

Institute of  
Social Studies

**THE INFORMAL SECTOR IN AN ADJUSTING ECONOMY:  
THE CASE OF PAKISTAN**

A Research Paper presented by

**Muhammad Arif Sargana**

**(Pakistan)**

**In Partial Fulfilment of the Requirements for Obtaining the Degree of**

**MASTER OF ARTS IN ECONOMICS OF DEVELOPMENT**

**Members of the Examining Committee**

**Dr. A Geske Dijkstra  
Prof. Graham Pyatt**

**The Hague, December 1998**

**This document represents part of the author's study programme while at the Institute of Social Studies; the views stated therein are those of the author and not necessarily those of the Institute.**

**Research papers and theses are not made available for outside circulation by the Institute.**

**Enquiries:**

***Postal Address:***

**Institute of Social Studies  
P.O. Box 29776  
2502 LT, The Hague  
The Netherlands**

**Telephone: -31-70-4260 460  
Cables: SOCINST  
Telex: 31491 ISS NL  
Telefax: -31-7-4260 799  
e-mail: postmaster@iss.nl**

***Location:***

**Kortenaerkade 12  
2518 AX, The Hague  
The Netherlands**

## **List of Contents**

Acknowledgement .....	i
List of Tables .....	ii
List of Figures .....	iv
List of Appendixes .....	iv

<b>S.No.</b>	<b>Contents</b>	<b>Page No.</b>
<b>CHAPTER 1</b>	<b>INTRODUCTION</b>	
1.1	Introduction.....	01
1.2	Statement of the Problem.....	02
1.3	Objectives of the study.....	04
1.4	Research Questions.....	05
1.5	Structure of Paper.....	05
<b>CHAPTER 2</b>	<b>THEORETICAL FRAMEWORK AND METHODOLOGY</b>	
2.1	Introduction.....	06
2.2	Informal Sector.....	06
2.3	Human Capital Theory .....	08
2.4	Earnings Function .....	08
2.5	Methodology .....	09
2.6	Data.....	11
2.7	Data Limitations.....	13
<b>CHAPTER 3</b>	<b>PAKISTAN'S URBAN INFORMAL SECTOR</b>	
3.1	Overview .....	15
3.2	Population, Urbanisation and Labour Force .....	15
3.3	Magnitude of the Urban Informal Sector in Pakistan.....	16
3.4	Poverty in the Informal Sector.....	20

<u>S.No.</u>	<u>Contents</u>	<u>Page No.</u>
	3.5 Results of Other Studies.....	21
	3.6 Conclusion.....	24
<b>CHAPTER 4</b>	<b>DATA ANALYSIS</b>	
	4.1 Characteristics of Informal Sector Workers .....	26
	4.2 Earnings.....	28
	4.3 Literacy.....	33
	4.4 Training.....	34
	4.5 Migration Status.....	35
	4.6 Problem Faced by Sector.....	36
	4.7 Conclusion.....	37
<b>CHAPTER 5</b>	<b>REGRESSION ESTIMATES</b>	
	5.1 Introduction.....	39
	5.2 Earnings Function for Wage Earners and Self-employed.....	39
	5.3 Earnings differentials By Region.....	42
	5.4 Earnings Differentials in Small Scale Economic Activities.....	44
	5.5 Parameter Stability Test.....	47
	5.6 Normality Test.....	48
	5.7 Hetroscedasticity.....	50
	5.8 Selectivity Bias .....	51
	5.9 General Test of Independence.....	52
	5.10 Robustness Test.....	53
	5.11 Conclusion .....	55
<b>CHAPTER 6</b>	<b>CONCLUSION AND POLICY IMPLICATIOPN</b>	
	6.1 Conclusion.....	57

<u>S.No.</u>	<u>Contents</u>	<u>Page No.</u>
	5.2 Policy Implications.....	60
<b>BIBLIOGRAPHY</b>	.....	62
<b>APPENDIX</b>	.....	67



## Acknowledgements

I would like to give my special thanks to my supervisor Dr. A. Geske Dijkstra, whose constructive comments and encouragement have enabled me to complete this study. Had it not been for her, this research paper would not have been written in an appropriate way. I would also like to express my sincere appreciation to Professor Graham Pyatt, who acted as my second supervisor. His invaluable suggestions and professional guidance added substantial content to this work.

My appreciation is also extended to Dr. Howard White, who examined portions of my first draft and gave me valuable comments, despite his busy schedule. I am also grateful to all of my friends at the ISS who made my stay in The Netherlands a notable year. I would further like to acknowledge the additional co-operation and support extended by all of the staff of the ECD programme.

Last, I wish to thank Dr. S.M. Naseem, who always encouraged me to study abroad and also contributed significantly to this paper. As well, I also pay my thanks to the Economic and Social Commission for Asia and the Pacific in Bangkok, Thailand, whom provided the primary data used in this study.

