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RURAL NON-FARM SECTOR IN PAKISTAN

By

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Contents

INTRODUCTION	1
CHAPTER 1:	
Section 1: Definitional Issues and Data Problems	4
Section 2: Size and Composition of RNF	5
Section 3: Structure and Composition of RNF	8
CHAPTER 2: Access of RNF to Income, Human Capital, Labour Market and Rural Credit Market	13
CHAPTER 3: The Determinants of the RNF Sector Growth	23
Section 1: Agriculture and Changing Agrarian Structure	23
Section 2: Physical and Social Infrastructural Development	29
Section 3: Urbanisation	31
CHAPTER 4: Explaining the Growth of RNF Multivariate Regression Analysis	39
CHAPTER 5: Policy Matrix	46
REFERENCES	47

LIST OF TABLES

Table 1:	Population & Households by Farm and Non-farm (Rural Areas)	5
Table 2:	Distribution of Household by Farm vs. Non-farm (1990)	6
Table 2-A:	Farm/Non-farm Composition of Household	7
Table 3:	Distribution of Rural Non-Agricultural Employment by Industry (%)	9
Table 4:	Percentage Distribution of Off-farm Workers by Occupation and Sex	10
Table 5:	The Determinants of Wages Dependent Variable = Ln Wages Rs/Month	12
Table 6:	Sources of Household Income (Percent) Rural Areas	13
Table 7:	Sources of Income: Rural Areas - 1995/96	14
Table 8:	Gini Index Household Income Distribution Farm/Non-farm 1993/94	15
Table 9:	Poverty Incidence (Percent of Household Poor) Farm vs Non-farm Rural Areas (1993/94)	16
Table 10:	Age/Sex Specific Educational Enrollment by Farm/Non-farm (Percentage)	17
Table 11:	Labour Force Participation Rate by Sex, by Education, Farm/Non-farm (Age 10+)	18
Table 12:	Unemployment Rate by Sex by Education, Farm vs Non-farm	19
Table 13:	Percentage of Under Employment by Farm, Non-farm and Undefined by Working House by Sex	19
Table 14:	Percentage Distribution of Funds by Sources and Type of Lenders	20
Table 15:	Percentage Distribution of Credit Extended by Source and Type of Borrowers	22
Table 16:	Use of Agricultural Inputs per Cultivated Acre 1969-70, 1979-80, 1984-85, 1989-90 and 1994-95	25
Table 17:	Surplus Labour as % of Employed in Agriculture	27
Table 18:	Estimated Landless 1980	28
Table 19:	Availability of Facilities by Distance (Kilometers)	30

Table 20: Size, Level and Growth of Pakistan's Urban Population, 1951-1998	32
Table 21: Average Annual Growth Rate of Cities and Share of Natural Increase in Urban Growth by Size of the Cities, 1981-98	33
Table 22: Components of Urban Growth by Province, 1972-1998	34
Table 23: Out and Return Migration for different Periods	36
Table 24: Percentage Distributions of Return Migrants by Pre-migration and Post-return Occupation, Controlling for Geographical Location	38
Table 25: Multivariate Regression Dependent Variable = Percent of Non-Agriculture Households (District)	40
Table 26: Number and Size of Livestock by Type of Reporting Households	44
Table 27: The Determinants of Livestock Holders Dependent Variable = <u>Percent of Livestock Holders in the District</u>	45

LIST OF APPENDIX TABLES

Appendix Table 1: Pattern of Work Participation by Industry by Sex (Age 10+)	49
Appendix Table 2: Percentage of Households and Average Size of Household (1990)	50
Appendix Table 3: Relative Shares of Agricultural and Non-agricultural Sectors in Rural Employment 1979-80 to 1996-97	51
Appendix Table 4: Employment by Type of Enterprise	51
Appendix Table 5: Employed by Sex/Education: Farm/Non-Farm	52
Appendix Table 6: Employed by Education Farm/Non-farm (%)	52
Appendix Table 7: Mean Wages by Industry: Rural Areas 1996/97	53
Appendix Table 8: Mean Wages by Industry, Education and Sex	54
Appendix Table 9: Mean Income and Distribution of Households by Farm/Non-Farm	55
Appendix Table 10: Percentage Distribution of Population 5+ by Level of Education	56

Appendix Table 11: Working Hours by Industry/Sex of the Employed	57
Appendix Table 12: Percentage Distribution of Credit by Type of Lenders and Borrowers, Pakistan 1995-96	58
Appendix Table 13: Size of Loan by Major Activity (Male and Female)	59
Appendix Table 14: Number of Farms and Farm Area by Size of Farm, All Pakistan, 1960, 1972, 1980 and 1990	60
Appendix Table 15: Absolute and Percentage Inter-Censal Change in Labour Use	61
Appendix Table 16: Farms Using Casual Labour	61
Appendix Table 17: Percentage of Cattle by Category and by Type of Household	62

RURAL NON-FARM SECTOR IN PAKISTAN

INTRODUCTION

Admittedly the rural non-farm sector has immense contribution to the growth, employment generation and poverty alleviation in the developing world, adequate assessment of the size, composition and structure of activities of this segment of the economy is not made in general, Pakistan being no exception. Partly the data limitations explain the relative neglect of research endeavours to focus upon this important sector, part of the reason lies in the intricate and complex interaction of RNF with the rest of the economy thereby defying efforts to delineate and subject it to a competent and rigorous analysis. In this study an attempt is made to provide some ideas regarding the size and structure of RNF sector in Pakistan, the nature of interlinkages between this sector and rest of the economy in particular the agriculture. Also an examination, of the nature of influences different policies have had on the relative size and the nexus between this sector and the rest of the economy, is attempted. The findings of the study are reported in five Chapters.

CHAPTER 1: SIZE AND COMPOSITION OF RNF

(a) Conceptual Clarification and Data Limitations.

A brief discussion on the type of information available appears imperative to understand the limits to which this analysis can be stretched. This is attempted in the first section of the Chapter I which contains discussion on size and composition of RNF, as briefly described below.

(b) Size and Structure of RNF

(i) Size of RNF

Estimation of the size of the RNF in terms of households or size of employment falling under RNF is attempted using the information from recent Agriculture Census, 1996/97 Labour Force Survey and 1995/96 Rural Financial Market Survey. Given the data availability inter-temporal changes in the relative size of RNF are also assessed.

(ii) Structure and Composition of RNF

Composition of RNF in terms of activities under certain assumptions is assessed using LFS 1996/97, RFMS 1995/96 and 1990 Agriculture Census. In particular the following are worked out.

- (a) Industrial and occupation composition and intertemporal changes.
- (b) Classification of employment by employment status (wage vs self employed).
- (c) Structure of employment by formality/informality.

- (d) Mean wages by farm and non-farm of wage employees are estimated and the determinants of wages using multivariate regression framework are explored.

CHAPTER 2: ACCESS TO INCOME, HUMAN CAPITAL, LABOUR MARKET AND RURAL CREDIT MARKET

In Chapter 2 an examination of the differentials in access to income, human capital, labour market and rural credit market by farm and non-farm is made. This chapter contains the following sections:

(a) Income Distribution/Poverty Incidence in RNF

Using HIES 1993/94 and RFMS 1995/96 data the following are worked out.

- (1) Sources of income of farm and RNF households.
- (2) Income distribution of RNF and farm household and estimating the Gini index.
- (3) Incidence of poverty by farm and non-farm households.

(b) Labour Market

Utilising the information of LFS 1996/97 and Census of Agriculture 1990, the labour force participation by farm vs non-farm is examined in this section. Also unemployment and underemployment by farm and non-farm are discussed.

(c) Human Capital

Participation of Farm and RNF households in the education system which expanded overtime is assessed using the information contained in LFS 1996/97. Evidence from previous studies is also provided.

(d) Rural Credit Market Participation

In this section the nature of the participation by RNF operators both as a lender and borrower is examined. Also the access of RNF operators to formal institutional mechanism is discussed. This section is mostly based on RFMS 1995/96.

CHAPTER 3: UNDERSTANDING INTER-LINKAGES

An investigation of interlinkages between RNF and agriculture as well as the rest of the economy poses formidable challenges both conceptually and empirically. Still an effort is made to draw inferences regarding inter-relationships between the RNF and rest of the economy by examining the nexus between evolving structure and composition of RNF vis-a-vis rest of the

economy, in particular the following are focused

- (a) Changes in the agrarian structure - a brief discussion of land reforms and their effect on labour use pattern and consequent ramifications for RNF is made. Also the input use and growth of agriculture is briefly discussed. In addition the adequacy of land resources to absorb the rural labour in farm sector is worked out by estimating labour surplus in agriculture from L.F.S. and a brief discussion on landlessness based on previous studies is made.
- (b) Development of Physical and Social Infrastructure is briefly touched upon to highlight the type of urban/rural integration Pakistan has achieved so far. This in turn affords insight regarding the impact of the rural uplift programmes on growth and composition of RNF.
- (c) Population growth and urbanisation has been briefly sketched in this section and the possible effects of urbanisation on the RNF growth are speculated. In this section also a sub-section on Emigration to Middle East describes the likely influences the ex-village and ex-country exodus of workers and inflow of remittances have had on the RNF.

CHAPTER 4: EXPLAINING GROWTH OF RNF

- (a) Utilising the multivariate regression framework in this chapter an effort is made to estimate econometrically the possible impact of factors discussed in the previous Chapter on the growth of RNF. In particular the fraction of Non-agricultural Households identified by Census of Agriculture 1990 at the district level is treated as dependent variable while quantity and quality of land, developmental level of the district and urbanisation are used as explanatory variables.
- (b) A separate sub-section examines the development of livestock in the country. Also an effort is made to empirically assess the determinants of the size of livestock holders at the district level.
- (c) Small Scale Manufacturing in rural areas finds its discussion in this sub-section.

CHAPTER 5: POLICY ISSUES

CHAPTER I

SECTION: 1 DEFINITIONAL ISSUES AND DATA PROBLEMS

Quantification and assessment of the size, composition and role of Rural Non-farm sector confronts various difficulties and statistical pitfalls. If the measurement focusses upon the input use particularly the labour, the design of the existing data collection instruments such as censuses and household surveys very often fail to capture the switching of labour from farm to non-farm during the reference period. Excepting the time use surveys with explicit identification of the industry and occupation other household surveys, generally report major activity and sometimes secondary activity too. These limitations could lead to erroneous judgments regarding farm/non-farm shares in the employment which is difficult to be treated as mutually exclusive in actual time use of individuals.

It will be instructive in this context to examine the distribution of multiple activities available from the data collected under Rural Financial Market Survey 1995/96. While the detailed classification is provided in Appendix Table 1 roughly it suggests that only 11% of the working population (of age 10 years and over) was exclusively engaged in Farm sector. For non-farm and livestock these percentages were 2% and 21% respectively. In other words more than two-thirds of the employed were engaged in more than one sector across farm/non-farm divide.

On the output or product end livestock clearly defies neat delineation. For instance Agriculture Census defines livestock holders as non-farm wherein land is not used or operated. But the data of the very census reflect participation of both farm, non-farm and non-agricultural households in livestock rearing. Nearly two thirds of cattle and sheeps etc. are kept by farm households.

In addition to above cited inadequacies of the data, inconsistencies and non-correspondence of definitions used in different sources of data further complicate the analysis. The major sources of data, such as Labour Force Survey (LFS), and Population Census opt a classificatory scheme at variance with the Agricultural Census. The former identify the sector or occupation of a worker on the basis of reported labour input made into that activity, the latter is more restrictive. Access to land either as owner or tenant serves as a condition for identification as farm household. The landless agricultural labour and livestock holder are defined to be non-farm households. In the 1990 Agriculture Census, the non-agricultural households are also reported. These are the one's which do not fall under the above mentioned farm and non-farm households.

In addition to the above caveats for the interpretation of the analysis which follows, the difference between the data on individuals and on the household has to be kept in view. For instance income distribution and poverty incidence has to be estimated on the basis of household data wherein the farm and non-farm distinction can be made on the basis of the Head of Household employing industry. But the distribution of employment, mean wages can be worked out on the basis of the information pertaining to individuals. These limitations has to be kept in view while interpreting the result in the subsequent sections.

SECTION: 2
SIZE AND COMPOSITION OF RNF

1. Estimating Size of RNF

Rural areas of Pakistan according to 1998 Population Census accounted for nearly two thirds of the total population. There has been a perceptible decline in the share of rural population overtime from 82% in 1951 to 67.5% in 1998. However the population in rural areas rose overtime, from 60.8 Million in 1981 to 88.12 Million in 1998 registering an annual average growth rate of 2.24 in contrast to 2.61 for the country.

The classification of Farm/Non-farm within rural areas confronts various data and definition problems as discussed already. Based on the information contained in Population Census and Census of Agriculture however the following distribution for the past three decades emerges.

Table No. 1
Population & Households by Farm and Non-farm (Rural Areas)

(000)

	1972	1980	1998
Rural Population	47363	58641	88120
Households Total	7287	9023	13450
Farm Households	3993	4265	5049
Non-farm Households	3294	4758	8401

Source: Census of Agriculture 1972,1980, 1990.

The above estimates have been worked out by using size of rural population reported in the three Population Censuses and the Censuses of Agriculture. Estimates for 1972 and 1980 have been reproduced from an earlier study (13) while for 1998, the reported households in Population Census 1998 have been divided into farm and non-farm on the basis of the proportions yielded by 1990 Census of Agriculture. It may be noted that non-farm households include livestock holders in addition to non-agricultural households.

Since classification of households into farm and non-farm is primarily based on Agriculture Census, it is imperative to understand the definitions used by the said census. The 1990 census adopts the following definitions for classification of different households;

- (a) Farm households include households reporting any farm area irrespective of its tenure and whether operating individually or jointly with other households.
- (b) Non-farm households include households not operating any farm area. Households owning land but not operating any land are also included in this category.

- (c) Livestock holder is a household without land. Households having one head of cattle/buffaloes, 5 sheep and/or goats but no farm area are included in this category.
- (d) Agricultural households include farm households and livestock holders
- (e) Non-agricultural households include households which do not fall in the categories of farm households or livestock holder. Not only the 1990 Agriculture Census introduces a new category of non-agricultural households but the definition of non-farm household was at variance with the one used by 1980 Agriculture Census. Still the distribution of the households by 1990 Agriculture Census is reproduced below in Table No. 2.

Table No. 2
Distribution of Household by Farm vs Non-farm (1990)

	Number of Households	Percentage of Households
RURAL		
All Households	13634827	100.00
Non-agriculture Households	5931451	43.50
Agriculture Households	7703376	56.50
Livestock Holders	2584633	18.96
Farm Households (Total)	5118743	37.54

Source: Census of Agriculture 1990.

The above table reflects that non-agriculture households excluding livestock holders account for 43 percent and farm households constitutes less than two fifth of the total (37.54). Almost one fifth of the households (19%) have been identified as livestock holders. Farm vs Non-farm composition varies across provinces and districts (the details are provided in the Appendix Table 2). Interestingly those provinces which are richer in agricultural resources such as Sindh and Punjab reflect a lower share of farm households in rural areas than NWFP and Balochistan. For instance farm households account for over 50 percent in NWFP and Balochistan in comparison to 36% for Punjab and 27% for Sindh. (See Appendix Table No. 2). In a multivariate regression framework the share of non-agricultural households and livestock holders are analyzed in a following section.

Alternatively one can use household surveys such as Labour Force Survey or HIES to estimate the farm non-farm proportions in rural areas. However, these sources of data afford two type of information. First using the information on the employing industry of the head of the household a distinction can be made between agriculture and non-agriculture households. In this case the livestock holders are included in the agriculture and it is not easy to have further disaggregation. Using this information from the L.F.S. 1996/97 one finds that almost half (47.8) of

the households were reported to be engaged in agriculture, while 37.6 percent of head of household were identified to be employed in non-agriculture segment of the rural economy. It may be added that around 14.6 percent of the head of households remained undefined, with no industry reported.

Employment data available at the level of individual constitute the second estimate. It can be used to work out the size which falls under the category of farm and non-farm employment. A perusal of these data is suggestive of perceptible rise in the share of non-farm employment over the time period (See Appendix Table No. 3). In other words the inter-temporal comparison, based on available data, is reflective of shift away from the farm to non-farm. This is evident from the data sets both at the level of households as well as at the level of individuals.

