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AGRICULTURAL POLICY ANALYSIS PROJECT, PHASE II

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THE STUDY OF LAND AND LABOR

MARKETS IN PAKISTAN

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EXECUTIVE SUMMARY

Traditionally rural land and labor markets were linked together. In the share-cropping system the landlords, laborers and a few artisans, who fulfilled the needs of a whole village, worked together and shared the outputs. The economic importance of these joint markets and the emergence of individual markets for these factors of production has been the inspiration for this study. Very little data exists on these markets, and there is a lack of sound economic theory that explains the structure of rural land and labor markets. This study provides a picture of the present structure of land and labor markets and delineates the evolution of changes brought about by the exogenous factors such as policy, technology, demographics etc. The objective is to explain the direction and magnitude of the impact of such exogenous changes so that in future policy making one can predict the impact on the rural land and labor markets. These factor markets can also be used as filters for policy making. The main results of the study are presented at the end of Chapters 2, 3 and 5. What follows is a discussion of these results.

Technology, infrastructure, off-farm opportunities, and Government intervention have been the most important exogenous factors affecting the land and labor markets. The effect of these factors has been noticeable; however the mechanisms through which they have affected the markets have been very complex.

Technology in the form of irrigation, mechanization, improved seeds, fertilizer and pesticides has contributed to a small increase in land area and productivity per hectare as a whole. Technology has increased the rent and value of land in real terms despite the increase in land area. Labor wages have increased similarly, but a part of the increase has been caused by growing rural off-farm activities coupled with the migration of labor to the Gulf countries. Male labor migration has also resulted in increased female participation in the rural labor sector (section 2.3).

Infrastructure in the form of transport, communication, and electricity has been instrumental in affecting the land and labor markets. Timely information and availability of inputs have greatly increased farmers' options in terms of the types of crops that they can grow and allowed the farmers to shift to more profitable cropping patterns. As a result there is an incentive for self-cultivation by adopting farming systems that reduce managerial cost and risk through distribution (section 4.3). A crop cycle is broken into activities that provide seasonal markets for land and labor separately. Crop and orchard leases are good example of such market disaggregation. These seasonal contracts and increased mobility of labor have made the wage labor market more competitive. As a result wage rates in the farming sector have come at par with wages in the industrial sector (section 2.3).

The major effect of Government policy has not been through price policies but land and tenancy reforms. These reforms have distributed land ownership but increased the average operated area. The increase in average operated area is caused largely by the fear of further tenant reforms and to some extent by the increased profitability of farming in some cases.

All the above stated exogenous factors have initiated the breakup of traditionally interlinked rural land and labor markets. We have seen through this study that the landlords have started self-cultivation. Land-leasing has also become more common, especially in the more developed parts of Punjab. Labor now prefers cash payments or more defined payments in kind. The time periods of the contracts have become shorter, allowing adjustment to the market forces and reducing the long-term dependency of tenants through indebtedness, which has been an integral part of the share-cropping system. These changes have been observed in the more developed parts of Punjab and some in places in Sind. Sind seems to lag behind Punjab at least twenty years in the development of such emerging markets.

About two-thirds of the land and labor contracts in Pakistan are still in the form of share tenancy. Therefore the market imperfections that inhibit profit maximization and efficiency for both parties are still there. The reasons for such contracts are factor availability and the socio-economic conditions of the people, in the rural markets. Such institutional rigidities have hampered the opportunities for Government policies to make the agrarian sector more profitable.

Pakistan's agriculture still has ground to cover in the development of a market-oriented agrarian sector. The almost self-sufficient agrarian sector is still operated at a subsistence level. Communications, roads and other forms of infrastructure that would develop processing, storage and physical marketing facilities for agricultural products will allow crop diversification and the realization of comparative advantage. Only then will the Government be able to aim at objectives beyond self-sufficiency and domestic price stability.

1. INTRODUCTION TO THE STUDY

1.1 Background, Purpose and Objectives of the Study

1.1.1 Background

Rural land and labor are arguably the two most important rural assets in Pakistan.¹ They are also the two factors of production in Pakistan's agriculture in which (attempts at land reforms notwithstanding) policy intervention has been negligible. There is, nevertheless, an important link between policy, and rural land and labor: land and labor markets are key transmission mechanisms for the impact of policy, (and other exogenous changes) on agricultural production, and on the welfare of various groups of rural people. Policy measures invariably effect the allocation of land and labor among competing activities, as well as the returns accruing to them. Thus, land and labor are central to the context of policy making.

Policy-oriented dialogue has been dominated, in the case of land, by the issue of land tenure and land reforms; and, in the case of labor, by the "under employment" issue. Impact-oriented research in the case of labor is dominated by discussion of the impact of green revolution technologies and overseas migration; in the case of land, it is dominated by research on the effect of technological change on land tenure. The lack of empirical evidence on the functioning of markets, and on household decision making over land use and labor allocation are notable omissions from research and policy dialogue. These are important omissions from the knowledge base for policy formulation and rigorous impact assessment.

1.1.2 Purpose and Objectives

The purpose of this study is to describe the structure of rural land and labor markets in Pakistan, and to understand their dynamics in terms of both household decision making and changes over time.

The objectives of the study are as follows:

- To provide a "numbers-oriented" description of the physical stock of land and labor—changes over time in the distribution/ownership of land and the composition of the rural labor force (particularly three types of rural labor -farm family labor, landless labor, and the informal sector).
- To construct a picture of secular and seasonal changes over time in the nominal and real prices of land and labor of different types, and of farm-household responses to these changes.

¹Section 1.1 reproduces the statement of purpose and objectives as contained in the Scope of Work.

- To provide an analytical description of the different forms of contracts under which rural land use and labor services are exchanged, and of changes over time in contractual arrangements, particularly since the beginning of the Green Revolution.
- Based on the findings of the first three objectives, assess the directions of impact of key institutional and price policies, technological change, overseas migration and other important exogenous changes in the economy since 1965/66.

1.2 Overall Methodology

The study focuses on exogenous changes to understand the comparative dynamics of rural land and labor markets in the context of policy formulation. Policy and other changes exogenous to the farm-household are sources of disequilibrium which are marked by changes in physical stocks and flows (of land and labor), asset values and contractual arrangements. Thus, as indicated under the objectives, stocks, flows, values and contracts are the filters through which policy effects can be transmitted and understood. The conceptual approach will be to generate predictions from first principles about the likely effects of exogenous changes, and to validate them against available empirical evidence.

The availability of data for each of the study objectives can be summarized as follows:

A number of research publications (particularly those commissioned recently by the World Bank and the National Manpower Commission) and working estimates are available for objective (a) of the study. A review of these is summarized in tabular format and presented in the study.

The situation regarding objective (b) is mixed: while wage rate estimates (over time) have been constructed in some recent studies, there is virtually no empirical research (except for a limited survey done by CIMMYT in December 1989) on changes over time in land rents and values.

Very little information was available on (land and labor) contract arrangements for objective (c) of the study. Therefore, a semi-structured field survey in Sindh and Punjab was undertaken as part of the study to obtain current and historical information.

Partly to identify the requirements of the survey a team planning meeting (TPM) was held for this study. A major portion of this two-day meeting was devoted to analytical discussions that contributed to the formulation of hypotheses. In view of these hypotheses a questionnaire-cum-checklist was prepared for the survey. It was decided that the unit of observation for the survey would be a contract type rather than a village or household. Therefore, the survey instrument was designed to obtain profiles of contract types. Details of the survey methodology, survey area, teaming arrangements and timing, and the survey tool that evolved from the TPM are given in the next sub-section.

1.3 Methodology for Field Work

1.3.1 Objectives of Field Survey

A retrospective survey was undertaken to collect information for the period before and after the Green Revolution, i.e. 1960-1992. The survey had the following objectives:

- To obtain information regarding existing land-labor contracts, the changes that have occurred within these contracts over time, and the differences that are apparent between various regions in contracting for land and labor.
- To gain insight into the functioning of rural land and labor markets at the micro-level; in particular, through description and understanding of factors which influence household decisions in choosing between contracts.
- To identify major exogenous changes and assess the adjustment process of rural land and labor markets in response to these; in particular, through examination of the impact of exogenous changes on contractual agreements.

1.3.2 Survey Area

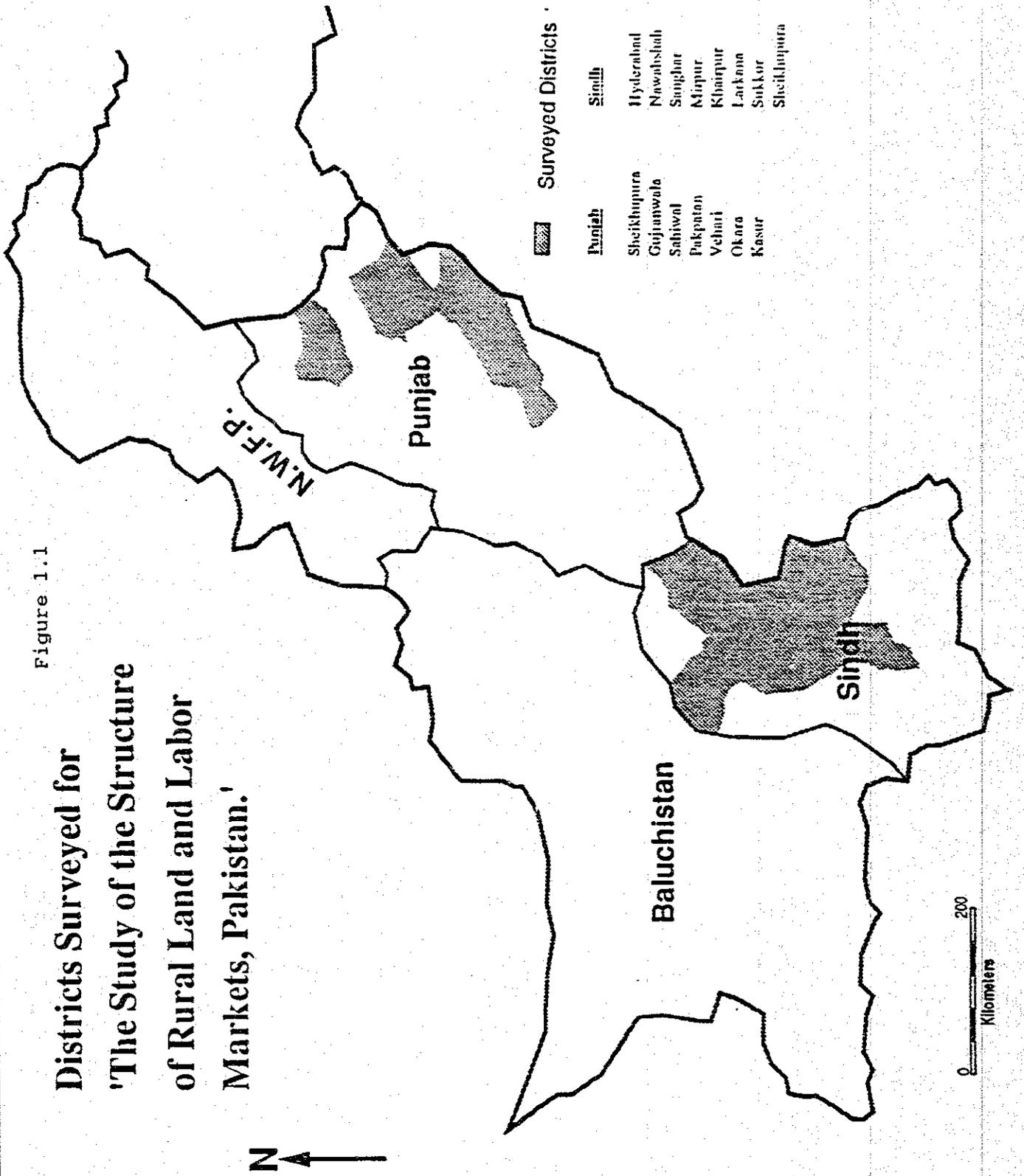
The villages chosen for the survey covered all the major cropping systems, namely, the rice belt, cotton belt, wheat producing areas, areas producing high-value crops such as flowers and special fruits, and fruit and vegetable producing areas. The data was collected for irrigated and rainfed areas in Punjab but only irrigated areas in Sindh. The map in Figure 1.1 shows the districts covered in the survey.

The surveyed area consisted of 29 villages (16 from Punjab and 13 from Sindh) in 15 districts (Figure 1.1). The list of villages and districts is attached in the Appendix. Information on contracts was gathered with the help of more than one person from a village regarding the arrangements prevailing in a 50 mile radius around the village. Since the unit of observation was the type of land-labor contract, each set of respondents was questioned about the details of the major contracts in the area and the changes that have occurred over the past three decades.

At each village at least three contract profiles were drawn up in this way with notes on the variations between contracts.

Districts Surveyed for 'The Study of the Structure of Rural Land and Labor Markets, Pakistan.'

Figure 1.1



1.3.3 Survey Instrument

The survey instrument prepared by the entire team was a checklist-cum-questionnaire. A copy of the questionnaire is attached in the Appendix.

The questionnaire consisted of two parts. The first part was a checklist for the profile of the village surveyed. It contained general questions regarding the socio-economic situation and the social structure of the village. The respondent was prompted at this stage to recall the exogenous changes and the relevant time period in which they occurred in the area so that the data could be collected for variations on this basis.

The second part was on contract descriptions. A separate questionnaire was filled for each type of land and labor contract. The questionnaire was tailored to maximize the information on all aspects of contracts. These included some information that is hard to quantify such as social obligations and the tasks and duties of artisans. These factors enabled the field team to completely understand the dynamics of markets and the factors affecting micro-level decision making.

1.3.4 Respondent Selection

The quality of the information collected was dependent on one major factor and that was the choice of the respondents. All the information was collected from respondents who were actively involved in agriculture in that area for at least 35 years. The reason for this criterion was to ensure that the information provided was based on first hand knowledge of the changing village structures and internal dynamics. These respondents were literate and had at least some had basic education. People fitting these criteria were village headmen (*nambardars*), influential landlords and school teachers.

1.3.5 Timing and Teaming Arrangements

The survey was conducted in the province of Sindh and Punjab. The survey in Sindh started on June 21 and took 10 days to cover 13 villages. The survey in Punjab started on July 1 and took 7 days. During this period 29 villages were surveyed.

In Sindh the survey team consisted of three persons. The team had a Field Economist, an Agronomist and an Economist. The team was accompanied by one resource person. A local enumerator was hired to survey the rice-wheat zone in Sindh in order to economize on time. The enumerator was trained in filling in the questionnaires by the field team and also accompanied the field team for a day to observe the questioning methodology. The field team spent 9 days in Sindh and covered 13 villages.

In Punjab, once again, the same survey team of three conducted the survey. An additional member (economist) was added to the team to cover the rainfed areas. The additional member spent one day with the survey team to discuss the survey methodology and get specific details on the type of descriptive information that was needed, before carrying out his work independently.

2. HISTORICAL OVERVIEW

2.1 Traditional Land and Labor Markets: Overview

Individual studies of rural labor and land in Pakistan show significant change over the last three decades. This change is interesting because new forms of contracting for labor and land are emerging in significance. These two primary factors of production in the agrarian sector, labor and land, have been traditionally linked together through one major institutional arrangement, the contractual form of share tenancy.

Share tenancy as a major form of contract in the labor and land markets has been reported from a variety of different regions of the world, over a variety of different epochs (Byers, 1983). In essence, the owner of surplus land and capital contracts with the owner of surplus labor power (and often draft animal power), to produce a set of outputs including crops. The important terms of the contract are the output shares, the input shares, the stipulation of the cropping pattern, the stipulation of inputs used, the size of the plot and the duration of the contract. These terms of the contract have been observed to vary considerably between regions and over time.

The contractual form of share tenancy has been predominant historically in Northern India, which became Pakistan, for a number of reasons (Mahmood, 1988). One, the concentration of owned area had become very high around the turn of the century, implying a high proportion of large owned farms. Two, a secure fixed rental market for land failed to emerge under British colonial rule. Three, this implied that very large owned farms had a family supervision constraint on using hired labor to self cultivate all this owned area. Four, this in turn implied the contractual arrangement of share tenancy, which provided large owners with labor that need not be closely supervised, and landless households with land to share crop which was otherwise inaccessible.

The predominance of the joint market for labor and land in the farm sector also influenced the labor market in the rural non farm sector which met much of the farm sectors needs. Rural non farm labor has traditionally been limited to a few artisans per village. These artisans have not been simple commodity producers selling their products on the market, but have also been linked to the production cycle and needs of the entire village. Each artisan (eg, carpenter, mason, blacksmith, etc.) met the entire village demand for a product or service, and was paid a share of the crop. So the traditional rural labor and land markets have been characterized by landlords, sharecroppers and artisans, all of whom earned a share of the output.

One overwhelming observation made by studies on Pakistan over the last three decades has been the gradual separation of labor from land over time. The process of this separation has been characterized in the earlier history of the more developed economies as one of differentiation of the peasantry (Byers, 1983). This process of differentiation marks the gradual separation of the labor market from the land market. The process is gradual, regionally diverse,

subject to many factors, and therefore not uniform over time either. In other words, it is not an abstract abrupt change, from a joint market contract to separate labor and land contracts. Rather, the emergence of separate labor and land markets is accompanied by the emergence of a variety of contracts for labor, land, and the persistence of some joint contracts for labor and land, though changed in form. Perhaps the most useful way to understand the dynamics of rural labor and land markets would be by analyzing the evolution of different contractual forms, which is the major focus of this paper.

2.2 Overview of the Rural Land Market

2.2.1 Trends in Agricultural Land Areas, 1960-1990

The supply and demand for land have been influenced by two kinds of technological change since ca. 1960, namely, that originating in the irrigation sector which shifts the supply of irrigated land outward, and that associated with improvements in crop productivity which increase the demand for land. Since ca. 1960, significant improvements in irrigation technology have been generated by the arrival of electricity and tractors for powering tubewells. Since the mid-1960s, improvements in the productivity of crops (through varietal improvements in wheat and rice, and more recently cotton) and purchased inputs (fertilizer, pesticide, etc.) have been a source of remarkable technological change in agriculture. Although both Punjab and Sindh have benefitted from these improvements in agricultural technology, it is in Punjab (and particularly its irrigated areas) that the impact of technological change has been most rapid and most extensive.

In addition to technological change, canal irrigation has also been a major source of conversion of rainfed or undeveloped land to irrigated land. Although important in Pakistan for more than 100 years, its relative contribution to irrigation has diminished somewhat since the mid-1960s as tubewell irrigation has developed.

Among non-agricultural factors, perhaps the three most significant factors influencing the demand for land are urbanization, remittances from overseas Pakistanis and hedging against high inflation rates. While urbanization is an ever-present factor reducing the availability of land for agricultural uses, the two other factors do not directly affect the supply of agricultural land, but have an important bearing on its price. Overseas remittances have been important (and generally rising) since the mid-1970s, particularly in the rainfed areas of Punjab; they have been less important in Sindh. High inflation rates have been observed in the mid-1970s and then ca. 1980 and ca. 1990.

Table 2.1, which shows trends in agricultural area since 1956, reflects the influence of some of the factors identified above.