Of course, my greatest debt remains with my father, Nawab Khan and my uncle, Khaliq, who are a constant source of encouragement for me.

Mohammed Arif Sargana



## List of Tables

<u>S.No.</u>	<u>Contents</u>	<u>Page No.</u>
2.1	Percentage Distribution of Respondents by type of Occupation .....	12
3.1	Workers by Type of Establishment and Nature of Activity (%) .....	17
3.2	Workers by Educational Level and Type of Enterprise (%) .....	18
3.3	Annual real Growth rates in The Formal and Informal Manufacturing Sectors in Urban Pakistan, 1976-77 - 1983-84 (%).....	19
3.4	Rates of Return to Education Levels for Workers and Self-employed ..	22
4.1	Mean Values of Major Variables by Sector of Employment.....	26
4.2	Mean Values of Major Variables by Region .....	27
4.3	Mean Values of Major Variables by Occupational categories.....	28
4.4	Households Income from All Sources.....	29
4.5	Average Monthly Earnings by Type of Economic sector and Educational Level.....	30
4.6	Mean Age earnings Profile by Level of Education and Occupation: Household Income from all Sources .....	32
4.7	Percentage Distributtion of Respondents by Level of Education .....	33
4.8	Distribution of Workers Who Received On the Job Training .....	35
4.9	Migration Status: Current Stay in This Location (%).....	36
4.10	Percentage Distribution of The Most immediate Problems faced by the Respondents to Enhance the Earnings .....	37
5.1	Earnings function for Wage Earners and self-employed .....	40
5.2	Earnings functions for Regions .....	43
5.3	Earnings Function for small scale activities .....	45
5.4	Earnings Function for small scale activities (Schooling as Dummy variable).....	46

<u>S.No.</u>	<u>Contents</u>	<u>Page No.</u>
5.5	Actual Frequency Table .....	52
5.6	Expected Frequency .....	53

## List of Figure

No.	<u>Contents</u>	<u>Page No.</u>
1	Histogram of daily Earnings of Respondents .....	49
2	Histogram of Log daily Earnings of Respondents .....	49
3	Scatter Plot of Absolute Residuals VS Predicted Values of Log Income on Sch, Exp and Exp2.....	50
4	Box Plot of Absolute Statistics .....	54
5	Box Plot of Normalised Coefficients .....	55

## List of Appendixes

	<u>Contents</u>	<u>Page No.</u>
1	Earnings Function by Occupational Group .....	67
2	Earnings Function by Occupational Group With Dummy Variable.....	68
3	Distribution of Average Monthly Earnings of Households by Region and Educational Level ...	69
4	Distribution of Average Monthly Earnings of Households by Small Scale Economic Activities..	70
5	Normality Test Statistics	71
6	Results of Multiple Regression Equation	72
7	Earnings Functions by Occupational Group (With Sch as Dummy var)..	75
8	Distribution of Respondents by Age, Level of Education and Occupation	76

*Received 12 January 1993; accepted 12 April 1993.*

*Keywords:* Non-linear systems, coordinated control, adaptive control, robust control, Lyapunov function, Lyapunov stability.

*Abstract:* This paper presents a practical approach to the design of a coordinated control system for a class of non-linear systems. The proposed approach is based on the Lyapunov function method and the adaptive control theory. The main idea is to decompose the overall system into two subsystems, one of which is a linear system and the other is a non-linear system. The linear subsystem is controlled by a linear controller, while the non-linear subsystem is controlled by an adaptive controller. The adaptive controller is designed to ensure the stability of the overall system. The proposed approach is illustrated by a numerical example.

*© 1994 John Wiley & Sons, Ltd.* *Int. J. Robust Nonlinear Control* *4*, 3–12, 1994  
*CCC 1063-6536/94/010003-10*

*Editorial handling: S. M. Hui (University of Hong Kong) and G. Tadmor (Technion, Israel)*

*Editorial office address: International Journal of Robust and Nonlinear Control, John Wiley & Sons, 605 Third Avenue, New York, NY 10016, USA*

*Editorial office telephone number: (212) 904-5000; editorial fax: (212) 904-5008; editorial e-mail: [ijrc@jwiley.com](mailto:ijrc@jwiley.com)*

*Editorial office address: International Journal of Robust and Nonlinear Control, John Wiley & Sons, 605 Third Avenue, New York, NY 10016, USA*

*Editorial office telephone number: (212) 904-5000; editorial fax: (212) 904-5008; editorial e-mail: [ijrc@jwiley.com](mailto:ijrc@jwiley.com)*

*Editorial office address: International Journal of Robust and Nonlinear Control, John Wiley & Sons, 605 Third Avenue, New York, NY 10016, USA*

*Editorial office telephone number: (212) 904-5000; editorial fax: (212) 904-5008; editorial e-mail: [ijrc@jwiley.com](mailto:ijrc@jwiley.com)*

