growth of rural wages over time [31, pp.114-124]. It has been shown that the rate of growth of rural wages remained lower than the rate of growth of value added in agriculture between 1951-52 and 1964-65 because of the existence of surplus labour. But as the labour surpluses diminished, rural wages in general began to surge up at progressively higher rates than those in agriculture. Thus, although the rate of growth of rural wages was only 1.3 times the growth rate of value added in agriculture during the period from 1964-65 to 1969-70, rural wages showed a more than eight-fold increase relative to the value added in agriculture for the period 1969-70 to 1974-75. Much the same trend is shown by the wage data for the rest of the decade of the Seventies [34].

#### 4. *The Context of Rural Employment*

In the most primitive world societies, the magnitude of rural employment depends largely on natural resource endowment,

especially on land-man ratios and amount and distribution of annual precipitation. As advancement occurs, however, a host of other factors enter the employment scene as the man endeavours to exploit his surroundings. For example, although a society may be poorly endowed with rain, rivers can be harnessed for irrigation purposes, generating employment both of direct and indirect nature. With further strides in economic development, increasing dependence on man-made capital becomes inevitable and government policies and international relations tend to shape the rural employment situation.

Since the majority of the less developed countries are still in the preliminary stage of economic development, various factors, including ecology, culture, government policies and international organizations, affect rural employment in varying degrees. What is the impact of the above factors in generating rural employment in general in Pakistan is a pertinent question to be addressed in the following pages.

In the first instance, rural employment may be taken as a function of agricultural production which, in turn, is subject to vagaries of nature. Although the canal irrigation system has reduced Pakistan's dependence on rains, weather remains a critical factor in rural employment because more than 20 percent of its cultivated area still depends on rain for crop production. Likewise crops may suffer from devastating floods. The experience suggests that despite year-to-year fluctuations, the weather conditions of the Sixties were more conducive to

agricultural output and, hence, to rural employment than those in the Seventies. This has been especially true of the first half of the Seventies when Pakistan was hit hard by devastating floods, as in 1973-74, or severe droughts, as during the first three years of the decade. In addition, seasonality of agricultural operations, dictated by climatic conditions, tends to constrain the job market in the rural areas.

Secondly, the social and cultural factors may be inhibitive of normal work hours. Although the rural society in Pakistan may be termed as highly enterprising and hard-working, two factors seem to cause under-work. For example, in spite of the fact that a small farmer may not have sufficient land to work full-time and to earn a respectable living, he is strongly discouraged by the prevailing social norms to work for wages on other farms. Similarly, undertaking of physical labour is against the cultural norms of the affluent and well-to-do rural households. As a result, the large land-holders cultivate land less intensively than medium or small land-holders.

Thirdly, population growth has a direct bearing on the growth rates of employment [16, p.16]. The higher the rate of population growth, the higher the growth of labour force and the smaller the likelihood of an economy to provide gainful employment to the growing labour force. The accelerating population growth rates add a special dimension to employment problem. This is so not only because the economy has to operate

consistently harder than ever before to create new jobs but also because dependency ratios rise which tend to impair the rates of savings and capital accumulation. In addition, a large share of the reduced savings may have to be invested in less productive projects because of the rising demand for social and economic infrastructure such as education, child-care, health, nutrition and housing. Pakistan's economy in recent years has been confronted with both an exploding population and an accelerating population growth rate. Studies on population growth rates [1, p.124] have indicated that the population growth rate in Pakistan accelerated from 1.0 percent per annum at the beginning of the Twentieth century to 2.5 percent during the Fifties. By contrast, the current population growth rate is estimated to be in the neighbourhood of 3.0 percent per year.

Fourthly, the government policies and programmes could contribute significantly to employment promotion. Several alternative policies could be employed for attaining the desired employment goal. For example, an effective population programme is surely needed to decelerate the growth rates of both population and the labour force. Decelerated growth rates in turn, would reduce the number of fresh job seekers entering the labour market and increase the rate of saving and that of capital formation to create more jobs and alleviate the employment problem considerably. These effects, however, are likely to appear with considerable delay because of the involvement of various lags, especially those between policy implementation and its impact on the economy and those between reduction of

population growth rate and its impact on the growth of labour force. In spite of the fact that the family planning programme in Pakistan has been in operation for about 20 years, the population growth shows no signs of reduction. While the causes of the failure of family planning programme may be embedded in the complex social system of Pakistan, it is believed [16, p.25] that too little is known about the fertility behaviour of households in various countries. An independent study on Pakistan [19, pp.134-135], has attributed the failure of family planning programme to the lack of comprehension of the problem as well as to the lack of will on the part of the family planning staff to accomplish the task. Due mainly to the above two factors the study has further argued that despite heavy budgetary outlays on family planning, only lip services were paid to the programme with the result that population pressure continued unabated.

Both monetary and fiscal policies affect employment by inducing changes in aggregate demand [15, p.38]. For example, an expansionary monetary (an increase in nominal quantity of money) or fiscal (a tax cut or an increase in government spending) policy would raise aggregate demand and employment. The opposite would hold if a contractionary policy is followed. The effectiveness of aggregate demand management policies to generate employment, however, would depend on the flexibility of wages and prices. If wages and prices adjust themselves slowly to changes in aggregate demand, as is the case in the short run, expansionary monetary and fiscal policies can prove

to be an effective tool of employment generation. On the other hand, the effect of monetary or fiscal policy on employment is likely to be negligible if the wages and prices are perfectly elastic, as is the case in the long run. The use of the monetary policy in the less developing countries may be further limited because of the presence of a significant non-monetized sector in these economies [92, p.650]. Similarly, the fiscal policy suffers from the 'crowding out' feature where an increase (decrease) in the long-run in private sector spending is largely off-set by a decrease (increase) in government spending or vice versa [15, p.383].

In spite of the above limitations, the monetary and fiscal policies might be of some relevance for employment generation in the less developed countries. The reason is simple. In the majority of the less developed countries, especially in Pakistan, governments exercise control on the variability of wages and prices irrespective of the monetary or fiscal policy in operation [92, p.646]. Even if such controls do not exist, wages and prices may be unlikely to change in response to monetary or fiscal changes if the less developed countries are confronted with a situation of protracted unemployment as is generally assumed. In addition, fiscal policy, like monetary policy, though unlikely to have an appreciable long-run impact on employment through aggregate demand, could, unlike monetary policy, prove to be an effective instrument of employment changes when used as an aggregate supply management policy [15, pp.384-387]. The case of subsidization of raw material



prices as part of the supply management policy is too well known to be cited as an example.