TABLE 2.1

**Trends in Agricultural Area (million ha)
1956-1990**

A. Aggregate time trends (million ha).

<u>FY</u> <u>Ending</u>	<u>Total</u> <u>Cult.</u> <u>Area</u>	<u>Rainfed</u> <u>Area</u>	<u>Irrig.</u> <u>Area</u>	<u>Source of Irrigation:</u>		
				<u>Canals</u>	<u>T'wells</u>	<u>Other</u>
1956	15.7	5.6	10.1	8.5	0.1	1.6
1960	16.5	6.2	10.4	8.7	0.2	1.5
1965	18.7	7.3	11.4	9.0	0.5	1.9
1970	19.2	6.7	12.5	9.3	1.1	2.1
1975	19.6	6.2	13.3	10.1	2.4	0.9
1980	20.2	5.5	14.7	10.7	2.7	1.3
1985	20.6	4.9	15.8	11.9	3.3	0.6
1990	20.7	5.1	15.7	11.2	4.0	0.5

B. Changes in million ha.

<u>Period</u>	<u>Total</u> <u>Area</u>	<u>Rainfed</u> <u>Area</u>	<u>Irrig.</u> <u>Area</u>	<u>Irrig. Area Change Due To:</u>		
				<u>Canals</u>	<u>T'wells</u>	<u>Other</u>
1956 -1966	3.58	2.19	1.39	0.23	0.75	0.41
1966 -1976	0.58	-1.57	2.15	1.49	1.59	-0.93
1976 -1990	0.91	-1.14	2.05	1.04	1.58	-0.57
Cumul.	5.07	-0.52	5.59	2.76	3.92	-1.09

[Table continued on next page]

TABLE 2.1 (continued)

C. Percentage Changes.

<u>Period</u>	<u>Percent Increase in Total Area</u>		<u>% Contribution to Area Change By:</u>		<u>Changes as % of Change in Irrigated Area:</u>		
	<u>Area</u>	<u>Area</u>	<u>Rainfed Area</u>	<u>Irrig. Canals</u>	<u>T'wells</u>	<u>Other</u>	
1956-1966	23		61	39	17	54	29
1966-1976	3		-271	371	69	74	-43
1976-1990	5		-125	225	51	77	-28
Cumul.	32		-10	110	49	70	-19

Note: The second and third columns add up to 100%, as also do the last three columns.

Source: Pakistan Economic Survey, 1990-91.

Total agricultural area increased by 23% during 1956-1966, but thereafter (that is, in the post-green revolution period) increased only modestly. While irrigated area has been increasing steadily since the beginning of the time series, rainfed area has been decreasing since 1966 (the beginning of the green revolution). Between the mid-1960s and 1990, rainfed area decreased by nearly one-third. Other interesting trends in the data include the following:

- Since the mid-1960s, increases in total agricultural area have been small, while substitution between rainfed and irrigated area has been large.
- The increases in irrigated area have been driven by increases in tubewell-irrigated area, which account for more than 50-70% of the increase in irrigated area in every major time period.
- The increase in tubewell area appears to have come about, in part, at the expense of area irrigated by traditional water extraction technologies such as dugwells, Persian wheels, tanks, and karezes (underground channels common in Balochistan), grouped under the category "other."

2.2.2 Trends in Land Prices and Rents

Land is the most important asset in agriculture and is also an indicator of social status in the rural societies of Pakistan. Economically speaking, land has also proven to be a very sound investment. By tradition, land is seldom sold, and agricultural land transactions take place in the villages mainly in cases of severe economic distress.

Comprehensive data on land rents and prices are not available for Pakistan. All the useful time series that exist pertain to Punjab. Of these, time series on land rent are reported by Renkow (1990) and Burki (1976), and on land prices by Renkow (1990) only. Renkow's land price data were collected by the author himself through a retrospective farmer survey in 1989, while his time series for land rents was constructed using the farm accounts data collected by the Punjab Economic Research Institute (PERI). Burki's land rent data were collected with the cooperation of the Deputy Commissioners of various districts, as reported by land owners in 27 villages to the government's revenue officials during 1948-1969.

Burki's land rent time series (converted to real terms) shows real land rents declining in irrigated Punjab between 1959 and 1967. Both before and after this period, rents show some tendency to increase. Renkow's land rent time series are summarized in Table 2.2. They show a steady increase in real land rents in irrigated and rainfed Punjab since the mid-1960s. While the growth rate for irrigated Punjab was 1.7% per year (3.1% for the rice-wheat zone), that for rainfed areas was surprisingly much higher at 4.1% per year.

Trends in land prices (based on Renkow's data) are summarized in Table 2.3, and show increasing real land prices in both rainfed and irrigated Punjab since the mid-1960s. The annual rate of growth averaged 5.7% in rainfed areas and 4.4% in irrigated Punjab over the period 1960-1989. Land prices in both rainfed and irrigated areas increased sharply during the green revolution (changes in prices are significant at the 5% level). Based on rental-price ratios, Renkow attributes 70% of this change to the increase in productivity from the green revolution technology. In the decade following 1976, land prices increased at a relatively slower pace and that is the period in which gains in agricultural productivity were generated at a slower pace.

TABLE 2.2

Real Land Rents in the Punjab, 1963-89.
(Rs/ha)

Period	Rainfed area	Irrigated rice-wheat zone	Entire irrigated Punjab
Pre-Green Revolution (1960-67)			
1963	287	1,440	1,830
1965	404	na	2,440
1966	381	1,920	2,690
1967	566	1,820	3,090
Average	410	1,730	2,510
Green Revolution (1968-75)			
1968	534	1,880	2,840
1969	576	1,830	2,700
1970	561	1,820	2,670
1971	586	1,800	2,560
Average	564	1,830	2,690
Post-Green Revolution I (1976-85)			
1976	685	1,990	2,680
1977	620	na	3,510
1978	702	na	4,240
1979	693	na	3,460
1980	847	na	3,630
1981	679	3,290	3,470
1982	781	3,280	3,260
1983	1,180	na	2,970
1984	629	na	2,770
1985	757	2,850	3,330
Average			
Post-Green Revolution II (1986-89)			
1986	1,180	2,570	3,780
1987	1,180	2,880	3,470
1988	1,110	3,780	3,900
1989	1,160	3,080	3,720
Average			
Trend growth rate of land rent, 1963-89 (%/yr)			
	4.1	3.1	1.7

Source: Rice Wheat Zone in 1976, from WAPDA Survey.
 Rainfed area and rice wheat zone in 1989, from Land Price Survey, Mitch Renkow, 1989.
 All irrigated areas in 1989, from PARC/CIMMYT National Maize Survey.
 The remaining data was taken from various editions of PERI Farm Accounts and Family Budgets.

Note: All values are expressed in constant (1989) rupees/hectare.

TABLE 2.3

Average Prices and Quantities for Land Transactions, Punjab, 1960-89

Period	Rainfed area	Irrigated rice-wheat zone
Pre-Green Revolution (1960-67)		
Average price (Rs/ha)	14,400	44,000
CV of prices	0.53	0.53
Average quant/transaction (ha)	2.8	7.3
Number of transactions	32	35
Green Revolution (1968-75)		
Average price (Rs/ha)	24,800	76,700*
CV of prices	0.85	0.41
Average quant/transaction (ha)	3.6	3.8
Number of transactions	12	12
Post-Green Revolution I (1976-85)		
Average price (Rs/ha)	34,400	85,500
CV of prices	0.84	0.46
Average quant/transaction (ha)	4.0	3.6
Number of transactions	12	19
Post-Green Revolution II (1986-89)		
Average price (Rs/ha)	58,600	11,9000*
CV of prices	0.41	0.34
Average quant/transaction (ha)	1.2	3.3
Number of transactions	23	33
Trend growth rate of land prices, 1960-89 (%/yr)	5.7	4.4

Source: Renkow, M., 1991, Land Prices, Land Rents and Technological Change: Evidence from Pakistan.

Note: * indicates that the average price is significantly greater than the average price in the preceding period at the 5% level. All land prices are expressed in constant (1989) rupees.

2.2.3 Trends in Land Ownership and Tenure

The best available estimates of agrarian change at the macro level are the Agricultural Census reports for 1960, 1972 and 1980. Relevant information for Punjab and Sindh on land distribution and tenancy is summarized in Tables 2.4 and 2.5.

For Punjab, census data show a large decline in the area operated in small holdings (and a large increase for large holdings) between 1960 and 1972, and a small increase thereafter. Nabi, Hamid, and Zahid (1986) argue, however, that data based on revenue records distorted the 1960 census, and they present (in the second column of Table 2.4) "corrected" estimates which do not show a decline in small holdings between 1960 and 1972. Except for the tails of the distribution (and depending on how confidently the census data are interpreted), changes in land distribution do not appear to have been considerable or systematic during 1960-1980 in Punjab.

In Sindh, quite the reverse picture obtains with respect to small holdings of up to 12.5 acres: they increased their share considerably during 1960-1980, while larger holdings showed a diminishing share in total operated area.

As far as tenancy is concerned (Table 2.5), both Sindh and Punjab have shown an unambiguous shift toward owner-operation and away from share-cropping during 1960-1980. By 1980, only 19% of the cultivated area in Punjab and 36% in Sindh was being cultivated by "pure tenants". Owner-cum-tenants, however, had increased in importance in Punjab, where they farmed 31% of the area by 1980 as opposed to 25% in 1960.

2.3 Overview of the Labor Market

2.3.1 Estimates of the Rural Labor Force

The rural labor force can be estimated, but with two important caveats. One, the last available population census was conducted in 1981. Therefore all recent estimates of the aggregate population are projections based on growth rates which are themselves assumed. We do not have census based estimates of the male-female split, or the urban-rural split, or the farm-non farm split after 1981.

Two, sample based estimate seriously under-estimate the labor force because of bias in methodology. The most important bias is that in estimating women's participation in the labor force. The Labor Force Surveys (LFS), the basis of all recent estimates, do not consider whether any housewives participate in any other economic activity. All women classified as housewives do not enter the labor force. The result is that the LFS seriously underestimate the female labor force.

TABLE 2.4**Distribution of Operated Area in Punjab and Sindh
1960-1980****A. Distribution of Operated Holdings in Punjab**

(acres)	Percentage of area operated			
	Size group			
	1960 ^a	1960 ^b	1972	1980
Up to 5.0	10.9	3.5	4.8	6.5
5.0 to 12.5	24.9	26.8	24.6	26.8
12.5 to 25.0	28.5	30.8	28.8	26.7
25.0 to 50.0	20.2	20.2	21.3	19.4
50 and above	15.5	18.7	20.5	20.6

B. Distribution of Operated Holdings in Sindh

(acres)	Percentage of area operated			
	Size group			
	1960 ^a	1960 ^b	1972	1980
Upto 5.0	5.4	1.4	4.5	6.4
5.0 to 12.5	22.5	20.8	34.5	35.2
12.5 to 25.0	28.6	30.8	29.2	24.5
25.0 to 50.0	21.1	21.1	13.2	15.1
50 and above	22.4	25.8	18.6	18.8

^aData extracted from revenue records.^bConverted to survey basis.

Source: Nabi, Hamid and Zahid (1986) based on Government of Pakistan, Pakistan Census of Agriculture, 1960, 1972 and 1980.

TABLE 2.5

**Details of Tenant Cultivated Area in Punjab and Sindh
1960-1980**

Year	Owner-cum-tenant			Pure tenant	Total
	Pure owner	Owned area	Rented area		
Punjab					
1960	38.2	14.0	10.6	37.2	100
1972	38.5	16.1	19.5	25.9	100
1980	49.8	14.3	16.9	19.0	100
Sindh					
1960	31.7	7.7	6.7	53.8	100
1972	30.8	8.4	10.7	50.6	100
1980	47.2	8.0	8.6	36.2	100

Source: Nabi, Hamid and Zahid (1986) based on Government of Pakistan, Pakistan Census of Agriculture, 1960, 1972 and 1980.

A second major bias in the LFS methodology emerges in their estimates of unemployment. This is also seriously underestimated because of a lack of conceptual clarity on the nature of unemployment.

Given these qualifications, we can use Cheong's (1988) estimates of the rural labor force for the most recent year available, 1987/88. Table 2.6 gives a total population of 100.7 million. Subtracting the economically dependent population from it gives the economically active population of 67%. The labor force is defined as those employed, those registered as unemployed, and those looking for work in the reference week. This gives a labor force of 29% and a residue of 37% not in the labor force. The underestimation of the unemployed at 1% of the population is evident from the restricted definition of unemployment. Registration of unemployment is very low because there are no incentives to register. And restricting looking for work to the reference week further underestimates the long term unemployed not bothering

to look for work when it is not evident. Underestimation of unemployment also underestimates the labor force.

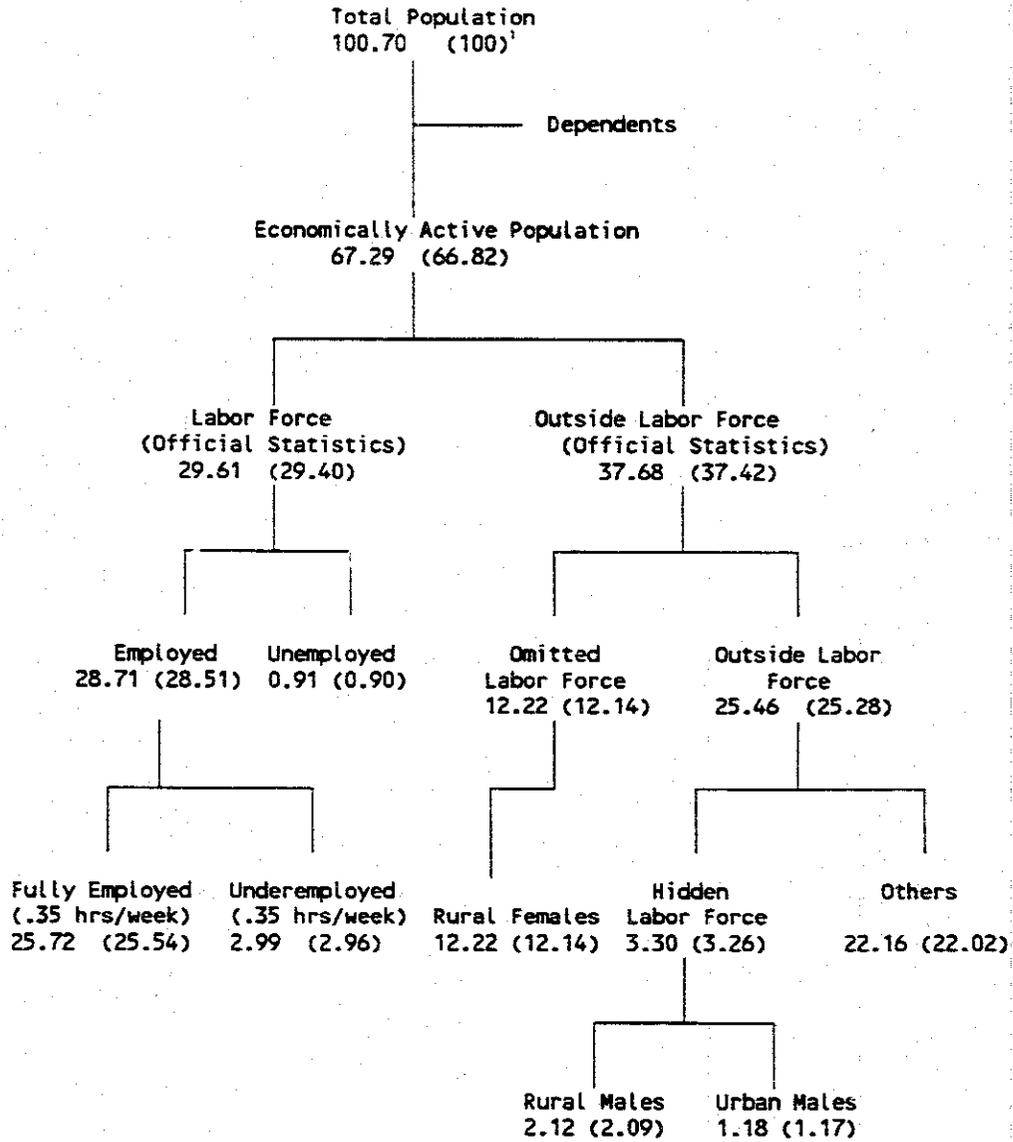
Tables 2.7 and 2.8 give estimates of the rural labor force for men and women respectively.

Table 2.7 shows that there were 36 million rural males, which is 36% of the total population. 24% males are economically active, that is above 10 years of age; 18% fall in the labor force, while 6% are outside it.

Table 2.8 estimates rural women also at 34 million, and 34% of the total population. 22% women were above 10 years of age. However in contrast to the men, only 3% women fall in the rural labor force while 19% are excluded. Cheong estimates that at least 12% of the excluded women actually should be in the labor force. Our own estimates of women in the rural labor force are based on the Agricultural Census for the earlier year of 1981. These give a female rural labor force of 14% of the total population (Bilqees and Mahmood, 1990). Since the labor force participation rate for women normally increases on trend, our finding at least supports Cheong's estimate for 1986/87 as a lower bound figure.

TABLE 2.6

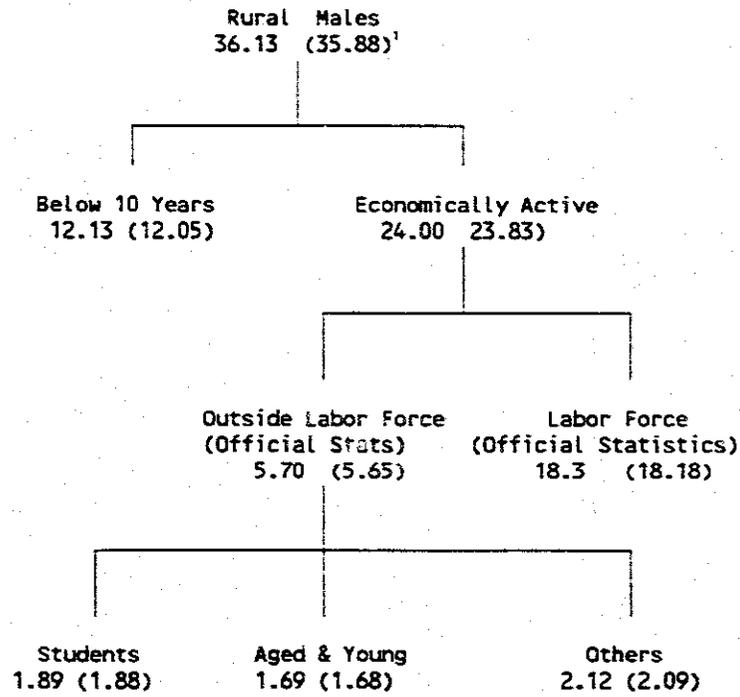
Disaggregation of Pakistan's Labor Force, 1986/87.



Source: Cheong, Kee-Cheok et al, The World Bank, 1988.
 Note: 1. Figures in brackets are percentages.