*Editorial office address: International Journal of Robust and Nonlinear Control, John Wiley & Sons, 605 Third Avenue, New York, NY 10016, USA*

*Editorial office telephone number: (212) 904-5000; editorial fax: (212) 904-5008; editorial e-mail: [ijrc@jwiley.com](mailto:ijrc@jwiley.com)*

*Editorial office address: International Journal of Robust and Nonlinear Control, John Wiley & Sons, 605 Third Avenue, New York, NY 10016, USA*

*Editorial office telephone number: (212) 904-5000; editorial fax: (212) 904-5008; editorial e-mail: [ijrc@jwiley.com](mailto:ijrc@jwiley.com)*

*Editorial office address: International Journal of Robust and Nonlinear Control, John Wiley & Sons, 605 Third Avenue, New York, NY 10016, USA*

*Editorial office telephone number: (212) 904-5000; editorial fax: (212) 904-5008; editorial e-mail: [ijrc@jwiley.com](mailto:ijrc@jwiley.com)*

*Editorial office address: International Journal of Robust and Nonlinear Control, John Wiley & Sons, 605 Third Avenue, New York, NY 10016, USA*

*Editorial office telephone number: (212) 904-5000; editorial fax: (212) 904-5008; editorial e-mail: [ijrc@jwiley.com](mailto:ijrc@jwiley.com)*

*Editorial office address: International Journal of Robust and Nonlinear Control, John Wiley & Sons, 605 Third Avenue, New York, NY 10016, USA*

*Editorial office telephone number: (212) 904-5000; editorial fax: (212) 904-5008; editorial e-mail: [ijrc@jwiley.com](mailto:ijrc@jwiley.com)*

*Editorial office address: International Journal of Robust and Nonlinear Control, John Wiley & Sons, 605 Third Avenue, New York, NY 10016, USA*

*Editorial office telephone number: (212) 904-5000; editorial fax: (212) 904-5008; editorial e-mail: [ijrc@jwiley.com](mailto:ijrc@jwiley.com)*

*Editorial office address: International Journal of Robust and Nonlinear Control, John Wiley & Sons, 605 Third Avenue, New York, NY 10016, USA*

*Editorial office telephone number: (212) 904-5000; editorial fax: (212) 904-5008; editorial e-mail: [ijrc@jwiley.com](mailto:ijrc@jwiley.com)*

## **CHAPTER 1**

### **1.1. Introduction**

Pakistan is right now among those developing countries, which face a high population and limited opportunities for employment. With the introduction of new technology in the agriculture sector, a boom in the industrialization sector and remittances from the Gulf in late 1970s, these have caused massive migration from rural agricultural sector to the urban industrial sector. However, due to the current mechanization, employment elasticities in agricultural sector as well as in the industrial sector are declining [Kamal.1993].

The Government of Pakistan has been providing a large chunk of employment in the labour market. However, due to data limitations, the contribution of the public sector in GDP can not be estimated. The public sector in Pakistan provides jobs to almost three million people. It has been estimated that 39 percent of the employed labour force in urban areas is working with the government sector [Kamal.1995]. As Pakistan is a signatory of the World Bank and IMF's stabilization and structural adjustment programs, which aim to reduce the budget deficit and restructuring of public sector employment, in the compliance with these programs, retrenchment policies have been adopted in the government jobs by the respective governments. It is estimated that employment in the public sector has declined by about 10.6 per cent in period 1990 to 1992 only [Kamal.1995]. All of these measures have exacerbated the employment situation in Pakistan.

In the light of the above mentioned facts, it may be viewed that the urban informal sector has become more important at not only absorbing the surplus labour which is creating political unrest in the country, but also at providing trained workers to the modern sector which is unable to provide training to its workers due to the constraint of the resources.

Despite the fact that the informal sector provides a large chunk of GDP and employment in the national economy, this sector is very much neglected in Pakistan. A few studies

have been conducted to measure the size and the role of urban informal sector in past. However, the employment estimates provided by these studies have always been controversial. In addition, in all of these studies attention has been focused mainly to the manufacturing sector. Though the importance of the manufacturing sector cannot be denied, the services sector is also of significant importance as well, however it has received relatively less attention in the past. In this study, sufficient attention has been given to this neglected sector and focus is given to its role in employment in the urban informal sector.

Early writings on the urban informal sector may be found by Lewis and then Rani's and Fei's two sector models. Those models indicate the migration of the excess labour in the agriculture sector to the modern urban sector for development purposes [Naseem 1996]. After studies sponsored by the International Labour Organization [ILO] in the early 1970s the informal sector has become popular in economic literature, especially in developing countries. Though economists are still not able to give an authentic and unanimous definition of the informal sector, it is commonly known as the non-regulated sector of the economy. Before this ILO study, the informal sector was considered as the backward and non-productive sector of the economy, so it did not receive the due attention by the researchers and the statisticians, to collect the necessary statistics, though individually small studies have been conducted with the help of small surveys. As the pioneer of the informal sector studies, ILO, has given ample attention to bring into the consideration of economists/researchers the importance of the sector in the absorption of any excess supply of labour, in its International Conference of Labour Statistics (ICLS) in 1982 and 1987. After these studies, it has been recognized that the informal sector is not a temporary phenomenon but has been developing into an important source of employment and income generation and contributing considerably to the domestic product of the many countries [Burki. 1995].