It has been pointed out [92, pp.635-652] that the conventional monetary policies in Pakistan neither were put to active use nor were they effective in achieving the set goals of growth and employment promotion. The task instead was left for the fiscal policy. The same picture emerges from the experience of the Seventies. Although the monetary policy in the Seventies became expansionary in response to world-wide inflation, the changes in monetary supply have been of ad hoc nature without specification of the targets to be achieved.

The fiscal policy in Pakistan has been highly expansionary. In 1959/60, total government receipts from capital and revenue accounts amounted to Rs. 2.8 billion but government expenditure involved Rs. 3.6 billion. Thus the government expenditure exceeded government receipts by Rs. 0.8 billion. This deficit was cut to Rs. 0.4 billion by 1969-70 but rose sharply to almost Rs. 16.8 billion in 1974-75 and to Rs.18.3 billion by 1979-80.

Apart from revenue raising, the provision of incentives to enlarge the volume of output has been one of the characteristic features of the fiscal policy in Pakistan. A number of programmes, including the exemption of a part of export earnings from income tax, investment tax credit, accelerated depreciation allowance, export bonus scheme, subsidies on industrial and agricultural use of gas, electricity, diesel oil,

chemical fertilizers, insecticides, tubewells, irrigation water from canals and certain industrial raw materials were instituted during the early Sixties. Although some of the above measures were discontinued during the early Seventies because of the nationalization of major industries and growing resource constraints of the government, input subsidies and investment tax credit had continued but with changing emphasis from time to time. While the prices of most of the agricultural inputs have been rising over time, the experience with fertilizer as a critical input may be cited as an example. Relative to the meagre increases of the Sixties, increases in fertilizer price in the Seventies showed substantial variation. Although the government followed a cautious policy of raising fertilizer price in the first three years of the Seventies, fertilizer prices were more than doubled from Rs. 0.69 per nutrient pound of nitrogen in January 1973 to Rs. 1.48 in April 1974 [13, p.16]. This increase in fertilizer price was followed by decreases in 1976 and 1978 to Rs. 1.34 and Rs. 1.25 respectively. However, a steep increase in fertilizer price in 1980 resulted in a price close to Rs. 2.00 per nutrient pound of nitrogen. This was also accompanied by a complete withdrawal of subsidy on tractors and insecticides [61, pp.29-30]. Under the denationalization policy that ensued after 1976, fiscal incentives of various kinds, including the rebate on exports, tax holidays for industries located in certain regions and abolition or reduction of sales tax for certain industries were reinstated from time to time.

The effect of subsidized inputs on output and employment would depend on price movements. In a free market economy where prices of commodities adjust themselves freely to changes in input prices, as may be the case in Pakistan's industrial sector, output and employment are likely to remain constant. Since, however, the commodity and input prices in Pakistan are controlled by the government, a favourable price policy for agriculture is capable of producing a substantial positive impact on output and employment. Throughout the Sixties the government supported the prices of agricultural commodities at above market prices and maintained favourable terms of trade for agriculture. This situation seems to have been reversed in the Seventies as the input prices relative to output prices in agriculture showed a steeper increase. It has been observed in Pakistan [11, p.10] that the price movements favouring agriculture were the basic factor in the promotion of profitable investment opportunities and accelerating growth rates of agricultural output during the Sixties. By analogy of this, a deceleration of the growth rates may be anticipated for the decade of the Seventies.

Investment spending, in addition to its short-run employment impact through aggregate demand, adds to the productive capacity and long-run employment potential in an economy. In a perfectly competitive market society the rate of investment is primarily a function of the expected rate of return on the investment to be made. But availability of funds, investment

climate and the state of the economy may also be the important determinants of investment in a less developed country like Pakistan.

Although the level of investment and employment generation are directly related to each other, a considerable variation in the magnitude of newly-created jobs can occur due to the choice of an investment project. For example, investment in a labour-intensive project relative to a capital-intensive one is likely to generate more employment. The same will be true if the investment is geared to direct employment-creating projects instead of the projects that have indirect employment consequences. Similarly, investment with forward and backward linkages would be more employment-creating than an investment without such linkages.

Gross fixed investment (private and public) in Pakistan (at current prices) rose consistently from Rs. 6.8 billion in 1969-70 to Rs. 16.2 billion in 1974-75 and to Rs. 39.2 billion in 1979-80 [60, p.22]. These figures point to the excellent investment-growth performance but may mean little in view of the sharply rising prices and increasing output to reflect the productive capacity of the economy. It would, therefore, be essential to look at investment funds in relation to the gross national product. When this is done, gross fixed investment shows a mixed trend. In 1969-70, gross fixed investment accounted for 15.8 percent of the gross national product. The proportion fell to 12.5 percent by 1972-73, but then the

trough of 1972-73 was followed by a consistent year-to-year increase in the proportion of investment until it peaked at 18.7 percent in 1976-77. Investment as a percentage of gross national product again dwindled down to 17.2 percent in 1979-80.

While the employment changes may be anticipated to follow changes in the level of investment, it is difficult, if not impossible, to ascertain the exact impact of investment on employment due to the lack of relevant statistics. In view of the fact that investment in water and power, transport, and communication, and industry may be less employment-creating than that in other sectors [22, p.38], it may be argued, in view of the declining proportions of investment in the above three sectors [61, pp.231-233] over the various plan periods, that the labour intensity of public investments has been on the increase over time. Similarly, investments in agriculture in the form of Green Revolution technology have been output- and employment-augmenting [32, p.39]. A detailed account of the contribution of various Green Revolution technologies to employment will follow in the next section.

Although every government policy may be employment-creating, national programmes of direct employment consequence have emphasized solely the rural works programme under the broad umbrella of the Works Programme. The aims and objectives of the Programme have been to create higher levels of employment in the rural areas, increase mass participation in the development process, provide basic social and economic infrastructure,

mobilize savings for productive purposes and strengthen local self-government [32, pp. 32-33]. As must be apparent from the objectives of the programme, the rural works programme must contribute significantly to employment-generation if it is well executed. It has, however, been argued [96, pp.72-78] that while the rural works programme has a promising employment potential, it has suffered from varying degrees of financial, political and administrative shortcomings. In Pakistan, the allocation of funds to the rural works programme declined from Rs. 189 million in 1965-66 to Rs. 37 million in 1971-72 and did not rise again to the 1965-66 level until 1978-79. The fund allocations for 1971-72 and 1978-79, however, will turn out to be negligibly small compared to those for 1965-66 if adjustment is made for the price increases.