Size of the non-farm segment of rural areas discussed above needs to be interpreted carefully. Firstly it is residual and under or over estimation of urban/rural population in the census impairs the validity of these estimates. Secondly the estimated number of rural households vary by source of information. For instance Population Census 1998 reported 13.45 Million total rural households, in contrast Census of Agriculture 1990 provided the number to be 13.63 Million for 1990. While further in depth investigation is needed to arrive at some conclusion in this respect, the available data do suggest a shift away from farm to non-farm in the rural areas as provided below in Table No. 2-A.

Table 2-A
Farm/Non-farm Composition of Household

Period	Farm		Non-farm		Undefined	
	Unweighted	Weighted	Unweighted	Weighted	Unweighted	Weighted
1992/93	51.9	52.9	32.9	31.4	15.2	15.2
1996/97	47.8	49.2	37.5	36.3	14.6	14.4

Source: L.F.S.

Note: Farm/Non-farm distinction is made on the basis of the head of households employing industry.

Unfortunately not much research has been to understand the changes in the composition of rural economy in terms of farm vs non-farm. Partly non-availability of data explains this neglect, part of the reason lies in the focus of researchers on the question of landlessness due to resumption of land by large land owners consequencing in eviction of tenants. For instance Naseem (21) and Akmal Husain (12) tried to investigate this phenomenon. Naseem using the data reported in the Population and Agriculture Census estimated increase in landlessness from 0.6 Million to 2.45 Million during 1961/72 Inter Censal period, an increase of almost 357%. As pointed out by Irfan and Amjad (13) "these estimate greatly exaggerate the transformation in rural occupational distribution of households". This is because of the use of unadjusted data for 1960/61, the initial

year of comparison which greatly over-estimated the cultivators. Akmal (12) for instance estimates the magnitude of landless labour less than Naseem's. Irfan and Amjad for the decade of 1980's highlighted the decline in number of farm households from 54.8% of the total in 1972 to 47.3% in 1980 (13).

Studies of this genre in fact emphasised upon the changes in agrarian structure as a major determinant of changing composition of farm/non-farm households in the rural areas. This may be explaining a small portion of the total change in rural areas. In the subsequent sections an effort will be made to discuss the role of the broad forces of development such as improvement in physical and social infra-structure, urbanisation, internal and external migration and industrial development of the economy in this context.

SECTION: 3 **STRUCTURE AND COMPOSITION OF RNF**

Employment Structure in Rural Areas

Information pertaining to employment is reflective of a shift away from agriculture to non-agriculture in the rural areas. The share of agriculture in total employment declined from 74% in 1961 to 68% in 1981, according to the Population Census. The data contained in L. F. Surveys tend to recount the same story. The share of agriculture in total dropped from 72% in 1969-70 to 60.83 in 1996-97. A number of questions pertaining to this shift in the employment structure have to be addressed. Of these foremost being the assessment of the very nature of this transformation. Whether or not this can be characterised as the labour supply thrust phenomenon wherein the non-farm sector acted as a labour market sponge. Equally important would be to facilitate the identification of factors underlying this transformation. The available data do not afford a meticulous exercise to unravel the factors involved. Some insights, however, can be gained through scrutiny of data contained in the L.F.S. 1996/97, HIES 1993/94. Rural Financial Market Survey 1995/96, Census of Agriculture 1990, and HIES 1993/94 in addition to past studies and published surveys, which are used in the discussion below.

Industrial Composition of RNF

The rising share of non-agricultural employment in rural areas has been accompanied by perceptible transformation in the industrial composition of non-agricultural employment. Table No. 3 below depicts these changes. Major trends which emerge from the intertemporal comparison of L.F.S. data are suggestive of a de-industrialisation, massive upsurge in services and impressive growth overtime in the construction and trade. The share of manufacturing in total non-agricultural employment has been drastically reduced from 40% in 1969-70 to 17% in 1996-97. In contrast the relative share of services experienced a gain from 18% to 29% during the same period. Similarly construction and trade registered an accretion in their relative shares in total employment. Overall the employment structure represents a shift away from commodity production (51.75 in 1969/70 to 36% in 1996/97) to service orientation of the rural non-agricultural economy.

Table No. 3
Distribution of Rural Non-Agricultural Employment by Industry (%)

	1969-70	1974-75	1978-79	1986-87	1996-97
Mining and Quarrying	0.46	0.47	0.67	0.63	0.22
Manufacturing	39.86	33.38	31.72	26.03	17.31
Electricity and Gas	0.53	0.82	1.45	1.1	1.61
Construction	10.90	12.21	14.19	16.9	17.35
Trade	19.12	20.81	20.94	20.9	24.30
Transport	10.16	10.57	8.81	10.21	10.50
Services	18.26	20.74	19.80	24.00	28.62
Undefined	0.71	1.04	2.74	0.54	0.37

Source: Labour Force Surveys.

The explanation of the above cited transformation in terms of broad sweep of development of the economy, such as a changes in agrarian structure, urbanization, social sector development and other factors is attempted in the next chapter. Below an attempt is made to investigate further the employment structure.

Occupational Structure

Available information on occupational distribution provided by Labour Force Surveys is at a highly aggregative level of one digit classification. However at this aggregative level the occupational distribution tends to follow the industrial composition of employment, a shift away from agricultural workers to the services, clerical and professional workers. This aggregative picture however fails to portray the changes occurring at the disaggregative level. Irfan () in his study on "Employment and Wages in Rural Areas of Pakistan" made a comparison between 1971 occupational structure of Punjab with that of 1986. One of the major conclusion of this study being the squeeze of traditional rural artisans. "In fact some of the traditional occupations such as water carrier, potter, cobbler and tailors were reported to be at the verge of extinction".

Tabulations based on data collected through Rural Financial Market survey 1995/96 while providing a detailed picture of occupational structure also tend to suggest the insignificant share of traditional occupations and emergence of government employees as a dominant occupational group. For instance 23% of male and 19% of female non-farm worker belong to the categories of government services, teachers, midwives/nurse etc. Private service (largely undefined) is the most pervasive activity reported by non-farm workers, wherein 35% of male and 13% of female were reported to be engaged. In addition 14% of female were also reported to be engaged as domestic services. Less than 5% of male were engaged in traditional activities such as blacksmith, potter, weaver, tailor, cart driver, and Pesh Imam. It may however be noted that 9% of the female workers were identified to be weaver (Table No. 4). Around 12% of males and 19% of females were the factory workers with little further insight provided by data whether these worker commute to urban

towns or the factories are located in rural areas.

Table No. 4
Percentage Distribution of Off-farm Workers by Occupation and Sex

(%)

Occupation	Male	Female
Blacksmith	1.1	
Potter	.5	.4
Weaver	.2	8.8
Taxi Driver	5.1	.4
Carpenter	.9	.6
Mason	2.0	.6
Teacher	4.3	14.0
Government Service	18.4	1.9
Construction	14.4	.8
Nurse/Midwife	.3	4.1
Domestic Service	.7	14.0
Piece Worker	2.0	13.0
Factory Worker	12.0	18.9
Private Service	35.3	13.2
Tenant	.0	.4
Tailor	1.3	7.6
Cart Driver	.6	-
Pesh Imam	.6	1.4
Others	.3	

Source: Rural Financial Market Survey, 1995/96.

The governmental role in direct provision of jobs through the expansion of social sector networks such as schools, health centres etc is also manifest from the employment distribution by type of enterprise reported in LFS. Almost 11% of the rural employment falls under different tiers of the government including the public enterprises, more than 90% of these jobs are classified to be in the rural non-farm sector. (See Appendix Table No. 4). More than 70% of rural employment was reported to be under the individual owner or partnership, which was equally divided between farm and non-farm sectors.

Employment Status

Employment composition by status is reflective of variety of contrasts of good deal of importance. For instance L.F.S. 1996/97 data suggest that 29% of the employed are accounted by wage employees, half of these were working as regular employee with fixed wages while the other half were engaged as casual or piece rate worker. However these wage employees account for 10% of farm employment in contrast to 56% of non-farm employment. On the other hand unpaid family helpers accounted for 36% of farm employment whereas only 7% of non-farm employment could be identified as unpaid family helper. In fact non-farm employment is disproportionately represented by males because of the limited opportunities for female to be engaged as unpaid family helper. Only 20% of the rural employed female belong to RNF.

Employment Structure by Education

Educational composition of employed reflect a distinct edge of the RNF over farm employment. While illiterates account for 63% of rural employment only 44% of male and 67% of female workers in non-farm segment of the labour market are illiterate. The corresponding percentages for farm sector are 68% and 92% respectively. At the upper end of educational distribution 72% of matriculates and those with higher education level are in the non-farm sector. It may be noted that 77% of matriculates and 95% of female degree holder were engaged in community service (see Appendix Table No. 5). The foregoing cross-sectional evidence is reflective of substantial impact of the social sector expansion in addition to other developments. This is not to under-rate the importance of the farm/non-farm inter-linkages operating in the labour market. Using the wage data reported in L. F. S. a comparison between farm and non-farm wage levels by different categories of wage employee is made.

Farm/Non-farm Wage Differentials

A comparison based on monthly wage data of the employees in different industries in rural areas yielded by LFS 1996/97 is reproduced in Appendix Table No.7. While employees in the agriculture earn the lowest mean wages (Rs. 1903), those engaged in Finance and Insurance occupy the top position in this ranking (Rs. 6812). It may be noted that workers in trade/hotels earn some what similar levels of earnings as that of agriculture. Controlling for the education level of wage employees one gets additional insights. Ranking of industrial average wage varies by educational levels. In case of illiterates agriculture worker still lies at the bottom but this position is occupied by trade/hotels, construction and manufacturing for literate and educated workers (see Appendix Table No.8). However the employees in Finance and utilities lie at the top of this distribution for all educational categories.

In order to assess the importance and significance of different factors, in particular the impact of the farm non-farm distinction, multiple regression framework is resorted to. In addition to conventional human capital variables the sector and occupation specificity with wage outcome is examined. The results are reported in Table No. 5 wherein the variables used in the regression equation are defined too.

The table contains the results of the two equations wherein the dependent variable (LN wages) is being explained by number of variables. Overall the variance explained is satisfactory given the cross-sectional nature of the data. All the human capital related variables, and age and its squared term bear the expected sign and acquire conventional significance level. The curvilinear relationship between age and wages and positive association between level of education and wage levels are the expected result.

The effect of employing industry simulated by dummy variables for Agriculture and Trade suggest that these industries pay 19% and 16% respectively less than the remaining excluded industries. On the basis of these equations farm sector is associated with the lowest wages after accounting for the relevant variables. However it may be added that the workers belonging to the

category of the elementary occupations may be better off in farm rather than the non-farm sector, the interactive dummy variable is reflective of lower size of the slope coefficient for the latter sub-sector. The regression equation is also suggestive of significant male/female differentials wherein the former earn around 47% higher wages than the latter. Similarly the worker with regular employment on fixed monthly wages earn 27% more than their counterparts controlling for other relevant variables.

Table No. 5
The Determinants of Wages
Dependent Variable = Ln Wages Rs/Month

Explanatory Variables	Equation No. 1		Equation No. 2	
	B	T	B	T
Constant	5.2	58.5	5.85	69.8
Age	0.06	12.8	0.06	14.4
Age. Squared	-6.5E04	-12.16	-6.6E04	-12.3
ED ₂	0.13	4.73	0.13	4.8
ED ₃	0.23	7.89	0.23	8.0
ED ₄	0.53	12.1	0.52	12.0
Agri.	-0.19	-6.1	-0.24	-6.1
Trade	-0.16	-6.2	-0.17	-3.26
Reg Fix	0.27	8.26	0.27	8.2
Prof.	0.02	0.70	-	-
Worker	-0.12	-4.7	-0.03	-0.9
Male	0.46	10.7	0.47	10.8
Worker Nagri.	-	-	-0.11	-1.9
R ² (adjusted)	0.28		0.29	
No. of Observations	2943		2943	
F	107		99	

Source:

Note

ED ₂	=	Literates less than matric.
ED ₃	=	Matric+Intermediate but less than degree.
ED ₄	=	Degree and above.
Agri.	=	If employed in Agriculture = 1 otherwise zero.
Trade	=	If employed in Trade/Hotels = 1 otherwise zero
Reg Fix	=	If employed in Regular Fixed Salary = 1 otherwise zero.
Prof.	=	If occupational category is professional = 1 otherwise zero.
Worker	=	Dummy for elementary occupation category = 1 otherwise zero.
Male	=	If employee is male = 1 otherwise zero
Worker Nagri.	=	Interactive dummy between worker and non-agriculture sector.

CHAPTER 2

ACCESS OF RNF TO INCOME, HUMAN CAPITAL, LABOUR MARKET AND RURAL CREDIT MARKET

(A) INCOME DISTRIBUTION AND POVERTY INCIDENCE

Estimation of poverty incidence and income distribution by the farm/non-farm categorisation is arbitrary entailing various assumption. Income and expenditure collected through various instruments used for household surveys is reported for a wage earner and household. Household members do participate in more than one sector and earn income from both farm or non-farm sectors. The HIES data generally provide the source of income such as wages and salaries, income from self employment, property income and transfers etc. The changes overtime in these sources of income in rural areas are depicted below.

Table 6
Sources of Household Income (Percent) Rural Areas

Period	Wages & Salaries	Self Employment Income	Property Income	Transfers
1970-71	8.5	79.2	9.0	3.3
1979- 18.4	68.1	8.3	5.2	
1985-86	18.4	61.9	9.4	9.7
1990-91	23.4	55.2	11.4	10.3
1992-93	25.3	48.6	12.8	13.1

Source: HIES, various years.

In consonance with the shift overtime in the employment structure, the wages and salaries as a component of total income has risen from 8.5% in 1970-71 to 25% in 1992-93. All these gains have been made at the cost of self employment income. Rising share of transfers presumably owes to remittances both internal as well as external. Under the property, income attributed to owner occupied houses account for over two thirds of this sub-total.

A perusal of HIES 1992/93 is indicative of some interesting associations between the source of income and income level of the household. While wages and salaries constitute 25% of the total household income in rural areas of the country, the relative share of this source declines as one moves up the ladder and accounts for 14% of the income in the top income group. Both the crop income and income from livestock display a reverse trend having relatively higher share among top income than in the lower groups. The remittance income bears interesting pattern, foreign remittances have higher share in top group while domestic remittances have the same level of contribution in lower income groups. The contribution of owner occupied houses is more prominent at the lower end of income distribution.

RFMS 1996 affords some insights regarding the share of farm vs non-farm income in the rural areas. The Table 7 depicting the income distribution in rural areas suggests that farm income (including livestock) accounts for almost 50% of the total household income in rural areas. Across the provinces the share of crop income in total varies substantially, being 29% (the lowest) for NWFP and 55% (the highest) for Sindh. This reflects the distribution of land resources in the country. Within the farm income nearly one-fourths is due to livestock and 73% is crop income. There is a good deal of variation among different provinces. NWFP and AJK depend on livestock income much above the average wherein the share of crop income is reduced correspondingly in these two provinces.

Table 7

Sources of Income: Rural Areas - 1995/96

Sources of Income	Provinces/Regions					
	NWFP	Punjab	Sindh	Balochistan	AJK	Pakistan
Crop Income	7114.8 (42.0)	21899.3 (74.5)	23864.3 (73.5)	20295.2 (83.2)	2024.8 (13.0)	20675.1 (73.0)
Livestock Income	6975.3 (41.0)	6593.7 (22.0)	7934.2 (24.4)	4227.6 (17.3)	12746.5 (82.0)	6736.0 (23.8)
Bee-keeping/Forest Income	2298.0	49.4	359.1	0.0	276.5	351.5
Tubewell Income	-139.7	-1012.2	-154.5	-1125.7	-17.9	-731.3
Tractor Income	594.3	237.9	173.9	461.9	434.0	280.0
Land Rent Income	57.1	1534.2	282.3	507.9	93.8	997.0
Total Farm Income	16899.8	29302.3	32459.3	24367.0	15557.7	28308.4
Sub total	(29.0)	(54.0)	(55.0)	(41.5)	(19.97)	(50.3)
Agriculture						
Employment Income	1050.4 (1.8)	2041.0 (3.8)	2768.9 (4.7)	600.3 (1.0)	95.2 (-)	1979.6 (3.5)
Non-Agricultural						
Employment Income	29789.6 (51.3)	19060.1 (35.2)	17962.6 (30.5)	26473.1 (45.2)	39952.0 (5.2)	20580.4 (36.6)
Enterprises Income	9723.7 (16.8)	2408.3 (4.4)	5478.2 (9.3)	6806.6 (11.6)	4039.3 (5.0)	4277.5 (7.6)
Other Income	1560.3 (2.7)	1381.2 (2.5)	198.3 (0.4)	357.9 (0.8)	18455.5 (23.6)	1032.9 (1.8)
Total Income	59023.8 (100.0)	54192.9 (100.0)	58867.3 (100.0)	58604.9 (100.0)	78099.7 (100.0)	56178.8 (100.0)

Source: Rural Household Saving and Investment Behaviour Study. Study No.3. AERC, Karachi University, Karachi. February, 1998.