## **1.2. Statement of the Problem**

Pakistan has experienced a rapid pace of economic growth in recent decades, but human capital is not matched that of physical capital. Despite much empirical evidence, tradition

has held that that human capital is not much rewarded especially in the urban informal sector. Presently Pakistan spends less than 2.5 percent of its GNP [Eco; survey, 1996] on education which is meager in view of very low level of literacy. On other hand reliability of the figures about employment in informal sector by previous studies always remained questionable.

Irfan and Guisinger [1980] pointed out that the workers in the informal sector in terms of earnings are quite comparable with the workers in the formal sector in Pakistan. It is observed that the formal sector workers earn only 28 per cent more than the informal sector workers. It is also observed [Burki & Uzma.1996] that informal sector workers make up for their deficiencies in formal schooling by getting special training on which they receive premiums. So, it is very important to find the wage differentials determinants of the urban informal sector workers. Human capital theory is important in this context.

Human capital theory developed by Becker (1964) and Mincer (1974) provides a framework to analyze the productivity of individuals. The earnings function by Mincer [1974] is a standard specification that is considered a departure point to measure the individual's wage differentials. In this study earnings functions will be estimated including the human capital variables to see the affect of variables on the earnings of the individuals.

It is also noted that in the urban informal sector, self-employed workers earnings compared quite favorably well as with those of wage earners [Burki & Uzma. 1996]. So the estimation of earnings functions for the population as a whole may provide misleading results. These results may overestimate or underestimate the earnings, so we cannot make any inference on the basis of these results. Separate equations have been estimated for wage earners and self-employed workers. Parameter stability tests have also been applied for wage earners and self employed in the informal sector of Pakistan, to check whether we can pool the data or not. [Chow test].

Employment growth and its absorption is another issue in economic debate. Demand for locally manufactured goods and services increased in last decades because of increase in real wages and the inflow of remittances in Pakistan. The construction boom in the Middle East during 1970s attracted large-scale skilled and semi-skilled workers from Pakistan. A domestic inward shift of the labour supply curve increased real wages and the demand for domestic products. This flow of remittances changed the pattern of consumption. Most of the migrants belong to lower income group who demand cheaper locally manufactured goods and services, which are produced by the informal sector. This increased demand for locally manufactured goods & services, in turn increased the informal sector employment growth [Burki.1996]. It is also observed that there is net decline in employment levels in the formal sector at a rate of 1.1 per cent annually while in small scale informal units annual employment growth rate exceeded 10 per cent [Naseem 1996]. Size and potential of urban informal sector for employment is discussed with the help of previous studies and secondary published data.

### **1.3. Objectives of the Study**

The main objectives of the study are: i) analysis of the survey data ii) estimation of the earnings function for individuals in different economic activities in the urban informal sector of Pakistan to know what is the extent of the sectoral wage differentials i.e are education, experience and other productive endowments rewarded differently in each sector?

The urban informal sector, despite its title of a “sector” is not limited to any one type of activity, such as petty trading, but covers a heterogeneous set of activities, including repair work, light manufacturing, transport services and house-building, undertaken by an equally heterogeneous set of actors. The only commonality among these diverse activities is that, in the urban informal sector context, they are legally established and hence are not subject to state regulations. The informal sector comprises of a wide range of economic activities in nature. The majority of this labor force in informal sector is self-employed. This study analyses how different levels of education affect earnings in different sectors of economy, for example wage earners and self-employed. In the second stage, separate

equations would be estimated for the two cities, Rawalpindi/Islamabad, to explore whether the earnings differentials exist among individuals living in two cities.

Finally to capture the impact of human capital variables in the services sector in detail in the urban informal sector of Pakistan, I have divided the sample into five small scale categories according to the services they engage in i.e., Petty trading (PT), Domestic servants (DS), Transport (T), Services [repair & maintenance] (S) and Other personal services (OPS). Separate equations have been estimated for all of these activities at the end.

#### **1.4. Research Questions**

The following research questions will be answered in this study:

- i) Is the earnings function specification conforms to the basic assumption of the classical regression model: whether the condition of homoscedasticity and normality hold and therefore whether the conventional tests can be performed.
- ii) Is there any interaction between the contribution of the schooling and work experience to earnings in the informal services sector of Pakistan?
- iii) Whether human capital investments are rewarded in these sectors equally or not.
- iv) Is there wage differentials across the region?
- v) Whether education and earnings are independent among informal sector workers?