Fifthly, the resource inflows from abroad could be of immense importance to growth of output and employment generation in the resource poor and, specifically, foreign-exchange-scarce less developed countries of the world, including Pakistan. It may be stated in this respect that foreign resource inflows could be used (1) to finance the balance-of-payment deficits, (2) to supplement domestic saving to maintain a higher level of investment than would otherwise be the case, (3) to create more employment through fuller capacity utilization of the industries allowed by the liberalization of raw material and capital imports in keeping with the industrial demand, and (4) to maintain a reasonably stable price level [54, p.1].

Foreign resource inflows seem to have been used more effectively in Pakistan since 1960 [53, p.1]. The same picture emerges if we look at the experience of the Seventies. For example, there seems to be no notable adverse effect of the declining rate of national savings [83, p.20] and the deepening balance-of-payment problem arising from sharper increases in imports than in exports [83, p.38] on the rates of investment [83, p.24] in the Seventies in Pakistan. The obvious reason for this has been the growing resource inflow from abroad.

In spite of the significance of foreign resource inflows to the national economies of the less developed countries, it is difficult to regard them as a permanent and dependable source of finance for the continuing and long-term process of economic development and employment generation. The reasons are both political and economic. For example, it has been argued [16, p.20] and [83, p.36] that the foundation of the foreign resource inflows, especially that of the foreign aid, is too fragile to be banked on as even small political disturbances can result in a discontinuation of such inflows. The access to foreign resources also tends to reduce the resource-mobilization efforts at the domestic front despite the growing resource needs for fuelling the larger and ever-expanding sectors of the economy. In addition, the use of certain types of foreign resource inflows, such as financial loans, economic aid and commodity and technical assistance for employment creation, may prove to be self-defeating for other reasons. For example, the commodity and technical assistance is a source of

employment for the donor countries at the expense of the recipient countries where it frequently tends to accelerate unemployment rates. Similar employment effects may be experienced although with a lag, in the recipient countries with the continuing and prolonged dependence on financial loans and economic aid. This is because financial loans and economic aid, although supplementing domestic savings, are likely in time to induce outflows in the form of debt servicing. Empirical investigation in Pakistan [53, p.2], have demonstrated that by 1980 resource outflow on account of interest payments on past loans alone were likely to be in excess of the net resource inflows. Since emigration of labour and foreign investment do not suffers from outflows of resources, they seem to be a viable alternative to foreign aid. In fact, Pakistan seems to have benefited from the two factors in recent years. The case of emigrating Pakistani labour has already been discussed in an earlier section. Here we would like to point out that Pakistan's experience with multinational enterprises had been better than that of many other developing countries [22, p.101]. It has been claimed that the direct employment generated by multinational enterprises and joint-ventures, in addition to a still more significant indirect employment effect, has been remarkable and is in no way comparatively less important than the total employment generated by Pakistani firms outside the textile industry [22, p.94].

Our earlier discussion has implicitly shown that the exodus of rural labour to both international and domestic urban



labour market has been the most notable phenomenon in the recent history of Pakistan. Two of the major factors underlying this out-migration could be deteriorating unemployment situation in the rural sector or phenomenal wage differentials between urban and rural sectors and between international and Pakistani labour markets. The analysis in Section 3 of this paper may well reveal that the growing unemployment rates could not be a satisfactory cause of out migration. In fact, although the data are lacking, wage differentials between Middle Eastern labour markets and those in Pakistan appear to be the only factor responsible for the exodus of labour from the rural areas.

##### 5. *Quantitative Employment Impact of Various Strategies*

It should be apparent from the discussion in the preceding section that the government of Pakistan has been keen in the past to take a number of direct and indirect steps to promote employment. The aims and objectives of the indirect measures have been to provide incentives for growth maximization and to realize employment gains from the resultant increased production. In agriculture, growth maximization efforts were concentrated on the creation of a favourable terms of trade for agriculture. Consequently, a system of input subsidies and price supports for agriculture was evolved and put into effect in the early Sixties. The rising profitability of agriculture induced by the favourable terms of trade was responsible for the remarkable improvements of agricultural production in Pakistan during the decade of the Sixties [6, p.126].

This, however, is to over-simplify the process of change. Production increases could occur only through the induced effect of terms of trade on the availability of profitable investment opportunities in agriculture in accordance with the Schultsian thesis [86, p.5]. The profitable investment opportunities in Pakistan have taken the form of what in common terminology has come to be known as the "Green Revolution". Although variously defined in the literature, the Green Revolution in Pakistan essentially hinged on four technologies, tubewell installation, increased fertilizer use, adoption of high-yielding cereal varieties and tractorization [11, p.11].

Although the green revolution technology has made a definite contribution to agricultural output, the same can not be inferred for employment changes. While the analysis of Section 3 has conclusively shown a positive growth rate of employment in Pakistan's agriculture, green revolution in the literature is believed to accentuate the unemployment problem [5, pp.307-353], [17, pp.703-706], [25, p.153], and [26, p.53] due to various reasons. It, therefore, seems imperative to study the impact of various green revolution technologies on employment in the rural areas.

Capital-embodied technical change, such as the green revolution technology, in addition to cropping-pattern changes as shown in an earlier section, could affect labour demand in any one or all of the following three ways. First, it could act as a substitute for labour or be complementary to it.