Note: Parenthesis denote percent of total income.

In case of non-farm income around three fourths (74%) is accounted by non-agricultural employment (both wage and self employment). Business income is higher in NWFP than the average while other income, presumably the remittances, is the highest in AJK.

Utilising the HIES 1993/94 data, wherein households are distinguished on the basis of the employing industry of head of household income distribution by farm and non-farm is discussed below. It may be noted that 16% of the head of household being either out of labour force such as retired, landlord or unemployed have been treated as a separate undefined category, while 33% of household belong to non-farm and 50% to farm sector. In this classification farm also includes livestock fisheries, and forestry.

Household distribution by various income groups with mean level of monthly income is provided in Appendix Table 9. Overall mean household income is higher for non-farm (Rs. 2650) than farm (2397) and undefined group (1310). The data reflect that distribution of household income is better in case of non-farm households than the farm or undefined groups. This is manifest from the fraction of households associated with bottom and top income groups. For instance 50% of farm and 72% of undefined households fall under the bottom two groups (less than 1500). Only 27% of the non-farm household fall in these groups. At the other end of the distribution 5.1% of the farm household belong to two top income groups in comparison to 2.5% of the non-farm households. Gini index yielded by this data set reproduced below is suggestive of the fact that income distribution in non-farm sector is more even than the farm sector where it appears to be highly skewed. The Gini index for the former (0.26) is half of the latter (0.52).

Table 8
Gini Index Household Income Distribution, Farm/Non-farm 1993/94

Type of Household	Weighted	Unweighted
Farm	0.52	0.43
Non-farm	0.26	0.26
Undefined	0.52	0.64
Total	0.41	0.40

Source: HIES 1993/94.

Poverty Incidence

Estimation of poverty stricken population and households has acquired the status of a routine annual exercise in Pakistan. With the availability of HIES data these exercises are generally undertaken to work out the estimate of the poor. Over the years the incidence of poverty by provinces have also been incorporated in these exercises in addition to rural/urban divide. However with the exception of few studies (Kemal and Amjad) hardly has there been any attempt to understand the inter-temporal variation in the incidence of poverty at aggregate or disaggregated level. Similarly there have been few attempts to understand the mechanics of poverty generation.

Assessment of the poverty by farm/non-farm classification has been almost a rare exercise. Utilising the Micro-nutrient Survey 1977 data Irfan & Amjad (13) reported that non-farm households are poorer than farm households. Irfan (14) on the basis of PLM 1979 data reported that 42% of non-farm household were falling under the poverty line in comparison to 37% for farm households and 39% for all rural areas. Similarly GAZDER on the basis of head of households characteristics worked out the poverty incidence.

Utilising the HIES 1993/94 data poverty incidence by farm and non-farm households is estimated. Regression of calorie consumption on food expenditure yielded a poverty line of Rs. 202 food expenditure to meet the caloric intake of 2550 per adult. The results of the exercise are provided below in Table.

Table 9
Poverty Incidence (Percent of Household Poor)
Farm vs Non-farm Rural Areas (1993/94)

Type of Household	All Areas	Irrigated	Semi-irrigated	Un-irrigated
Farm	23.3	22.6	30.0	20.2
Non-farm	29.5	31.7	29.8	20.3
Undefined	26.3	28.5	23.6	22.8

Source: HIES 1993/94 (Unweighted raw data).

As already pointed out that farm/non-farm classification is based on the employing industry of the head of households wherein around one-sixth of the household fall under the undefined category. In contrast to overall estimate of 26% for the rural areas, the farm households emerge to be better off in comparison to non-farm households (29.5% poor). While this finding is consistent with previous studies and has a ready explanation very often offered by researchers in Pakistan. For instance Hira-Shima (11) Aly Ercelawn (9) and Irfan (14) associated the rural poverty with assetlessness particularly the land. However focus of these studies has been on farm sector wherein non-farm sector did not fetch much of an attention.

The table reflects that poverty incidence by farm/non-farm classification differs with the characteristics of the area. In the irrigated areas the non-farm households emerge to be the worst but in semi-irrigated or un-irrigated these are either marginally better off or not worse off than farm household. While further disaggregated analysis is needed, however, it is difficult to conclude on the basis of HIES data that poverty incidence in the un-irrigated (less productive) areas is higher than the irrigated. Obviously factors in addition to land such as participation in the ex-village labour market, income from RNF and other developmental programmes have their own influence on income generation and poverty incidence.

Access to Human Capital

Over the years there has been substantial expansion in the availability of educational facilities in rural areas, as detailed in the next chapter. Also the data on enrollment and educational composition of the population and labour force suggest a rise overtime in the share of literates and educated. Participation in the schools by farm/non-farm has never been assessed, though the determinants of child school enrollments by parental characteristics such as education and income have been explored (Burney, Irfan, Khan, Sathar).

Farm/non-farm differentials in participation and access is examined utilising the recent LFS data. Distribution of the population aged 5 and over by level of education (Appendix Table 10) indicates that non-farm households are better equipped with human capital than the farm. For instance 8.2% of the members of the former compared to 4% of the latter have education level matric or above. On the other hand the fraction of population without any education is substantially higher in the farm than the non-farm households.

Age-sex specific school enrollment rates by farm/non-farm are compared in the Table 10 below. The participation level of the members of non-farm household is substantially higher than the farm. For instance in case of the age cohort of 5-9, 50% of the former and 40% of the latter are in schools. This differential is visible across all the age-cohort. One can attribute this differential to the opportunity cost of sending children to schools if they can be utilised in the household farm activities. However a more rigorous analysis at household level reckoning with other important variable is needed to arrive at any valid conclusion, though farm/non-farm differentials have been noted by previous research studies too.

Table 10
Age/Sex Specific Educational Enrollment by Farm/Non-farm (Percentage)

Age Group	Farm			Non-Farm			Undefined			Total		
	Male	Female	Both	Male	Female	Both	Male	Female	Both	Male	Female	Both
Total	26.95	12.92	20.30	33.33	19.90	26.93	33.39	18.20	25.64	30.13	16.22	23.46
5-9	49.68	29.50	40.12	57.17	40.93	49.33	63.45	47.92	56.27	54.28	36.20	45.68
10-14	70.83	35.68	55.12	79.92	50.48	66.65	82.85	56.38	70.50	75.81	44.07	61.50
15-19	37.38	12.23	26.09	47.24	18.56	34.03	49.46	23.66	37.09	42.58	16.32	30.54
20-24	7.17	0.70	3.89	11.53	2.30	6.94	14.23	1.12	7.53	9.71	1.29	5.46
25-Hi	0.15	0.03	0.09	0.28	0.05	0.17	0.05	0.00	0.02	0.18	0.03	0.11

Source: L.F.S. 1996/97.

Access to Labour Market

Recent information on labour market participation (activity rate) yielded by 1996/97 LFS provides some insights pertaining to farm/non-farm differentials. It may be added that inadequacy of the concepts which underlies the measures used to quantify the labour supply is well known and hardly needs any emphasis. To the extent these inadequacies are sector specific, such as ease with

which an individual can be classified as unpaid family helper in household farm or enterprise, there is a need to interpret the results carefully.

Overall the Table 11 containing activity rates by farm/non-farm and sex suggests that labour market participation is perceptibly higher in farm population than the non-farm. Females in the farm houses have a distinct edge (20.5%) over their counterparts in the non-farm households (4.7%). The farm/non-farm comparison controlling for education level of individuals provides some interesting insights. At the upper end of the educational qualification (Graduate and above) both male and female in the non-farm exhibited substantially higher levels of activity than their counterparts in the farm-sector. These differentials appear to be reverse at the lower levels of education. The labour market participation of illiterate female in farm households is almost twice (20%) that of the females in non-farm households, possibly due to the influence the land as a cooperant factor, wherein females generally can get easily engaged as unpaid family helper.

Table 11
Labour Force Participation Rate by Sex, by Education,
Farm/Non-farm (Age 10+)

Education Level	Farm			Non-Farm			Undefined		
	Male	Female	Both	Male	Female	Both	Male	Female	Both
Illiterate	95.0	20.1	51.3	91.1	10.3	39.6	39.8	7.6	18.1
Less than matric	52.2	8.5	10.7	49.7	6.1	36.1	32.4	4.5	32.3
Matric but less than graduate	67.7	19.3	58.7	73.0	15.3	62.1	42.0	17.0	34.9
Graduate & above	71.3	16.6	68.6	87.1	34.4	82.2	72.1	52.6	68.4
(33%) H.KE	77.6	20.5	50.6	71.8	11.7	43.8	46.5	11.3	28.2

Source: Labour Force Survey, 1996/97.

Unemployment and Underemployment

Unemployment data contained in LFS 1996/97 do suggest wide differentials by education levels, and sex across the farm/non-farm divide. While both male and female unemployment rates, are higher among the member of non-farm households, however, the difference is much wider in case of females. For instance unemployment rate for females in non-farm households is almost twice (20%) of what their counterparts in farm households exhibit. An interesting rather intriguing result pertains to unemployment rates by education level. While at the upper end of the educational laden unemployment rates are substantially lower in the non-farm households than the farm, however for all other categories lower than degree level the members of the farm households are better off. The explanation of differential access to white collar jobs needs to be further probed with the availability of additional data at disaggregated level.

Table 12

Unemployment Rate by Sex by Education, Farm vs Non-farm

Education Level	Farm			Non-Farm			Undefined		
	Male	Female	Both	Male	Female	Both	Male	Female	Both
Illiterate	0.9	9.5	3.0	2.4	16.9	5.6	23.2	34.4	27.0
Less than matric	1.5	14.1	2.4	3.9	20.3	5.0	15.1	32.8	16.5
Matric but less than graduate	6.8	17.2	7.6	7.8	31.3	9.2	23.2	22.0	23.1
Graduate & above	14.6	58.9	16.7	3.0	24.0	4.0	12.9	15.0	13.3
	1.7	10.2	3.4	3.7	19.6	5.8	20.0	32.7	22.6

Source: Labour Force Survey, 1996/97.

Under-employment

Available information on number of hours worked during the week is utilised to estimate the under-employment and reported in Table 13.

Table 13

Percentage of Under Employment by Farm, Non-farm and Undefined by Working House by Sex

Working Hours	Farm			Non-Farm			Undefined			Total		
	Male	Female	Both	Male	Female	Both	Male	Female	Both	Male	Female	Both
Hours not reported	0.2	0.7	0.3	0.8	2.3	1.0	1.1	3.4	1.5	0.5	1.3	0.6
1-14	0.7	3.2	1.1	0.3	3.0	0.6	1.0	0.8	0.9	0.6	2.9	0.9
15-34	8.5	42.6	14.5	6.1	33.6	9.1	8.5	40.3	14.3	7.6	40.2	12.7
35+	90.7	53.5	84.1	92.7	61.1	89.3	89.1	55.5	83.2	91.3	55.5	85.8

Source:

Overall under employment (working less than 35 hours/week) in rural areas amounted to 13% of the employed in 1996/97. The level of under employment is substantially higher in farm (15.6%) than the non-farm (9.7%). Across the divide female suffer from higher level of under employment than the male.

A perusal of the data on employed by broad industrial classification (see Appendix Table 11) suggests that the agricultural employment carries a lot of under employment. Once again female are worst sufferers wherein almost half of the female employed work less than 35 hours. Community services and manufacturing followed agriculture in this comparison.

(B) RURAL CREDIT MARKET PARTICIPATION

Rural credit market, notwithstanding the massive expansion in the institutional network, Agricultural Development Bank (ADBP) Commercial Banks and Cooperatives, is still dominated by the informal sector accounting for overwhelming share of credit extended to rural population. According to a recent survey (1996) 76% of the borrowings made by households originated in informal credit. An inter-temporal comparison lends an impression of a rise in the share of formal institutions in the total credit extended during 1973-85 and since then it has declined. Predominance of informal credit system characterised by heterogeneity of practices and complexity of operations defy efforts to understand the role and participation of RNF sector in rural credit market.

RNF participation in credit market however, has to be examined with respect to the dual role of its operators. Shopkeeper, commission agents and arhti's are the major functionaries in the informal credit market some of them reside in rural or peri urban areas. A household census conducted in 1995-96 by AERC and PERI in 250 randomly selected villages spread over the entire country, revealed that operators in RNF account for 90% of the sources of credit for rural households. Shopkeepers were the single largest category accounting for 39% of the responses of the households on sources of credit, irrespective of the fact whether the households borrowed or not. Since trade is a major activity in RNF, its interlinkages with the rural credit market are important wherein expansion in credit market leads to enlargement of these segments of RNF.

Utilising the information contained in the RFMS and Informal Lender Survey of 1996 an effort is made to examine the nature and extent of participation of RNF households in rural credit market both as lender as well as borrower. The table below provides the sources of funds for the informal lenders, most of which belong to RNF.

Nearly two-thirds of the informal lenders reportedly relied on their own sources to run their businesses, an impression of little dependence on external sources. The distribution of actual funds generated by informal lenders from various sources, however, indicated that about half of these funds were borrowed, and more than two-thirds of the borrowed funds were obtained from banks or societies (Table 14). This suggested that one-thirds of the total funds utilised in informal credit transactions originated from the formal credit system.

Table 14
Percentage Distribution of Funds by Sources and Type of Lenders

Type of Lenders	All Sources	Own Sources (%)	Borrowed		Friends* and Relatives
			Formal Sources	Informal Sources	
Commission Agents	100	78.3	2.6	19.1	0.9
Input Dealers	100	84.0	5.0	11.0	3.3
Commission Agents/Input Dealers	100	45.5	21.7	32.8	3.0
Landlords/Farm Machinery Suppliers	100	71.8	15.1	13.1	3.6
Money Lenders	100	62.6	0.0	37.4	5.0
Processing Units	100	26.6	69.6	3.8	0.0
Shopkeepers	100	72.3	3.8	23.9	6.0
Others	100	59.9	7.3	32.8	2.2
Total	100	52.0	33.2	14.8	2.2
Total (Excluding Processing Units)	100	68.4	9.6	22.0	2.9

Source: The 1996 Survey of Informal Lenders

*Friends and relatives are included in 'informal sources'.

About 83 percent of the total funds obtained from banks/societies were utilised by a single category of lenders, i.e. the processing units. Commission agents and landlords were the other main users of formal credit institutions. It appeared that a good deal of inter-linkage existed between the funds lent by formal credit institutions and the volume of credit transacted in the informal credit market. The institutions or influential persons in the society, who could also offer collateral, borrowed from the formal sector for onward lending in the informal sector presumably at higher rates of interest. It also implies that liberal credit policy has a positive influence on the trade activities in RNF.

What has been the share of RNF households in the volume of credit extended by informal lenders. An idea can be had from the Appendix Table 12. The credit distribution pattern substantially changes with the inclusion or exclusion of the processing units, a major lender. These units appear to be lending overwhelmingly to non-farm (over 90%) and accounting for over two thirds of informal lending. Excluding this major actor one finds that almost 72% of the informal credit has been allocated to farm sector, however with the inclusion of processing units the share of farm sector dramatically reduces to 26%.