#### **1.5. Structure of Paper:**

The structure of the study is as follows:

Chapter 2 consists of the theoretical framework, methodology and data description. The third chapter discusses the state of the Urban Informal Sector in Pakistan and results of the other studies. Chapter four comprises of the analysis of the data. Chapter five presents the regression results and statistical tests. Final chapter consists of concluding remarks and policy recommendations.

and the following year he was appointed to the faculty of the University of Michigan.

## CHAPTER 2

### THEORETICAL FRAMEWORK AND METHODOLOGY

#### **2.1. Introduction**

The concept of the informal sector has gained popularity since the well-known study by International Labour Organization [ILO] in 1972 Kenya. Since then it has become a center stage in policy discussion regarding unemployment and poverty alleviation. The focus has been on whether such activities should be encouraged on the grounds of equity and efficiency, and if so, what are the best mechanisms for achieving these Objectives [ Patel *et al* 1996].

Human capital has emerged in the economic literature with the seminal work done by Becker [1962] and Blaug [1970]. Even before them in 1957 Jacob Mincer did the pioneer work on investment in human capital as part of his Ph.D dissertation entitled “ A Study of Personal Income Distribution”. However, he published it in 1972 separately under the title of “ Schooling, Experience and Earnings” in which he presented the powerful theoretical model in which human capital is the central explanatory variable. In literature, it is also known as the “ Earnings Function” and has been applied in this study to measure the wage differentials in the urban informal sector of Pakistan.

Since its emergence, the human capital theory has become very popular in the economic literature especially in the measurement of the marginal productivity of the workers in different sectors of the economy. In the case of informal sector, it has been widely utilized to examine the determinants of employment and the structure of earnings in the informal sector.

#### **2.2. Informal Sector**

In the debate of informal sector, the fundamental question arises about the origin of the term “Informal Sector”. According to Rakowski, Cathy.A [1994], this terms was unearthed during the debate and disagreement about how third world economies should

develop and at what pace, the role of state planning and investment or international funding and technical advising should play in economic development and the relative importance and costs of the pace of economic development in addressing social problems such as poverty, rural-urban migration, rapid urbanization and so forth.

Bromley Ray [1979] explains that Hart. J.K [1970] was the very first to introduce the two sector terminology, dividing the economy into “ Informal” (an extension of the concept of traditional) and “Formal” (more or less analogous to modern) sectors and to emphasize the significance of self-employment and small enterprises and the degree of statistical under-recording in the informal sector. However, most of the other studies reveal that the term “Informal Sector” was introduced by International Labour Organization (ILO) in its World Employment Program report on Kenya in 1972.

Despite much debate about the role of informal sector in development process, notwithstanding many attempts to clarify the concept, the definition of the term “Informal” has remained elusive. For empirical work, the size criterion has often been used to measure the informal sector, which is defined in terms of the numbers of workers. The more popular definition among researchers is the firm which has the size of less than 10 workers is considered the informal sector firm. As mentioned somewhere else in the study, it is a lot easier to describe the sector than it is to provide an exact definition. The International Labour Organization [ILO] in its World Employment Program [WEP] report on Kenya in 1972, described some characteristics of the informal sector activities such as ease of entry, reliance on indigenous resources, family ownership, small scale and labour intensive technology etc. However, it is a very crude and simple classification, dividing all the economic activities into two categories. This approach is also criticized on the basis that in this approach no adequate guidelines exist as to how to classify activities which have some of the characteristics of the formal sector and some of those of the informal sector.

### **2.3. Human Capital Theory**

Human capital theory is based on the idea that investment by the people in themselves through different ways i.e., schooling, work experience and on the job-training etc. is profoundly influenced by expected economic returns in future. Human capital theory explains that people with more education earn on average higher incomes than people with less education. Mark Blaug [1970;02] says;

*... even if additional education did not raise lifetime earnings, education might still be an investment from the social point of view.*

Other than Blaug [1970], Mincer [1974] and Becker [1964] are the major contributors in the development of this theory.

### **2.4. Earnings Function**

The Earnings function is a statistical technique to measure the marginal impact of socio-economic characteristics of individual's earnings. Human capital theory exhibits that earnings of the individuals differ with the level of human capital investment that includes education, experience and on the job-training etc. Mincer [1974] explains that with the help of the earnings function one can gain an understanding of the observed distribution and structures of earnings from information on the distribution of accumulated net investment in human capital among workers. It takes the form in which the individuals' wage rates are regressed on a number of characteristics (human capital variables) that can influence wage. However the earnings function is based on a strong set of assumptions as stated by [Dougherty *et al*, 1991]:

- In the absence of post schooling investment, an individual's age-earnings profile would be flat and the present discounted value of life time earnings would be the same for all individuals, regardless of how long they stayed in school.
- The number of years spent at work is independent of the number of years spent in school.
- The return to all post school investment in human capital is a constant.

- During schooling, no time is spent in the labor force, whereas after schooling everyone works full time.