TABLE 2.7

Rural Males

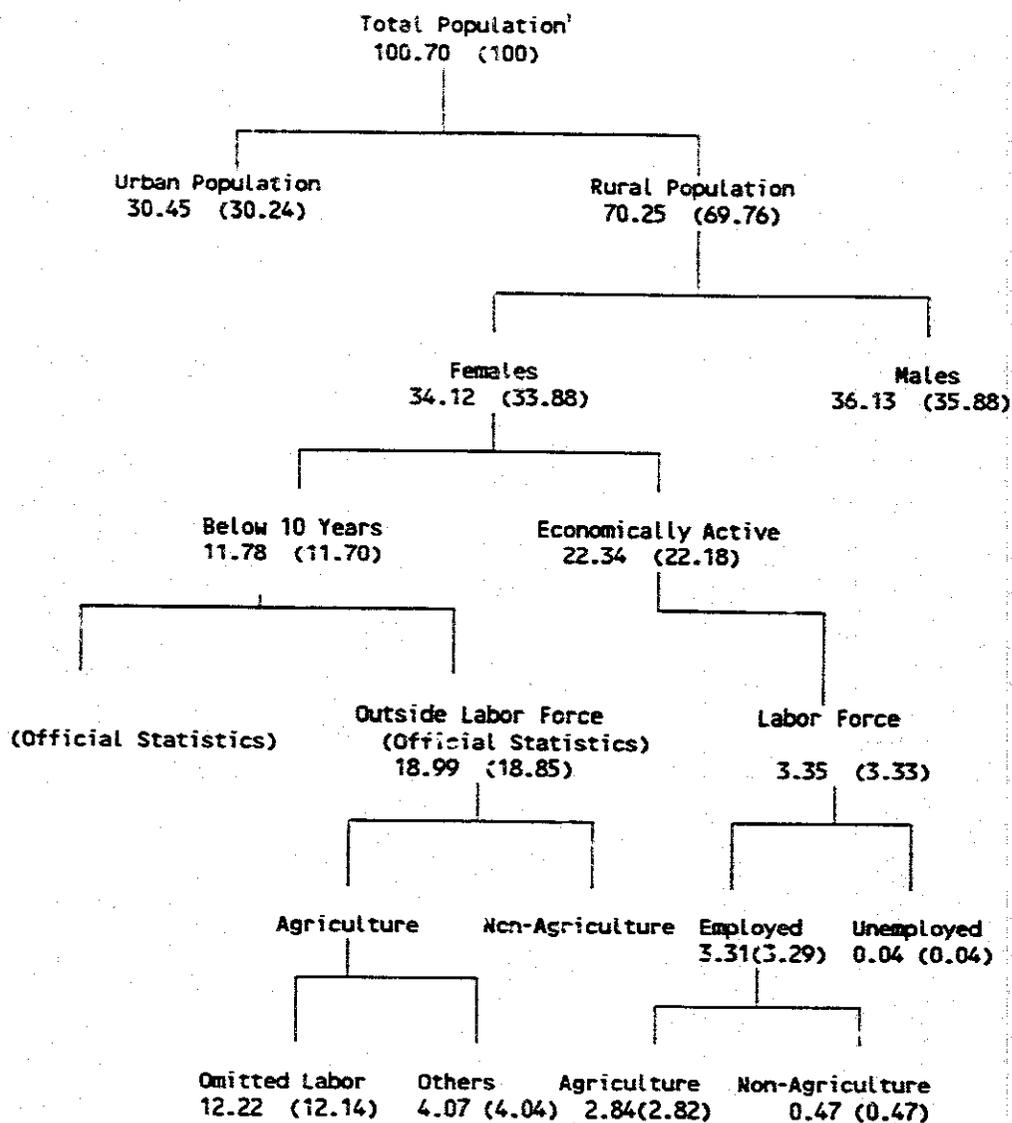


Source: Cheong, Kee-Cheok et al, The World Bank, 1988.

Note: 1. Figures in brackets are percentages.

TABLE 2.8

Women in Agriculture



Source: Cheong, Kee-Check et al, The World Bank, 1988.
 Note: 1. Figures in brackets are percentages.

Over time, demographically and socially, the rural population and the agricultural population have shrunk. Table 2.9 shows that over the last 25 years, the rural population has dropped from 76% to 70% of the total. The agricultural population has dropped from 59% to 51% over this period. This drop has been due to a lower population growth rate for the rural areas, at approximately 2%, compared to an urban growth rate of approximately 4% (Longmire, 1990). This has largely been due to rural out-migration, rather than a rural urban differential in birth rates.

TABLE 2.9
Population in Agriculture

Year	Population			Employment		
	Total	Rural	%	Total	Agriculture	%
1965-66	53.3	40.6	76.1	16.7	9.8	58.7
1970-71	61.5	45.9	74.6	18.4	10.6	57.6
1975-76	72.1	52.7	73.1	21.1	11.4	54.0
1980-81	83.8	60.1	71.7	24.7	13.0	52.6
1985-86	97.7	68.9	70.5	27.0	14.6	54.1
1990-91	113.8	76.7	69.5	31.8	16.3	51.2

Source: Longmire (1990).

2.3.2 Employment in the Farm Sector: Impact of Technical Change and Landlessness

Macro estimates of change in employment in the farm sector are extremely difficult to come by. Again, the last Agricultural Census was in 1981, and we have no other sample based estimates for more recent years. Longmire (1990) estimates change in employment for one crop, wheat. He does this by establishing 7 determinants of employment in wheat. These are cultivated area, cropping intensity, irrigated area, HYV area, fertilizer use, tractor use, and mechanical thresher use. He then calculates the elasticity of employment for each of these determinants. Elasticity of labor demand with respect to the wage is taken to be -0.5, based on estimates for the Indian Punjab. Elasticity of labor supply with respect to the wage is taken to be 0.5, based on estimates for cotton in Pakistan. The employment coefficients so estimated give an estimate of the change in employment for change in each of the determinants over time.

Longmire's estimates of change in employment for wheat over the last 20 years are given in Tables 2.10 and 2.11. Table 2.10 gives aggregate figures, while Table 2.11 divides them into favorable and marginal areas.

TABLE 2.10

The Impact of Technical Change
(million work days per year)

Year	Culti- vated Area	Cropp- ing Inten- sity	Irriga- ted Area	HYV Area	Fert- ilized Area	Trac- tors	Tresher	Total Jobs
1965-66	-	-	-	-	-	-	-	-
1970-71	-2.71	22.55	9.66	8.36	7.15	-8.38	-10.86	25.8
1975-76	50.42	-1.34	2.05	1.39	2.58	-9.02	-14.79	31.3
1980-81	36.14	15.99	8.16	1.26	7.51	-24.10	-5.91	39.0
1985-86	24.18	5.62	3.63	0.25	3.26	-48.14	-7.08	-18.3
1990-91	14.15	5.74	2.80	0.19	0.82	-23.09	-1.65	-1.0
Accumu.	122.2	48.6	26.3	11.5	21.3	-112.7	-40.3	+76.8

Source: Longmire (1990).

TABLE 2.11

Employment Change in Favorable and Marginal Areas

	Increase in Jobs	Substitution (M.days)	Net Increase in Jobs
Marginal	+3	-52	-49
Favorable	+227	-101	+126
Total	+230	-153	+77

Source: Longmire (1990).

The most important result in these estimates is that between 1970/71 and 1990/91, there has been a net increase in employment of 77 million days. Gross employment generated has been higher at 230 million days, of which 153 have been substituted by mechanization. Marginal regions, largely rainfed, have had a net decrease in employment. However this has been compensated by a higher increase in employment in the favored areas, largely irrigated.

From Longmire's estimates we can make some inferences. The HYV package (variety and fertilizer) has had a positive impact on employment, and mechanization has a negative impact. Longmire has three irrigation based variables in Table 2.10, irrigated area, and

cultivated area and cropping intensity which are irrigation based. All three variables have generated positive employment. The HYV variable which began by being strongly positive in 1970/71 has declined steadily to become virtually zero by 1990/91. The fertilizer variable associated with HYVs has also followed suit, and of course the tractor and thresher variables have been negative throughout.

These results determine the long run trend emerging from Longmire's table. Over the decade of the 1970s, positive employment was generated. Over the 1980s, there has been a net decrease in employment in wheat. This has been due to two reasons. One, the impact of irrigation has declined because irrigation growth has declined in the 1980s. Two, the impact of tractorization has increased in the 1980s. So labor substituting factors have come to dominate the 1980s, possibly generating increased landlessness.

The problem in estimating the landless is that the Agricultural Censuses do not give the total rural population. They only give the total farm population, and leave out the non farm population. We have overcome this obstacle by deriving the total rural population from the Population Census for the two years of 1972 and 1981. This is legitimate if the same Census Organization conducted the two censuses, for population, and agriculture, for the same years, and on proportional scales. Then in Table 2.12, the rural population from the Population Census is used, and the farm population from the Agricultural Census is subtracted from it to give the non farm population. Further subtracting livestock holders, and the population below 10 years of age gives the rural landless labor force. Over 8 years this landless labor force increased from 7.5 million to 10.4 million, by 39%. This gives a very high rate of growth of 4.1% per annum. Even if we assume no rural out-migration from this, and a natural population growth of 3.1%, this gives a rate of growth of landlessness of 1% per year.

The other important trend shown in Table 2.12 is the nature of employment and unemployment generated by the diverse causal factors. Permanently hired agricultural labor actually decreased between 1972 and 1980. Casual agricultural labor however increased over this period.

TABLE 2.12
Estimate of Landlessness

	PAKISTAN				PUNJAB			
	1972	1980	% Increase	Growth Rate PA	1972	1980	% Increase	Growth Rate PA
Rural Pop.	47368	58641	23.8	2.7	28396	34112	20.1	2.3
Farm Pop.	26446	29751	12.5	1.5	16844	18422	9.4	1.1
Non-Farm	20917	28890	38.1	4.0	11552	15690	35.8	3.8
Non-Farm Livestock Holder	9459	12768	35.0	3.7	7451	9557	28.3	3.1
Non-Farm Non-Livestock Holders	11458	16123	40.7	4.3	4101	6133	49.5	5.0
% > 10 Years	65.2	64.3			67.0	67.3		
No > 10 Years	7471	10367	38.8	4.1	2748	4128	50.2	5.1
MALES	52.8	52.7			53.0	52.8		
MALES > 10 Permanently Hired Labor	3945	5463	38.5	4.1	1456	2180	49.7	5.0
	470	359	-23.6	-3.4	318	285	-10.4	-1.4

Source: Mahmood

a. From Population Censuses of 1972, 1980/81. b. From Agricultural Censuses of 1972, 1980/81.

2.3.3 Wages in the Farm Sector

Longmire's careful decomposition of the impact of technical change (summarized above) would predict a net positive effect on rural employment and wages. While recent, reliable macro-level data on rural employment are not readily available, wage series shown in Tables 2.13 and 2.14 confirm that rural wages have been generally increasing since the 1960s.

In Table 2.13, Cheong (1988) estimates real wage rates for casual farm labor over the last two decades. In Table 2.14 Longmire (1990) estimates real wage rates for permanent labor for the rural areas. Table 2.13 shows that over the 1970s the casual wage rate rose from an index of 100 to 145, with dips in between. Compared to this, over the next 7 years of the 1980s, the casual wage index shot up to 224.

Table 2.14 for the entire rural sector shows a similar pattern. Over the 1970s the permanent wage rate barely rose by Rs 3 from Rs 27 to Rs 29. Compared to this, over the 1980s, the permanent wage rate shot up by another Rs 10.

TABLE 2.13

Real Wage Trends in Selected Sectors 1970-1987^e

(Index)

	Large-scale manufacturing		Small-scale man.	Unskilled Labor	Construction		Agriculture
	6 Industries Punjab ^b	All Workers ^c	Household Manufacturing ^d		Carpenters	Masons	Male Casual Workers
1970	-	100	-	100	100	100	100
1972	100	107	-	94	102	102	105
1973	99	-	-	91	95	97	151
1974	95	-	-	106	95	94	160
1976	99	-	-	129	110	105	121
1977	98	-	100	143	124	123	129
1978	100	149	-	160	142	140	134
1979	102	157	-	160	143	129	138
1980	114	-	-	154	152	145	145
1981	115	165	-	149	142	141	191
1982	117	169	-	146	143	138	186
1983	125	180	-	143	136	135	21
1984	134	191 ^d	123	129	126	126	-
1987 ^e	-	-	-	149	132	132	224

Source: Cheong, Kee-cheek, The World Bank, 1988

- Note:
- Money wages deflated by the consumer price index.
 - From ILO/ARTEP, Mid Term Review.
 - Employment cost per worker (wage plus cash and non-cash benefits), from Censuses and Surveys of Manufacturing Industries.
 - Employment cost per worker, from Surveys of Small-Scale and Household Manufacturing Industries.
 - All data for 1987 are from the Pakistan Economic Survey, 1986-87.

TABLE 2.14

Real Wages

Year	Nominal Wage		CPI 1990=100	Real Wages		Real Wages, Punjab	
	Urban	Rural		Urban	Rural	Irrig.	Rainfed
1965-66	6.8	2.7	11.8	37.4	22.6	17.8	15.3
1970-71	6.5	4.0	14.8	43.6	27.1	14.8	11.6
1975-76	12.9	7.5	31.3	47.9	23.9	18.6	-
1980-81	27.5	14.7	50.1	54.9	29.3	30.0	26.7
1985-86	39.5	27.5	70.3	56.2	39.1	27.3	26.2
1990-91	62.	40.0	100	62.0	40.0	-	-

Source: Longmire (1990).

So the wage rate increase was sluggish over the 1970s, and higher over the 1980s. Wage rates in the farm sector will be bid up by farmers as a result of, one, rural out-migration, and two, the growth of the rural non-farm sector.

Estimates of rural out-migration, especially to the Gulf, show that it increased significantly over the 1970s (Amjad, 1988). It peaked in the mid-1980s, after which there has been significant return migration. The important point here is that rural out-migration levels in the 1980s have been higher than in the 1970s. Therefore the impact of rural out-migration on farm and rural wages has been greater over the 1980s relative to the 1970s.

The second factor explaining a higher increase in wages over the 1980s compared to the 1970s is the increasing significance of the rural non farm sector. This is seen in the following subsection.

2.3.4 Increasing Importance of the Rural Non-Farm Sector

Having examined available data for the farm sector, we can now turn to the second sector comprising the rural area, the non farm sector.

The traditional non farm sector was restricted to a small number of share artisans per village. Recent micro studies have shown the decreasing significance of the share transactions of these artisans, and the increasing significance of their cash transactions. Husain (1989) makes an interesting comparison between the findings of micro studies of artisans at different points in time. For the Punjab, Husain finds that traditional (seypi) artisans have almost halved, while cash transacting artisans have increased by 50%.

Macro estimates of the rural non farm sector show an even greater significance, and they help to explain the higher growth of wage rates in the 1980s relative to the 1970s.

Cheong (1988) uses a Social Accounting Matrix (SAM), to delineate the importance of the rural non farm sector. In Table 2.15 the production linkage multipliers from the Input-Output table show the backward and forward linkages of the various industries. The most surprising result in the table is that rural manufacturing has higher backward linkages than agriculture itself. The backward linkage multipliers for crop processing are all above 2, while those for crop production are all well below 2.

Cheong also estimates that rural non farm households have increased from 26% of the rural population in 1960 to 45% in 1972, to 53% by 1980.

Now these estimates are for 1979/80. However if we make the reasonable assumption that the rural non farms sector growth will not roll back, then the sector will have increased in significance over the 1980s. It is this increasing importance of the rural non farm sector which additionally helps explain the higher growth of wage rates in the 1980s compared to the 1970s.

2.4 Some Preliminary Findings

Any analysis of markets is less than satisfactory if it cannot model the demand and supply conditions prevailing in the market, in order to explain changes in factor quantities and prices. This observation applies to much of the literature available on the subject in Pakistan, as well as to this chapter of the report. It is the foremost qualification to be kept in mind in interpreting the findings of this chapter. Another important qualification is that there is so little data available on rural land and labor markets that goes beyond the questions of distribution of land ownership, and the prevalence of tenancy and landlessness. Because of these qualifications, the preliminary findings presented below are offered with a keen sense of the inadequacy of analysis and evidence to support them.

In the land market we observe the following important trends in the areas of land of various categories:

- A 32% increase in agricultural land between 1956 and 1990, but the bulk of this increase (75%) took place before the beginning of the green revolution in the mid-1960s, and majority of it (61%) came about through an increase in rainfed area.
- Since the beginning of the green revolution, there has been little increase in agricultural area overall, but there has been a secular decline in rainfed area, large amounts of which have been converted to irrigation with the adoption of tubewells. Traditional ground-water technologies have also been displaced by tubewells.

TABLE 2.15

Inter-industry Production Linkages, 1979/80

	<u>I-O Linkage Effects</u>		<u>Full Linkage Effects</u>	
	Forward	Backward	Forward	Backward
Wheat	1.991	1.350	5.353	8.865
Rice	1.890	1.239	2.907	8.841
Sugar	1.877	1.425	3.194	8.917
Cotton	1.048	1.177	1.793	8.749
Other Agriculture	1.713	1.254	9.524	8.758
Fertilizer	1.518	1.121	2.096	6.984
Wheat Processing	1.044	2.220	2.568	9.528
Rice Processing	1.140	2.200	2.567	9.548
Sugar Processing	1.210	2.159	3.287	8.351
Rural Manufacturing	2.039	1.724	17.138	8.000
Urban Manufacturing	2.225	1.827	36.341	7.021

Source: Cheong, Kee-Cheok, The World Bank, 1988.

The conversion of large tracts of rainfed land to irrigation imparts a certain degree of "mobility" to land, that is, land is mobile (and its supply is endogenous) between the marginal (rainfed) environment and the favored (irrigated) environment in response to technological change in the irrigation and crop sectors. One can expect this mobility to benefit both kinds of environment even if crop productivity improves in only one of them. It is not surprising, therefore, that what little data exist on land rents and prices show increasing land values in both rainfed and irrigated areas since the mid-1960s, even though technological change in rainfed areas was not important until the late-1970s.

What is surprising, however, is that land rents and prices in Punjab appear to have grown at a higher rate in rainfed areas than in irrigated regions. Hypotheses relating the demand for land to non-agricultural factors (such as remittances from overseas workers) might explain this finding (which, in any event, is based on only one researcher's time series).

In terms of the distribution of ownership of land, census data would seem to suggest a slight worsening of inequality over a twenty-year period (1960-1980) in Punjab, but a slight improvement in Sindh. Many qualifications and reservations apply to these data, however, and little can be said with confidence without additional evidence. The same census data, supported by other sources, indicate that tenancy in the form of share-cropping has declined in both Punjab

and Sindh since 1960. Those who are owner-cum-tenants, however, have become more important in Punjab over time.

The decline of tenancy since the 1960s is said to have caused an increase in the incidence of landlessness, a problem that may have been compounded by the decline of the traditional system of village artisans in this period. Whether the landless were gainfully employed after being evicted as tenants is, however, a moot point in the literature, and the positions taken on this point depend largely on the impact that is attributed to changes in agricultural technology, and to land ownership and tenure reform. A comprehensive "decomposition" exercise shows that the overall employment effect of technological change would have been positive, though its impact would have tended to diminish over time.

It is fairly clear, however, that the proportion of rural dwellers working for wage labor has increased markedly, and that rural wages have increased, since the 1960s, albeit with variations over time in the growth rate of real wages. As with land rents and prices, rural wages have been influenced not only by changes in agriculture, but also by the out-migration of labor. The growth of this phenomenon, as well as of small scale industry, has been evident since the mid-1970s and may have peaked in the 1980s. It would be plausible to suggest that wages have increased since the 1960s on account of technical change in agriculture and, since the 1970s, also (or perhaps largely) on account of the non-agricultural demand for rural labor.

The overall picture that emerges over a thirty-year period (1960-1990) is one of considerable versatility in the farmer's allocation of land and labor in response to both agricultural and non-agricultural opportunities. Traditional arrangements that bound land owners with labor have been disintegrating in a rapidly-changing environment dominated by market (and policy) incentives. This has diminished the extent of the "safety net" that operated in favor of labor through traditional land-labor contracts. At the same time, the diminishing importance of these contracts means that institutional rigidities are becoming weaker, and that rural areas will be more responsive than before to changes (and interventions) in the market.

3. DESCRIPTION OF MAJOR CONTRACTS

3.1 Introduction and Overview

This chapter is motivated by the extreme paucity of literature describing the terms of contract under which labor and land are exchanged. It addresses objective (c) of the Terms of Reference of this study, and its purpose is to:

- i) Provide an analytical description of the various forms of contract under which rural land use and labor services are exchanged; and
- ii) Document and understand the changes over time in contractual arrangements (particularly since the beginning of the green revolution).