Considerable displacement of labour could be the outcome of rapid capital substitution if the technical change is a substitute for labour since machines could perform the work of several mandays in a matter of hours. The most important example of this is the introduction of tractors in Pakistan. Although the introduction of tractors is also complementary in the sense that it creates new jobs such as tractor operators, the displacement of unskilled workers can be expected to be more pronounced than the complementary effect. Since tubewells, HYVs and fertilizer were additions to current practices, their complementary effect outweighs the substitution effect. In fact, these technologies have no substitution effect and add to current jobs by creating new jobs such as tubewell operators and well drillers. Secondly, one of the constraints on employment in rural areas is that of too low land-man ratios. Most of the green revolution technologies are marked by their land-augmenting characteristics. With the availability of additional irrigation water from tubewells, the farmers are able to profitably double-crop part of their land-holdings. Studies exploring the effect of tubewells are consistent in their conclusion that tubewells raise the cropping intensity of farmers by about 50 percent. Increased use of fertilizer augments the cropping-intensity effect of tubewells by maintaining land productivity. HYVs, with their short duration and higher response to fertilizer input, open new visits for more croppings per year per unit of land [10, p.33]. With quickness of operations facilitated by tractors, it has been possible to

harvest a crop and immediately plant another crop on the same piece of land. In addition, tractors have also led to a reduction of current waste and an increase in the cultivated area [35, p.54]. In Pakistan, with tubewells and tractors in place, the cropping intensity can be raised almost to 200 percent per year [47] in contrast to prevailing intensities not exceeding 150 percent. Since a doubling of crop-land would require a doubling of labour input, the changes in cropping intensity and land use involve proportionate changes in labour demand. A third effect on on-farm employment appears in the form of an increase in labour productivity. Again, most of the Green Revolution technologies are out-augmenting. For instance, incomes of tubewell-owners are practically double those of non-tubewell farmers [51, pp.87-91]. Similarly, yields of HYVs are 50-60 percent higher than those of local wheat and rice varieties [21, p.18]. Tractors are believed to raise agricultural productivity by 10 percent by allowing deeper plowing and timely sowings [47]. The effect of productivity changes on labour demand, however, must be less than proportional, since part of the total productivity increase may appear as an increase in labour wages. No effect on labour demand should be expected if the increase in wage rates equals the increase in labour productivity.

The totality of the effects of substitution, cropping intensity and productivity, in addition to the effects of cropping pattern changes induced by individual technologies, is the labour demand effect of the Green Revolution technology in

Aggregate. It follows from the foregoing that tubewell installations, increased fertilizer use and introduction of HYVs have positive effects on labour demand. But the same may not be true of tractors. Labour demand is reduced if the substitution effect of tractors exceeds their cropping intensity and productivity effects. But if the cropping intensity and productivity effects dominate the substitution effect, labour - augmentation rather than labour-displacement may be the end product of the tractorization move.

While the above analysis is helpful in projecting the trend of demand for labour as determined by the various effects of the individual Green Revolution technologies, it may be misleading in specifying the exact magnitude of the trend of aggregate labour demand. For this purpose, references to empirical studies exploring the labour-demand aspects of the Green Revolution technologies may be directly relevant here and are undertaken in the following pages.

Three major studies of tractorization and its effects on labour requirements have appeared in Pakistan. Bose and Clark were among the first to study the problem and to conclude that the introduction of tractors leads to halving of labour requirements [9, p.289]. The conclusion of their study, however, is not by any means complete. First, the study did not indicate the breakdown to total available labour into its constituent parts: namely family labour, permanent labour and casual labour. Instead, it takes into account only changes in the number of

permanent workers without specifying if there were any changes in the total hours worked per acre as a result of mechanization. Secondly, a 50-percent reduction in labour requirements seems to be unrealistic, since tractor use in Pakistan has remained limited to preparatory tillage operations only. For example, Yudelman indicates that tractors were not utilized for very labour-intensive operations of sowing and harvesting [97, p.89]. Similarly, Johnston and Kilby point out that seeding, fertilizing, intercultivation and reaping, normally carried out with the assistance of a tractor, are executed with human and animal power in most cases on the subcontinent [38, p.386]. Since seed-bed preparation takes only 2-3 man-days of labour with bullock cultivation and a fraction of the day with tractors compared to 36.4-38.5 average man-days of total labour per crop-acre depending on the period under consideration, it follows that the labour displacement with the introduction of tractors should in no way exceed a 5-10 percent limit. In fact, labour requirements can be expected to rise if one accounts for the labour productivity increase, the rise in cultivated land and cropping intensity and, at the same time, changes in family and casual labour induced by tractors. Probing somewhat more deeply and accounting for the biases inherent in Bose and Clark's study, Ahmad [3, p.30] pinpoints the fact that there is no reduction in permanent labour use, except that a third of the permanently hired labour is replaced by a third of the permanent family labour; and, in addition, the casual labour requirement is increased by 5-35 percent or, on average, 20

percent in major areas of Pakistan. Similar conclusions have been arrived at by an independent study [47] on mechanization in Pakistan. A study based on data from the Indian Punjab seems to be consistent with the above findings in estimating a 20-percent increase in labour use with the introduction of tractors under the conditions prevailing there [93, p.593].

While the effect of tractors on labour demand may be disputable, depending on how one perceives it, the real case for increased demand for labour under the Green Revolution must be made on the basis of tubewell installations and the introduction of HYVs. It is widely recognised in Pakistan that tubewells add to farm labour requirements and at least one study has indicated [39, p.76] that labour input in tubewell farms was, on an average, 57 percent higher than on non-tubewell farms. Labour requirements for harvesting, weeding and care of HYVs, according to a U.S.-AID study [21, p.9], are estimated to have increased by 20-40 percent in Pakistan. The results of Rochin's study are particularly noteworthy in this respect since the study indicates a 50- percent increase in labour input following the introduction of the HYVs of wheat [85, p.284]. Perhaps these two studies underestimate the potential impact of HYVs on labour demand. Data from the Indian Punjab indicate that labour costs were 2-5 times the local varieties respectively for HYVs of rice and wheat during 1967-68 [93, p.291].

The above information can be combined with the rates of growth of individual technologies to arrive at the rate of growth of labour demand in the crop-production sector. The installation of tubewells from 1967-68 to 1975-76 proceeded at the rate of roughly 12,000 tubewells per annum. If each tubewells is assumed to provide irrigation facilities to 100 acres [51, p.87], labour demand will be affected on some 1.2 million acres out of 50 million acres of farm area of Pakistan. Multiplying it by the effect of tubewells on labour requirements yields an annual increase of 1.37 percent in labour demand due to tubewells. Similarly, the area under HYVs for the period 1967-68 to 1975-76 increased by 1.1 million acres per annum. With a 50-percent increase in labour requirements, it is equivalent to an overall increase of 1.10 percent per annum. Thus the combined effect of tubewells and HYVs amounts to 2.47 percent per annum. The effect of tractors is varied. In Pakistan, during the above period, the number of tractors increased by 4500 units per annum. Assuming that each tractor can operate 200 acres [25, p.136], and causes a 10-percent reduction in labour requirements (see earlier discussion) on affected area, tractors will result in a negative growth rate of the labour demand of 0.18 percent per annum. Thus the overall increase in the labour demand will amount to 2.29 percent per annum. If, however, a more realistic assumption of a 20-percent increase [3, p.30] in labour input with tractor introduction is followed, the tractors, will generate a 0.36 percent per annum additional demand for labour, forcing the



total labour demand to grow at the rate of 2.83 percent per annum. To the growth rate of 2.29 to 2.83 percent of labour demand, however, we must add the effect of cropping pattern on employment to arrive at the total labour demand effect of the Green Revolution. For the period under study, the effect of cropping pattern on labour demand, as shown earlier, amounted to roughly 0.50 percent per annum placing the growth rate of labour demand due to Green Revolution at 2.79-33.3 percent per annum. This, incidentally, compares favourably with the results reported in Section 3.