Earnings functions are generally considered positive monotonic in schooling. Mincer describes this relationship as the productivity augmenting effect of education.

To capture the post school human capital investment, experience enters into the function as another important human capital variable after schooling. Often age is used for experience but the age is not a good proxy. Mincer describes experience as;

$$EX = Age - 6 - \text{no of years of schooling}$$

In this equation implicitly it is assumed that workers begin full time work immediately after completing education and the age of completion of schooling is six plus no of years of schooling [Rizwana 1995]. However some authors consider it an inappropriate proxy for LDC's for experience on the grounds that much of the labour force in LDC's has little or no schooling, so in that case work experience gained during childhood is treated on the same level as adult work experience. Considering it an over estimate, they estimate a smaller expression as Age - 15. Human capital theory believes that earnings of an individual increase with the increase in experience but at a decreasing rate, it reaches its peak and starts declining. This implies that experience- earnings profile takes the probabilic shape.

## 2.5. Methodology

The earnings function in the urban informal sector has been widely used to estimates the returns to education and training. In case of Pakistan Irfan and Guisinger [1984], Burki [1992], Eric [1982] have used the same model to estimate the rates of returns in the urban informal sector with small surveys. I have tested with my own survey data that has been conducted in the two cities of Pakistan Rawalpindi and Islamabad, with much focus to the service sector. The following most popular Mincerian model has been estimated:

$$\ln Y_i = B_0 + B_1 Sch + B_2 EXP + B_3 EXP^2 + B_4 D_j + U_i$$

where

- $\ln Y_i$  = Wages/earnings of the  $i$ th individual
- Sch = Years of schooling
- EXP = Years of experiences ( $\text{Age} - 6 - \text{years of schooling}$ )
- EXP<sup>2</sup> = Square of Experience
- $D_j$  = Dummy variable for on the job training
- $U_i$  = Random error term

$B_i$ s are parameters to be estimated. In this specification, the coefficient of the variable measuring years of schooling can be interpreted as the private rate of return to schooling. It provides an estimate of the percentage increase in income due to one year's increase in schooling.  $B_3$ , the coefficient of experience square is expected having negative sign to prove the concavity of the experience-earnings profile. The dummy variable for on the job training assumes a value of zero for yes and one for no. If the coefficient of  $D_j$  has the negative sign, it can be interpreted that individuals who do not have on the job training earn less than individuals who attain on the job training, and vice versa.

In the first instance schooling is used as the continuous variable then it has been used as the dummy variable for different levels of schooling. In case of dummy variable it explains the percentage variation in earnings due to higher level of education.

Richard Sabot introduced the interaction term to capture the effects of schooling on experience. It explains that an educated person learns quickly as compared to an uneducated person. So schooling has a positive impact on experience. It might not be the case if the latter is doing the same job for generations or having more natural ability, in that case schooling would not have any impact on experience and the interaction term would be insignificant. In this study it has been included in earnings functions as:

$$\ln Y_i = B_0 + B_1 \text{Sch} + B_2 \text{EXP} + B_3 \text{EXP}^2 + B_4 \text{Sch} * \text{EXP} + B_5 D_j + U_i$$

If the coefficient of interaction term comes out to be positive and significant then the age earnings profile should be steeper for the more educated, or vices versa.

---

Estimation has been segregated into subgroups of wage earners and self-employed. Then separate equations have been estimated for the two cities, Rawalpindi/Islamabad. Later on this informal sector has been divided into five small-scale activities namely, Petty Trading (PT), Domestic Servant (DS), Transport (T), Repair & Maintenance; Services (S) and Other Personal Services (OPS). Lastly equations are estimated separately for all of these sub-groups of the sector.

## **2.6. Data**

The analysis utilizes primary survey data collected from the informal sector in the two cities of Pakistan. A small survey has been carried out in Rawalpindi and Islamabad for the study sponsored by ESCAP/UN to measure the poverty incidence in the urban informal sector of Pakistan. The total sample of 142 respondents was drawn on the principles of, stratified sampling. For the purpose Rawalpindi has been divided into 26 Mohallas and Wards and from Islamabad 4 markets have been covered. A well-trained team was selected for the purpose of interviews and for one week they were given special training to understand the questionnaire.

A total of 111 (78%) respondents have been selected from Rawalpindi while 31 (22%) have been interviewed from the 4 markets of Islamabad. Special attention was given to choose the respondents who represent the informal sector i.e., those which belong to an enterprise small in size (standard criteria, workers must be less than 10). In the past most of the studies in the urban informal sector explore only the manufacturing sector but in this survey the neglected services sector has been more emphasized. Occupational distribution of the respondents is given below in **Table 2.1**.