The chapter is descriptive and empirical, and based almost entirely on the survey conducted for this study (described in Chapter One) in 1992 in Sindh and Punjab. In these provinces, land is cultivated mainly under three tenurial arrangements: (a) self-cultivation - through family or hired labor; (b) share-cropping; and (c) land leasing.

Under self-cultivation the land owner employs his family members or hires wage labor to cultivate land.

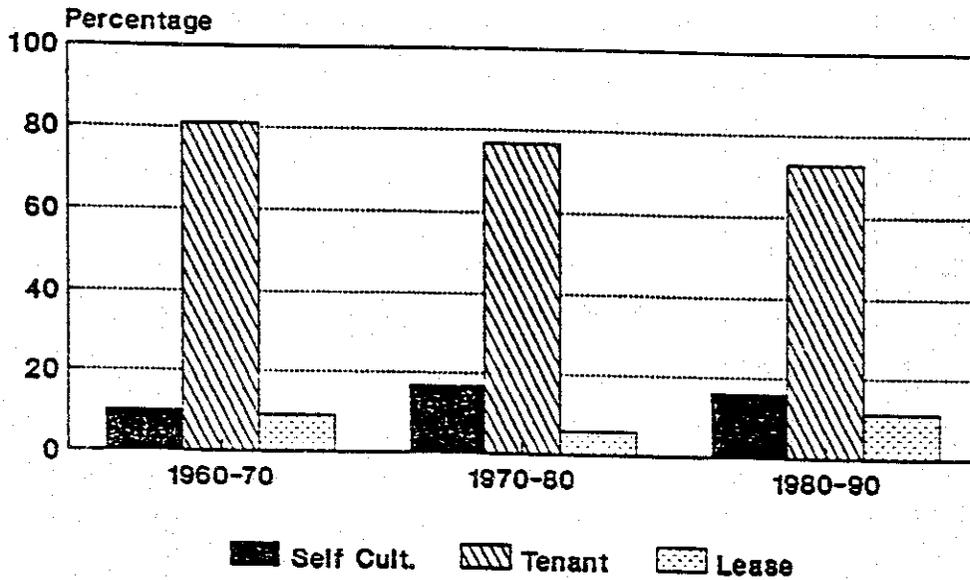
Under share-cropping the land owner gives his land to another person for cropping under certain conditions that are stipulated in terms of his share in inputs, including water and land taxes, and his share in output. There are three types of share-cropping which prevail in the provinces but the most common type shares inputs and output on a fifty-fifty basis.

Under land leasing the land owner rents his land to another person on fixed annual rent for an agreed number of years. There are other conditions also attached to the lease contracts apart from the rent.

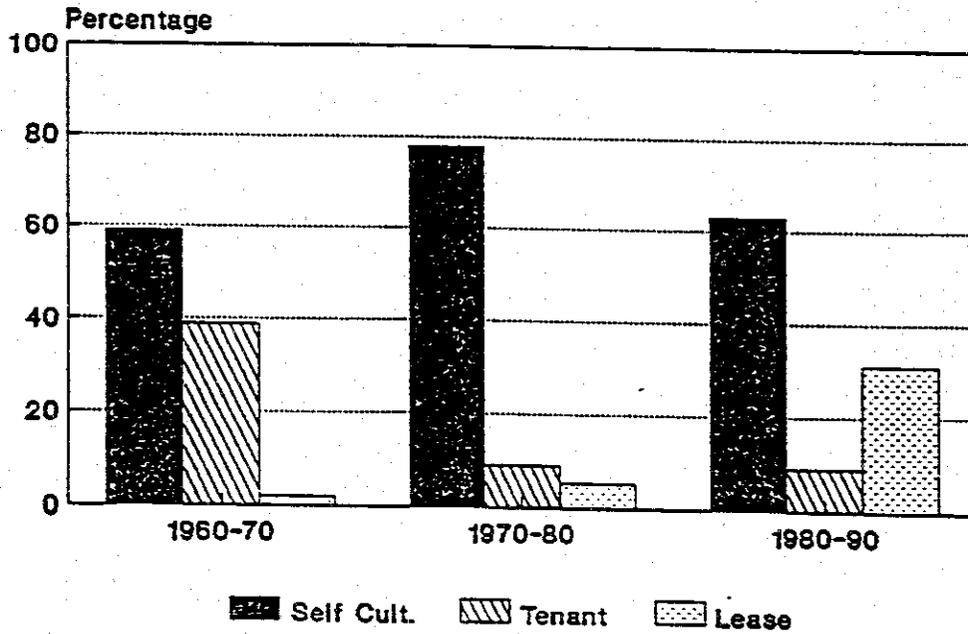
It should be noted that for land owners with large holdings the three forms of tenure under which land may be cultivated are not necessarily mutually exclusive. Part of a large holding may be self-cultivated with wage labor, part cultivated through share-croppers and occasionally part leased in return for cash rent.

Economic advantages to land owners and tenants have varied over time for each arrangement. As a result, both provinces have experienced changes in their tenancy systems. Figure 3.1 shows the survey findings on changes in tenure for both Sindh and Punjab. Although share-tenant cultivation has decreased from 81% in 1960 to 73% in 1992, it has remained the dominant tenurial system over the last three decades in Sindh. Self-cultivation increased from

FIGURE 3.1
Distribution of Contracts Over Time
Sindh Irrigated



Punjab Irrigated



Source: USAID/EDC Survey Data (1992)

10% in 1960 to 16% in 1992 in Sindh, while leasing has increased to 11% in 1992

In Punjab self-cultivation remained the dominant tenorial system throughout the last three decades though it declined to 63% in 1992 as compared to 78% in 1971. This decrease can be easily understood by examining Figure 3.1, where leasing has increased from 2% in 1960 to 31% in 1992.

Land-labor contracts in rainfed areas of Punjab did not show a major change (Table 3.1) over the last three decades. Self cultivation has remained the main tenure. Tenant cultivation in 1960 was reported as 29% which has decreased to 18% in 1992. However, leasing increased from 1% in 1971 to 3% in 1992.

TABLE 3.1

**Distribution of Contracts Over Time
(Percent)**

Cult	Tenant	Lease 1960	1970			1992			Self		
			1960	1970	1992	1960	1970	1992	1960	1970	1992
			(percent)								
Sindh	Irrig	10	17	16	81	77	73	9	6	11	
Punjab	Irrig	59	78	63	39	18	9	2	5	31	
Punjab	Rainfed	70	76	79	29	23	18	1	1	3	
No. of observation		29	29	29	29	29	29	29	29	29	

Source: Field Survey.

3.2 Landlord-Tenant Contracts

The most widely prevailing land-labor contract in Sindh is between landlord and tenant. The situation in Punjab is the reverse where self cultivation or leasing is more widespread. The tenant is called *hari* in Sindh and *mazarah* in Punjab.

There are basically two types of tenants, one who owns at least a pair of bullocks and one who does not. Both types of tenants work on the landlord's land with their household members. However, the shares which govern their contractual agreements differ. The bullock-owning tenant shares the output equally with the landlord, whereas the tenant who does not own a pair of bullocks contributes 25% of the production cost and thus receives a 25% share of the output. The latter system is better known in Sindh as the "Chauthra" system. Although a tenant can be changed by a land owner at any time, typically many tenants are permanent tenants with any one landlord and are regarded more or less as family members. There are tenants as well who work on a less permanent or short-term tenancy basis and move from farm to farm.

3.2.1 Landlord-Tenant Employment Procedures

About 95% of tenants are indebted to their landlords in lower Sindh,² which comprises the districts of Badin, Thatta, Tharparkar, Mirpurkhas, Hyderabad and Sanghar. In upper Sindh, which includes Sukkur division and the district of Dadu, a similar situation prevails, but tenants are partly indebted to their landlords and partly to shopkeepers and traders of near towns. In lower Sindh when a landlord needs a tenant he has to pay an advance of Rs 5,000 to 10,000 per family to the tenant. This money is returned to the previous landlord where the tenant was employed. This system is age-old in Sindh and still exists.

The new landlord is responsible for his new tenant's needs for food, medical, clothing and other subsistence expenses until the crop is harvested. All loans advanced to tenants are said to be free of interest. The time period in which debts are returned usually ranges from 3 months to 18 months. If any landlord refuses to provide a loan when required, the tenant will start to seek another landlord who will not only agree to pay off previous loans but also provide a further loan for consumption needs until the crop matures. In this way tenants are generally permanently indebted.

When a tenant's debt becomes large, it will be difficult to repay, and no other landlord is likely to employ the tenant. In this situation a tenant is compelled to work for that landlord until the debts are completely paid. Such debts may be passed from one generation to the next. This situation also tends to result in the practice of the tenant providing *begaar* (corvee or forced labor) to the landlord.

All records of financial inputs and production are maintained by landlords. Tenants are generally illiterate and do not keep records. Some progressive landlords prepare annual income and expenditure statements which allow the tenants to be aware of their net incomes, savings or debts for the year, but most landlords do not.

Traditional practices and customs regulating the relations between landlord and tenant are more effective than government legislation. For example, when a tenant wants to leave a landlord, according to prevailing tradition in lower Sindh he cannot claim a share from the standing crops. Conversely, if a landlord is not willing to continue to employ a tenant, then the landlord is bound to pay to the tenant the due share of the crops cultivated, either in cash or in kind. It is very rare that such traditional rules are broken.

In upper Sindh landlords tend not to give large advances to tenants while employing them and are less responsible for provision of subsistence needs. Consequently, tenants tend to maintain business relations with shopkeepers of the nearby town or with traders of crops.

²Sindh Development Studies, 1991, Patterns of Land Tenure and the Distribution of Land Ownership in the LBOD Project Area.

Hence, movement of tenants from one landlord to another may be relatively easier and more frequent.

Generally the tenant is supervised directly by the landlord. In case of big holdings, the landlords may employ a land manager, or a Kamdar (in Sindh) for the management of the tenants. This manager is the decision maker if the landlord does not live on the land, although permanent affiliations with landlords allow the family hari to participate in the decision-making of crop production and marketing. In the case of temporary tenants, the decision-making power is with the kamdar or with the landlord.

It was noted during the survey that generally tenants on large land holdings in Punjab are inherited tenants. Share-croppers on small holdings, on the other hand, are chosen on the basis of their professional skills.

There are three types of share-cropping systems prevailing in Punjab and Sindh namely:

- Share-cropping on 50:50 basis
- Share-cropping on 75:25 basis
- Share-cropping on 1/8th basis

50% share-cropping, being the dominant system in share-tenancy, is discussed in detail below with respect to input and output shares of both parties and the changes observed over time. Share-cropping on 75:25 basis follows the same structure in input and output allocations but with different shares.

3.2.2 Share-cropping on a 50-Percent Share Basis

Share-cropping on a 50 percent basis, whereby the tenant and the landlord share the output equally, is a traditional practice which has changed very little over the years. Over time and with the arrival of new technology, certain changes have occurred in the input supply conditions, either formally via land tenancy reforms or by consensus between landlords and tenants.

Tables 3.2 and 3.3 summarize the input share of tenants in the case of 50:50 share-cropping for large land owners and small land owners respectively. Explanations for these tables are provided below:

Land Development: Since land as an asset belongs to the landlord, the landlord pays the full cost of land development when he brings in new land under cultivation.

Land Levelling: The cost of land levelling, done annually or after each crop harvest, is shared by the landlord and the tenant on a 50:50 basis. However, before the introduction of machinery, in the late 1960s, land levelling was the responsibility of the tenant with the use of his bullocks.

Seed Bed Preparation: The seed bed preparation has always been the tenant's responsibility. No changes have been observed.

Farm Yard Manure. The application of farm yard manure was widely practiced until the adoption of chemical fertilizers in the late-1960s. If farm yard manure belongs to the land owner, then the cost of transportation is borne by the tenant, whereas if the farm yard manure is owned by the tenant, then the transportation charges are paid by the landlord. However, if the farm yard manure is to be applied over large areas of land, the landlord arranges "vangar"³ to finish the job earlier. This system of application of farm yard manure is in operation for the last thirty years without any change.

Chemical Fertilizers. The cost for purchase of chemical fertilizers is equally shared between the landlord and the tenant. This has been the normal practice since the adoption of fertilizers.

Seed. Before the Tenancy Reforms of 1974, the cost of seed was entirely borne by the tenant. In light of the increased cost of seed these reforms shifted the responsibility to the landlord. The adoption of this practice is not widespread. It was noted by the field team that for most crops the responsibility of seed has informally reverted to 50:50 share. However, in Punjab some farmers also claimed to bear the complete cost of seed. Only in rare cases was it found that progressive landlords preferred to purchase the seed directly from the certified agencies and bear the complete cost of seed.

³ The system of "vangar" is a form of collective labor use amongst farmers on a mutually beneficial basis. No money is exchanged but food is generally served for those participating in the "vangar". The system is not exclusively used for any one operation.

TABLE 3.2

Responsibilities and input share percentage
of a tenant in 50:50 share-cropping (large holdings)

Input	1960	1971	1992
Bullocks	100	100	100
Land development	0	0	0
Land levelling	100	100	50
Seed bed preparation	100	100	100
Cost of FYM	50	50	50
Cost of fertilizer	-	50	50
Cost of seed	100	0	50
Sowing	100	100	50
Weeding	100	100	50
Irrigation cost	0	0	0
Irrigation labor	100	100	100
Cost of pesticides	-	50	50
Wheat harvesting	100	100	50
Threshing/cleaning	100	100	50
Cotton picking	50	50	50
Transport/mkt	100	100	50
Land and other taxes	0	0	0
Canal maintenance	0	0	0
Watercourse cleaning	100	100	100

Source: Field Survey

TABLE 3.3

Responsibilities and input share percentage of a tenant
in 50:50 share-cropping (small holdings)

Input	1960	1971	1992
Bullocks	100	100	100
Land development	0	0	0
Land levelling	100	100	100
Seed bed preparation	100	100	100
Cost of FYM	100	100	50
Cost of fertilizer	-	50	50
Cost of seed	100	0	100
Sowing	100	100	100
Weeding	100	100	100
Irrigation cost	0	0	0
Cost of pesticides	-	50	50
Wheat harvesting	100	100	50
Threshing	100	50	50
Cotton picking	50	50	50
Transport/mkt	100	100	50
Land and other taxes	0	0	0
Canal maintenance	0	0	0
Watercourse cleaning	100	100	100

Source: Field Survey.

Sowing and Planting. Sowing and planting of crops is entirely the responsibility of the tenant. No changes have been noted, except among the big landlords who prefer to use the machinery for sowing/ planting. Such landlords either share the cost equally with the tenant or expect the tenant to bear all the charges for diesel.

Weeding/Hoeing. Weeding and hoeing of crops is the responsibility of the tenant. Normally, this is done by the female members of the tenant's household who also collect the weeds for livestock consumption. However, if the landlord uses tractors for hoeing and weeding he either shares the cost equally with the tenant or expects the tenant to bear all the charges for diesel.

Irrigation. Irrigation charges for both canal water and tubewells are the responsibility of the landlord. In the case of tubewell irrigated lands, the tenant will pay a small amount per acre. This amount of money is directly related to the cost of electricity. The labor involved in irrigation is the tenant's responsibility. No changes were reported since 1960.

Pesticide. The introduction and use of pesticides took place in the late-1960s and since then the cost of pesticide is shared equally between landlords and tenants. However, the labor involved in the application of pesticide to the crops is the responsibility of the tenant.

Harvesting/Picking. Harvesting is generally the responsibility of the tenant but can vary across crops. With the introduction of sugar mills and the need to transport truck loads to the mills, tenants are now using wage-labor. The cost of wage-labor is being shared equally with the

landlord. The cost of cotton picking has always been shared between the landlord and the tenant. Before the green revolution only small farmers paid the complete cost of cotton picking and wheat harvesting.

Threshing and Cleaning. With the introduction of threshers, the cost of threshing and cleaning is shared equally by land owner and tenant. Before the introduction of threshers, the tenant was completely responsible for threshing and cleaning.

Transportation to the Market. The cost and responsibility for transportation of output from farm-gate to the market has generally been the responsibility of the tenant. In the case of vegetables and sugarcane the cost is shared equally by the landlord and tenant. For wheat and cotton, in most cases, "beoparis", (local roving traders) buy the produce from the field and transport the produce themselves. Another system has also emerged with the introduction of machinery - if the landlord has a tractor trolley, the tenant will either share the transport cost with the landlord equally or pay for the complete cost of diesel.

Land and Other Taxes. Land, ushr and all taxes are paid by the land owners.

Watercourse Cleaning. Canal maintenance is the responsibility of the land owners of the area. Almost all tenants of the area share the maintenance work for the canal twice a year without any charge using the "vangar" system. However, the watercourse owned by the individual landlord is cleaned and maintained by the concerned tenant. No changes in the system have been reported.

3.2.3 Chauthra or Share-cropping on a 25-Percent Share Basis

Share-cropping on a 25 percent basis means that crop production is shared between landlord and tenant on 75:25 share basis respectively. The responsibilities of the share-croppers under this "Chauthra" (literally, "one-fourth" in the Sindhi language) system are the same as those described earlier for the 50:50 share-croppers. The landlord bears 75 percent of cash production expenses and provides oxen or a tractor for plowing while the tenant provides all the labor requirements and only 25% of the share in inputs. However, it was noted that in areas visited during the survey, due to the growing use of tractors, this system is being replaced by the 50:50 share-cropping system. The "Chauthra" system is still found to a limited extent in lower Sindh comprising of Badin, Tharparkar, Mirpurkhas, Sanghar, Hyderabad and southern part of Nawabshah Districts. Table 3.4 summarizes the allocation of labor and input

TABLE 3.4

Responsibilities and input share percentage of Chauthra Tenant

Input	1960-70	1971-80	1981-92
Bullocks	0	0	0
Land development	0	0	0
Land levelling	100	100	25
Seed bed preparation	100	100	100
Cost of FYM	25	25	25
Cost of seed	25	25	25
Cost of fertilizer	-	25	25
Sowing	100	100	25
Cost of pesticides	-	25	25
Weeding	100	100	25
Irrigation cost	0	0	0
Irrigation labor	100	100	100
Cost of pesticides	25	25	25
Wheat harvesting	100	100	25
Threshing/cleaning	25	25	25
Cotton picking	25	25	25
Transport/mkt	25	25	25
Land and other taxes	0	0	0
Canal maintenance	0	0	0
Watercourse cleaning	100	100	100

Source: Field Survey

3.2.4 Share-cropping on 1/8th Basis

Another land-labor contract similar to the *chauthra* system also exists for tenants who own neither oxen nor cash for purchase of inputs for production. Under this contract the tenant is only expected to provide labor (family and his own). No cash payments are made. As payment the tenant receives 1/8th of total production. The remaining share is allocated to the landlord. This system is, however, reportedly being replaced by self-cultivation due to the introduction of tractors and other agricultural machinery.

3.2.5 Obligations of Tenant and Landlord

Previously the tenant and his family members were supposed to accomplish the domestic chores and house maintenance of their landlords. Since the early-1970s, this type of work is limited to the large land owners. However, it is observed that tenants are expected to take care of the landlord's guests.

The landlord is obliged to provide a piece of land for the tenant's house. Land is also available for the tenant to cultivate fodder for livestock. Credit is available with the landlord for his tenant at the occasion of the marriage ceremony of his family members and other occasions. This credit provided by the landlord is interest free. The landlords help the tenant in case he is caught by the police or other agencies. Surprisingly, as was pointed out during the survey, the landlord feels responsible and insulted if a tenant is arrested by the police. He, therefore, uses his influence to get the tenant free at any cost. In case, there is some cost

involved in getting the tenant free, the landlord considers the cost as a loan to the tenant. Similarly, the landlord provides credit to the tenant in case of medical treatment of his family.