Thus, although the tractorization move may be a source of greater unemployment in the rural areas, the Green Revolution technology in aggregate seems to be employment-creating and the rate of increase seems to be in excess of that of farm-labour supply. This should not be surprising in view of the conclusions by Johnston and Cownie [37, p.572] who held that multiple cropping under seed-fertilizer revolution may lead to an increase in farm-labour inputs that is considerably greater than the increase in farm-labour force in Pakistan.

The above growth rates, however, represent only the direct effect of the Green Revolution technology on employment, ignoring indirect effects which take many forms. For example, the Green Revolution technologies have been associated with a rapid development of small-scale tubewell-manufacturing industry, repair-shop business for tubewells and tractors, electric transmission lines, fertilizer and diesel oil distribution

centres, and transportation services. More significantly, the Green Revolution technologies have promoted the cause of forward and backward linkages between farm and non-farm sectors. When farm incomes, rise, as under the Green Revolution, the demand for key industrial goods begins to rise. The consequent expansion of the industrial sector not only provides more jobs but also increases the demand for agricultural production calling for another chain reaction of the industrial sector. Thus the process repeats itself, generating an ever-increasing demand for labour. Initially, the employment effect may be limited to a few industries of necessities but it soon spreads to the whole economy because of inter-dependence of various industries. The process of linkages is greatly facilitated and is more powerful if the agricultural output is the key input for the industrial sector and vice versa. Since this is true of Pakistan's economy, the process of linkages may well be expected to generate strong employment effects.

Although the indirect employment effect of the Green Revolution technologies may not be quantifiable, two instances of their importance may be cited. First, while tubewell-manufacturing industry may be assumed to account for a small fraction of the total indirect employment, it provided 7000-8000 jobs in only five industrial towns [14, p.267]. Since however, the development of tubewell industry has been widespread, the study perhaps is an underestimate of the potential employment. In fact, another study [38, p.387] reported that the manufacturers of farm equipment provided about 106,000 jobs in Pakistan.

Secondly, it has been remarked [94, p.106] that the indirect employment effect of the Green Revolution technology may exceed its direct effect.

In view of the strong direct and indirect employment effects of the Green Revolution technology, a considerable tightening of rural labour market may be anticipated. This, in turn, has implications for the institutional and structural interventions and rural industrialization.

If the forward and backward linkages between agricultural and industrial sectors are important, the labour-absorption capacity of the industrial sector can be assumed to be dependent on the expansion of agricultural output within certain limits. Studies have shown that employment in the large-scale industrial sector expanded at the rate of 4.4 percent between 1964-65 and 1969-70, at 3.3 percent during the early Seventies in contrast to 5.1 percent between 1974-75 and 1978-79 [40]. The agricultural output reflects a similar trend of variations during the corresponding periods.

A considerable tightening of the rural labour market implies more rapid and accelerating growth rates of rural wage rates. This seems to have happened in Pakistan. In fact, it has been shown that the growth rates of rural wages in Pakistan have shown a consistent upward trend over time between 1951-52 and 1974-75 and have been in excess of the growth rates of the value added in agriculture since 1964-65 [11, p.119].

Between 1960 and 1972, the tenant-operated farms showed a drastic decline in their number from about 2.03 million [63, p.64] to 1.30 million [75, p.1] accompanied by a 3 percentage point increase in the owner-cultivated area. This points to the fact that the land owners evicted their tenants to take advantage of tractors and rising profitability of agriculture under the Green Revolution. The things, however, do not seem to be all that clear in view of the rising demand and increasing wages for agricultural workers. In addition, the census data also show that despite the decline in the number of tenant-operated holdings, the average size of a tenant-operated farm went up considerably between 1960 and 1972. Thus the reduced number of tenants can be as much a function of the labour scarcity as it is of rising profitability of agriculture or tractor cultivation. Furthermore the large farmers have not been successful in increasing their farm size. Land distribution between 1960 and 1972 in fact became more egalitarian as the land-concentration ratio based on farm area fell from 0.62 in 1960 to 0.54 in 1972 [11, p.52].

Rural industrialization has not been pursued actively in Pakistan. Government programmes to control the quality of semi-processed goods, in fact, have tended to discourage rural industrialization. For example, the quality control laws prohibit installation of small-scale units for rice husking and cotton ginning. Despite this, however, the number of small establishments such as flour mills, tubewell and tractor repair shops, oil-exPELLERS and wood shops must have been on the increase

with the passage of time. Although rural industrialization does not seem to have made any progress in Pakistan until recently, the rural electrification induced by tubewell installations may act as a catalytic agent in the future in this respect.

Rural works programme, despite a possible direct bearing on employment generation in rural areas, has been mainly inconsequential. It has been reported that rural works programme between 1963-64 and 1965-66 generated 18 million man-days of employment [32, p.44]. Likewise, planned migration and resettlement could be effective in reducing population pressure on land. But no known policy of planned migration or resettlement seems to exist in Pakistan. Even the registration of emigration to international markets is of recent origin and the decision to migrate is solely of the individuals holding work permit except in the case of medical doctors who have no such freedom of choice. Movements of labour between rural and urban areas are based on the free choice of the individuals settling in one place or the other. While the estimates of rural-urban migration are non-existent, there were 1.8 million Pakistani migrants working abroad in 1978-79. Depending on the demands abroad, the unplanned migration is likely to cause severe shortages of certain kinds of labour in Pakistan.