On the basis of household data collected under RFMS 1996 it is difficult to conclude that those who borrowed belonging to RNF are at a disadvantage compared to farm sector. Distribution by size of loan by broad categorization of self and wage employment in farm and non-farm sectors is detailed in the Appendix Table No. 13. The data indicate that 70% of the self employed in agriculture fall under the three bottom loan size categories (less than Rs. 10000). Only 64% of the self employed off farm borrowers are associated with the same loan size categories. Fractions of wage employees in these slabs both farm and non-farm are substantially higher than the above cited percentages. On the other end of the distribution (Rs. 100000 and over) 13% of off farm self employed are associated with the top slab compared to only 2% for the self employed farm population.

This information however pertains to the size distribution of actual loans advanced and hardly affords quantification of access any way. Large size commission agents, input dealers, transporters and possibly money lenders belonging to RNF may explain this distinct edge of RNF over farm sector on access to large size credit. It may be noted that the percentage who borrowed during past five years according to RFMS is substantially less for RNF (including hired labour) than both the farm only and livestock holders. These fractions are 11%, 23% and 15% respectively.

The household data of this survey can afford identification of sources of credit both formal and informal. However, classification of households into distinct categories such as farm/non-farm is to some extent arbitrary, as discussed already. In addition the responses were gathered from male as well female though the number of the female borrowers were quite limited. The distribution of responses from male are provided in Table 15.

The table is suggestive of the fact that those who borrowed during the past five years almost half of the amount was borrowed from friends and relatives. Only 12% of the loans were borrowed from the formal sources, such as Government, ADBP, Commercial Banks and Cooperatives.

Nearly 20% of the credit was extended by RNF operators such as commission agents, shopkeepers etc while the remaining was lent by landlords, employers and other lenders.

Table 15
Percentage Distribution of Credit Extended by Source and Type of Borrowers

Source of Funds	All Borrowers			Livestock Only	Off Farm Only
	All	Irrigated	Unirrigated		
Government	.6	.3	.8	.5	.3
ADBP	9.5	18.1	3.9	3.3	6.5
Commercial Bank	.8	1.0	.6	.7	.6
Cooperatives	1.1	1.3	1.1	-	2.5
NGO	.5	.1	.7	.4	.9
Friends/Relatives	50.1	44.4	53.9	51.2	57.0
Commercial Agents	3.1	4.9	1.9	1.4	3.0
Arhti	5.9	7.0	5.2	4.2	4.5
Input Supplier	6.1	5.9	6.2	8.6	4.6
Shopkeeper	4.2	2.1	5.6	10.3	5.7
Landlord	11.3	9.1	12.7	12.9	7.8
Employer	3.2	4.1	2.7	4.8	.8
Agent Bisi	.0	.0	.0	-	.0
Other (specify)	3.5	1.9	4.6	1.7	5.8

Source: RFMS 1996.

Credit extension by formal sources varied substantially by type of the area. In case of irrigated areas the share of formal sources worked out to 21% of the total credit. The same is reduced to 6% of the total in unirrigated areas. The role of relative and friends and the RNF operators in the unirrigated areas is correspondingly enhanced. Higher level of credit extension by formal sources in the irrigated areas could be due to the higher level of demand for credit associated with higher input use. Interestingly the contribution of the formal sources is higher (10% of the total lending) in case of households identified as off farm than the average of unirrigated areas. However the share of the RNF operators such as commission agents is somewhat reduced in total lending to these households, though dependence on friends is more than their counterparts. For pure livestock holders the role of formal credit sources is substantially curtailed with gains in the relative share in total credit made by shopkeeper, landlords and employers.

The extent to which the credit needs are met is difficult to quantify. According to the survey, 84% of those who responded to the question expressed need for additional loans. While it is not possible to classify the needy respondents according to farm, non-farm classification, however indirectly it can be inferred from the information on additional loans needed by purpose. Almost one-fifths of the needed loans were to be spent on business expenditure. This is followed by 19% for farm inputs and 15% for other farm equipments. Around one tenths of the additional credit needed was to be spent on purchase of capital goods. This result together with the lower fraction of borrowers from RNF than farm and livestock holders tend to suggest that RNF on the whole may be at a relative disadvantage as far as access to credit is concerned.

CHAPTER 3

THE DETERMINANTS OF THE RNF SECTOR GROWTH

The foregoing has established that the share of RNF has risen overtime and simultaneously its employment composition shifted away from commodity production to services sector. Not only the RNF emerges to be the major employer of educated labour force and white collar occupations in rural areas but in general the mean wages are higher in RNF than farm sector though for some sub groups wages in farm sector are higher than the non-farm sector. Still the multivariate regression is reflective of lower wages for farm sector wage employees. Similarly both the distribution of income and poverty incidence hardly supports the contention that rural non-farm sector totally represent a labour market sponge with disproportionate incidence of poverty and unemployment or underemployment. In fact one finds that non-farm sector employment can hardly be regarded as homogeneous. In particular the wage employees in non-farm sector represent a broad spectrum occupying both the top and lower rungs of the wage distribution. Income distribution on the other hand is reflective of better and more even distribution pattern than the farm sector.

Obviously many factors and forces underlay these distribution pattern and changes overtime. Firstly the nature and level of growth in agriculture. The technological developments and agrarian change, had a bearing on RNF sectors. Secondly a major impetus to rural development has originated from rural uplift programmes comprising physical and social infrastructural development. Thirdly since early 1970's the emigration to Middle East and more recently to other parts of the world has had a bearing on the character and pace of developments in rural areas. Finally the overall development of the economy, urbanisation and population growth wielded their own influence on the RNF sector. Below a discussion of the growth and changes in these broad forces is made.

SECTION: 1

AGRICULTURE AND CHANGING AGRARIAN STRUCTURE

Given the interdependence between farm and non-farm in product and input market the relationships between these two are quite complex. Agricultural transformation influences rural non-farm sector development. However these affects get transmitted through a number of intervening variable such as choice of inputs, composition of output and farm size distribution. It may be added that farm size distribution is an exceedingly important variable. Being proxy of both the scale of operation and form of organization it influences the choice of inputs including labour, intensity of land use and income distribution. The land reforms bearing upon farm size distribution is discussed below.

Land Reforms

Pakistan introduced three Land Reforms in 1959, 1972 and in 1977. Legally there has been a decline overtime in the permissible ceiling on ownership wherein the prescribed upper limit on land holding was 500 acres in irrigated and 1000 acres of non-irrigated in 1959. These were further slashed down to 150 acres of irrigated and 300 acres of non-irrigated areas in subsequent land

reforms. Owing to plethora of exemption in 1959 Land Reforms only 2.3 Million acres were distributed to roughly 20000 families which accounted for 7 to 8% of subsistence farmers. Less than full implementation of 1972 and 1977 land reforms fetched only 0.87 Million acres in contrast to 2.8 Million expected. Recently efforts are afoot to implement fully 1977 land reforms whose impact can not be quantified due to lack of information.

The impact of the three land reforms has been quite limited as far as the farm size distribution is concerned. The Gini coefficient as a measure of inequality in terms of the crop area actually rose from 0.593 in 1960 to 0.611 in 1980. A comparison between the Agriculture Censuses of 1972 and 1980 indicates that both number and area under the size categories of 7.5 acres and less rose over time in relative as well as in absolute terms. The other size categories in general experienced a decline. The 1990 Census of Agriculture denotes further accentuation of these trends. (See Appendix Table 14).

Inheritance custom and law requiring sub-division of land among the heirs in conjunction with growing population means a rise over time in the relative number and share of small farms in total farm area. What probably needs an explanation is the resiliency of large farms not only to retain but increase the average size of the farm (operational holdings). There appears to be a general consensus among researchers that this phenomenon is due to resumption of land by large land owners from tenants. This is also visible from a comparison of the Agricultural Census of 1972, 1980 and 1990 wherein both the number and area of tenant operated farms has declined. (See Appendix Table 14).

It must not be forgotten that the data in the Agriculture Censuses pertain to the operational holdings and not to ownership. Increase in the average size of farm at the top of the distribution can occur by either of two processes: (i) resumption of land from tenants by owners, and (ii) development of joint ventures or informal tenancy. While the former process has been widely discussed and highlighted, the latter, has been hardly mentioned.

What probably matters in this respect being the assessment of the extent to which the eviction of tenants, worker's shift from farm to non-farm, entailed proletarianisation and worsening income distribution and poverty of the affected households. Irfan in his study concluded on the basis of a 1984 survey conducted in Punjab province, that the data hardly warranted a definite conclusion that through eviction the tenants suffered a decline in their income. Application of care is needed in the interpretation of these result. Not only are these results difficult to be generalised for the entire country but these also refer to a specific time period. The period covered by this survey 1976/77 to 1983/84 was characterised by massive exodus of Pakistani workers to Middle East and a high growth in GDP. The resultant tight labour market conditions as evidenced by rising real wages in rural areas (15) may have facilitated the labour absorption in the rural labour market in the RNF sector.

Input Use in Agriculture

In addition to a substantial expansion in the irrigation through the construction of dams, canals and irrigation channels resulting in a substantial rise in irrigated areas, there has been a

quantum rise in the use of various inputs such as fertiliser, pesticides, and tractors etc. At present more than two thirds of cultivated area has been brought under irrigation. Similarly the use of various inputs per cultivated acre has experienced substantial expansion overtime. This is reproduced below in Table 16. For instance fertilizer nutrients has risen from 16Kg per acre in 1969/70 to 101.5 in 1994/95. During the same period improved seed distribution and pesticides has expanded manifold. Whilst increased use of the inputs generates higher agricultural output, good deal of trade activities also spring up for sale and distribution of these inputs as well as the increased outputs. The data imply a deceleration in the rate of input growth for recent sub-period. Partly this could be due to withdrawal of subsidies entailed by Structural Adjustment Programmes of 1990's.

Table 16
Use of Agricultural Inputs per Cultivated Acre 1969-70,
1979-80, 1984-85, 1989-90 and 1994-95

Years	Acreage Input (Kgs) per Cultivated Acre of:			
	Fertilizer Nutrients	Improved Seed Distributed	Pesticides	No. of Tractors Per 100 Acres
(1)	(2)	(3)	(4)	(5)
1969-70	16.00	0.83	0.10	0.166
1979-80	51.62	3.01	0.22	0.476
1984-85	60.81	4.19	0.77	0.763
1989-90	90.26	2.90	0.50	-
1994-95	101.53	3.57	1.01	1.173

Source: M. G. Chaudhry, PIDE, 1998.

The data also suggest a tremendous rise in the use of tractors. Number of tractors per 100 acre went up from 0.166 in 1969/70 to 1.173. Mouza Statistics of 1993 yield on the average six tractors per reporting villages in the entire country. According to the latest Census of Agriculture only 10 to 15% of the area is cultivated by bullocks only.

There have been a number of studies which deal with the impact of tractorisation on labour use in agriculture. One set of studies claimed and provided evidence pertaining to the labour displacement effect of tractors while the other set of studies argued that the direct labour displacement effect has been more than counter-balanced by the indirect output increasing effect of the tractors. A survey comparing 1976-77 and 1983-84 found that labour use per cultivated acre declined during this period by about six percent. This study, however, failed to provide a cogent explanation of the decline in labour use during this period even on the farm using bullocks. At best the available evidence regarding the effect of tractors on labour use can be regarded as inconclusive but certainly there is no evidence of increasing employment per unit of the area.

Employment Generation in Agriculture

Labour absorptive capacity of the agriculture and changes overtime are one of the important factors influencing the type and magnitude of the RNF sector. A rise in the labour input in agriculture may reduce the supply for RNF sector as well as together lead to higher income and productivity levels in both farm and non-farm sector of rural areas. On the other hand a failure to absorb the incremental labour force in farm sector may be reflected in the sub-optimal use of labour wherein segments of both farm and non-farm degenerate into labour market sponges.

Major determinants of employment generation in agriculture such as input use, farm size distribution have already been discussed in the foregoing. Hardly any perceptible change in cropland and cropping intensity has been experienced during the past two decades or so. Both the land use intensity and cropland were reported to be roughly constant during the 1980/90 intercensal period, these were for instance 88 and 47 Million areas. The cropping intensity, however, rose from 120 to 137 during this intercensal period. Given the inverse relationship between cropping intensity and size of the farm and with the neutrality of tenurial status in labour use, the changing farm size distribution maintained the labour input per cropped acre during 1980-90. It was 0.28 in 1980 and 0.29 labour man year in 1990. The labour input estimated is exclusive of casual labour because of non-availability of information. This constancy, it may be highlighted, was due to relative rise in the share of small farms in total area, as labour intensity has declined for all farm sizes during the intercensal period. According to the Census of Agriculture the number of permanent labour (family and hired labour) has risen from 13 Million in 1972 to 17.9 Million in 1990.

Focussing upon employment in agriculture, reported by the Censuses of Agriculture however one finds an interesting picture. In contrast to 1970's where the data reveal a drastic curtailment in the use of permanent hired labour, the trend appears to have been reversed during 1980-90. There is a good deal of substitutability between family labour and hired labour. Also there is an increasing resort to casual labour. The number of farms reporting the use of casual labour has risen from 33% of the total in 1972 to 50% in 1990. This casualisation of agricultural labour presumably is associated with type of input use such as pesticides in cotton and tractors. During 1980-90 a remarkable employment generation is reported by livestock holders in the category of permanent hired labour. (See Appendix Tables 15 & 16).

Estimating Surplus Labour in Agriculture

Efforts using household survey data to estimate the surplus labour have been rare in Pakistan, though poverty and poor have been quantified frequently. Exercises aimed at estimation of surplus labour in other countries estimated the labour demand for a typical hectare or acre of land. Alternatively a comparison of labour used by farms which employ wage labour with those which depended exclusively on family labour has been made. (Mehra 1966). Labour force survey data do not permit such estimates which require enterprise based information. A crude procedure to estimate the labour surplus is used and the results are presented in Table 17 below.

The table presents the surplus as percent of employed in the respective category of employment status. This estimate is based on the assumption that wage employee is fully employed and those who work less than the number of hours worked by wage employee suffer from under-employment. The difference between the average number of hours worked by an employment category and that of wage employee is identified to be as surplus labour. The table is indicative of a higher level of estimated surplus in non-irrigated agriculture than the irrigated. In addition a higher fraction of female workers is surplus compared to males, due to concentration of females in the unpaid family helper category. On the whole under certain assumptions this table suggests that if one were to reorganize so as to allow unpaid family helper and self employed the same average working week as the wage earners, then agriculture sector could release 16% of those currently employed. However, the procedure underlying this estimate has been not only crude but aggregative too.

Table 17
Surplus Labour as % of Employed in Agriculture

Type of Area	Male	Female		
	Unpaid Family Helper	S.E.	U.F.	Total
Irrigated	1.4	3.0	13.0	11.4
Semi Irrigated	-	21.0	17.0	18.0
Unirrigated	10.3	18.0	33.0	30.8
All				16.0

Estimates based on L. F. S. 1993/94.

Note: S.E = Self employed

U.F = Unpaid family helper

There is an argument that, through land redistribution and reversing mechanisation, many more of the growing rural labour force could be absorbed productively into agriculture. This question was addressed in Irfan and Arif (3). This exercise was aimed at assessing the extent to which the available land resources under the current distribution pattern and productivity conditions can absorb the farm population. The following assumptions were made in this exercise.

- (a) The farm population receives income only through crop and livestock (non-farm labour or ex-village labour participation is not allowed);
- (b) A subsistence income consistent with nutritional needs of 2550 calories per adult was used to define an income requirement. This was translated into a required crop area under different tenurial arrangements. It was 6.2 acres on average for owner operators and for owner-cum-tenant, the required farm area was 9.3 and for tenants it was 12.4 acres;
- (c) It was assumed that people can migrate only within the district, in other words the district was chosen as the unit of analysis;

- (d) In order to deal with inter-district productivity differentials, the per acre productivity of each district was used as an index to adjust the required area for subsistence in that district;
- (e) Any aggregate insufficiency of land resources to yield subsistence income was identified as generating landless households.

Around two-thirds of the agriculturally-dependent population using this procedure was identified to be as landless. Table 18 below provides the details at provincial level.

Nearly two-thirds of "farm" households cannot meet their subsistence needs from existing land resources. Incipient "landlessness", thus defined, is highest in NWFP (82%) and lowest (52%) in Sindh province. In terms of numbers, 2.7 million agriculture-dependent households in 1980 would not have land sufficient enough to earn subsistence income.