3.3 Landlord-Worker Contracts

Under such contracts land is cultivated by the landlord through his own family members or by hired labor. Areas under self-cultivation can broadly be divided into two categories, small land holdings and large land holdings.

In the former case, holdings are generally not more than 10 hectares and family labor is utilized for the cultivation of crops. This category of land owners can be termed peasant proprietors. In the latter case, the landlord will utilize labor either on a daily wage or regular monthly basis or both. Generally holdings farmed in this way are over 20 hectares in size.

Large self-cultivating farms have become more mechanized after the green revolution. The use of tractors and other equipment in the cultivation of the land has increased for land preparation operations and crop threshing. As a result of mechanization the demand for skilled labor has increased. Large and progressive farmers may employ skilled tractor drivers and "kamdars" to manage lands. The wage labor contracts can be either payment in kind or in cash, or a combination of the two.

Various types of labor contracts prevail for different operations in agricultural production process. The types of labor used and wages paid are discussed below:-

3.3.1 Skilled Labor (full time)

There are two types of skilled full-time labor, the land manager and the tractor operator. The land manager, also known as *kamdar*, is employed by the landlord for the management of land and labor. He is usually a regular employee. The land manager is experienced in crop production. His duties include the arrangement and supervision of labor. His salary is also fixed and varies on the basis of his experience and management skills. The salary range was reported as being Rs 150 per month in 1960 and gradually increased to Rs 400 per month during 1970. Nowadays it is reported between Rs 1000-1200 per month. As kamdars are completely in charge of land and labor in the absence of a landlord, they are given a hectare of land, free of cost, for their own cultivation. Normally food is not included in the contract but as food is cooked at the farm for other laborers during peak working days, the kamdar is also served food.

The hiring of tractor operators started after the green revolution and the salary ranged between Rs 400-450 per month in cash plus food. Now the salary of a tractor operator ranges from Rs 1000-1200 per month as cash and 200 Kg of wheat annually. Other than this it was also reported the young land owners also pay the tractor driver an extra Rs 10-15 per day during the peak working season as pocket money for cigarettes and going to the movies.

3.3.2 Unskilled Labor (full time)

Unskilled labor is also employed by the landlord on a regular basis. Such labor is used particularly for livestock feeding, application of fertilizer, sowing and irrigation and other jobs which require attention, knowledge and caution. Such labor also supervise the other labor involved in harvesting, picking, threshing, loading and other labor-intensive jobs which are done by the casual and seasonal labor on daily wages. The salary structure was Rs 80-100 per month during 1960, Rs 150-200 during the 1970s while the prevailing salary rate is Rs 700-800 per month. A slight variation in wages was reported from farm to farm.

It was also reported that low paid individuals are meant for bringing the fodder from the fields for cattle and looking after the animals and taking care of other domestic chores. They usually eat at the landlords' home.

3.3.3 Skilled Casual Labor

When landlords need tractor operators on a temporary basis, they employ a person for a few days or for a month. The prevailing rate for temporary tractor operators is Rs 800-1000 per month. This type of labor was non-existent before the introduction of tractors and the salary range was reported as Rs 400-450 per month during the early '70s.

3.3.4 Unskilled Casual Male Labor

Such labor is used for various agricultural operations like harvesting of wheat, maize and vegetables etc. They are employed on daily basis and the wage rate was reported as Rs 1.75-3 per day during 1960 which was increased to Rs 7-10 in the 1970s. The prevailing rates vary from Rs 40-50 per day without food. Table 3.5 presents the average nominal daily wage rate in the surveyed area. A rising trend in wage rates from an index of 100 in 1970 to 224 in 1987 has also been reported by Cheong et al. (1988).

TABLE 3.5

Average Nominal Daily Wage Rates
(Rs/day)

	1960-70	1970-80	1980-92
Sindh	3.0	15	45
Punjab	1.5	20	50
Pb.Rainfed	3.0	10	40
No. of observations.	14.0	18	26

Source: Field Survey

3.3.5 Unskilled Casual Female Labor

Uptil the late-1950s female labor input was confined to a few specific jobs in agriculture. These were rice planting, harvesting and threshing, wheat harvesting and cotton picking. Male labor was engaged in other labor intensive jobs. At present however, in most places in Sindh and Punjab, it was reported that female labor plays a role in almost all agricultural operations. It was also reported that casual labor prefer to work on "contract basis" rather than on normal daily wages. The wage rates reported vary from Rs 1.75, Rs 7, and Rs 20 per day during the 1960s, the 1970s and in 1992, respectively. Jobs such as vegetable picking, fruit picking (like falsa) are mostly done on contract basis and the prevailing rate is Rs 7 per 40 kg. Similarly, sometimes vegetable picking is also done on contract basis. In Sindh Rs 7 per bag of okra is reported for such contract work.

Seasonal migration in case of female labor for cotton picking and harvesting of wheat was reported from the Tharparkar District of Sindh. With the changing cropping patterns and the resulting increases in cropping intensities, an increase in the use of casual labor for specific operations was reported by Cheong et al. (1988).

To understand the various wage contract rates on work done basis, the prevailing contract rates for operations are given in Table 3.6.

TABLE 3.6

Activities Carried out on Work Done Contract Basis, 1992

Activities	Contract rate	Major Involvement
Potato Harvesting	Rs 620/ha	Female
Potato Loading	Rs 1/bag	Male only
Maize Hoeing/Weeding	Rs 500/ha	Female
Maize Harvesting	Rs 500/ha	Female
Sunflower sowing	Rs 20/day	Female labor
Thinning of sunflower	Rs 100/ha	Male/female
Cotton sticks Harvesting	Rs 250/ha	Male/female
S.cane Sowing	Rs 750/ha	Male/female
S.cane Harvesting	Rs 750/ha	Male/female
S.cane Hoeing	Rs 750/ha	Male only
S.cane Harvest/Loading	Rs 1.5/40kg	Male/Female
Rice Planting	Rs 450/ha	Male/Female
Rice Threshing(Kind)	3 Kg/40kg	Male/Female
Tobacco Sowing	Rs 620/ha	Male/Female
Tobacco Flower Plucking and Burying	Rs 1,500/ha	Male/Female
Tobacco Processing(Kind)	6/100	Male only
Melon Harvest/Loading	Rs 750/Truck	Female
Wheat Harvest(in kind)	75 Kg/ha	Female

Source: Field Survey

A specific job which is completely done by women is cotton picking. The wages were almost similar in Sindh and Punjab, since the introduction of cotton in these regions. Wages paid in kind were of the order of 1/20th of the total cotton picked by a laborer. This practice has remained the same for many decades (up to 1985). However, in Sindh, the trend is to pay cash instead of in-kind payment, and normally the daily rate is fixed keeping in view the value of cotton. It was also observed that 1 kg of cotton is deducted from the total pick of a laborer to deduct the weight of inert matter and moisture. The prevailing wage rate in Punjab was reported as varying from 1/14th - 1/20th of the total pick. This variation is in accordance with the availability of labor and the total area and the crop stand. Farmers with better crop stand and large area offer a higher rate of 1/14th for picking. This provides an incentive for faster picking by labor. This also confirms the findings of Shafiq et al. (1991).

3.4 Leasing Contracts

Leasing of land for cultivation in return for payment of a cash rent also exists in Sindh and Punjab. However, only 11% of the total land-labor contracts in Sindh are land lease contracts in comparison with 31% in Punjab. A landlord who cannot cultivate his own land, may lease the land. The period, rent and other conditions of the lease differ (Table 3.7). Rents are generally higher in cotton, wheat and sugarcane zones as compared to rice zones. Lease holders generally employ share-tenants for cultivation, especially when they operate holdings of 10 hectares or more, but they may also practice self-cultivation employing wage labor and machinery.

TABLE 3.7

Average Rents of Land Over Times
(Rs/ha)

	1960-70	1970-80	1980-92
Sindh Irrigated	200	620	2,500
Punjab Irrigated	500	1,000	3,700
Punjab Barani	-	-	2,500
No. of observations	15	15	20

Source: Field Survey

Lease contracts vary with land, field crops and orchards. Crop and orchard lease contracts can also be regarded as marketing contracts. Prevailing contracts are described below.

3.4.1 Land Lease

For such a contract an informal lease agreement takes place between landlord and lessee. The time of lease can vary. Major lease conditions in Sindh specify that tenants should not be removed by the owner. If the new contractor brings his own tenants or workers, he is allowed

to take away his tenants or workers at the end of the lease. But no such condition was found in Punjab.

It was found that in both the provinces if land is leased out for more than two years, the lessee applies farm yard manure to the land to keep its fertility intact. This condition cannot be fulfilled if the lease period is less than two years. The lessee is obliged to take care of the trees along the watercourse and periphery. He is authorized to prune the trees and use the sticks as fuel wood. The lessee is not obligated to plant any particular crop, nor is he authorized to use this water on any other land or to sell the water share of the landlord. If leased land includes a tubewell in working order, then the lessee is liable to return the land with the tubewell in good condition.

3.4.2 Crop Lease

Generally the most common crops to be leased are vegetable crops such as tomato, onion, chilies, radish, while other crops like sugarcane, melons, maize and potato are also leased. Under such a contract the crop is normally grown by the landlord/tenant but at the time of maturity, the crop is sold/leased out. Normally the conditions imposed by the landlord are advance payment and specific time to harvest the crop. However, in case the tenant is a lessee he can pay the amount after the sale of the produce.

3.4.3 Orchard Lease

Orchards of mango, citrus, guava, banana, falsa, and dates are commonly grown in Sindh and Punjab. Mango, citrus, and guava orchards are generally leased out for one season. The leasing agreement is done at the time of fruit setting. The payment is made in three installments. The first installment is paid at the time of agreement, the second payment is made at the time of harvest of fruit, whereas the final payment is due before the harvest is completed.

Other terms and conditions are also included in orchard leasing. The landlord is responsible for providing irrigation to the orchard. Pesticide and other management of orchard is the responsibility of the lessee. Rents are paid on per hectare basis which vary with the condition and location of the orchards.

Banana and falsa orchards are normally leased out for more than one year. Banana orchards entail huge management costs. Therefore, the land owner puts the condition that skilled labor for orchard management will be provided by the owner of the land. The lessee is bound to pay the wages at the prevailing market rates to the owner's laborers. This is because of the fact that the banana orchard requires highly skilled labor, and by imposing this condition the owner ensures that the orchard is in safe hands.

Another type of contract prevails in Sindh for the establishment of falsa orchards. In this case the landlord will give the land to the tenant who is responsible to establish the orchard and enjoy the produce for an average period of five years. For the initial period of two years, the

landlord does not take any rent from the tenant. After two years, once the orchard is established the tenant pays an agreed amount to the landlord and this amount is constantly increased every year in keeping with the maturing orchard. After five years the tenant will have no rights on the orchard and the landlord takes over the possession of the orchards.

The lease and value of date orchards is calculated on a per tree basis. The lease agreement is on a yearly basis. The management responsibility during the lease period falls on the lessee. Professional contractors are involved in getting the lease of date orchards.

In almost all orchards, lease agreements include "dali." A "dali" includes a certain amount of fruit for the landowner's home consumption and distribution amongst the relatives and friends.

3.5 Landlord-Artisan Contracts

An artisan is a skilled worker who does not come to the field to cultivate the land but has a major share in facilitating agricultural production. The major artisans in the rural community are blacksmiths, carpenters, barbers, kumars, or pot makers, and watermen. Such workers function under what is known as the *seypi* system in Sindh and Punjab provinces or the *arra* in NWFP (described briefly by Eckert, 1972: Appendix A). *Seypi* or *arra* system is a traditional system of exchange between land owner and landless artisans. Under the "*seypi*" system a land owner maintains a claim on services of several artisans from various occupations. Similarly, in the "*seypi*" system an artisan can serve several land owners and tenant farmers at the same time.

Similar arrangements are indicated in the anecdotal evidence relating to the *arra* system, such as the following office memorandum from the Pak-Swiss Agricultural Light Engineering Program in NWFP:

In far flung areas/villages of districts Dir and Swat, the *arra* system is prevalent. *Arra* is a centuries old system according to which a local farmer enters into a verbal arrangement with a blacksmith of his choice, making it binding upon the blacksmith to render free services (e.g., repairing tools, manufacturing tools from the material provided by the farmer) to the farmer through out the year. In exchange for his services the farmer would give a fixed portion of the main crops he produced.

3.5.1 Duties Performed by Each Artisan

Blacksmith/Carpenters. It was reported during the survey in Sindh and Punjab provinces that responsibilities of blacksmiths and carpenters include repairing the plow, sharpening sickles, shaping the spades (shovels), fixing wooden handles in small agricultural implements, manufacturing wooden churns, wooden toys and looking after other domestic works like repair of wooden doors, roofs etc.

Barbers. Barbers are responsible for routine haircuts of family members, assistance in marriage negotiations, delivering messages and invitations, cooking food at marriages and for the circumcision of new born male babies.

Kumars. Kumars are responsible for supplying earthen pots for home use, pots/utensils at the time of marriages and on other occasions, mud plastering of graves.

Watermen. Watermen are responsible for the supply of drinking water at the time of marriages and other ceremonies, while the wives of the watermen are responsible for making the breads (locally called Roti) on various occasions.

3.5.2 Payment Procedure

All artisans under the seypi system are paid in grain and crop by-products (of wheat, rice and maize); no cash payments are made. Payments in kind are almost the same in Punjab and Sindh with a slight variation between localities. This amount is calculated on the basis of land owned by each individual. For example a farmer owning 10 hectares of land would pay 20 kg of wheat and 5 kg of maize annually to each artisan. In rice growing areas 20 kg wheat is replaced by 20 kg of rice. Watermen, however, are reported to be paid half these amounts.

In NWFP the amount of arra also varies from place to place as was reported in the office memorandum mentioned above. For example, in Buner valley every 50th kg of a crop is given as arra. In upper Swat the amount of "arra" is 20 kg per bullock being used for agricultural purposes. The farmer has the option to break the agreement any time he wishes to, if he is not satisfied with the services of the blacksmith, but the farmer has to give "arra" for the season during which the blacksmith has rendered the services for some time.

In addition to the above, the land owner accords special gifts and considerations to his seypi on the occasion of weddings, circumcisions and other ceremonies. Besides the payments made in grain, the artisans are informally allowed to take fodder for their cattle once a week.

3.5.3 Changes Over Time

There were 2-3 artisans of each category in a village. The seyp system remained active up until the late-1970s. With the introduction of machinery the importance of blacksmiths and carpenters started diminishing. Artisans showed the highest propensity to migrate to new jobs despite their relatively low education (Eckert, 1972). Some moved to nearby road junctions where they could benefit from the heavy flow and traffic of potential customers. Many kumars migrated to cities or overseas as the demand for village produced pottery declined. As a result of migration, the number of artisans has declined drastically since the 1970s. Only a few old artisans remain in the villages.

Payments are still made in kind, though cash payments have also been reported. As a result of the increased number of households, the system of payment in kind has changed. Now

the same amount of grain is provided not from 10 hectares but by each household that the artisan serves. In the villages surveyed, barbers are the only artisans who were still reported as working under the seyp system.

3.6 Main Findings

The main findings of the survey are summarized as follows:

- Three types of land-labor contracts are prevailing in Pakistan. The contracts are share cropping, self cultivation and land leasing.
- According to the field survey carried out for this study, the prevailing share cropping percentage in Sindh and Punjab is 73% and 9%, respectively, self cultivation 16% and 63%, while land leasing was found to be 11% and 31% in Sindh and Punjab, respectively.
- Generally, all inputs for agricultural production other than labor are shared equally in case of 50:50 share cropping system between the landlord and tenant. Labor is the job of the tenant exclusively.
- In the case of 75:25 share cropping basis, all production inputs are shared 75% by the landlord except labor.
- In the case of 1/8th share cropping system, a tenant does not contribute any cash input for production purposes except labor.
- Daily wage rates are higher in Punjab than in Sindh.
- Female labor participation has increased in agriculture since 1980. Female labor is now increasingly being involved at all levels of agricultural production.
- There is an increasing trend towards piece-rate work in Punjab. Labor and landlords prefer to work on contract basis rather than on daily wages.
- Cotton picking is entirely done by female labor in both Sindh and Punjab.
- Cash payment equivalent to the 1/20th share of cotton picked is more common in Sindh than in Punjab. In Punjab payment in kind is still the most common form of payment for cotton picking.
- Wage rates in Punjab for cotton picking have increased from 1/20th to 1/14th of the total pick. Such an increase in wage rates is not reported in Sindh.

- There is a trend towards greater high-valued crop cultivation such as vegetables, sunflower and orchards. High-valued crops have been introduced in both Sindh and Punjab.
- Because of industrialization, urbanization and overseas migration supported by strong transport network, the number of artisans per village has drastically declined.
- The mode of payment to artisans has shifted from payment in kind to cash payments.

4. EXPLAINING DIFFERENCES BETWEEN CONTRACTS

Broadly speaking, three types of land-labor contracts exist in the rural areas; landlord-labor contracts, landlord-tenant contracts and landlord-lessee contracts. These contracts have been described in some detail in Chapter Three.

This section provides a cross-sectional look at the factors which determine and explain the incidence of types of land-labor contracts. The purpose is to explain: (a) the differences between contracts; and (b) what considerations motivate landlords and workers to enter into different contracts. Given that there are options available to both landlords and workers, what distinguishes the frequency of one contract from another's? What are the premises under which farmers and workers prefer one contract to another?

The section sets about its task of describing the major components which affect contracts by first summarizing the major contributions to the economic theory of tenancy and land-labor contracts. It then pursues the rationale of share-cropping in Sindh and self-cultivation in Punjab by looking into dimensions of risk aversion, market imperfections, factor market limitations and crop production schemes. The section then analyzes the tenancy dichotomy of cash versus share tenancy for the two provinces before presenting the main findings and wider perspectives of land-labor contracts in Pakistan.

The primary source of information in discussing the farmers' empirical response will remain the survey conducted for this study in the irrigated regions of Sindh, and the irrigated and rainfed regions of Punjab.

4.1 Overview of Economic Theory of Tenancy

There are basically two opposing economic models of land and labor allocation by individuals. Concise expositions and various arguments of two models are well documented in Basu (1984), Ellis (1988), and Bliss and Stern (1982). For the purposes of this section, these two models will be described very briefly.

The first model, the Marshall Model,⁴ is a tenant model which describes the production behavior of the tenant in share-cropping as inefficient in its allocation of labor. The model crucially depends on the assumption that an external market for the tenant's labor exists where he can earn a market wage rate. Marshall argues that the tenant, operating under the rationale that his wage rate represents the opportunity cost of labor-time to him and his family, will provide sub-optimal labor input in comparison with an owner-operated farm directly hiring labor from the labor market.

⁴ Marshall, A. (1966). *Principles of Economics*. 8th edition. Macmillan, London

The second model, attributed mainly to Cheung (1968, 1969), looks at the profit maximizing behavior of the landlord who, Cheung assumes, is free to vary both the amount of land allocated to the tenant and the share in output. In addition, Cheung assumes that the landowner can stipulate⁵ in the share-contract the amount of labor input he requires from the tenant. These assumptions completely reverse the picture portrayed by Marshall. The labor input and income distribution from share-tenancy, evolving under such assumptions, are indistinguishable from those which would arise from a farm cultivated under a straight landlord-worker contract.