Human resource development is one of the key variables in the economic development of a country. While education of the masses is essential for an improvement of human skills and

enhancement of productive capacities of the individuals, the educational policy must be geared to achieving these desired objectives. The educational policy of Pakistan since independence has specifically been directed at the realization of these basic goals. A three-fold increase in educational institutions with an almost equal increase in school enrolments occurred between 1959-60 and 1979-80, involving mounting burdens of educational expenditure on the government [62, pp.100-102]. For example, government expenditure on education between 1972-73 and 1979-80 alone showed a more-than-400-percent increase.

An increase in educational expenditure or, for that matter, in enrollments may be misleading in the sense that it may not be representative of the true situation. For example, rising educational expenditures may simply be the result of shifts from lower to higher levels of education. This seems to hold in the case of Pakistan. While enrollments in primary schools only tripled, a seven-fold increase occurred in university enrollments [62, p.100]. Since the annual cost of education per student at the primary level is only Rs. 138 in contrast to Rs. 20,000 at the university level [35, p.216], the shift in education policy seems to be the principal cause of rising government expenditures. Similarly, the rising enrollment may entirely be coming from specific groups of population. It has been observed [35, p.218] that the educational system suffers from serious distortions due to disparities between urban and rural areas, between male and female communities, and between the rich and the poor. Since the rural population constitutes

more than 70 percent of the total population, and more than half of the urban population is represented by the females, it is not difficult to see that a great majority of the masses is deprived of access to educational facilities.

The educational system of Pakistan may also be defective for other reasons. It has tended to emphasize general education, producing millions of white-collar workers each year. Since job opportunities in this field are insufficient relative to the demand for them, many remain unemployed due to mismatch of the acquired and the job-specific skills. It has been argued that the insistence of the educated youth on white-collar jobs may be used as a partial explanation of the direct relationship between unemployment rate and the level of education [30, p.146]. This would contradict the perceived objective that education should normally lead to promotion of employment by reducing the incidence of structural imbalances. Thus, there is a serious need for modifying the educational policy in Pakistan. In addition, although vocational and in-service trainings and adult education should form an integral part of an efficient educational policy, they seem to have drawn no attention in Pakistan's educational policy.

#### *6. Policy Formulation, Management and Mass Participation*

Policy formulation, in collaboration with domestic research organizations or international missions, is one of the major responsibilities of the Central Government ministries and provincial government departments. The policies thus formulated,

however, are subject to the approval of the Planning Commission and/or Cabinet Division which have the power to authorize the concerned ministries or departments to implement the programme or policy under consideration. As should be obvious, the general public is not allowed to participate in policy formulation. In fact, mass participation in policy formulation is discouraged by the government as most of the policy documents are kept secret until they reach the final implementation stage.

The approved policies are then passed down to lower tiers of the governments responsible for their implementation. The implementing agency may be a concerned provincial department, district administration or local self-government depending on the nature of the policy to be implemented. For example, the implementation of most of agricultural policies may rest with the provincial agricultural departments. Most of the rural development programmes have been executed through the local self-governments such as the Basic Democracies of Pakistan. Fiscal and land-reform policies have been the executive responsibility of the district administration. Whatever the case, the implementing agency, while responsible for implementation, has no power to challenge the efficiency and workability of the policy to be implemented. In general, the higher governments or their representatives consider it inappropriate to reciprocate with lower levels of government on matters of policy. In other words, the practical problems of implementing a policy are not well appreciated by the staff preparing the policies. Likewise, the public opinions carry no weight in the implemen-



tation or formulation or review of a policy. Thus all that is required of the implementing staff and the masses is that they carry out the orders from the top irrespective of the costs associated with them.

The above discussion has been addressed to the weaknesses of policy formulation and its implementation. Implicit in this discussion are the factors that may contribute to policy failures. An explicit statement of these factors, though in a summary fashion, may be desirable and may be listed as follows:

- (1) Highly political and centralized nature of the policy-making process;
- (2) Failure of the bureaucracy to understand the problems of the rural areas in general and of the target groups in particular mainly because of lack of communication between target groups and the implementing staff on the one hand and implementing and policy-making agencies on the other;
- (3) Ineffectiveness of the rural classes to press their legitimate demands individually or collectively due to subservience of the rural population to unmitigated administrative powers of the government officials that may be liberally misused for vested interests and for suppression of individuals;
- (4) Absence of unionization of rural population to confront the powers of the administration;
- (5) Secrecy of policy-matters before implementation;
- and (6) Government's dependence on foreign aid and its ready susceptibility to aid-tied policy-packages of international organizations irrespective of the costs involved and relevance of the policy to the country at large.

It may not be beside the point to add that most of the policies under these circumstances are doomed to failure at the implementation stage and can do more harm than good to the rural society. For example, a land-reform programme that is announced but fails to take effect due to administrative shortcomings can be destabilizing in the sense of strained relations between tenants and landlords, reduced output and falling employment [29, p.275]. An early rectification of the factors leading to policy failures would, therefore, be essential for enhancing the welfare of the rural population in general and of the weaker rural sections of the population in particular.

#### *7. Major Findings and Policy Recommendations*

Pakistan in the recent past has experienced exploding and accelerating population growth rates threatening the realization of her developmental potential. While the desirability of population planning to reduce the current growth rates, can not be under-estimated, Pakistan's experience with family planning programme has been rather disappointing. In spite of this, however, there seems to exist no viable alternative solution to the population problem. The only recommendation that follows, therefore, is to restart family planning programme with renewed vigour and determination to accomplish the desired goal of reducing population growth rates.

Investment-savings gap and import-export gap in absolute terms at current factor costs have continued to widen and dependence on foreign aid continues unabated. For example, the

resource gap (investment-savings) quadrupled at current prices [83, p.29] between 1969-70 and 1978-79. Likewise, the trade gap (imports-exports) showed a seventeen-fold increase between 1972-73 and 1978-79 (83, p.37]. This is a cause for concern in view of the growing uncertainties of foreign aid and worker's remittances from abroad. Unless Pakistan strives hard to become financially self-reliant in the near future, her prospects to maintain any sustainable growth rate may be seriously jeopardized. For the purpose in hand, Pakistan needs to make concerted efforts for resource mobilization at the domestic front by taxing incomes, properties and imported luxury items more heavily than is currently done. In order to promote exports, a system of export incentives for major exportables may be developed and considered sympathetically. Because of unfavourable terms of trade for primary commodities in the world market, the emphasis of the fiscal incentives must be redirected to the exports of non-traditional goods [83, p.74].