Out of total 142 respondents 45 belong to the Petty Trading category in our sample. Almost 94 percent of the respondents from this category are self-employed. Domestic servants got the minimum weight that is only 9.9 per cent of the total sample. Services

sector (Repair & Maintenance), which consists of some sort of semi skilled workers in the enterprises,

**Table 2.1**

**Percentage Distribution of Respondents by Type of Occupation**

<b>Occupation</b>	<b>Percentage</b>	<b>Cases</b>
Petty trading	31.7	45
Domestic Servant	9.9	14
Transport	13.4	19
Services	21.8	31
Other personal services	23.2	33
<b>Table Total</b>	<b>100</b>	<b>142</b>

Source: Primary survey of Rawalpindi/Islamabad

represents about 22 percent in the total survey. The proportion of wage earners and self-employed is more evenly distributed, 33.1 percent of the total sample belong to the wage earners group and 66.9 percent represents the self-employed.

A short questionnaire was designed which consisted of 14 pages. It has been divided into five major modules:

1. Household module
2. Occupation and location module
3. Employment and income module
4. Enterprise module
5. Self Perception module

- Impact of government policies
- Public attitude
- Co-operative assistance
- Perceived solution

Every module consists of on average 6 questions along with some supplement questions except the enterprise module that has some more detail and comprises of 16 questions.

The nature of the informal sector activities is quite different from the formal sector. To identify the informal sector enterprises a comprehensive framework is required. It is observed that informal sector activities tend to cluster in particular areas of towns due to a number of factors including the government restrictions and availability of markets.

For the selection of households in the informal sector, a multi-stage sampling approach has been utilized. In this approach stratification is used to divide the area to be covered by the survey into homogeneous blocks or clusters using an established criterion for homogeneity such as level of urbanization or industrial intensity etc. In the second stage after the division of the areas into strata (Rawalpindi 26 Mohallas and Islamabad in 4 markets), intensity of the informal sector activities was mapped with some basic field checks and from the knowledge of previous studies. To make the survey representative of the entire city, it was decided that not more than 5 households should be selected from anyone of the strata (Mohallas) but within this number the selection varies with the intensity of the informal sector activities. Final selection that was at the discretion of the enumerators has been presented in Table 2.1

## 2.7. Data Limitations

Because of the small number of the women, a separate analysis for male and female is not possible. In Pakistan due to some social barriers and discrimination against women, they hardly enter into the labor force and it is also very difficult to cover more females in numbers in these small surveys. Pilot study<sup>1</sup> 1, indicated that in Pakistan females represent less than 10 percent of the urban labor force in Pakistan. However, it is also indicated that as compared to the formal sector, women have greater opportunities for employment in the informal sector because of the home based nature of the enterprises.

<sup>1</sup> Government of Pakistan, Ministry of manpower and Overseas Pakistan and Growth dynamic University Institute, Erasmuss University, Rotterdam (1994), Informal Sector Employment in Pakistan: New

Results of this survey directly are not comparable with previous studies, as they have been conducted in different years and in different cities. However, the direction and trend is comparable. On the basis of this survey estimates must be considered provisional and approximate for Pakistan as it hardly represents the whole country. However, it gives a good indication of the magnitude of human resources contribution in earnings in the urban informal services sector of Pakistan.

and the individual's behavior and responses to the environment. This is particularly true in the field of education where the teacher's role is to facilitate learning and development. In addition, the teacher must be able to identify and address individual differences in learning styles and abilities. This requires a deep understanding of the subject matter and the ability to communicate it effectively. The teacher must also be able to provide guidance and support to students as they work through challenges and setbacks. This requires a strong sense of empathy and a willingness to listen and respond to individual needs. Overall, the teacher's role is to facilitate learning and development in a way that is both effective and compassionate.

## CHAPTER 3

### **PAKISTAN'S URBAN INFORMAL SECTOR**

#### **3.1. Overview**

Pakistan is categorized among those countries, which have the highest rate of population growth of nearly three per cent per annum, high fertility rate, low per capita income, inadequate capital formation and low rate of savings etc. Under these circumstances unemployment has become a severe problem. The problem affects the economy of the country not only directly but also creates social disturbances in the society. In this chapter, with the help of previous studies, the state of urbanization, the magnitude and the incidence of poverty in the urban informal sector have been discussed.

#### **3.2. Population, Urbanization and Labour Force**

According to the 1997 census [unpublished] population of Pakistan has mounted to 130.5 million. It is almost four times higher as that of the time of independence in 1947 that was only 32.5 million. The current growth rate of 2.77 per cent is considered highest among the region [Pak;Eco; survey 1997]. Higher growth rate of population has two reasons. Control of diseases like Cholera, Tuberculosis and Small Pox and improved living conditions have caused a considerable fall in the death rate whereas crude birth rate shows only a marginal decline due to ineffectiveness of population programs during the last three decades. A major factor behind the failure of those programs is considered to be low level of education. According to the Work Force Situation Report and Statistical Yearbook 1993, 59% of the population is illiterate, in the rural areas this ratio has increased to 69%.