During the survey in Sindh and Punjab, a large variation in the incidence of land-labor contracts was observed. Whereas share-cropping was widespread in Sindh, it was minimal in Punjab where landlord-worker contracts were the dominant land-labor contract. If any one of the two basic models of share-cropping are to hold, then why do we witness such large scale variation in the incidence of contracts in Pakistan? If there is an inherent tendency for inefficient allocation of labor from the tenant (Marshall's view) then why is share-cropping so widespread in Sindh? If on the other hand, share-cropping is as efficient as any other form of production arrangement (Cheung's argument) then why not adopt share-cropping instead of employing wage labor or cash-leasing.

What was missing in the two models was the likelihood of uncertainty, imperfect information, imperfect markets and the risks associated with these factors. Newbery (1977) and Stiglitz (1974) pursued the reasons which made share-cropping the best tenurial system by dropping the assumption of certainty.

In what follows, some hypotheses which might explain the incidence of different contracts, are proposed. These hypotheses are then examined in the context of the survey findings from Sindh and Punjab.

The major factors which are expected to determine the type of contract that landlords and workers enter into have been broadly categorized, for the purposes of this study, as risk arrangements, factor availability and quality, crop requirements and cropping patterns, and socio-economic characteristics of workers and landlords.

4.2 Major Hypotheses: Factors that Explain Different Contracts

4.2.1 Risk and Land-Labor Contracts

Landlords and workers are motivated to prefer one contract from another in accordance with their risk preferences. Elements of risk enter the farming systems largely from uncertainty

⁵Bliss and Stern (1982) argue that any solution that can be achieved by the landlords stipulating input levels can also be achieved by cost-sharing of inputs other than labor, arguing that the tenant would apply inputs till a point where the price of the input equals the marginal product.

concerning exogenous factors such as weather and diseases, uncertainty in the output markets regarding output prices, inefficiencies in factor markets and imperfect information.

The three land-labor contracts vary enormously by the degree of risk faced by the landlord and the worker. Table 4.1 summarizes the hypothesized risk-return levels associated with major contracts. Although the uncertainty and risk attached to weather and disease remains the same for all landlords, contracts can affect the risks associated with imperfect labor markets, incomplete or non-existent markets or risks associated with monitoring and incentives.

TABLE 4.1

Contracts and Associated Risk and Income

Contract	Landlord
Landlord-Worker	High Risk/High Income
Landlord-Tenant	Risk Sharing/Income Sharing
Landlord-Lease	Low Risk/Low Income
Contract	Worker-Tenant
Daily Wage Labor	High Risk/High Income
Cash Tenant	High Risk/High Income
Share Tenant	Risk-Sharing/Income-sharing
Regular Labor	Low Risk/Low Income

Share-tenancy plays an important role in spreading the risk which, in landlord-worker contracts, would be borne completely by the landlord. Under landlord-worker arrangements, risk is maximum for the landlord since he must bear the total cost of production and must contend with imperfect labor markets and shirking problems associated with wage labor. The nature of landlord-tenant arrangements, reduces the landlord's risk since the tenant shares the cost of production and output. Under fixed rent tenancy, all the risks associated with the production environment are borne by the tenant. The landlord's only risk is linked to the probability that the lessee might default with payment.

4.2.2 Factor Availability and Quality

The most crucial factors of production in agriculture are land, labor, water and management. A farmer's output is a function of these factors of production, the use of other agricultural inputs and the price of the output. The availability and quality of any of these factors plays an important role in determining the type of land-labor contract the landlord ascribes to.

From the worker's perspective, the ownership of assets such as bullocks, and access to family labor are important factors in determining the contracts that he can enter. Draft power

and labor are both prerequisites to the cultivation of agricultural land and hence to qualifying as a share-cropper (Section 3.2). Bliss and Stern's Tenancy Model argues that tenancies in general occur due to unequal endowments of inputs which compliment land. Hence, endowments of family labor, bullocks are adjusted by participating in the market for tenancy.

4.2.3 Cropping Patterns and Crop-Labor Requirements

Improvements in infrastructure and the resulting accessibility to both markets and information have resulted in more diversified cropping patterns. New high-valued, and sometimes perishable, crops such as a variety of vegetables, sunflower for oil seed, tobacco, and rose orchards have been adopted in Sindh and Punjab. Each crop has different labor requirements, both in terms of skill and time. These two factors can be critical elements in determining the type of land-labor contract for a given crop.

The introduction of high-valued, perishable crops has implications on increasing per hectare profitability and increasing the need for urgent marketing of perishable produce. The latter may be an important factor in the widespread adoption of crop-lease contracts witnessed during the survey in both Punjab and Sindh.

4.2.4 Labor Monitoring and Profitability

Management is a key factor in organizing an efficient use of inputs for production. The availability and requirement of management varies across contracts. Landlord-worker contracts for instance require relatively more management and supervision than landlord-tenant contracts. The latter, it is argued, benefits from tenant's incentive to maximize production in order to increase his own share in output and hence has a direct effect on increasing his labor input.

Profitability, in terms of returns from land, varies across contracts and is influenced by factors such as cropping patterns, farm-size and returns to scale, management and monitoring costs.

Farm-size can also play an integral part in determining the nature of the contract. Is it economically feasible for small landlords to enter into share-cropping contracts?

4.2.5 Socio-economic Characteristics of Landlords and Workers

Major socio-economic considerations such as the landlord's occupation and profession and the worker's and landlord's residence (as in migrant labor or absentee landlord) and education can play an important part in determining the nature of land-labor contracts landlords and workers prefer.

The following sections, 4.4 and 4.5, look at the major factors which contribute to the incidence of one contract type to another in two provinces of Pakistan. The rationale for delineating the contract determining factors for Sindh and Punjab is to understand the context in which the factors are important. The two provinces represent completely different socio-

economic environments and hence is important to understand the contract determining factors in the context of each province.

4.3 Share-Tenancy versus Landlord-worker Contracts in Sindh

Sindh's agriculture is characterized by large farm holdings, with almost 70% of the agricultural land being owned by only 30% of the population. Little out-migration of labor to the Gulf countries has occurred here and labor movement to larger towns and urban areas is limited. Hence, labor shortages are not a problem in the province. Industrialization has been confined largely to urban areas in the in Hyderabad, Karachi and Sukkur districts and rural industry is restricted to cotton ginning and sugar mills. Although the use of tractors is widespread and the use of combines is growing, extensive mechanization as in an intensive use of tractor drawn implements was not noted by the field team. Sindh's agriculture is concentrated in canal irrigated areas. In the survey area, the use of tubewell irrigation is minimal. The brackishness of underground water has been the major factor which has inhibited the adoption of tubewells in Sindh.

Tremendous emphasis on the tradition and institution of share-cropping was encountered during the survey conducted in Sindh. According to the field survey 73% of land-labor contracts in Sindh, are share-cropping contracts whereas only 16% of the contracts are land owner-worker contracts.

The major factors which determine the incidence of self-cultivation or share-cropping in Sindh can be summarized in the order of importance for the landlord as follows:

1. Labor management and monitoring problems.
2. Strong traditional ties with share-cropping and the lack of developed rental market for land.
3. Crops and the associated crop-labor requirements.

The most important factors which influenced workers' decisions are:

1. Risk and security of employment.
2. Affinity to land and lack of developed land rental market.
3. Access to factors such as credit and land.

The main reason cited by almost all the landlords interviewed during the survey for the prevalence of share-cropping in Sindh is the perceived advantage that share-cropping reduces the managerial and supervision load and cost on landlords.

According to the farmers surveyed, the efficiency of workers under landlord-worker contracts depends almost entirely on regular monitoring and enforceability of wage-rate contracts. The costs and inconvenience associated with monitoring the obligations and duties of labor are considered very high particularly in the case of large fragmented farm holdings.

Landholdings in Sindh are highly fragmented⁶ and managing and supervising different parcels of land at the time of plowing, irrigation, harvesting and marketing can be difficult and highly costly.

In addition, farmers are also reluctant to hand over all responsibility of critical operations such as fertilizer application and irrigation of crops to daily wage labor or to managers. Besides being less knowledgeable about these critical operations, workers require more personal involvement and management to prevent workers from being less cautious. Landlords associate a high risk with poor management of such essential operations. This problem relates again directly to the enforceability of contracts.

In comparison with landlord-worker contracts the management problems and costs are substantially reduced under share-tenancy. Landlords, interviewed during the survey, were of the opinion that share-tenants were relatively more motivated to being efficient in their supply of labor (according to their own production functions) than wage workers who needs constant supervision. The risk of poor input applications and shirking is reduced with share-croppers, since the amount that the tenant earns in output is dependent entirely on crop yields. The incentive to profit from his own labor motivates the share-cropper to increase his labor productivity.

In addition, input-cost sharing also provides incentive to the tenant to allocate his labor input more efficiently. The tenant equates his share of the marginal value product to his share of the input price, thus resulting in an efficient use of inputs. The further threat of possible eviction is supported by the maintenance of short-term leases. The fact that there is no shortage of share-croppers, "haris", and labor in Sindh further motivates share-tenants to increase their labor input at little supervision cost. Thus the level of supervision required under share-tenancy arrangements is less demanding than what would be required in managing hired workers.

The additional problem of law and order in Sindh presents another reason for landlords' preference towards share-tenancy. Whereas a wage laborer might decide to leave employment and move to another area, a share-tenant is more likely to remain on the land and continue to provide labor. Generally a share-cropping landlord in Sindh employs a land manager or a kamdar who supervises the tenants. The landlord's personal involvement in management is vastly reduced in comparison with landlord-worker contracts thus allowing the landlord to partake of other off-farm activities.

The institution of share-cropping in Sindh is deep-rooted and inherited. The traditional role of share-cropping remains prevalent in Sindh given the lack of options available to landlords. The alternative of landlord-worker contracts is dismissed by many landlords due to the high managerial costs described above. The additional deficiency of a developed land-rental market in Sindh has further skewed this dependency on share-cropping.

⁶According to a report by the SDSC (1991), the extent of fragmentation varies from 17% to 60% of farm area.

During the survey it was evident that the nature of crops that are grown under self-cultivation, share-tenancy and contract leasing differ. Table 4.2 describes the type of contracts which generally prevail over cropping patterns. Contracts are determined on the expected profitability of crops, the crop-labor requirements, in terms of skill and time and marketing requirements associated with the perishability of the crop.

Traditional crops such as cotton, wheat, sugar cane and rice, all require the bulk of their labor requirements at planting and harvesting/picking. In addition, these traditional crops, with the exception of sugar cane, do not require immediate marketing. Cotton, wheat and rice are sold directly to the beopari at farm-gate. Sugarcane requires transportation to the sugar mill which is generally located in the vicinity. No other marketing problems and risks such as uncertainty of price and demand are encountered in marketing these traditional crops. The cultivation of these traditional crops in Sindh has remained squarely on share-cropping basis.

On the other hand perennial crops, for which labor input and supervision requirements are low, such as chiko and mango orchards, are managed under self-cultivation. For marketing of these perishable fruits crop leases are arranged between the landlord and the crop lessee who arranges for the picking and transportation of the fruit to the market for a fixed contract.

Banana, falsa and date orchards require many managerial practices that involve more skill and constant supervision. They were generally found to be on cash-leases. Other new high-valued crops such as vegetables and roses require more labor input and skilled labor inputs respectively.

It was established during the survey that landlords tended to enter into landlord-worker contracts for high-value crops such as roses, vegetables, mango and chiko orchards, which have a higher potential for profitability. For all four crops, the landowners were seen to be minimizing the risks associated with marketing the crops by allowing crop leases. Nowhere did the field team encounter landlords taking on the task of marketing of the output in order to capture the extra financial gains. Even where share-croppers cultivated vegetables and high-valued crops, it was found that standing crops were sold/leased to marketing agents.

From the worker's perspective, share-cropping provides security in comparison with daily wage labor and more income in comparison with regular labor. In the case of illness and other short-term misfortunes, share-cropping provides job security, income, and access to the landlord's protection. Section 3.2.5 describes in detail the obligations of the landlord vis a vis the tenant under share-cropping contracts.

TABLE 4.2

Type of Contract by Crops for Sindh

Crops	Labor Requirements	Urgent Marketing	Contract
Traditional Crop			
Wheat	Sowing/Harvesting	not required	Share Cropped
Cotton	Sowing/Picking	not required	Share Cropped
Rice	Sowing/Harvesting	not required	Share Cropped
S Cane	Sowing/Harvesting	required	Share Cropped
Orchards			
Mangoes	Harvesting	required	Self/Crop Lease
Chikos	Harvesting	required	Self/Crop Lease
Dates	Skill/Harvesting	required	Cash-Lease 1 yr
Falsas	Skilled	required	Cash-Lease
Bananas	Skilled	required	Cash-Lease > 1 yr
New High-value Crops			
Veg.	Sow/Weed/Harvest	required	Self/Crop Lease
Roses	Skilled	required	Self/Crop Lease

Source: Field Survey. Note: Self/Crop Lease = self-cultivation/crop leasing.

An additional feature of share-cropping is that it brings excess land to excess labor for cultivation. Given the absence of a land-rental market, the only option available to the worker to have access to land to cultivate is via a share-tenancy arrangement. Although under such contracts all the decision-making power is in the control of the landlord or the manager, the affinity to land and the desire to cultivate was noted as being a major incentive to share-tenants. The esteem associated with cultivating land as opposed to working as hired labor also influences the workers' decision to enter into tenancy. All these factors represent the scope for a landlord-lessee market in the province. The major problem, cited by respondents during the survey, which inhibits land-leasing in Sindh is the lack of capital amongst the workers.

Besides providing workers with access to land, share-cropping also provides workers with access to credit. Nabi, Hamid and Zahid (1986) posit that, whereas previously landlords provided only consumption loans to tenants, landlords in Sindh are now also the major source of credit for production inputs. One hypothesis proposed by Braverman and Stiglitz (1982) concerning credit facilities provided by landlords is that increased borrowing from the landlord will increase the tenant's efforts and as a result improve the returns to the landlord.

A degree of moral hazard affects the landlord's behavior as he encourages borrowing with the ulterior motive of stimulating the tenant to work harder in order to repay his debts. The amount of indebtedness is adjusted against shares in inputs and outputs during the course of the year with share-croppers almost usually being indebted to the landlord. In Sindh there is an implicit understanding between the landlord and the tenant that the tenant will be bound to the landlord until all his debts are repaid either by the share-cropper himself or by some other landlord. The share-cropping system, prevailing in lower Sindh involves many years of

indebtedness to the landlord and his family. A special study by the Sindh Development Studies Center (1991) estimates that almost 95 % of all tenants in lower Sindh are indebted to landlords.

The absence of a market for draft animal power also contributes to share-tenancy agreements. Tenants with access to bullock power function on an equal share basis with the landlord. Landlords match their labor and draught power requirements with the tenant's endowments. Where the tenant does not own a pair of bullocks, a new tenancy arrangement occurs which discounts the marginal product of bullock power. What evolves is the "chauthra" tenancy system which allocates only a 25 % share in output and in input to the tenant. The share in output is further reduced for those tenants who are neither bullock owners nor have access to capital. In such a case the tenant earns one-eighth of the total output and does not contribute to the cost of production.

4.4 Self-Cultivation versus Share-Tenancy Contracts in Punjab

Punjab's agriculture is characterized by small self-cultivated farms. Punjab's small farms are primarily the result of demographic changes and many decades of division of land-holdings within children and family. The average farm size in the areas surveyed was 1.6 hectares. However, the majority of farmers interviewed operated up to 5 hectares of family land. Mechanization and the use of tubewell irrigation was found to be widespread in the areas surveyed. Rural agro-based industry is varied and more extensive than in Sindh. Overseas migration, urbanization and off-farm employment have together created a labor shortage in agriculture. Agricultural daily wages for labor have increased in keeping with daily wages offered by the industry (Table 4.3). As a result of a shortage of male labor, women, particularly in the rainfed areas which have been the hardest hit by migration, actively participate in agricultural activities.

In Punjab, almost 80 % of contracts in rainfed Punjab and 63 % in irrigated Punjab, are landlord-worker contracts while only 9 % and 18 % of contracts in rainfed and irrigated Punjab respectively are tenancy contracts (Table 3.1).

The main reasons which influence farmers to self-cultivate their lands are summarized below:

- Shortage of labor and the resulting increase in wage rates.
- Small farm-sizes and profit maximization.
- Crops and crop-profitability.
- Risk of Land Reforms and environment.

The shortage of casual labor and the high cost of regular hire labor is the most important reason which promotes self-cultivation in its form in Punjab. The on-going urbanization and rapid development of non-agricultural opportunities in rural areas of Punjab has created a major shortage of cheap agricultural labor. The result has been a vast increase in the cost of production via increased labor costs. Table 4.3 describes the nominal daily wage labor costs

in the three regions surveyed. The daily industrial wage rate at the time of the survey was Rs 60-70/day depending on the type of industry. The increase in the cost of production, particularly the cost of labor, has not been offset by an increase in output prices of crops. Agricultural production in Punjab, particularly small-scale farming is as a result experiencing declining profitability with a profit margin in irrigated Punjab of Rs 3700-5000/ha at the time of the survey. This declining profitability in agriculture has compelled farmers to cultivate their lands using family labor and limited hired labor.

TABLE 4.3

Average Nominal Daily Wage Rates in Agriculture
(Rs/day)

Regions	1960-70	1971-80	1981-92
Irrigated Sindh	3.0	15	45
Irrigated Punjab	1.5	20	50
Rainfed Punjab	3.0	10	40
No. of observations	14	18	26

Source: Field Survey

From the predominantly small farm-size sample, it was noted that medium sized farms used family labor due to high transactional and search costs associated with the inaccessibility to labor, whereas the smaller farms used family labor simply because they could not afford hired farm labor. Ownership of small farms in the survey area in Punjab has placed the onus of extracting maximum profits from limited land. One effect of such pressure on small lands has been the adoption of high-valued and diversified crops.

The introduction of high-valued crops in Punjab, due to a rapidly expanding agro-based rural industry which depends on agriculture for its primary inputs, has played an important role in fostering self-cultivation. Such a change was also noted in Sindh. Table 4.4 describes the type of contracts which exist in Punjab by crop. Crops such as maize, sunflower and tobacco are now increasingly being cultivated on contract basis, with the industries providing the demand and the inputs for production. Once again it was noted that farmers did not involve themselves in the marketing aspects. For this, particularly for perishable crops, they preferred to lease their crops and orchards seasonally thereby transferring the risks associated with picking/harvesting and transportation of crops to another party.

Although high-valued crops have increased the profitability potential for small self-cultivating farms in Punjab, small farming remains relatively unprofitable in comparison with large-scale mechanized farming. This, in turn, has increased the demand for land on cash-lease basis. Developments in cash leasing will be addressed later in section 4.6.

TABLE 4.4

Type of Contract by Crops for Punjab

Crops	Labor Requirements	Urgent	
		Marketing	Contract
Traditional Crop			
Wheat	Sowing/Harvesting	not required	Self-Cultivate
Cotton	Sowing/Picking	not required	Self-Cultivate
Rice	Sowing/Harvesting	not required	Self-Cultivate
S Cane	Sowing/Harvesting	required	Self-Cultivate
Maize	Sowing/Harvesting	not required	Self/Contract
Orchards			
Mangoes	Harvesting	required	Self/Crop Lease
Guavas	Harvesting	required	Self/Crop Lease
Citrus	Harvesting	required	Self/Crop Lease
New High-value Crops			
Veg.	Sowing/weed/harvest	required	Self/Crop Lease
Sflower	Sowing/Harvesting	not required	Self/Contract
Tobacco	Sowing/Harvesting	not required	Self/Contract
Melons	Sowing/Harvesting	required	Self/Crop Lease

Source: Field Survey

Self/Contract is self-cultivation under industry contract. Self/Crop Lease implies self-cultivation and crop leasing.