Part of the reason for low saving rates in Pakistan is the low level of incomes especially in agriculture. Unless widespread development of agriculture occurs, it seems impossible to raise the level of saving. An active pursuit of the Green Revolution can prove to be highly promising in this respect. It has been observed in this study that the Green Revolution technology in Pakistan has been output-augmenting, employment-creating and poverty-alleviating phenomenon offering widespread redistributive justice. Although these findings contradict the perceived judgements of the existing literature, several

empirical studies in recent years [11], [42, pp.126-155], [6, pp.126-129], [19], [8, pp.254-268], [50], [2, pp.298-323] could be cited in support of the findings of this study. Based on such considerations, the pursuit of the Green Revolution has been regarded for most countries to be the necessary condition for increased employment and welfare of the poor [50, p.23].

While an active pursuit of Green Revolution may be a desirable goal, its inherent potentials may not flow automatically and must be supported by complementary policies [50,p.23]. Depending on the past experience and likely future developments in Pakistan's agriculture, five complementary policies may be recommended. First, it has been argued in the earlier pages that favourable terms of trade for agriculture in the form of liberal input subsidies and active price supports for major agricultural commodities was a key factor in promoting the cause of Green Revolution during the Sixties. In the recent years, the government's keenness to pursue the same policy seems to have weakened. This is evident from the government's recent price policy for agriculture. Subsidies from key agricultural inputs, such as chemical fertilizers, diesel oil, electricity, insecticides and tubewell equipment, are being withdrawn. A procurement price policy offering prices for agricultural commodities that are much below the international market prices is replacing the price support policy of the Sixties. Unless the present price policy for agriculture is reversed, the impetus of the Green Revolution technologies is apt to suffer slowing

down the growth rates of investment, economic development and employment in agriculture. Secondly, continuation of input subsidies, however, may be undesirable for it involves mounting financial burdens for the government. Rapidly increasing fertilizer consumption and the consequent import needs are the principal causes of the rising subsidy bills. Since the cost of production of domestically-produced fertilizers is much below the international or domestic fertilizer prices at present, the government subsidy costs can be sharply curtailed or altogether eliminated if the dependence on import is reduced for attaining self-sufficiency in fertilizers. Thirdly, in addition to favourable price policy for agriculture, timely and satisfactory provision of agricultural inputs and services would be of immense importance. The present system of controlled input supplies through registered dealers needs to be expanded and supplemented by free market sales to curb black marketing and to make the system more efficient in terms of easy access for the farming community. Fourthly, agricultural production in the near future is likely to be constrained by severe shortages of labour, especially at the peak demand periods. As pointed out earlier, such shortages perhaps have already begun to appear in certain seasons and regions of Pakistan. It would, therefore, be appropriate to study the emerging situation in detail on an all-Pakistan basis now and prepare plans to combat the severity of the labour problem. In this regard, the inevitability of mechanization of certain agricultural operations, that is partial mechanization, may not be under-estimated.

Although mechanization on its face is connotationally labour-displacing and may conflict with employment promotion, the effect of gradual, slow and partial mechanization on labour displacement is claimed to be less severe and even non-existent. In addition, since the most prominent cause of labour shortages is the exodus of rural labour into the rest of the economy and international markets, the reduced drudgery and greater profitability of mechanized agricultural operations relative to the non-mechanized ones would stem the tide of emigrating rural labour force. Fifthly, the development of the small-scale agriculture-related industry, manufacturing electric motors, diesel engines, agricultural implements and tubewell equipment, has played a vital role in the success of the Green Revolution and in employment generation in rural and urban areas. Private initiatives rather than government encouragement have been at the heart of this development. A keen interest of the government in the provision of liberal industrial raw material, credit, patent right and standardization of the products of the small-scale industrial sector would be required in the future.

Institutional approaches to rural development, such as village aid, land reforms, cooperative farming, basic democracies, rural works and integrated rural development programmes, have been tried and discontinued in Pakistan from time to time. Although the contribution of these approaches to rural employment and incomes, especially with generous budgetary provisions,

cannot be denied, the insignificance of the extent of their contribution in practice must be obvious from their failures.

The pervasiveness of corruption among government officials has tended to undermine the effectiveness of institutional approaches to rural development despite their theoretical legitimacy. It is my conviction that corruption among the government officials has tended to promote favouritism, inefficiencies, non-cooperation, ignorance and, above all, vested interests and lack of will to accomplish the desired social goals. A frontal attack on corruption is, therefore, needed. Unless corruption is completely wiped out, institutional approaches to rural development, irrespective of fund allocations, can only add to the problems of rural masses who on the other hand may well benefit from a policy of non-interference. For example, the 1972 land reforms in Pakistan resulted in large-scale tenant displacements simply because of the lack of will to implement them.

Since corruption is a deep-seated social problem, there are no set norms for its elimination. However, the incidence of corruption can be considerably reduced if the administration is made to guide government action towards development objectives and promotions are undertaken on the basis of work accomplishments rather than on the basis of seniority. There is a need to reduce the powers of the civil administration. It would be highly desirable to recognize the rights and privileges of the masses in contrast to those of civil administration. The

government must emphasize work efficiency rather than increase in the administrative capacity to control rural areas. Raising the salaries of the civil servants may be a right step to reduce corruption.

Rural industrialization offers one promising and viable alternative to institutional approaches for the development of the rural areas. But the concept is foreign to Pakistan's economy. In spite of the fact that the large-scale manufacturing sector in Pakistan depends heavily on rural areas for raw material and labour supplies, industries have tended to concentrate in large urban centres. In fact, the government policy has been to discourage rural industrialization. For example, the law prohibits the location and operation of even small cotton ginneries and rice husking mills in rural areas. In order to alleviate the problems of urban centres, promote rural development and minimize the costs of labour rehabilitations, it would be highly desirable to embark upon rural industrialization in the future. The textile industry, sugar mills, rice-husking plants and canning and processing of agricultural products are some of the industries that can be considered for rural locations.

The educational system of Pakistan must be reoriented, with emphasis gradually shifting from general education to technical education. This recommendation follows from higher rates of unemployment among college and university graduates as white-collar workers than those among technicians. In view of



the international migration of specific labour groups and growing emphasis on industrialization, creation of job-specific skills rather than the production of white-collar workers, would also be in keeping with the needs of the day. At lower levels of education, that is primary and secondary levels, a growing emphasis must be placed on the teaching of languages, including Arabic and English, in addition to the national and provincial languages to increase the competence and effectiveness of Pakistani labour abroad. The curricula at these levels must also stress the importance of honest and hard work and pinpoint the evils and social repercussions of corruption.