Table 18
Estimated Landless 1980

(% of Farm Households)

Near Landless Provinces	Owner	Owner/Tenant	Tenant	All	Pure Landless	Total
Pakistan	60.6	52.6	72.2	62.0	5.1	67.1
Punjab	60.2	55.4	70.9	61.7	6.3	68.0
Sindh	33.5	20.7	71.1	49.3	3.2	52.5
NWFP	83.5	61.5	80.3	79.6	2.4	82.0
Baluchistan	67.8	71.2	94.0	72.1	2.8	74.8

Source: J. Cameron and M. Irfan (1991) "Enabling People to Help Themselves: An Employment and Human Resource Development Strategy for Pakistan in the 1990s. ILO/ARTEP.

The paper concluded that only under extreme circumstances entailing radical departures from the past, might the existing land have afforded a subsistence income to all the farm population. These measures should include redistributive land reforms with a permissible upper ceiling of 25 acres for a household, abolition of tenancy, transmigration of farm population from land short to land surplus districts and above all improving the per acre productivity in Barani and less productive districts to the average of the country. Even if the political will existed to introduce these radical land distributive changes, the required increase in the productivity levels of the agriculture sector in the less productive districts would not prove to be an easy or costless task. The finding of the exercise highlighted the growing physical and socio-political imbalance between the land resources and population as well as making it very clear that any thought of absorbing a growing rural population within small scale agriculture were not very realistic and that a drive for productivity gains per worker and per unit area were the current requirement.

Worsening imbalance between land resources and mounting population pressure in association with tractorisation and resumption of land by landlords, to some extent explain the relative shift of rural employment from farm to non-farm segments of the labour market. However other factors in addition to rising agriculture output have been operative too which also explain growth in RNF. A brief discussion on social and physical infrastructure and urbanisation is made below.

SECTION: 2

PHYSICAL AND SOCIAL INFRASTRUCTURAL DEVELOPMENT

Notwithstanding the fact that thrust of the development policies pursued in Pakistan did have an urban bias, rural uplift programmes, educational expansion and health coverage in rural areas in addition to agricultural development has also been an important ingredient of overall developmental efforts. The public sector development expenditure in agriculture registered a rise of Rs. 6.6 Billion in 1980/81 to Rs. 17.4 Billion in 1992/93. Under the assumptions that 25% of the total expenditure on health, education, nutrition and transport are spent in rural areas and these areas also get one tenth of the total expenditure on power, Sarfraz (22) estimated that rural areas got one thirds of the total public sector development expenditure in 1980/81. This share according to his estimates has declined to 26% in 1992/93, though the actual outlay has experienced a gain.

Over the years the improvement has occurred in most of the indicators of social and physical infra-structure. For instance the total road length has gone up from 44.6 thousands kilometers in 1982 to 92 thousand in 1998. This rising road density has been accompanied by expansion in the social infra-structure facilities such as schools, hospital and other similar facilities. The available data do not permit separate estimation for rural areas. The countrywide information is suggestive of around 150% increase in number of primary schools during 1980/96 period. Middle and secondary schools experienced some what similar level of expansion during the same period. Health infra-structure also underwent expansion. Hospitals mostly located in urban areas went up from 550 in 1979 to 863 in 1996, but Basic Health Units most of which are located in rural areas experienced almost seven times increase (645 in 1979 to 4498 in 1996) during the period.

Mouza (village) statistics provide an idea regarding the inter-temporal changes in the access of rural population to the physical and infra-structural facilities. A comparison of 1993 with 1983 is provided below in Table 19.

The data indicate substantial improvement in the availability of physical and social infra-structure. For instance the percentage of villages having primary school (less than 1 KM) has gone up from 68% to 82% during 1983-93. In case of primary schools for females this fraction is lower but the rate of growth is higher than that of boys. Similarly by 1993 nearly half of the villages in rural areas were equipped with metalled road as compared to less than one-thirds in 1983. With the possible exception of location of government hospitals which are mostly located in urban areas, there appears to be substantial expansion in the physical and social infrastructure.

There appears to be variation in the level of access among the provinces. In particular the

sparsely populated Balochistan lags behind the rest of the country. Detailed information at the district level highlights the discrepancy and relative neglect of certain district as compared to other within a province.

Table 19
Availability of Facilities by Distance (Kilometers)

Type of Facility	1983			1993		
	Less Than 1	1-3	Total	Less Than 1	1-3	Total
Metalled Road	30.00	28.00	58.00	51.65	25.51	77.16
Primary Schools:						
Boys	68.00	20.00	88.00	82.54	11.72	94.26
Girls	40.00	23.00	63.00	61.95	17.10	79.05
Middle Schools:						
Boys	15.00	32.00	47.00	27.31	40.92	68.23
Girls	9.00	20.00	29.00	19.15	32.51	51.66
High Schools:						
Boys	7.00	20.00	27.00	15.35	36.96	52.31
Girls	4.00	11.00	15.00	8.97	24.29	33.26
College						
Boys	1.00	4.00	5.00	2.96	7.60	10.56
Girls	1.00	3.00	4.00	2.48	5.81	8.29
Government Hospital/ Disp./Health Centres	13.00	28.00	41.00	12.23	32.73	44.96

Source:

Impact of the infrastructural development on the RNF and rural areas in general has not been assessed in Pakistan. Rural roads not only provide cheaper transport and access to markets for agricultural products, but also facilitate better access to schools, hospitals, variety of consumer goods and promotes communication between urban centres and rural areas. In Pakistan for instance number of registered vehicles almost tripped during the last 15 to 20 years. Obviously rural areas did benefit. While Suzuki revolution in the country particularly in rural areas engendered an integration of rural with urban areas it has also influenced positively the promotion of transport and trade activities in the RNF. Massive expansion in the wage employment in rural areas to a large extent owes to manning the educational and health facilities. In wage employment the government emerges to be a major employer in the rural areas.

The rural physical and social infrastructure development provides an explanation of shift in the composition of RNF employment, a rise in service, trade and construction. While recognising the importance of rural/urban integration due to various factors there is a need to underscore the fact

that it will be premature to conclude that these relationships can be characterised as symbiotic because in the emerging equation the rural areas are gradually turning into abode of consumers with increasing dependence on urban areas. The artisan squeeze and the shift away from the commodity production in RNF happens to be a major result of the type of rural/urban integration has occurred in Pakistan.

SECTION: 3 URBANIZATION

The trends and patterns of urbanization estimated from these provisional results of 1998 population census have been compared with previous studies based on the 1951, 1961, 1972, and 1981 censuses. It is well documented that the definition of 'urban' used in a census affects the most not only urban areas, but also the size of the urban and rural population. It seems important to review first briefly the definitions used in different censuses.

Definition of Urban Areas

In the first three censuses 1951, 1961 and 1972, a city or town was regarded as an urban area if it had a minimum of 5,000 inhabitants. The municipal and town committees were also treated as urban area if they had fewer than 5,000 inhabitants. There also existed the provision to include any other area having urban characteristics. The definition of 'urban' was changed in 1981 census by replacing the size-specified definition with an administrative criterion. The definition of 'urban' used in the 1998 census is also based on this criterion. This similarity in definition makes the data generated by the two latest censuses comparable.

However, with respect to urban population, there seems to be three major limitations of the 1998 census, which might have depressed its share in the total population of the country. First, immigrant population has not been included in the provisional results of the census. A large number of Afghan refugees and illegal immigrants are concentrated in Karachi and to some extent in Peshawar and Quetta. This exclusion has certainly depressed the share of urban population. Second, there has always been a possibility of double counting of internal rural migrants at the places of their origin and destination. But in view of the strict measures taken by the Population Census Organization to avoid duplication, many urban persons might have themselves enumerated in the rural areas of their origin thus increasing rural population and decreasing urban dwellers. Third, there are some fears that communities adjacent to cities were counted in the 1998 census as rural as compared to the 1981 census when they were treated as urban. This might have inflated the rural population and depressed the urban count.

Urban Growth and Urbanization

In terms of absolute numbers, the population living in urban areas of Pakistan increased from 6 million in 1951 to about 43 million in 1998. The urban population in 1998 exceeded the total population of the country in 1951. The share of urban population in the total population increased from 18 percent in 1951 to about 33 percent in 1998. However, the average annual growth rate of urban population declined from 4.9 percent for the intercensal period of 1951-61 to

3.5 percent for the 1981-98 period. But the rural growth rate fluctuated substantially between 1951 and 1998. It increased from 1.8 percent for the intercensal period of 1951-61 to 3.4 percent for the next intercensal interval, 1961-72. It dropped to 2.6 for the 1972-81 period, and declined further to 2.2 percent during 1981-98. Because of these fluctuations in the rural growth rates, the ratio of urban to rural growth fluctuated as well during the four-intercensal intervals (Table 20). However, despite these fluctuations, the ratio has declined from 3 in 1961 to 1.4 in 1998. It thus appears from the data generated by the five censuses that the degree or level of urbanization has increased overtime.¹

Table 20

Size, Level and Growth of Pakistan's Urban Population, 1951-1998

Population (000)/ Urban Growth	Census Years				
	1951	1961	1972	1981	1998
Total Population	33780	42880	65309	84253	130580
Urban Population	6019	9655	16593	23827	42458
Share of urban Population in Total Population (%)	17.8	22.5	25.0	28.3	32.5
Intercensal Annual Urban Growth Rate (%)	-	4.9	4.8	4.4	3.5
Intercensal Annual Rural Growth Rate (%)	-	1.8	3.4	2.6	2.2
Ratio of Urban to Rural Growth*	-	3.0	1.6	1.8	1.4

Source: Abbasi (1987); GOP (1998).

*Refers to intercensal growth rates which are reported in Appendix Table 1.

Between 1981 and 1998 urban population of three provinces, Punjab, Sindh and NWFP grew at the same rate (around 3.5 percent per annum). There was also not much difference in urban growth of these provinces for the period of 1972-81. However, differences did exist in this growth across these provinces during the 1950s and 1960s, when Sindh was the fastest growing province. In view of relatively more rapid decline in the growth of urban population of Sindh, it has recently been argued that the large cities of Sindh, particularly Karachi and Hyderabad, have lost their dynamism due to the dislocation of economic activities caused by the troubled law and order situation in these cities during the last one and a half decade. This argument seems to be only partially correct because it is not only Sindh, which has experienced a decline in the annual rate of urban growth overtime, but Punjab and NWFP followed the same path.

¹ But this increase is not as rapid as was being projected mainly because of a continuous decline in the annual urban growth rate. For example, in the early 1970s, it was estimated that by 2001 the nation's urban population will number 86 million and will make up nearly two-thirds of Pakistan's total population. The United Nation's projection made in the 1980s and early 1990s showed the level of urbanization around 40 percent by 2001. Even the Planning Commission's working group on urbanization for the Ninth Five Year Plan estimated the share of urban dwellers at about 35 percent in 1993.

Rather there seems to be an increasing convergence in urban population growth rates not only across the four provinces but also across the cities. This is because in addition to large urban centres of the country, small and medium-sized cities have grown rapidly during the last two decades. In that Table 21, where all urban centres of the country were classified into nine categories, confirms these findings. The annual growth rate of the 7 major cities in category I was 3.3 percent for the period of 1981-98, while for the category II it was 4.1 percent. However, the growth rate for the latter was influenced heavily by the growth of Islamabad and Quetta. Between 1981 and 1998 the medium-sized towns (categories III and IV) grew annually at a rate of more than 3 percent. The growth rate at which the small towns (categories V to IX) grew annually during this period was 3.7 percent, which is higher than the rate of any other category shown in Table 21, except the growth rate of cities in category II. Moreover, during the intercensal period 1981-98, the average annual urban growth rate of about two-thirds of the total districts in the country was 3 percent or higher. Out of the 34 cities, which grew at a rate of 4 per cent per annum or higher during this period, among the 10 largest cities only Quetta grew at this rate. This indicates that all urban centres of the country, particularly the district headquarters, have been growing rapidly.

Table 21
Average Annual Growth Rate of Cities and Share of Natural
Increase in Urban Growth by Size of the Cities, 1981-98

Categories	Size of Cities (Persons)	% Share in Urban Population 1998	Average Annual Growth Rate 1981-98	% Share of Natural Increase
I	≥ million	50.1 (51.2)	3.3	74.0
II	500,000-999,999	4.9 (4.4)	4.1	62.1
III	200,000-499,999	9.1 (9.7)	3.1	81.1
IV	100,000-199,999	8.6 (8.9)	3.2	76.2
V-IX	< 100,000	27.3 (25.8)	3.7	61.9

Source: GOP (1984); (1998)

Note: In parentheses are the shares of urban localities in the 1981 census.

Components of Urban Growth

The contributions made by the three different components (natural increase, reclassification and internal migration) to urban growth during 1981-98 are reported in Table 22. Decomposition of urban population growth for the 1972-81 period is also reported in the table. The trend over time shows that for both periods, 1972-81 and 1981-1998, urban areas grew primarily because of natural increase. However, its role was more dominant in the 1970s than in the 1980s and 1990s. It might be due to a decline in urban marital fertility rate, which declined substantially from 8.1 in the mid-1970s to 5.7 in the early 1990's. The role of reclassification in the urban growth was less important during the 1970s than its role in the 1980s and 1990s.

Table 22
Components of Urban Growth by Province, 1972-1998

Period	Region	Natural Increase	Reclassification*	Internal Migration	Total Increase
1981-98	Pakistan	70.3	9.7	20.1	100
	Punjab	74.2	11.3	14.5	100
	Sindh	70.6	4.5	24.8	100
	NWFP	70.0	20.9	9.1	100
	Balochistan	43.7	18.4	37.9	100
	Islamabad	35.1	-	64.9	100
1972-81	Pakistan	78.4	2.6	19.1	100

Source: GOP (1989); (1998)

* The share of reclassification in urban growth is computed by taking into account only those formerly rural areas that were transformed into urban during 1981-98. Information on annexation of towns into pre-existed urban areas is not available. This annexation can affect the share of reclassification in the urban growth.

During the latter period, the contribution accounted by the reclassification was about 10 percent. The share of internal migration in urban growth was similar for the two periods, 1972-81 and 1981-98. Variations in the role of each component of urban growth are apparent across the different regions during 1981-98. The dominance of natural increase as a factor of growth is found in all regions, except Islamabad where internal migration was more important than other two factors of urban growth. Internal migration also contributed significantly in the growth of urban population of Balochistan and Sindh.

Urbanization and Rural Development

It is true that urban population in Pakistan is still concentrated in large urban centers, but there is an increasing convergence in urban growth across the large, medium and small towns/cities. The literature on urban system evolution, and its relationship to the broader process of regional or national economic development argues that countries or regions go through major shifts in settlement pattern as their economies proceed through different stages of economic development. It seems from the process of urbanization in Pakistan, particularly uniformity in the annual urban growth rates across provinces and cities, that de-concentration process has probably begun. The ramifications of this process for rural areas of the country can only be speculated in the absence of relevant data, these are briefly as under:

1. Most of the small and medium-sized towns have road-links with the surrounding rural communities. Growth of these towns would be beneficial for the local farmers to sell their agricultural produce in these towns.

2. Landless labourers or even the seasonal agricultural workers can commute to these cities to earn their livelihood.
3. Several families migrate to urban centres for their children education. Rural families can benefit from educational institutions concentrated in the small and medium-sized towns without changing their residence.
4. Because of the growth of these towns agricultural inputs are easily available for the farmers living in the surrounding rural communities.
5. Providers of health services also concentrate in these towns. They are equally beneficial for rural communities.

EMIGRATION OF PAKISTANI WORKERS

Manpower export constitutes an exogenous change for the labour market. While the exodus of manpower results in the reduction of labour supply at home, the coterminous inflow of remittances bears upon the domestic expenditure and investment thereby influencing the level and composition of demand for labour in the domestic labour market. Emigration from Pakistan started to Europe and North America in mid 1950s and 1960s. Given its small size it was hardly regarded to have a major impact on the labour market though it involved substantial brain drain. The contract migration mostly of unskilled and semi-skilled workers commencing with mid 1970's had a visible influence on the domestic economy and labour market.