Accessibility of farm machinery in Punjab has provided small farmers with protection from risks associated with labor market imperfections. In addition, the widespread adoption of tubewell irrigation has given the farmers control over their water supplies. A combination of factors such as small-farm size, more water control as a result of tubewell irrigation, more knowledge and the accessibility to agricultural machinery makes agriculture in Punjab less riskier than that in Sindh. The reduced risks make self-cultivation in Punjab a feasible option.

During the survey a new element of risk was also observed in Punjab which was not observed in Sindh. This is a risk associated with tenancy. The Land Reforms of 1959 appear to have had greater impact in Punjab than in Sindh. In Punjab landlords were forced to award ownership rights to occupancy tenants of land which they cultivated. It was noted that in many instances, landowners still considered the enactment of such Land Reform Laws as a threat. This threat has continued to pose as a disadvantage to share-tenancy in Punjab

4.5 Landlord-Lessee Contracts in Pakistan

Three types of cash-leasing arrangements have been described in Section 3.4, namely land-lease, crop-lease and orchard-lease contracts. Crop and orchard-lease contracts are essentially the same type of leasing arrangements and only differ by crop. For the purposes of this section they will be considered jointly as crop-lease arrangements. According to the field survey land-lease contracts contribute to only 11% of all contracts while in Punjab 30% of all contracts are land-lease contracts (Table 3.1).

4.5.1 Land-Lease Contracts

Both share-cropping and land-lease contracts are basically tenancy contracts. While in the former payment is made on share basis, in the latter payment is made in cash. The essential differences between fixed rent and share-cropping tenancies are a) the nature of risk dispersement between the landlord and the tenant and b) the allocation of decision-making power. In the case of fixed cash tenancy, the tenant bears all the risk associated with uncertainties in production but also maintains the decision-making control on what to plant and how to plant. From the landowners' perspective, cash tenancy in Sindh is a low risk contract with low returns. So what are the reasons which motivate landlords to lease their lands and why do tenants wish to bear the complete risk of production?

The main factors which affect fixed cash tenancy in Sindh are summarized below.

- Socio-economic conditions of landlords.
- The lack of a rental market.

In Punjab the land rental market is growing rapidly and land-lease contracts are becoming increasingly profitable with high rents for irrigated land. The main factors which influence the demand and supply for land-leasing in Punjab are listed below.

- Demand—Crops and crop-profitability.
- Supply—Small Farms and Profitability.
- Urbanization.

The most general characteristic of landlords who enter into the land lease contracts is their involvement in other non-agricultural and off-farm activities. It is common for landlords in Sindh who reside elsewhere and who are unfamiliar with agriculture to lease-out their landholding for cultivation. Since self-cultivation of land would require constant supervision and monitoring, the only other alternative would be to either enter into share-tenancy or to lease-tenancy contracts. Land is rarely sold and is held as a real asset investment. The logistical problems, such as selection of good tenants, and the risks associated with share-cropping in the absence of the landlord result in land leasing contracts induce absentee landlords to let out their lands on cash tenancy basis. It was also found in Sindh that many landlords leasing out their lands have previously been employed with the services and have received land at retirement. Those who are unfamiliar with agricultural production enter into land-lease contracts.

During the survey it was found that education amongst landowners has not affected or increased the land rental market. Where landholders move out of rural areas, having obtained some education, the general practice is to let the land be managed by some family member, usually a brother. In Sindh this land was then share-cropped and shares were then distributed between the owner, the share-cropper and the managing relative. In Punjab, the landholding was

self-cultivated by the relative and shares from the output were shared between the owner and the managing relative.

Whereas in Sindh, the land rental market has remained stagnant over the past two decades, in Punjab there has been tendency to resort to leasing-in contiguous holdings for intensive land cultivation for commercial purposes. This is apparent from Figure 3.1. The main premise of this new leasing-in market is to profit from high-valued crop cultivation and the economies of scale that accrue from intensive large scale mechanized and commercial farming. Close monitoring and supervision of workers is a prerequisite for such high risk and high income farming. The profit potential, however, is sufficiently high to sustain the cost of management.

This process of leasing is further stimulated by the presence and emergence of agro-based industries in Punjab which provides the market for such high-valued crops. The crops which are cultivated in such leasing arrangements are high-valued crops such as sunflower, tobacco, potato and cotton.

The growing demand for land-lease and the high land rents for irrigated lands in Punjab have stimulated the supply of land. At the time of the survey the average rent was reported as being Rs 3700/ha in irrigated Punjab (Table 3.7 and section 3.4). The declining income generation capacity of small-scale farming in Punjab has motivated landlords to enter the land-rental market. Estimates of profitability from farms in the same area ranged between Rs 3700-5000 per hectare under self-cultivation. Therefore smaller farmers who are entering the land-lease market are getting compensated for the economic opportunity cost associated with self-cultivation.

Labor mobility and the subsequent urbanization have also been factors which has contributed to the growing supply of land for rent in Punjab.

4.5.2 Crop-Lease Contracts

A leasing arrangement that is increasingly becoming popular in both provinces is crop-leasing. There are two advantages of crop leasing; first, crop-leasing provides instant or early access to cash depending on the leasing agreement (refer to section 3.4); and second, crop-leasing allows the self-cultivator or the share-cropper to transfer the risks associated with marketing onto another agent. The crop lessee receives a premium for undertaking the risk. If the crop is good and the prices offered in the market are in his favor then the lessee accrues large gains. Generally, the lessee leases/buys a number of crops from various producers in an area. Thus he benefits from economies of scale.

The crucial determining factor of crop lease arrangements is the crop. The perishability of crops and the need to transport these perishable products to the market place is the most important element in creating the demand for such lease arrangements.

Leasing out of banana orchards and rose gardens is a common practice in lower Sindh and reflects a risk averse behavior. Cutting techniques and continuous inspection of the crop and marketing are required for the banana crop whereas training in pruning, harvesting and marketing is required for rose cultivation. Landlords prefer to give banana and rose plantations out on three-year leases. Generally there is a tendency of landlords not to undertake the marketing of any perishable product themselves.

Perennial crops such as date and fruit orchards involve a combination of land-labor contracts. The labor requirements in the maintenance of orchards are neither time intensive nor skill intensive. As a result, orchards are generally cultivated using landlord-worker arrangements. The landlord, however, minimizes the risk of losses in marketing of the fruit by leasing out the orchard once fruiting has occurred.

5. CHANGES IN CONTRACTS OVER TIME

5.1 Summary of Major Changes

5.1.1 Impact of Agricultural Development Factors

The field survey conducted for this study in Sindh and Punjab revealed that the agricultural development factors—canal and tubewell irrigation, use of improved seed, fertilizer, pesticide and farm machinery, support services like research and extension, infrastructure and Government interventions such as land and tenancy reforms, subsidies, pricing policy, credit supply—affect the following:

- Land and water use.
- Distribution of land ownership.
- Tenurial contracts.
- Cropping pattern.
- Crop productivity
- Income of land owners and tenants.
- Employment and labor wages.

It is also observed that generally no development factor produces a single change in agriculture. It produces a number of changes simultaneously which generate other developments. In this way, over time, one factor produces many changes. It is therefore extremely difficult to separate developments in agriculture caused by individual exogenous factors.

5.1.2 Major Contracts in Agriculture

It was found in the survey that the main contracts prevailing in agriculture in both provinces are share-tenancy, hired-labor cultivation, and leasing.

The field data shows that the percentage share of the above contracts in Sindh is quite different from Punjab. Share-tenancy and hired-labor cultivation are the major contracts in Sindh and land leasing varies from 5 to 10% of the cultivated area. In Punjab, hired-labor cultivation and land leasing are the major contracts and share-cropping is a minor contract limited to 5 to 10% of the cropped area except in some southern parts of the province. Crop leasing in both provinces is practiced in more than 70% of fruit orchards, vegetables and other valued crops.

5.1.3 Major Changes in Contracts Over Time

The survey shows that almost all exogenous factors—irrigation, land and tenancy reforms, improved seed, fertilizer, pesticide, farm machinery, credit schemes—were introduced

simultaneously in both provinces. But their impact on the contracts have produced different responses due to different socio-economic factors—land ownership pattern, off-farm employment opportunities, land and population ratio, use of farm machinery, labor movement—prevailing in the two provinces. For example, it is found in the survey that 30% of owners own 70% of the agricultural land in Sindh whereas in Punjab 20% of the land is possessed by big land owners and 80% land is distributed among the small farmers whose average landholding is about four acres.

This difference in land ownership pattern has tremendous impact on the tenurial contracts in the provinces. In Sindh, it was found that the following major changes in the contracts occurred due to the development factors and Government interventions mentioned above:

Change in share-tenancy. Most of the farmers interviewed informed us that before 1947 about 90% of the lands used to be cultivated by sharecroppers. In 1980, according to the Agricultural Census, 44.7% of the farm area was under sharecropping and lease tenancy. This percentage for the tenancy found in the Census was less than the actual percentage of the land under this tenancy in the province, since the conceptual error was caused in the census reporting. In the report, the land cultivated by sharecroppers under the supervision of the managers (kamdars) of big landowners was assumed to be self-cultivated land. As a result of that the land under sharecropping was reported less than the actual area under this form of tenancy. Probably the same mistake is made in the Agricultural Census of 1972 and 1960.

Table 5.1 shows the change in the tenancy contracts in Sindh and Punjab over time. It is hard to say whether this form of tenancy increased or remained the same as it was in 1972, due to the doubtful data of the Census of 1980. It is not known whether the leased land is self-cultivated by the tenant or sharecropped. In Sindh, as found in the survey, more than half of the leased land is cultivated under sharecropping.

A land tenure study conducted for Sanghar, Nawabshah and Mirpur Khas districts in 1991 showed that 58% of the land was cultivated under sharecropping.⁷ It excludes the leased land cultivated under sharecropping. In this study it is found through the farmers' estimate that about 70% land is cultivated by sharecroppers in the whole province. The agricultural census data of the last thirty years and the field experience of the survey team lead to the fairly confident conclusion that sharecropping tenancy in Sindh prevails on 60% to 70% of the cultivated area.

⁷Sindh Development Studies Center (1991), Patterns of Land Tenure and the Distribution of Land Ownership in the LBOD Project Area.

TABLE 5.1

Change in Tenancy contracts in Sindh and Punjab

Year	Percentage of Total Area Cultivated by Tenants	
	Sindh	Punjab
1955-56	N.A.	53.2
1960	60	47.8
1972	61	45.3
1980	44.7	36
1992*	70 (sharecrop.- 65%) (leasing- 5%)	40 (sharecrop.- 20%) (leasing -20%)

Source: Census of Agriculture 1960, 1972 and 1980

Note: The average survey data at the provincial level

Increase in hired-labor cultivation. It is evident from the above data that since 1947 self-cultivation has increased from 10% to about 30% of the cultivated area in the province. Most of this land is cropped with the help of hired labor either on casual or regular basis depending on the type of crop and availability of family labor. The general pattern found through out this study is that small as well as big land owners hire labor on casual basis for specific cropping operations such as planting\ sowing, harvesting and picking operations. However, big landowners employ three to ten persons on a regular basis for cropping, land supervision and other jobs. Big land owners in most cases cultivate small percentage of their lands mainly for growing fruits, vegetables and other valued crops.

Stagnation in land leasing. No significant change has occurred in land leasing contracts during the last 40 years. Only 5-10% of the land, according to the farmers interviewed, is leased at present. The Agricultural Census² of 1980 reported that 8% of the land was given on lease in the province.

Increase in share-cropping on 50:50 basis. Since 1947 sharecropping contract on 50:50 basis has increased. It constitutes more than 95% of the share-tenancy contracts, as observed in the survey. It was 93% in 1972.³

²The Government of Pakistan, 1980, Census of Agriculture 1980, Vol. 2.

³The Government of Pakistan, 1972, Agricultural Census Report.

Before the enforcement of the tenancy reforms, there were a considerable number of share contracts on 75:25 basis particularly in lower Sindh. It is difficult to quantify the prevalence of this contract at that time. Perceiving the economic disadvantage in this contract, the sharecroppers practicing this system of sharecropping have switched to the fifty-fifty contract.

Increase in crop leasing. Since the last 20 years there has been a significant increase in the cultivation of fruits, vegetables and other valued crops in the province. These include mangoes, dates, guava, banana, chilies, onion, roses, chiko, papaya, tomato and others. The National Commission for Agriculture reports in 1988 that Sindh produces 60 percent of the refined sugar, out of one-third of the total sugarcane cultivated in the country, nearly half of the country's onion crop; almost all of sun-flower, nearly all of bananas, about half of the dates; and a large quantity of mangoes. The survey shows that more than 70% of these crops are leased with different terms for different crops. For example a mango or guava orchard is leased for one season only where as a banana orchard is leased for three years.

The survey in Punjab shows that the development factors produced the following changes in the land and labor contracts.

Increase in hired-labor cultivation. Self-cultivation through hired labor has increased during the last 40 years. The survey finds that at present the area under self-cultivation is 60% of the total cultivated area. In 1980 it was 64%;⁴ and 57% in 1971.⁵ It is interesting to observe through the field survey that self-cultivation has decreased recently. The farmers estimate that during the late-1970s self-cultivated area was 77% which is 60% now. The decline in self-cultivation, as explained by the farmers, is due to the increase in land leasing.

Increase in land leasing. Land leasing has increased significantly since the early '80s. According to the farmers' perceptions, about 20% of the land is leased in this form. The survey finds that it was 2% in the '60s, 3% in the late 70s and increased to 7% in the '80s⁶. In some areas of the province- Gujranwala, Kasur, Pakpatan- about 50% of the land is cultivated under lease tenancy.

Decrease in share tenancy. There is a marked decline in share tenancy. The survey finds that presently about 20% land is cultivated under sharecropping. According to the Agricultural Census of 1980 it was 28%. The farmers informed us that in the late 60s and upto 1972 about 34% land was under sharecropping. In some areas—Gujranwala, Kasur, Vehari, Pakpatan—the

⁴The Agricultural Census Report, 1980.

⁵Khan, Mahmood Hassan. 1981. *Underdevelopment and Agrarian Structure in Pakistan*. Boulder, Colorado: Westview Press.

⁶The Agricultural Census Report, 1980

survey finds that share-tenancy has been either eliminated or it is practiced on only 2 to 5% of the land.

Increase in crop leasing. Similar to the situation in Sindh, there is an increased cultivation of valued crops such as fruits, vegetables, maize, sunflower and jwar, in Punjab. According to the survey 70% of these crops are leased.

5.2 Changes Due to Technology

Irrigation system, tubewells, dams, farm machinery, watercourse lining, improved seed, fertilizer and pesticide are the major elements of agricultural technology. They influence agriculture in many ways and affect the distribution of contracts as well.

The above technological factors have been introduced simultaneously both in Sindh and in Punjab. However, the intensity of each element varies for each province and for different regions within the same province.

Irrigation, through tubewells and barrage controlled canals, increased the cultivated area, since they managed to get government lands through different land schemes introduced by the government. They also allowed a higher cropping intensity and yields.

Increasing use of improved seed in major crops, fertilizer and pesticide helped land owners to enhance crop productivity. Application of certified seeds increased from zero to 86,000 tons and chemical fertilizers from 31,000 nutrient tones in 1960-61 to 184,000 tones in 1986. Pesticides have been used at the increasing rate of 39% per year during last five years.⁷ In 1984-85 about one-fifth of cropped area in the country was sprayed. The most heavily sprayed crop in both relative and absolute terms has been cotton (where 35.5% of its cropped area is sprayed). In 1985, 3455 tons of active pesticide ingredient were sold in Pakistan. The survey reveals that the improved inputs and enhanced crop protection encouraged mainly small land owners in Punjab to self cultivate the lands to benefit from the increased crop productivity. Which in turn increased the demand of wage labor.

The improved inputs did not affect much the contracts in Sindh. The big landowners, possessing about 70% of the land, found it more profitable to continue with sharecropping, considering higher supervision costs and more risk in terms of crop productivity in self-cultivation on larger area compared with share-tenancy. They could not lease the lands due to almost non-existence of lease market in the province.

The survey shows that the farm machinery has caused more changes in the contracts in Punjab than in Sindh. It has promoted self-cultivation, by small land owners, and land leasing.

⁷Memon, Rajab A. 1990. *Agrarian Structure and Policy in Pakistan*. (A paper prepared for ACFOD, Manila.)

In Sindh, the farm machinery has promoted self-cultivation by small as well as big landowners. However sharecropping is still practiced on the larger farms because of large number of big landholdings in the province. Economical use of the farm machinery has encouraged small farmers in both provinces to self cultivate the lands. The big landowners in Sindh still find self-cultivation of wheat, cotton and sugarcane crops costlier in terms of supervision costs and higher risk in achieving the required productivity at that scale. They therefore opt to give the lands for sharecropping for cultivation of food grains and prefer to self-cultivate valued crops due to higher returns and lesser supervision costs and lower risk in getting the higher crop productivity.

The biggest impact of farm machinery has been experienced in promoting land leasing in Punjab. As mentioned earlier the leased area has increased from 7% in 1980 to about 20% in 1992 in the province. Most of the leased land is cultivated by the professional land contractors. They get 50 to 200 acres land on lease and cultivate mostly valued crops through extensive use of the machinery. They get higher income and productivity from the land in comparison to small land owners having 3 to 5 acres farm area. In Gujranwala and Sahiwal the self-cultivating farmers informed us that they hardly get Rs. 1500 to 2000 net profit per acre in a year whereas the prevailing lease rate is about Rs. 4,000 per acre per year in these areas. This shows the difference in profitability of land being achieved from leasing in comparison to self-cultivating the land.

In Sindh still leasing market has not developed in comparison to Punjab. That is why there is no increase in land leasing despite enhanced use of improved inputs and farm machinery in agriculture in the province.

5.3 Changes Due to Infrastructure

Road and rail network, transport, electricity, telecommunication and markets have facilitated the supply of agricultural inputs, marketing of agricultural products and trading in agriculture in the country. They have significantly promoted the cultivation of the valued crops. It is observed through the survey that infrastructure particularly road network is adequately developed in many parts of Sindh and Punjab.

The survey shows that in Sindh infrastructure contributes to the increase in self-cultivation of the valued crops particularly and facilitates supply of the inputs and marketing of the outputs. In Punjab along with these functions it is also strengthening the self-cultivation and leasing. Developed infrastructure supports the self-cultivators and lease holders to get timely market information and take maximum benefit of the demand of the valued crops. This helps them to maximize crop productivity and profitability of the land.

Infrastructure also facilitates fertilizer and pesticide companies, farm machinery dealers, agricultural traders and government institutions working in agriculture to reach cultivators. For example the farmers in Punjab informed that there is a constant link of traders with farmers through telephone. It helps the farmers to know about demand of crop products and their market prices on daily basis and sell the products at higher prices. Before this farmers used to take the

products to the market and sell at the prices whatever were offered by the traders. Thus they were totally dependent on the traders for marketing of the products.

In Punjab infrastructure combined with industrialization is significantly facilitating the movement of labor between urban centers and nearby rural areas resulting in the shortage of labor for agricultural operations. This in turn increases the labor wages causing self-cultivation of small holding—less than ten acres—unprofitable. The small landholders are therefore increasingly leasing the lands in the industrializing areas in the province.

5.4 Changes Due to Off-Farm Opportunities

It is experienced through the survey that there has been significant growth in urbanization and industrialization in Punjab which have created off-farm employment opportunities particularly for rural labor and small farmers. There was visible impact of rapid developments in urbanization and industrialization on the contracts. The pace of development in these processes speeded up since 1980 in the province and it still continues.

The first impact of the off-farm development was felt in cropping pattern, resulting in the increased cultivation of the valued crops, since demand for vegetables, fruits, oilseeds, maize, and other crops increased with increased incomes.