## Appendix Table 2A

*Magnitude of Rural Poverty Under Alternative Definitions  
of Poverty Line for Various Years at 1959-60 Prices.*

Annual Per Capita Income/Expenditure	<u>1963-64</u>	<u>1966-67</u>	<u>1968-69</u>	<u>1969-70</u>	<u>1970-71</u>	<u>1971-72</u>
Number of Poor Persons (Million)						
1) Expenditure						
< Rs. 225	9.97	6.15	4.19	0.00	0.00	0.09
< Rs. 250	16.53	13.13	10.76	11.40	4.15	8.82
< Rs. 300	23.20	24.49	26.37	26.18	24.59	26.83
< Rs. 350	31.83	32.86	31.66	32.14	36.70	40.16
2) Income						
< Rs. 225	12.86	6.39	9.97	9.19	5.22	8.87
< Rs. 250	21.66	12.65	15.81	15.62	12.82	19.10
< Rs. 300	25.83	20.01	27.37	26.79	26.99	29.77
< Rs. 350	30.69	25.19	32.84	35.87	35.53	39.99
The Poor as % of Total Population						
1) Expenditure						
< Rs. 225	26.0	15.0	10.0	0.0	0.0	0.2
< Rs. 250	43.1	32.0	25.1	26.0	9.3	19.2
< Rs. 300	60.5	59.7	61.5	59.7	54.8	58.4
< Rs. 350	83.0	80.1	75.5	73.3	81.8	87.4
2) Income						
< Rs. 225	33.5	15.6	23.2	21.0	11.6	19.3
< Rs. 250	56.5	30.8	36.9	35.6	28.6	41.6
< Rs. 300	67.4	48.8	63.8	61.1	60.1	64.8
< Rs. 350	80.0	61.4	76.6	81.8	79.1	87.0

Source: (4, pp.433-435)

Appendix Table 2B

*Income Shares and Concentration Ratios for Rural  
Households (for various years)*

Households	Cumulative Income Shares (Percent)							
	1959	1961	1963- 64	1966- 67	1968- 69	1969- 70	1970- 71	1971- 72
Lowest 10 Percent	3.0	3.0	3.3	4.0	4.0	3.8	3.8	3.7
Lowest 20 percent	7.1	7.4	7.4	8.6	9.0	9.3	9.5	9.0
Lowest 40 percent	19.7	19.1	19.6	21.6	22.2	21.8	22.1	21.0
Lowest 50 percent	25.8	26.0	26.5	28.7	30.1	30.2	30.4	29.5
Lowest 60 percent	36.5	42.5	35.4	37.3	39.2	38.9	38.9	38.5
Lowest 80 percent	58.0	56.4	57.1	58.9	62.1	61.0	61.7	59.8
Lowest 90 percent	71.8	72.7	72.5	74.1	76.4	76.0	76.6	74.3
All Households	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
GINI Coefficients:								
Household basis	0.348	0.357	0.348	0.349	0.294	0.295	0.291	0.308
Population basis	0.228	0.203	0.223	0.186	0.161	0.161	0.146	0.164

*Source:* (11, pp.175-179)

Appendix Table 3A

*Participation Rates, Employment and Underemployment  
of Rural Labour Force for Various Years*

Year	Percentage of Rural Labour Force that is			
	Economically Active	Employed	Underemployed Working less than	
			35 hours week	25 hours week
1966-67	52.63	98.48	15.44	4.75
1967-68	53.37	98.65	15.40	5.01
1968-69	46.41	98.25	20.79	6.67
1969-70	47.22	98.26	18.94	7.20
1970-71	47.82	98.64	15.75	6.30
1971-72	47.12	98.39	18.87	8.05
1974-75	45.88	98.67	11.02	3.63

Source: Calculations based on data in (58;59;69;70;71;72 and 73)

Appendix Table 3B

*Total Area of Crops, Cropping Pattern and  
Labour Input per Acre by Crops for various  
years*

Irrigation Status and Crops	Crop Shares (percent) in Total Area				Labour Input (Mandays) Per Acre For	
	1962-63/ 1965-66	1966-67/ 1969-70	1970-71/ 1973-74	1974-75/ 1977-78	1969-70	1975-76
	A. Irrigated (Sub- total)	74.5	77.0	78.7	79.5	-
Wheat	22.9	26.1	26.4	26.6	37.37	40.69
Rice	8.9	9.3	8.9	9.9	33.46	34.73
Cotton & other Fibers	10.1	10.8	11.3	10.9	43.24	47.07
Sugarcane	3.6	3.6	3.5	4.2	162.70	169.50
Maize	2.2	2.6	2.7	2.5	45.67	45.30
Bajra	2.4	2.1	2.4	1.4	29.66	31.70
Jowar	2.0	2.1	1.9	1.5	29.47	29.93
Barley	0.5	0.5	0.7	0.5	9.50	9.50
Gram	3.3	2.8	1.8	1.6	40.97	32.31
Tobacco	0.3	0.4	0.3	0.3	89.68	87.22
Oil-Seeds	3.3	2.9	3.1	2.6	29.76	30.75
Fodder	12.9	11.7	13.2	14.8	27.72	27.72
Vegetables and Spices	1.2	1.1	1.2	1.3	79.35	81.94
Fruits	0.9	1.0	1.3	1.4	67.23	67.23
B. Unirrigated (Sub- total)	25.5	23.0	21.3	20.5	-	-
Wheat	10.9	10.2	9.1	8.4	11.00	11.00
Maize	1.1	1.1	1.1	1.0	16.00	16.00
Bajra	3.3	2.8	1.9	2.3	11.75	11.75
Jowar	1.2	1.0	1.2	1.1	7.75	7.75
Barley	0.6	0.6	0.6	0.5	11.75	11.75
Gram	4.8	3.8	4.1	4.2	8.75	8.75
Oil-Seeds	0.4	0.6	0.6	0.6	13.00	13.00
Pulses	3.2	2.9	2.7	2.4	10.25	10.25
C. Total	100.0	100.0	100.0	100.0	-	-
Total Cropped Area (Million Acres)	38.0	41.0	42.3	44.5	-	-

Sources: 1) For cropping pattern: calculations based on the data in

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