Based on a patchwork of various sources of data the level of outmigration and return flow for 1977-95 period is provided in Table 23. The data suggest that emigration from Pakistan was at peak during 1977-82 with annual net outflow of over 110 thousand workers. In fact during the decade or so commencing with mid of 1970's Pakistan exported over 2.5 million workers to Middle East. The return migration however tended to dominate the stream of migration during 1982-87. Again around 1992 emigration from Pakistan apparently increased but the rise in volume appeared to have been influenced by substitution of Yemenis and Palestinian by Pakistani workers in Saudi Arabia. To a large extent this has been generated by political factors rather than genuine upsurge in the demand for expatriates in Saudi labour market, the major importer of Pakistani labour. For the most recent sub-period 1993-95 one gets a net outflow of around 60 thousand per year, which as a fraction of domestic labour supply is much lower than was the case in the late 1970's.

The two related flows (labour outflow and remittances inflow) had a differential impact on different segments of the population and of the economy. To begin with, the flow of emigrants was uneven in terms of spatial origin. A majority of them belonged to rural areas, particularly, the northern Punjab and North West Frontier Province (NWFP) while the labour exodus from rural Sindh was relatively low. The occupational composition of Pakistani emigrants was overwhelmingly dominated by those joining the construction and transport sectors with forty percent unskilled workers. During the 1980s, at the same time as sluggish demand conditions

emerged in the Gulf region, demand for all types of skills for the services sector has tended to replace that for construction workers. A shift which Pakistan found difficult to adjust to in terms of skill and sectoral requirements.

Table 23
Out and Return Migration for Different Periods

Estimates in Numbers

Period	Emigration BOI	Per Year (000)	Return Migration	Per Year (000)	Net Out Migration	Per Year (000)
1977-81	659715	132	98176	19	561539	112
1982-87	592279	98	642448	107	-50169	-9
1988-92	642494	128	450000	90	192494	38
1993-95	394633	131	213008	71	181625	60

Sources:

Note All outflow data based on registration data from Bureau of Emigration. For estimates of return migration the following sources are used:

1. 1977-81 (Iqbal & Khan) 1981.
2. 1982-87 and 1993-95 Airport Surveys.
3. 1988-92 (Author's estimation on the basis of the estimated return flows of preceding and the following periods).

The dual effect of labour and remittance flows on the economy has been a subject matter of various studies. In a publication (Amjad 1989), the experience of various labour sending countries from the ESCAP region has been documented. There is a recognition that disentangling the influence of labour exodus on the economy from the various other forces which were operative simultaneously is a complex task. The impression lent by this set of studies is that the associations yielded by macro-level data between different variables such as the remittances or labour export or commodity export can at best be regarded as coincidental rather than interpreted as a stable macro-economic relationship and is based on millions of individual decisions made in the light of particular micro-economic circumstances.

The macro-economic impact of labour exodus and inflow of remittances depends upon: (a) importance of labour outflow and remittances in the overall economy; (b) initial conditions of the economy; (c) the governmental policies which tended to dilute or enhance the impact of labour export and use of remittances.

In Pakistan the exodus of labour in the late 1970s and early 1980s should have been significant in reducing the growth in the supply of the domestic labour force, and hence reducing unemployment. During 1975-82, Pakistan exported labour which amounted to around a quarter of its incremental labour force. But the unemployment rates yielded by Labour Force Surveys remained quite insensitive to this emigration. Partly this may have been due to the inadequacy of the data and the discouraged workers phenomenon. An additional reason could be the changes in the factor mix and absorptive capacity of the economy some extent related to labour export.

A careful examination of the wage data pertaining to Pakistan is indicative of a significant

rise in the real wages of all the workers coinciding with the period of massive outflow of workers to the Gulf region. Research studies, Irfan and Ahmad 1985 (15) analysed these wage changes and concluded that labour export has been an influential factor in raising the real wages of the workers in the domestic labour market. Some studies have tried to document the effect of labour exodus and wage rise on choice of the factor proportions in the economy. In a survey of construction and transport firms in 1982, it was found that wage costs as a fraction of output have risen over time implying that labour productivity in value terms has deteriorated or failed to match the growth in wages (16). The employers in response did appear to resort to selective mechanisation in the medium term. For instance, the construction industry reduced the share of wages directly through introduction of machines and indirectly through the use of pre-fabricated material. Similarly, the shift towards higher capital intensity through mechanisation in agriculture could also be interpreted as a by-product of labour shortage occasioned by labour exodus which led to rise in real wages. The evidence on elasticity of employment with respect to value added for various sectors of the economy tends to substantiate the claim that there has been a shift from less capital intensive to more capital intensive techniques of production during the late 1970s and 1980s.

Official remittances from overseas workers have become a very important source of foreign exchange earnings increasing from US\$ 578 Million in 1976-77 to a peak of US\$ 2885 Million in 1982-83, thereafter decreasing substantially to only US\$ 1409 Million in 1996-97. The importance of the remittance inflow is manifest from the fact that in 1994-95, these accounted for 3% of GDP and 23% of total export earnings.

A major impact of these remittance inflow in an inter-temporal comparison has been on the poverty alleviation (Kemal & Amjad). In addition the remittance facilitated a rise in the consumption level of the recipient households and elevation of consumption standards in general through demonstration effect. A shift in the consumption pattern towards real estate and consumer durables has been one of the obvious outcome. This appears to have led to local production of a number of consumer durable products in urban and peri urban areas besides providing a major impetus to the construction activities.

Emigration to Middle East of unskilled and semiskilled workers has had a differential impact on RNF. With the rising consumption levels and construction of houses it had a positive impact on trade and construction sector. Similarly through influencing the mechanisation in agriculture, the labour input in agricultural operations may have gone down. Further more most of the return migrants preferred to be self employed and majority of them opened shops, joined transport sector and opened workshops in rural areas. Arif and Irfan (1997) examined the employment experience of return migrants. Major finding of this exercise was that return migrants preferred self employment rather than wage employment.

It may however be noted that resettlement pattern of the return migrants suggest a substantial shift in the composition of occupations in rural areas. For instance a comparison of pre and post emigration is reflective of a remarkable shift away from production/services to business, as indicated in Table 24. In the pre-emigration mix production/services accounted for 57% of the workers. However in the return migrants this proportion has gone down to 31%. The gains on the other hand were made by agriculturistics but particularly by business or trade sector. This also

provides an explanation for the artisan squeeze in rural areas discussed already.

Table 24
Percentage Distributions of Return Migrants by Pre-migration
and Post-return Occupation, Controlling for Geographical Location

Occupations	Rural Areas			
	Irrigated	Non-Irrigated	Total	All Area
Professional/Clerical (a)	6.1	5.4	5.8	6.8
(b)	3.3	2.5	2.8	5.6
(c)	3.6	3.1	3.3	4.5
Agriculture (a)	35.8	22.4	28.5	22.8
(b)	2.9	0.0	1.4	1.4
(c)	42.8	36.3	39.3	27.1
Business (a)	11.8	5.6	8.6	10.7
(b)	2.3	0.6	1.4	1.7
(c)	26.1	26.6	26.4	31.8
Production/Service (a)	46.3	66.3	57.1	59.7
(b)	91.5	96.9	94.4	91.3
(c)	27.5	34.0	31.0	36.6
Total	100.0	100.0	100.0	100.0
(N)	(306)	(659)	(659)	(1000)

Source: G.M. Arif and M. Irfan. Return Migration and Occupational Change: The Case of Pakistani Migrants Returned from the Middle East. *The Pakistan Development Review*.36:1(Spring 1997) pp.1-37.

Note: (a) Indicates pre-migration occupational composition of returnees, while (b) shows occupations while abroad, and (c) reveals post-return composition.

CHAPTER 4

EXPLAINING THE GROWTH OF RNF MULTIVARIATE REGRESSION ANALYSIS

The foregoing has identified factors which are inextricably interlinked with the growth and composition of RNF sector. Broadly these are firstly the developments within rural areas in agriculture. The level and type of input use, composition of output and farm size distribution influenced the RNF. Secondly the rural development programmes particularly the construction of rural physical infrastructure like roads, provision of electricity and establishment of schools and hospitals. Finally the level and pattern of urbanisation and development of the economy in particular large scale manufacturing are expected to have a bearing on the RNF growth through provision of jobs, access to productive opportunities and expanding volumes of trade and transport.

While intertemporal growth of RNF can not be subjected to empiricism due to lack of information, the district level data yielded by Census of Agriculture 1990 and Mouza (village) Statistics 1990 are used for the current analysis. The Census of Agriculture provides number of non-agricultural household at the district level, the ratio of non-agricultural households to total has been used as the dependent variable. Given that the category of the non-agriculture households contain different industrial activities its use as a dependent variable suffers from various limitations and involves number of assumptions, such as different explanatory variables have same effect on all the constituent industries of RNF. However due to lack of data this variable is used as dependent variable. Among the explanatory variable four pertain to farm sector, availability of land resources proxied by cultivated area per person in rural areas, cropping intensity, percent of small farms (less than 2.5 acre) in total and the fraction of total cropped area under these small farms. Whether the share of the livestock holders in total bears any influence on size of RNF is also assessed. Variables such as percent of villages having metalled road, high and middle schools within the distance of one kilometer and access to electricity have been used to simulate the impact of rural uplift programmes on the size of RNF sector. In addition the size of the urban population and value added in large scale manufacturing at the district level are expected to provide insights regarding the impact of urbanisation and development at the district level on the size of the RNF sector. The results are provided in Table 25.

Results

The equations reported in the table explain more than two thirds of the variance of the dependent variable while the significance the equation models fitted acquires the conventional levels as depicted by F statistics. Most of the explanatory variables bear the expected signs with satisfactory level of significance being associated with co-efficients. Briefly the following results emerge from the regression results.

- (1) Availability of land resources and higher levels of cropping intensity are negatively associated with the share of non-agriculture households in a district. Similarly the percentage of number and area under small farm (2.5 acres or less) bears an inverse association with the

Table 25
Multivariate Regression
 Dependent Variable = Percent of Non-Agriculture Households (District)

Explanatory Variable	Equation No. 1		Equation No. 2		Equation No. 3	
	Coefficient	(T)	Coefficient	(T)	Coefficient	(T)
(CONSTANT)	40,361	3.911	47,306	4,969	50,399	4,862
CROPINT	-7.84E-02	-1.375	-,101	-2,150	-,105	-2,216
CULTIVAT	-.148	-2.442	-,134	-2,795	-,137	-2,832
ELECTRIC	.274	2.538	,208	2,649	,195	2,420
LIVESTOCK	-.477	-2.290	-402	-2,213	-,430	-2,315
METAL ROAD	4.467E-02	.415	-	-	-	-
ADDED	1.392E-07	.310	-6.39E-08	-,139	-5.10E-08	-,111
URBAN	7.091E-06	2.956	8,838E-06	3,753	8,772E-06	3,711
PFRM2.5	.190	.944	,106	,588	8,542E-02	,468
AREA2.5	-1.029	-2.070	-,745	-1,980	-,663	-1,694
HIMIDL	-	-	2,517E-02	,318	1,600E-02	,199
BULLOCK	-	-	-	-	-3.80E-02	-,767
R ² Adjusted =	0.697		0.697		0.695	
No. of Observation	62		77		77	
F =	16.76		20.67		18.55	

Note:

- CROPINT = Cropping intensity 1990
- CULTIVAT = Cultivated area per person
- ELECTRIC = Percent of villages in a district having electricity
- LIVESTOCK = Percent of livestock holders in the total households
- METAL ROAD = Percent of villages having a metalled road within one kilometer.
- ADDED = Value added in L.S. Manufacturing of the district
- URBAN = Size of the urban population of the district
- PFRM2.5 = Percent of farms under 2.5 acres
- AREA2.5 = % area under 2.5 acres farm
- HIMIDL = Percent of villages having middle or high school within one kilometer.
- BULLOCK = Percent of the area of the district exclusively tiled by bullocks

dependent variable. These results suggest that the shrinking land resources in the context of population pressure and concentration of land at the upper end of scale could lead to expansion of RNF. However better land distribution can arrest the expansion of RNF.

(2) Rural development simulated by different variables such as access to roads, electricity, schools and hospital tend to display a positive association with the level of RNF at the district level. Since most of these explanatory variable suffer from multicollinearity among each other only availability of electricity emerges to be significantly associated with the dependent variable. Availability of electricity not only is an exposure variable but also facilitates development of various types of processing and non-processing activities and services in the village.

(3) Urbanisation and overall development of the district proxied by size of the urban population and value added in the large scale manufacturing reveal expected association. The former emerges to be significant variable having positive effect on the dependent variable while the latter fails to acquire significance with direction of association being somewhat inconsistent. To some extent this lack of association is understandable because the backward and forward linkages between large scale manufacturing and household/cottage industry are little if any. Size of the urban population of a district besides being an indicator of overall development also reflects size of the market for goods and services of RNF. In addition urban centres also provide various kinds of employment opportunities to nearby rural population, the daily commuters. This finds its support from the detailed occupational structure wherein nearly one fifths of male worker in RNF reported themselves as factory workers.

(4) A highly significant and negative relationship between the dependant variable and percent of pure livestock holders at the district level implies that availability of alternative earning opportunities could have a negative influence on the size of non-agricultural households. However in the next section the pure livestock holders are endogenously explained.

The regression results in fact depict the regional distribution of land resources, population pressure; varying levels of availability of physical and social infrastructure and above all the participation in the governmental employment. Thus, for instance northern Punjab, most of the NWFP and unirrigated rural areas do not have the land resources enjoyed by the population in Southern Punjab and Sindh. However, the former is better equipped with physical and social infrastructure, higher level of participation as well as location of the governmental employments.

Thus uneven regional endowments and development conceal the exact nature of interlinkages between the growth of farm sector and that of RNF. This requires further investigation controlling for the extraneous factor for a given region or district, as well as sharpening the dependent variable. Below a brief discussion is made on the relationship between small scale manufacturing and wheat production in Punjab.

In order to assess the linkages between the small scale manufacturing and the farm sector, a simple empirical analysis was undertaken. Data limitations, especially the absence of a detailed rural household survey, precluded more ambitious econometric estimation. Punjab was chosen as the province of examination since it is the most populated and highly developed and the area where

the linkages would be relatively easier to examine in contrast to other provinces. In order to measure the agricultural productivity and performance in a district, in the absence of any solid and reliable data on agricultural incomes by district, a proxy was used- namely, the wheat yields per acre per district. Given that wheat is a very important crop throughout Punjab and these districts all have significant wheat production, added to the fact that cotton and sugarcane use is less frequent and widely variant depending on this, it was felt that this is the best proxy to show the agricultural potential in a district. Using data obtained from the Bureau of Statistics, Government of the Punjab, wheat yields were computed for a ten-year span from 1973 to 1983 per district and then averaged out. The large time trend was used to iron out annual fluctuations in performance. Then the 1988 SHMI data was used in order to determine the size of rural industry in a given district. The value of the products of the output of small manufacturing enterprises in rural areas divided by the total number of persons gave an indication of the size of the SSM sector per person per district. This measure gave an important measure of value added per worker. Lahore was excluded from the analysis as well as three districts for which it was hard to obtain wheat yield and rural value-added information. Finally these two series were compared in order to examine the linkages. A lag was allowed because the increase in agricultural incomes as a result of wheat productivity spurred on by the Green Revolution takes time to increase demand for the products of rural industry.

The results of the analysis are very interesting. Firstly, there is a significant positive relationship between the growth performance of the district and the size of the small scale manufacturing. Simply put, districts in Punjab which have had high yields of wheat and hence high agricultural performance have had more dynamic rural industries. The chart lends credence to the view that the Green Revolution in agriculture generated significant income gains for rural people in Pakistan, which were then used to purchase the output of rural industry. After adjusting for labor force size, value-added in rural small manufacturing establishments in a district is strongly correlated with the agricultural performance of the differing districts.

Secondly, there is significant difference in performance of rural cottage industries in different districts. These range from more than Rs. 20,000 per worker in the advanced districts of Faisalabad and Leiah to the less than Rs. 2,000 per worker in Mianwali and Bahawalpur. There are similar differentials in agricultural performance, as measured by yield increases. The agriculturally more productive districts in Punjab-Faisalabad, Kasur, Multan, Vehari, and Jhang had relatively high levels of rural industry. The districts in southern Punjab with low agricultural productivity-Mianwali, Dera Ghazi Khan, and Bhakar are also the districts with very low levels of small manufacturing enterprises. However, there is not an exact one-to-one correspondence suggesting that growth linkages may be blocked in places. Sialkot district has very well developed rural cottage industries that cater to the need of its burgeoning surgical goods and soccer balls sector, but its agricultural performance has been relatively low. A similar case is Gujarat. By contrast, Bahawalpur and Rahimyar Khan have performed reasonably well agriculturally, but their rural industries have not performed as well. However, on the whole, a district's agricultural potential is a fairly good indicator of its rural industrial value-added.