The second impact is on tenurial arrangements. Rapid development in urbanization and industrialization has created demand for more labor and increased labor wages. These factors attract labor from the rural areas particularly from the villages nearer to the urban centers, creating shortage of sharecroppers and labor for agricultural activities and raising wages of rural workers. Except few places, the respondents in the survey informed us that the biggest problem in agriculture in their areas was the shortage of labor. Increased wages and shortage of casual labor and share tenants have forced land owners to cultivate lands themselves or lease the lands.

It is found in the survey in Lahore, Gujranwala, Vehari, Kasur and Sahiwal there is an acute shortage of labor for agricultural work. Due to the rising labor wages and other facilities in the cities, sharecroppers are leaving farming and doing work as laborers. This is compelling landowners to opt for either self-cultivation using family labor and farm machinery or leasing the lands. It is found that there is no sharecropping in Gujranwala and it is reduced to about 5% in Lahore, Vehari and Kasur.

In case of Sindh, the situation is quite different. In no place in the survey, conducted in different regions of the province, was a labor shortage reported. There has been a rise in urbanization. According to the Census of 1981, about 40% of the population of the province live in the urban centers. However large scale industrialization has not taken place in the province except in Karachi, Hyderabad and Sukkur cities. Most of the jobs due to industrialization are created in these places and are availed by non-local people. As a result of that rural population of the province engaged in agriculture has not been largely affected in terms

of rural labor movement by these developments. Thus socio-economic pattern in rural Sindh largely remains same as it was before these developments.

Urbanization however has affected the cropping pattern in the province, resulting in the increased cultivation of fruits, vegetables and other valued crops. High returns from these crops have encouraged small as well big land owners to self cultivate these crops. This has affected the contracts, increasing the percentage share of self-cultivation and reducing sharecropping.

5.5 Changes Due to Government Interventions

After 1947, it was the mainly government interventions which have influenced agriculture in the country, thus contributed to the changes in the contracts.

Its land and tenancy reforms of 1959, 1972 and 1977 contributed to the increase in the small land holdings and protection of the rights of the share-tenants. The Ayub government in 1949 introduced the first land reforms in the country in which the land holding area was reduced from unlimited area to 500 acres of irrigated or 1,000 acres of non-irrigated land or an area equivalent to 36,000 Production Index Units (PIU) per individual.

Second land reforms were introduced by the Bhutto government in 1972 reducing land holding to 150 acres of irrigated land or 300 acres of non-irrigated land or an area equal to 12,000 PIU. The third and last reforms were enforced in 1977 in which the land holding was further decreased to 100 acres of irrigated or 200 acres of non-irrigated land or equal to 8,000 PIU. No relaxations or exceptions were allowed, as was done in the previous reforms.

The Land Reforms Commission, Government of Pakistan, reporting on the implementation of the reforms until 30th June, 1984, informs that about 1.48 million hectares were resumed by the landowners in all three land reforms - 1.035 million hectares in the 1959 reforms, 0.48 million hectares in the 1972 reforms and 0.073 million hectares in the 1977 reforms. Out of the resumed land, 1.48 million hectares were distributed among 0.291 million tenants. Remaining 0.326 million hectares were left for further distribution.

The important impact of these reforms has been on the limit of landownership. Previously there was no limit on landholding. The purpose of the land reforms was to redistribute lands, creating and strengthening the owner-cultivator class in place of absentee land lords and sharecroppers. This purpose has been partially achieved. Other aim of the reforms was to protect the rights of sharecroppers who were not properly treated by the land owners. The survey shows that the tenancy reforms do help protect the rights of tenants. They are relieved from other non farming obligations such as working in the house of a land owner, looking after his livestock, providing free labor for his personal benefits. Landowners contribute all inputs, except seed, according to their share in the output. They can not evict tenants easily in Sindh particularly as it used to be in the past.

The pace of government involvement in agriculture increased since 1959. Public investment in this sector was enhanced in the Second Five Year Plan (1960-65) in which 255 million rupees were allocated for it. The priority for the agricultural development continued in the Third Five Year Plan (1966-70) in which 40% of the total development outlay was targeted for agriculture to achieve a 5% increase in agricultural production per year.

During 1960s the government introduced many policies in agriculture. These included accelerated crop improvement programme including the use of high yielding seed in wheat, maize and rice; incentives for rapid development and use of tubewells, fertilizers and agricultural machinery; price support policy for major crops; credit facilities for private agricultural investment and input subsidies. This period was called the era of Green Revolution. It marked the beginning of agricultural development in the country. During 1966-70 crop yields increased, value added in agriculture increased at an annual rate of 6% and productivity of major crops increased by 9% annually.

The Government helped increase the availability of irrigation water. It was increased from 52 MAF in 1960 to 104 MAF in 1985-86. The additional water came partly from the completion of Mangla and Tarbela storage projects but mainly from the public and private tubewells whose number increased from 60,000 in 1960-61 to over 257,000 in 1985-86. The increased water enhanced the cultivated area by about 2.5 million hectares and the cropped area went up from 1.59 million hectares in 1960-61 to 4.36 million hectares in 1986-87- a 174% increase. Consequently, the cropped area increased from 14.86 million hectares to 20.09 million hectares- an increase of 35% in 25 years.

The National Commission on Agriculture (1988) reports that Government annually provides Rs 2,409 million as subsidies on imported fertilizer and Rs 1,198 million in water sector. Credit subsidies account for Rs 923 million in the form of lower lending rates.

The Government policies and development projects have contributed to the increase in use of land and water, increase in crop productivity, adoption of technology, production of new HYVs, development of infrastructure, promotion of research and extension services and regulating the prices of major crops that are wheat, cotton, rice and sugarcane. It is observed through the survey that impact of the different Government interventions on the contracts can not easily be separated.

The field impression of the survey team is that in Punjab the land and tenancy reforms, use of farm machinery, increased farm income, off-farm development, enhanced cultivation of the valued crops and increase in family size of landowners over time have caused the major changes in the contracts. These factors have contributed to the development of agricultural markets, reduced share tenancy and increased self-cultivation and land leasing in the province.

In Sindh the Government interventions and other exogenous factors have also increased crop productivity and water and land use and changed the cropping pattern. But they have not

been as effective in bringing changes in the contracts as they have in Punjab. The team experienced through the field observations that slow industrialization in the rural areas and insignificant migration of the rural labor to the main urban centers, namely Karachi, Hyderabad and Sukkur, have prevented major changes in the share-tenancy in the province. Sharecroppers continue the cultivation of the lands because there is a shortage of off-farm employment opportunities for them and they perceive remaining unemployed for long periods of time as a high risk, if they give up land cultivation.

5.6 Main Findings and Conclusions

- The field survey shows that development factors and the government policies, as stated earlier, have affected the agricultural contracts both in Sindh and Punjab but intensity of change in the contracts vary in case of each province.
- The most significant change has been observed in the share-tenancy contract. In the highly developed areas of Punjab it has been either eliminated or reduced to 5% of the cultivated area. In other parts of the province it is limited to between 20 to 30% of the area. Whereas in Sindh there has been no major change in this contract. It has reduced from 90% to about 70% in the period of 40 years.
- Land leasing is increasing rapidly in Punjab whereas in Sindh it is stagnant. In the developed areas in Punjab it is about 31% of the cultivated area which was only 2% in 1960s and 5% during 1970s in the province. In case of Sindh it has remained on between 5% to 10% of the cultivated land.
- Self-cultivation, employing wage laborers, has increased from 10% to 30% in Sindh. This has remained almost same (60% in 1960s and 63% in 1992) in Punjab since 1960.
- The continuity in share-tenancy at larger scale in Sindh is caused by the presence of large landholdings (70% of the land owned by 30% owners) and insignificant movement of rural labor to the urban areas. In Punjab, the survey shows that 80% of the land is held by small landowners (area between 2 to 10 acres). The small landholdings and the shortage of labor created by the urbanization and industrialization have reduced the sharecropping.
- The intensive use of improved inputs (seed, fertilizer and pesticide) and farm machinery has increased the crop productivity and encouraged the self-cultivation in both provinces and leasing in Punjab only. Self-cultivation in Sindh is practiced mostly for cropping of fruits, vegetables and other valued crops.
- The land reforms have partially achieved the objective of redistribution of land to create large number of owner-operators for increasing crop productivity and establishing equitable landownership pattern in the country.

- The tenancy reforms have strengthened the inputs contribution from the landowners and share-tenants according to the share in the output. They have made it difficult for the landowners in Sindh to evict their tenants at their discretion.
- The relatively developed infrastructure present in both provinces has promoted marketing of agricultural products, development of private seed, fertilizer, pesticide and farm machinery companies, and the link of government extension and research agencies with the farmers. This has contributed to the increase in crop productivity and cultivation of the valued crops. It has in turn encouraged self-cultivation and leasing in the provinces.
- The increased off-farm employment opportunities in Punjab is attracting rural labor to the urban areas causing shortage of sharecroppers and wage labor for the agricultural operations. In Sindh there is still no shortage of either sharecroppers or wage labor due to limited off-farm employment opportunities for the rural labor.

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APPENDIX A
VILLAGE PROFILE

Personal

Respondent's Name:

1. Age:

2. Education:

60-65 66-70 71-75 76-80 81-85 86-90

AREA

3. Village

4. District

5. Population:(Nos.)

6. No. of HH

7. Literacy rate: (%)

8. Accessibility: (Des)

9. Other Details: (Des)

Exogenous Changes in the Village

Arrival Codes, A=[Yes=1, No=0]

Intensity Level Codes, I=(%age)

Technology

10. -Seed/fertilizer

11. -Tractor

12. -Irrigation

13. -Tubewell

14. -Watercourse Renovation

A I A I A I A I A I A I

	60-65	66-70	71-75	76-80	81-85	86-90
	A	A	A	A	A	A
	I	I	I	I	I	I

Out Migration

- 15. -Local (Skilled)
- 16. (Unskilled)
- 17. -Overseas (Skilled)
- 18. (Unskilled)
- 19. Land Reforms
- 20. Tenancy Reforms
- 21. Price Policies

22. Industrialization

23. Urbanization

AGRICULTURE IN THE VILLAGE

- 24. Total Area: (ha)
- 25. Irrigated: (ha)
- 26. Rainfed: (ha)
- 27. Tubewells: (No.)
- 28. Avg. Farm Size: (ha)
- 29. Cropping Pattern: (Des)

Tenurial Status

- 30. -Self-cultivated: (%)
- 31. -Tenant: (%)
- 32. -Leasee: (%)
- 33. Rainfall: (%)
- 34. Female Participation: (%)
- 35. Children Participation: (%)
- 36. Other Characteristics: (%)

LABOR

- Availability Codes=[Easy=1,Hard=2]
- 37. -Skilled
- 38. -Unskilled

60-65 L T 66-70 L T 71-75 L T 76-80 L T 81-85 L T 86-90 L T

ARTISANS IN THE VILLAGE

- 39. Blacksmith No.
- 40. (Cash)
- 41. (Kind by crop)
- 42. (Kind by crop)
- 43. Barber No.
- 44. (Cash)
- 45. (Kind by crop)
- 46. (Kind by crop)
- 47. Faqir No.
- 48. (Cash)
- 49. (Kind by crop)
- 50. (Kind by crop)
- 51. Waterman No.
- 52. (Cash)
- 53. (Kind by crop)
- 54. (Kind by crop)
- 55. Kumar No.
- 56. (Cash)
- 57. (Kind by crop)
- 58. (Kind by crop)
- 59. Others

COMMON PROPERTY IN THE VILLAGE

- Codes={Yes=1, No=0}
- 60. Forests
 - 61. Grazing Field
 - 62. Drinking Water Pond
 - 63. Livestock Pond
 - 64. Others

Govt. Intervention and Reported Impact of

A. Land Reforms

B. Tenancy Reforms

C. Input Price and Subsidy Policies

D. Output Price and Procurement Prices

CONTRACT DESCRIPTION

TYPE OF CONTRACT: (----- Will)-----)

60-65 66-70 71-75 76-80 81-85 86-90

LAND

- 65. Value of Land (Rs/Ac)
- 66. Rent of Land (Rs/Ac)

SHARE IN INPUTS COST (%age):

L T L T L T L T L T L T

- 67. Decision Maker
- 68. Land Preparation
- 69. FYM
- 70. Fertilizer
- 71. Seed Cost
- 72. Sowing
- 73. Pest. (cost)
- 74. Weeding
- 75. Irrig. Lab
- 76. Harvest/Pick
- 77. Threshing
- 78. Cleaning
- 79. Transport (m/kt)
- 80. Taxes (land)
- 81. Taxes Water
- 82. Other Terms

	60-65	66-70	71-75	76-80	81-85	86-90
	L T	L T	L T	L T	L T	L T

SHARE IN OUTPUTS (%age)

- 83. Decision Maker
- 84. Main Produce
- 85. Straw
- 86. Cotton Sticks
- 87. Fodder Seed
- 88. Other Terms

SHARE IN LABOR (%age)

- 89. Local
- 90. Non Local
- 91. Gender Participation
- 92. Male
- 93. Female
- 94. Children

WAGES

- Full Time
- 95. -Skilled (Cash)
- 96. (Kind by crop):
- 97. (Kind by crop)

- Unskilled
- 98. Male (Cash)
- 99. (Kind by crop)
- 100. (Kind by crop)

- Female (Cash):
- 101. (Kind by crop)
- 102. (Kind by crop)

60-65
L T

66-70
L T

71-75
L T

76-80
L T

81-85
L T

86-90
L T

Casual

- 103. -Skilled (Cash)
- 104. (Kind by crop)
- 105. (Kind by crop)

-Unskilled

- 106. Male (Cash)
- 107. (Kind by crop)
- 108. (Kind by crop)

- 109. Female (Cash)
- 110. (Kind by crop)
- 111. (Kind by crop)

OTHER OBLIGATIONS OF TENANT

Codes=[Yes=1, No=0]

- 112. Bring Fuelwood
- 113. Look After Livestock
- 114. Domestic Chores
- 115. House Maintainance
- 116. Others

OTHER OBLIGATIONS OF LANDLORD

Codes=[Yes=1, No=0]

- 117. Accomodation Provision
- 118. Wedding
- 119. Consumpton Loans
- 120. Medical Treatment
- 121. Protection Against Police
- 122. Others

60-65

66-70

71-75

76-80

81-85

86-90

L T

L T

L T

L T

L T

L T

LEASE TERMS

123. Land Rent (Rs/Ac)

Terms & Conditions

Codes=[Yes=1, No=0]

124. FYM (Must be applied)

125. Tree Protection

126. Authorization for Fuel Wood

127. Cotton Sticks for LL

128. Fodder for LL

129. Other Details (Des)

APPENDIX B

RAW DATA FROM LAND LABOR SURVEY CONDUCTED FOR USAID IN JUNE/JULY 1982 BY EDC.
 SURVEY TEAM: MUSHATAQ MIRANI, ABDUL RAZZAQ SALEEMI, SADIA BASHIRUDDIN AHMED

SINDH	SAMPLE VILLAGE NAME	DISTRICT POP	LITERACY SELF_1	SELF_2	SELF_3	TEHANT_1	TEHANT_2	TEHANT_3	LEASE_1	LEASE_2	LEASE_3	WAGE_1	WAGE_2	WAGE_3	(In thousands)					
															LYALUE_1	LYALUE_2	LYALUE_3	RENT_1	RENT_2	RENT_3
	1 PIR JAHOO	700	70	0	50	50	40	40	35	60	10	15	10-15	40	0.05	5-50	20-150	50	100-300	500-1000
	2 KARAN A JANALI	500	10	10	10	10	80	80	80	10	10	3	15	50	1-1.5	2-2.5	35-40	20-80	200-300	800-1000
	3 GORCHARI	500	20	5	5	5	90	90	15	15	5	3	15	50	1-1.5	2-2.5	35-40	20-80	200-300	800-1000
	4 PIR MORDIN	100	10	15	15	15	60	60	60	60	60	3	15	50	1-1.5	2-2.5	20-30	20-80	200-300	800-1000
	5 SULEMANI BARRI	400	25	15	5	5	80	95	95	0	0	0	15	50	1	10	35-40	100-125	500	1000-1500
	6 PIR SARAHADI	300	10	5	10	25	95	90	75	0	0	2	15	1100	71	10-12	30-40	80-100	300-1000	1000-1500
	7 ASHRAF GOT	25	50	20	15-20	30	60	60-70	0	0	10-15	20	10	50	2-9	4-10	8-10	80	150	200-300
	8 TAPANI GOT	600	50	0	50	20	90	40	70	10	10	10	10	50	0.6	4-7	10-20	100	150-500	1000-1500
	9 SULTANAB-D	2200	80	20	20	10	90	80	50	0	0	40	10	50	20	25	10-15	100	1000	500-3000
	10 CHODRHO	5000	60	25	25	25	75	75	75	0	0	0	10	40	0.4	5	5	100	1000	500-3000
	11 MAHOTA	1000	60	0	0	5	35	95	85	5	5	10	10	40	0.4	5	5	100	1000	500-3000
	12 HEDAYAT ALI RID	1000	50	5	5	5	95	95	95	0	0	0	0	40	0.4	5	5	100	1000	500-3000
	13 GULAN KADIR CHAHMA	1000	40	5	5	5	95	95	35	5	5	5	5	40	0.4	5	5	100	1000	500-3000
	14 KALA SHAH KAKOO	2000	25	93	93	95	5	5	2	2	2	3	1.5-2	40	2	4	40-50	150	200-300	1000-1500
	15 VARAKHALAL	10000	50	50	90	50	50	10	0	0	0	50	10	40	2-4	2-1	35-100	150	200-300	1000-1500
	16 GATTAYWALA	1200	50	50	80	50	50	15	0	0	5	50	10	70-80	5-16	15-20	50-80	300-500	300-500	1500
	17 13/91 ZAFARABAD	1500	50	50	75	80	30	25	10	0	0	10	10	50	7-8	11-12	100	100-150	200	400-600
	18 1315P	6000	5	10	30	70	80	50	5	10	20	45	1.5	50-60	1	4-5	60-100	20-50	250-300	2500-4000
	19 251-EB	4000	15	85	85	85	10	5	5	5	10	2	5-7	50-60	3	5	70-80	20-50	250-300	2500-4000
	20 OKARA FARM	2000	80	100	100	40	0	0	0	0	0	10	10	50-50	4-5	20-30	100	100-300	300-500	1000-1500
	21 CAN 7	4000	25	30	70	30	70	30	0	0	0	70	15	40-50	3-4	50-60	150-175	50-60	1500-1600	3000-3500
	22 PANDORI	210	60	25	40	50	75	60	50	0	0	0	0	40-50	2	6	40	60	600	600
	23 KALRA	850	50	100	100	100	0	0	0	0	0	0	0	40-50	0.8	6	6	16	16	16
	24 RASILA KALAN	1050	25	50	60	75	50	40	25	0	0	0	0	40-50	1	6	35	35	35	35
	25 MOGRAH	2750	60	100	60	60	0	20	30	0	0	10	5	40-50	0.8	5	15	15	15	15
	26 DARSAPUR	2800	45	50	75	90	50	25	10	0	0	0	0	50	6	10	40	40	40	40
	27 HATAH	1600	50	80	90	90	20	10	8	0	0	2	3-5	40-50	2	2	40	40	40	40
	28 KOJET	714	80	75	85	100	25	15	0	0	0	0.5	5	50	0.7	16	20-80(B-1)	16	16	2000
	29 MATAYAL	1800	70	80	60	70	10	10	20	10	10	10	3-5	40-50	6	6	30-200(B-1)	6	6	200(B)

B-1