Furthermore, given the conspicuous absence of relatively advanced agro-processing and other technology-intensive production in Pakistan, which can account for inter-district productivity differentials, agricultural growth becomes even more important in explaining differential

performance. However, it is not only agricultural performance but a range of other factors which affect the performance of cottage industries - government policies, local traditions of entrepreneurship, infrastructural development, and credit systems. Thus, Leiah and Sialkot have prospered due to factors other than agricultural performance. Thus, while a strong agricultural sector is an important precondition for the success of rural cottage industries, it is not a sufficient condition.

Livestock

Livestock sub-sector over the years has registered substantial growth both in terms of numbers of households engaged and contribution to national income and employment. In fact during the 1990's livestock sub-sector displayed vibrant growth, value added rose at the average annual rate of 9% during 1990/98 in constant prices. The share of this sub-sector in agricultural value added experienced a rise from 29% to 36% during the same period. The contribution of livestock to household income in rural areas is substantial in certain areas, as discussed already. While the growth in livestock can be partly attributed to rising population leading to a relative price effect on the incentive to rear livestock for milk and beef/mutton, partly it could be a survival strategy at the household level to supplement the meagre income.

It would be arbitrary and questionable to identify the livestock as a non-farm sector. The Census of Agriculture 1990 reflects that 75% of cattle 89% of bullocks and 70% of cows are kept by farm households. Only 8% of all households reported to have sheep and goats. Out of these two thirds of the households accounting for 83% of sheep and goats were farm households. In other words pure livestock holders reported by Census of Agriculture represent only a minor fraction of the livestock production and income. (See Appendix Table 17).

Around 19% of all households in rural areas, according to Census of Agriculture 1990 were reported to be livestock holders. This proportion varies among provinces wherein Punjab has 21% households as pure livestock holders while the NWFP registered the lowest percentage (14%). The data available hardly reflect that livestock sub-sector has been developing on the large or medium scale. The Table below reproduces the information from the above cited census by size of the livestock. The table provides distribution by size of herd and cattles as reported by different categories of households. Overall one finds that nearly two thirds of cattle and buffaloes and 90% sheep and goats are accounted by size categories of less than five livestock. On the other hand only the size categories of over 10 cattle or sheep have only 6% of the cattle and less than 1% of the sheep and goat stock of the country.

The pure livestock holders identified by Census appears to be mostly the landless households in rural areas. In order to assess the relationship between the size of the pure livestock holders and some contextual variables an equation is fitted to the data reported by the Census of Agriculture 1990. The peculiar connotations of the dependent variable, pure livestock holders, need to be kept in view. It is the fraction of the rural populace without land engaged in livestock rearing. In no way this variable depicts the totality of livestock production at the district level. In other words it is the participation in a peculiar industry which is being examined through regression analysis. Broadly the following results are indicated by the regression analysis which explains over two-

thirds of the variance in the dependent variable, as reported in Table 26.

Table 26
Number and Size of Livestock by Type of Reporting Households

Size of Livestock	Percentage and Number of Cattle and Buffaloes Reported by			Percentage and Number of Milch Cows and Buffaloes Reported by		
	Farm H.holds	Non-farm H.holds	Total H.holds	Farm H.holds	Non-farm H.holds	Total H.holds
Total	4078276 (100)	2270394 (100)	6348670 (100)	3865861 (100)	2124432 (100)	5990293 (100)
1 to 2 animals	1152877 (28.3)	1226625 (54.0)	2379502 (37.5)	2448614 (63.3)	1683454 (79.2)	4132068 (69.0)
3 to 4 animals	1198217 (29.4)	616938 (27.2)	1815155 (28.6)	914541 (23.7)	288768 (13.6)	1203309 (20.1)
5 to 6 animals	770841 (18.9)	211544 (9.3)	982385 (15.5)	281751 (7.3)	76388 (3.6)	358139 (6.0)
7 to 10 animals	635207 (15.6)	132324 (5.8)	767531 (12.1)	154860 (4.0)	44853 (2.1)	199713 (3.3)
11 to 15 animals	209516 (5.1)	43703 (1.9)	253219 (4.0)	41654 (1.1)	14790 (0.7)	56444 (0.9)
16 to 20 animals	62159 (1.5)	16449 (0.7)	78608 (1.2)	12279 *	6057 *	18336 *
21 to 30 animals	33643 (0.8)	12242 (0.5)	45885 (0.7)	7194 *	5074 *	12268 *
31 to 50 animals	11316 *	6145 *	17461 *	3489 *	3580 *	7069 *
51 animals & above	4500 *	4424 *	8924 *	1479 *	1468 *	2947 *

Source: 1990 Census of Agriculture Vol.1.

*Value less than 0.5.

(1) Land availability has a negative association and similarly a better land distribution, higher fraction of farms and areas under 2.5 acres, are negatively associated with the dependent variable. Together these two suggest that widespread peasant proprietorship could arrest the pace at which the population is converted into the landless people and opt for livestock holding particularly if other source of income due to participation in off farm and urban labour market exists. Interestingly the cropping intensity at the district level promotes livestock holding. This is explicable in terms of the strong association between cropping intensity and irrigation influencing both the supply of fodder on input side and higher level of agricultural income generating demand for output of the

livestock products.

(2) Presence of veterinary hospitals and dispensary has a positive influence on the propensity of the population to opt for livestock rearing as an exclusive occupation. Similarly presence of metalled road positively influences the dependent variable. Part of this positive association stems from ease of the transport of input and output, further more metalled road also provides grazing ground for goats and sheep in many parts of the country.

(3) Both the size of the urban population of the district and presence of high or middle school appear to be negatively associated with the dependent variable. This negative association further supports the contention that pure livestock holding may very well be an effort to eke out subsistence income by landless people. Availability of the alternative job opportunities therefore could act as a detractor.

Table 27
The Determinants of Livestock Holders
Dependent Variable = Percent of Livestock Holders in the District

Model	Unstandardized Coefficients		Standardised Coefficients	t	Sig.
	B	St. Error	Beta		
(Constant)	23,795	6,673		3,566	,001
V.ADDED	-1.44E-08	,000	-,008	-,052	,959
AREA2.5	-,470	,323	-,315	-1,454	,152
CROPCULT	6,833E-02	,033	,241	2,086	,042
CULTIVAT	-,99.6E-02	,035	-,380	-2,836	,006
HIMIDL	-,222	,066	-,594	-3,384	,001
MROAD	9,956E-02	,067	,224	1,493	,142
PFRM2.5	-,222	,131	-,410	-1,847	,070
URBAN	9,95E-06	,000	-,566	-3,508	,001
VETHOSP	,631	,241	,457	2,617	,012
UDARTCR	2,255E-02	,062	,044	,363	,718
R ² Adjusted	0.68				
N	77				

- V.ADDED = Value Added in large scale manufacturing at the distinct level.
 AREA2.5 = Percent of cropped area under the farm sizes of 2.5 acres or less.
 CROPCULT = Cropping intensity at the district level.
 CULTIVAT = Cultivated area per person in the district.
 HIMIDL = Percent of villages having middle or high school within one kilometer.
 MROAD = Percent of villages having a metalled road within one kilometer.
 PFRM2.5 = Percent of Farms (Nos.) having 2.5 acres or less.
 URBAN = Size of the urban population of the district.
 VETHOSP = Percent of villages having Veterinary Hospitals/dispensary.
 UDARTCR = Percent of cultivated area operated by bullocks only.

CHAPTER 5
POLICY MATRIX

REFERENCES

1. Amjad Rashid (ed) To the Gulf and Back: Studies on the Economic Impact of Asian Migration ARTEP/ILO, New Delhi, 1989.
2. Amjad, Rashid and A. R. Kemal (1997). Macro-economic Policies and their Impact on Poverty Alleviation in Pakistan. *The Pakistan Development Review*, 36(1): 39-68.
3. Arif, G.M. & Mohammad Irfan (1997). Return Migration and Occupational Changes the Case of Pakistani Migrants Returned from the Middle East, *The Pakistan Development Review*, 36(1): 1-37.
4. Arif, G.M. & Sabiha Ibrahim (1999). The Process of Urbanisation in Pakistan, 1951-1998. Paper presented at the 14th Annual General Meeting of the PSDE held in Islamabad, January.
5. Burney, N.A. & M. Irfan. (1995). Determinants of Child School Enrollment: Evidence from LDC, Using Choice theoretic Approach. *International Journal of Social Economics*. Vol. 22 No.1. MCB University Press, England.
6. Cameroon, J. and M. Irfan. Enabling People to Help Themselves- An Employment and Human Resource Development Strategy for Pakistan in the 1990's ILO/ARTEP, New Delhi, 1991.
7. Chaudhry M.G. "The State and Development of Rural Industries in Pakistan" in Development and Diversification of Rural Industries in Asia. Edited by Swapna Mukhopadhuay and Chee Ping Lime. APDC, Kuala Lumpur. Malaysia, 1985.
8. Child F.C. and Kanela H. Links to the Green Revolution: A Study of Small Scale Agriculturally Related Industry in Pakistan's Punjab" *Economic Development and Cultural Change*, Vol. 23, Chicago, 1975.
9. Ercelawn Aly "Income Inequality in Pakistan: A Study of Sample Villages: *PJAE*, 1984.
10. Gazder, H., S. Howes and Salman Zaidi (1994). `Poverty in Pakistan: Measurement Trends and Patterns", *STICRD*, LSE, London.
11. Hirashima, S.J. The Structure of Disparity in Pakistan's Agriculture.
12. Hussain, Akmal Strategic Issues in Pakistan's Economic Policy: Progressive Publishers Ltd. Lahore, 1988.
13. Irfan, M. and Amjad R. Poverty in Rural Pakistan in Poverty in Rural Asia. Edited by A. R. Khan and Eddy Lee, ILO/ARTEP, Bangkok, 1988.

14. Irfan, M. Poverty, Class Structure and Household Demographic Behaviour in rural Pakistan in Population Growth and Poverty in Rural South Asia. Edited by Gerry Rodgers. SAGE Publication, New Delhi, 1989.
15. Irfan, M. and Ahmed M. "Real Wages in Pakistan Structure and Trends 1970-84" PDR, 1985.
16. Irfan, M. "Out Migration and Labour Market Adjustment in Pakistan" in Monitoring Labour Market ARTEP/ILO, Bangkok, 1985.
17. Irfan, M. etal. The Structure of Informal Credit market in Pakistan. Research Report No. 168, PIDE. 1999.
18. Kemal, A.R. and Zafar Mahmood: Labour Absorption in the Informal Sector and Economic Growth in Pakistan, Islamabad, FES, 1993.
19. Kemal, A.R. and Zafar Mahmood. Characteristics of Workers in the Informal Sector of Pakistan. Research Report No. 160, PIDE. 1998.
20. Khan, Shahrukh Rafi & M. Irfan. "Rates of Return to Education and the Determinants of Earnings in Pakistan". The Pakistan Development Review. Autumn-Winter.
21. Naseem, S.M. Underdevelopment, Poverty and Inequality in Pakistan. Vanguard Publications Ltd., Lahore, 1981.
22. Qureshi, S.K. Implication of Macro-economic Reforms Trade Libralisation of Pakistan's Agriculture. Mimeo. PIDE, 1998.

Appendix Table 1

Pattern of Work Participation by Industry by Sex (Age 10+)

Activities	Male		Female		Both	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Farm only	1260	11.8	671	8.7	1931	10.5
Non-farm only	322	3.0	58	.8	380	2.1
Hired labour only	464	4.3	807	10.5	1271	6.9
Livestock only	1712	16.0	2194	28.6	3906	21.2
Farm+Non-farm	53	.5	12	.2	65	0.4
Farm+H.labour	252	2.4	211	2.7	463	2.5
Farm+Livestock	5220	48.7	2196	28.6	7416	40.3
Non-farm+H.Labour	6	.1	14	.2	20	-
Non-farm+Livestock	93	.9	83	1.1	176	0.9
H.Labour+Livestock	306	2.9	675	8.8	981	5.3
Farm+N.farm+H.Labour	7	.1	6	.1	13	-
Farm+H.Labour+Livestock	841	7.9	655	8.5	1496	8.0
Farm+N.farm+Livestock	141	1.3	48	.6	109	1.0
N.farm+H.Labour+Livestock	8	.1	31	.4	39	-
Farm+N.farm+H.Labour+Livestock	24	.2	17	.2	41	-
Total	10709	100.0	7678	100.0	18387	100.0

Source: RFMS, 1996.

Appendix Table 2

Percentage of Households and Average Size of Household (1990)

Province	Number of Households	Percentage of Households	Average Size of Household
PAKISTAN			
All Households	13634827	-	6.9
Non-agriculture Households	5931451	43.50	6.4
Agriculture Households	7703376	56.50	7.3
Livestock Holders	2584633	18.96	6.8
Farm Households (Total)	5118743	37.54	7.5
NWFP			
All Households	1946340	-	8
Non-agriculture Households	597973	30.72	6.7
Agriculture Households	1348367	69.28	8.5
Livestock Holders	275447	14.28	8
Farm Households (Total)	1072920	55.00	8.7
PUNJAB			
All Households	8322598	-	6.6
Non-agriculture Households	3563895	42.82	6.2
Agriculture Households	4758703	57.18	6.9
Livestock Holders	1760554	21.15	6.6
Farm Households (Total)	2998149	36.02	7.1
SINDH			
All Households	2889560	-	6.7
Non-agriculture Households	1624336	56.21	6.5
Agriculture Households	1265224	43.79	7.1
Livestock Holders	460415	15.93	6.8
Farm Households (Total)	804809	27.85	7.2
BALUCHISTAN			
All Households	476329	-	8.2
Non-agriculture Households	145247	30.49	7.3
Agriculture Households	331082	69.51	8.6
Livestock Holders	88217	18.52	7.9
Farm Households (Total)	242865	50.99	8.8

Source: Census of Agriculture, 1990.

Appendix Table 3

Relative Shares of Agricultural and Non-agricultural
Sectors in Rural Employment 1979-80 to 1996-97

Years	Employed Rural Labour Force	Percent Employed in Agriculture	Share of Non- agricultural Sector
1979-80	100.00	68.76	31.24
1982-83	100.00	67.69	32.31
1984-85	100.00	66.69	33.31
1985-86	100.00	70.94	29.06
1986-87	100.00	65.24	34.76
1987-88	100.00	67.49	32.51
1990-91	100.00	63.74	36.26
1991-92	100.00	63.26	36.74
1992-93	100.00	63.76	36.24
1993-94	100.00	64.76	35.24
1994-95	100.00	61.94	38.06
1996-97	100.00	60.83	39.17

Source: Labour Force Surveys.

Appendix Table 4

Employment by Type of Enterprise

Enterprise	Farm	Non-farm	All
Federal Government	10.9	90.1	2.0
Provincial Government	6.0	94.0	7.6
Local Government	9.9	90.1	0.5
Public Enterprises	6.3	93.7	0.7
Private Limited	2.1	97.9	3.5
Public Limited	7.3	92.7	0.6
Cooperative Societies	26.7	73.3	0.2
Individual Owner	48.3	51.7	70.8
Partnership	51.7	48.3	3.4
Others	59.1	40.9	10.6

Source: LFS 1996/97.

Appendix Table 5

Employed by Sex/Education: Farm/Non-Farm

(%age)

Level of Education	Male			Female		
	Total	Farm	Non-farm	Total	Farm	Non-farm
Illiterate	58.3	68.5 (66.7)	44.9 (33.3)	86.8	92.1 (84.6)	66.0 (15.4)
Less than matric	29.1	25.4 (48.9)	34.5 (51.1)	8.8	7.1 (62.0)	17.2 (38.0)
Matric and above	12.6	6.1	20.6	4.2	0.8 (15.0)	16.8 (85.0)

Source: LFS 1996/97 [Tabulations on raw data (weighted)].
 Parenthesis denote percent distribution of respective columns.

Appendix Table 6

Employed by Education Farm/Non-farm (%)

Education Level	Farm			Non-Farm			Total		
	Both Sexes	Male	Female	Both Sexes	Male	Female	Both Sexes	Male	Female
Illiterate	73.0	68.5	92.1	46.5	45.0	65.9	62.7	58.3	86.8
Less than Matric	21.5	25.1	7.1	33.0	34.6	14.9	26.0	29.2	8.7
Matric but less than Degree	4.9	6.0	0.8	17.0	17.0	16.4	9.7	10.8	3.9
Degree and above	0.9	0.4	-	3.5	3.5	2.8	1.6	1.7	0.6
Total	100.0 (100)	100.0 (79.6)	100.0 (20.4)	100.0 (100)	100.0 (92.1)	100.0 (7.9)	100.0 (100)	100.0 (84.5)	100.0 (15.5)

Source: L.F.S. 1996/97

Appendix Table 7

Mean Wages by Industry: Rural Areas 1996/97

Sector	Unweighted			Weighted		
	Both Sex	Male	Female	Both Sex	Male	Female
Agriculture	2043.10 (429)	2069.19 (418)	1051.52 (11)	1903.12	1934.75	716.08
Mining	3392.26 (26)	3396.26 (26)	- -	3174.66	3174.66	-
Manufacturing	2371.71 (391)	2447.01 (372)	897.38 (19)	2224.58	2307.18	838.0
Utilities	3537.13 (110)	3537.13 (110)	- -	3284.58	3284.58	-
Construction	2319.55 (122)	2319.55 (122)	- -	2166.64	2166.64	-
Trade	2176.25 (120)	2181.93 (119)	1500.0 (1)	1953.47	1957.75	1500.0
Transport	2981.30 (377)	2982.57 (376)	2500.0 (1)	2871.05	2871.26	2500.00
Finance	6528.23 (47)	6528.23 (47)	- -	6812.24	6812.24	-
Community Services	2835.25 (1320)	2907.82 (1172)	2260.52 (148)	2787.09	2878.03	2172.61
Total	2718.00 (2942)	-	-	2595.44	-	-

Source: L.F.S. 1996/97

() denote actual number of observations.

Appendix Table 8

Mean Wages by Industry, Education and Sex

(Rs.)

Industry	Illiterate			Less than Matric			Less than Degree BA+			BA +		
	Both	Male	Female	Both	Male	Female	Both	Male	Female	Both	Male	Female
Agriculture	1550	1581	508	2707	2734	1512	3068	3074	2300	3753	3753	-
Mining	2518	2518	-	2738	2738	-4299	4299	-	-	-	-	-
Manufacturing	1954	2107	538	2163	2163	-	2978	2978	-	2907	2907	-
Utilities	3219	3219	-	2896	2896	-	3069	3069	-	5270	5270	-
Construction	2156	2156	-	2031	2031	-	2357	2357	-	3800	3800	-
Hotel, Trade	1806	1816	1500	1879	879	-	2090	2090	-	4000	4000	-
Transport	2834	2834	-	2861	2862	500	2949	2949	-	3212	3212	-
Finance/Business	-	-	-	3281	3281	-	5025	5025	-	9727	9727	-
Community Services	1929	2215	790	2317	2372	1485	2802	2835	2600	4438	4440	4420
Total	1966	-	-	2419	-	-	2877	-	-	4772	-	-

Source: L.F.S. 1996/97.

Appendix Table 9
Mean Income and Distribution of Households by Farm/Non-Farm

Income Group	Industry			
	Agricultural	Non-Agricultural	Not Defined	Total
Upto 1000	613.09 (29.6)	750.14 (8.7)	113.82 (63.8)	439.4 (27.0)
1001-1500	1270.80 (20.5)	1335.01 (19.1)	1300.94 (8.8)	1299.6 (18.0)
1501-2000	1756.83 (17.0)	1803.59 (22.9)	1768.58 (7.1)	1781.1 (17.7)
2001-2500	2277.67 (10.3)	2289.91 (17.2)	2273.29 (5.6)	2284.0 (12.2)
2501-3000	2758.25 (6.6)	2820.39 (10.6)	2817.82 (4.5)	2796.6 (7.8)
3001-3500	3282.02 (3.8)	3288.89 (6.3)	3294.69 (3.6)	3287.1 (4.8)
3501-4000	3770.84 (2.5)	3819.56 (5.4)	3793.38 (2.5)	3801.6 (3.6)
4001-4500	4552.94 (3.0)	4502.05 (4.9)	4492.13 (2.1)	4520.2 (3.6)
4501-6000	5453.11 (1.5)	5581.77 (2.1)	5577.75 (0.9)	5527.0 (1.6)
6001-7000	6467.18 (1.2)	6510.00 (0.9)	6508.71 (0.2)	6484.7 (0.9)
Above 7000	18447.72 (3.9)	22597.02 (1.9)	22944.18 (1.7)	19983.8 (2.6)
Total	2397.79 (50.2)	2658.58 (33.3)	1310.25 (16.6)	2321.9 (100.0)

Source: HIES 1993-94

() denotes percentage of the respective column household distribution.

Appendix Table 10

Percentage Distribution of Population 5+ by Level of Education

Education Level	Farm			Non-Farm			Undefined			Total		
	Male	Female	Both	Male	Female	Both	Male	Female	Both	Male	Female	Both
No Formal Education	52.9	80.1	65.8	37.7	69.7	52.9	40.9	68.9	55.2	45.8	74.7	59.6
KG, Nursery	19.0	10.4	14.9	22.8	15.6	19.4	21.7	13.6	17.6	20.7	12.7	16.9
Primary	13.9	5.7	10.0	16.8	8.7	13.0	14.5	9.1	11.8	15.0	7.3	11.3
Middle	7.6	2.2	5.0	9.7	3.1	6.6	10.1	3.9	6.9	8.7	3.8	5.9
Matric	4.9	1.3	3.2	8.3	2.3	5.5	8.2	3.3	5.7	6.6	2.0	4.4
Intermediate	1.2	0.3	0.8	2.8	0.6	1.7	2.8	0.9	1.8	2.0	0.5	1.3
Deg. in Engineering	0.1	0	0.1	0.3	0	0.2	0.3	0	.1	0.2	0	0.1
Deg. in Medicines	0	-	0	0.1	0	0	0	-	0	0	0	0
Deg. in Agriculture	0	-	0	0	-	0	0	0	0	0	0	0
Deg. in other Subjects	0.3	0	0.2	1.0	0.1	0.6	1.0	0.2	.6	0.7	0.1	0.4
Post Graduate	0	0	0	0.3	0.1	0.2	0.3	0.1	.2	0.2	0	0.1

Source: L.F.S. 1996/97.

Appendix Table 11

Working Hours by Industry/Sex of the Employed

Sectors	Working Hours			
	Hours not Reported	1-14	15-34	35+
Agriculture				
Male	0.1	0.8	9.6	89.5
Female	0.7	2.7	44.0	52.6
Both Sexes	0.3	1.2	16.6	82.0
Mining and Quarrying				
Male	-	-	4.4	95.6
Female	-	-	-	-
Both Sexes	-	-	4.4	95.6
Manufacturing				
Male	0.9	0.2	2.9	96.0
Female	1.2	3.1	21.6	74.1
Both Sexes	0.9	0.7	5.9	92.4
Utilities				
Male	1.6	0.6	3.3	94.6
Female	-	-	-	-
Both Sexes	1.6	0.6	3.3	94.6
Construction				
Male	0.4	0.1	6.7	92.8
Female	-	10.5	6.6	82.9
Both Sexes	0.4	0.3	6.7	92.7
Whole Sellers and Retailers				
Male	0.0	0.2	3.9	95.6
Female	-	2.2	37.4	60.1
Both Sexes	0.2	0.3	4.9	94.5
Transport and Communication				
Male	0.8	0.2	2.3	96.7
Female	-	-	-	100.0
Both Sexes	0.8	0.2	2.3	96.7
Finance and Insurance				
Male	0.6	-	-	99.4
Female	-	-	-	-
Both Sexes	0.6	-	-	99.4
Community Services				
Male	2.0	0.5	7.9	89.6
Female	6.3	4.3	27.2	62.2
Both Sexes	2.6	1.1	10.8	85.6

Source:

Appendix Table 12

Percentage Distribution of Credit by Type of Lenders and Borrowers, Pakistan 1995-96

Borrowers	Types of Informal Lenders								Total	Total (Excl Proc. Units)
	Commissio n Agent	Input Dealer	Commiss ion Agent/ Input Dealer	Proc. Unit	Landlords /Farm Machinery Suppliers	Professional Money Lenders	Shop- keeper	Others		
Small Farmers	24.7 (13.4)	25.0 (23.4)	23.2 (26.4)	1.4 (12.3)	17.9 (7.4)	24.3 (3.3)	23.2 (4.2)	12.9 (9.6)	7.9	21.4
Medium Farmers	28.8 (11.8)	32.5 (23.0)	40.3 (34.6)	1.5 (9.9)	17.8 (5.5)	34.9 (3.5)	17.1 (2.3)	16.7 (9.4)	10.5 (100)	29.2
Large Farmers	22.0 (12.0)	34.1 (32.1)	20.2 (23.2)	1.0 (8.8)	21.8 (9.0)	31.3 (4.2)	6.0 (1.1)	12.8 (9.6)	7.9 (100)	22.2
Landless	0.6 (0.6)	4.8 (8.8)	13.1 (29.2)	0.1 (1.5)	39.0 (31.4)	1.4 (0.4)	16.4 (5.9)	15.2 (22.2)	4.0 (100)	12.3
Livestock	0.4 (4.7)	0.1 (1.1)	0.0 (0.0)	0.3 (58.3)	0.2 (1.4)	0.4 (1.0)	2.6 (9.9)	1.5 (23.6)	0.4 (100)	0.5
Shopkeeper/ Whole Seller	0.7 (2.3)	2.9 (17.3)	2.5 (18.6)	0.0 (1.4)	0.1 (0.4)	1.5 (1.3)	15.1 (17.6)	8.6 (41.1)	1.2 (100)	3.8
Others	22.8 (1.4)	0.7 (0.1)	0.7 (0.1)	95.6 (94.9)	3.2 (0.2)	6.4 (0.1)	19.5 (0.4)	32.3 (2.8)	68.0 (100)	10.7
Total	100 (4.3)	100 (7.4)	100 (9.0)	100 (67.6)	100 (3.2)	100 (1.1)	100 (1.4)	100 (5.9)	100 (100)	100

Source: The 1996 Survey of Informal Lenders Note: In parenthesis, row-wise percentage distribution is given.

Appendix Table 13

Size of Loan by Major Activity (Male and Female)

(Percentage)

Activity	Loan Size							Total
	Below 1000	1000- 5000	5001- 10000	10001- 25000	25001- 50000	50001- 100000	100001 & above	

MALE

Self Employment in Agriculture	28.73	25.51	17.80	14.82	8.41	2.82	1.92	100.0
Self Employment in Off Farm	24.90	27.20	13.41	16.09	9.96	6.51	12.92	100.0
Employment in Agriculture	61.96	17.75	9.78	5.07	2.17	2.54	0.72	100.0
Employment in Off Farm	33.11	25.57	17.85	13.66	6.12	2.77	0.92	100.0
Non-Working	41.76	20.04	14.04	12.17	7.12	2.81	2.06	100.0

FEMALE

Self Employment in Agriculture	52.46	28.89	9.72	6.22	2.07	0.39	0.26	100.0
Self Employment in Off Farm	72.73	18.18	3.03	6.06	-	-	-	100.0
Employment in Agriculture	63.06	25.37	7.84	3.36	-	-	0.37	100.0
Employment in Off Farm	42.11	42.11	7.89	2.63	2.63	2.63	-	100.0
Non-Working	57.48	26.40	8.64	5.84	1.40	-	0.23	100.0

Source: Role of Women in the Rural Economy and the Credit Market. AERC, Karachi University, Karachi. February 1998.

Appendix Table 14

Number of Farms and Farm Area by Size of Farm,
All Pakistan, 1960, 1972, 1980 and 1990

Size of Farm (Acres)	Number of Farms				Farm Area			
	1960	1972	1980	1990	1960	1972	1980	1990
Less than 7.5	1,140 (34.1)	1,639 (43.6)	2,071 (50.9)	3,245 (63.9)	4,413 (8.6)	5,992 (12.2)	7,339 (15.6)	10,191 (21.5)
7.5 to 25	1,758 (52.6)	1,715 (45.6)	2,625 (39.9)	1,481 (29.2)	23,086 (44.9)	21,970 (44.8)	20,453 (43.4)	18,408 (38.9)
25 to 50	3,121 (9.3)	2,891 (7.7)	264 (6.5)	238	9,742 (19.0)	9,215 (18.8)	8,386 (17.8)	7,489 (15.8)
50 to 150	114 (3.4)	103 (2.7)	96 (2.4)	92 (4.7)	8,226 (16.0)	7,402 (15.1)	6,913 (14.7)	6,454 (13.6)
150 and Above	18 (0.5)	16 (0.4)	14 (0.3)	15 (0.3)	5,935 (11.5)	4,482 (9.1)	4,004 (8.5)	4,776 (10.0)
Total	3,342 (100)	3,762 (100)	4,070 (100)	5,071 (100)	51,402 (100)	49,061 (100)	47,095 (100)	47,318 (100)

Source: Census of Agriculture 1972, 1980 and 1990.

Appendix Table 15

Absolute and Percentage Inter-Censal Change in Labour Use

(000)

Farm Household	Permanent Hired Labour		Family Labour	
	1972-80	1980-90	1972-80	1980-90
Small (under 12.5 acres)	-45.2 (-43.2)	48.7 (81.9)	2145.1 (32.0)	1295.9 (14.6)
Medium (12.5 - 50 acres)	-61.6 (-29.5)	10.6 (7.2)	-128.1 (-3.1)	-1220.9 (-30.4)
Large (50 and above acres)	-5.1 (-3.3)	16.1 (10.6)	-45.7 (-8.2)	-150.0 (-29.1)
All Farm Household	-111.9 (-23.8)	75.4 (21.1)	1971.2 (17.3)	-74.9 (-0.6)
Live Stock Holders	-13.6 (-32.1)	24.8 (86.2)	1639.8 (113.4)	1065.6 (34.5)

Source: Census of Agriculture, 1972, 1980, 1990.

Appendix Table 16
Farms Using Casual Labour

(Number)

Farm	Number of Farms Using Casual Labour		
	1972	1980	1990
Small (under 12.5 acres)	644524	1235845	2016588
Medium (12.5 - 50 acres)	407409	460521	481500
Large (50 and above acres)	49491	56509	58859
All Farms	110424	1752875	2556947

Source: Agriculture Census 1972, 1980, 1990.

Appendix Table 17

Percentage of Cattle by Category and by Type of Household

Type of Household	% of Total No. of Cattle	% of Bullocks	% of Cows	% of Households
All Agri. Households	100.00	100.00	100.00	100.00
Livestock Holders	25.33	10.85	29.96	18.96
Farm Households	74.67	89.15	70.04	37.54

Percentage of Buffaloes by Category and by Type of Household

Type of Household	Total	Male Buffaloes	Female Buffaloes	Young Stock	% of Households
All Agri. Households	100.00	100.00	100.00	100.00	100.00
Livestock Holders	30.81	30.53	30.87	30.72	18.96
Farm Households	69.19	69.47	69.13	69.28	37.54

Percentage of Sheep and Goats by Category and by Type of Household

Type of Households	H.holds Reporting Sheep	No. of Sheep	H.Holds Reporting Goats	No. of Goats	% of H.Holds
All Households	100.00 (8.07)	100.00 (15.64)	100.00 (31.42)	100.00 (26.11)	100.00
Non-Agri. Households	4.27 (0.83)	0.49 (27.98)	12.33 (8.91)	4.13 (25.28)	43.50
All Agri. Households	95.73 (14.31)	99.51 (16.26)	87.67 (48.75)	95.87 (26.15)	56.50
Livestock Holders	27.85 (12.41)	36.63 (20.58)	29.11 (48.25)	32.01 (30.02)	18.96
Farm Households	67.88 (15.27)	62.88 (14.49)	58.56 (49.01)	63.85 (24.56)	37.54

Source: 1990 Census of Agriculture, Vol. 1.

Note: Parenthesis denote % of reporting Households