It is also shown in the report that literacy rate of men is far higher than those of women, as the literacy rate of men is about 53% while for women, it is only 27%. In terms of educational expenditures in 1992 Pakistan was spending only 1.6 per cent of its GNP on education while other third world countries like Nepal was spending 10.9.1%, Sri Lanka

10.1% and Indonesia was spending 9.8% of its GNP on education. All those factors exacerbated the growing population problem in Pakistan.

The annual labour Force survey [LFS] is the main source of information about labour force and its characteristics in Pakistan. Estimates of the LFS 1992-93 reveal that the total labour force consists of 33.71 million people as against 32.98 million in the year before. It shows 2.2% growth of the total labour force in Pakistan. Out of this 33.71 million 24.17 was in rural areas against 9.54 million in the urban areas. It explains that urban labour force is growing at the rate of 3% as against total of 2.2%. Urban labour force in the province of Punjab [Data in our study was collected from the same province] is growing more rapidly against its counterparts, as the results indicate that urban labour force in Punjab increasing at annual growth rate of 3.2% as against Balochistan 0% and Sind 2.5%. It is also evident in LFS 1992-93 that total number of employed labour force was 32.11 million as against 30.05 million in previous year. The total number of employed persons in urban areas is 9.57 million. Whereas the rural employment is estimated 23.47 million. The Work Force Situation Report 1993 come up with the estimates that in 1991-92 the open unemployment rate in Pakistan was 5.8% [rural 5.4% and Urban 6.91%]. It also reveals that the overall unemployment rate of rural areas is less than urban areas. As a whole, about 66% of unemployed labour force are concentrated in the rural areas.

### **3.3. Magnitude of the Urban Informal Sector in Pakistan**

Though the importance of the urban informal sector in the development process has been emphasized for the last two decades, still no uniform definition of the urban informal sector exists in Pakistan [Kamal 1994]. To measure the size of the urban informal sector, researchers tried to describe the sector rather than to provide an exact definition.

Naseem [1996] explains that the size of the urban informal sector in developing countries depends on a number of factors. It includes the extent to which the rural sector is able to absorb labour in relation to initial population pressure and subsequent population growth, on the one hand and the employment opportunities created by the growth of the urban

formal sector, on the other. He has suggested three basic factors to measure the size of the urban informal sector:

- (i) the rate of growth of the labour force in agriculture
- (ii) the rate of growth of agricultural output and labour productivity in agriculture, and
- (iii) the rate of growth of industrial output and labour intensity of the production.

By utilizing these criteria, we can mark the boundaries of the urban informal sector in Pakistan. The population of Pakistan is growing at the rate of 2.8% per annum which is the highest in Asia. This increasing population has hampered the growth of per capita income in addition to it causing massive unemployment in the country. With this continued high growth of population, the labour force has grown at a rate of 2.6% over 1963-64 to 1990-91 while the labour force participation<sup>2</sup> has fallen from 32.60% in 1963-64 to 28.83% in 1990-91 [LFS 1993]

**Table 3.1**

**Workers by Type of Establishment and Nature of activity (%)**

Nature of activity N = 8017	Formal Sector		<b>Informal sector</b>	% of Total
	Large Enterprises	Small Enterprises		
<b>% of Total</b>	<b>22.5</b>	<b>10.4</b>	<b>67.1</b>	<b>100.0</b>
Light Manufacturing	21.6	13.4	15.3	16.5
Heavy Manufacturing	21.9	10.4	5.1	9.5
Trade	4.8	65.7	28.9	27.3
Sophisticated services	33.1	4.4	6.4	12.2
Simple services	7.0	2.5	29.6	21.7
Other	11.6	3.6	14.6	12.8
Total	100.0	100.0	100.0	100.0

Source: HRD project 1994

<sup>2</sup> Participation rate refers the percentage of persons in labour force to the population 10 years and above. [Labour Force Survey 1992-93] Government of Pakistan.

In 1994 the Pak/Netherlands project on Human Resource Development and Federal Bureau of Statistics of the Government of Pakistan has conducted a nation wide survey and tried to differentiate the formal and informal sector in Pakistan. Results of the survey have been reported in **Table 3.1**. The formal sector has been sub-divided into large enterprises having more than 10 workers and small enterprises having less than 10 workers. Results of the survey presented in **Table 3.1** reveal that the proportion of the urban employed persons working in the urban informal sector was 67.1%, while large scale and small scale formal enterprises provide employment to about 22.5% and 10.45% respectively. Thus the results of the survey suggests that out of a total of 8.7 million people employed in urban areas in 1991, 5.8 million were engaged in informal enterprises compared to 2.8 million workers in large and small scale formal enterprises. In terms of education the survey has also tried to answer the fundamental question of whether informal sector employment is concentrated in sectors where economic activity is characterized by a relatively low level of education. The Survey indicated that of the total workers in the sample, 51.2% in the informal sector were illiterate while the comparable figure for the small and large enterprises in the formal sector are 7.1% and 2.6% respectively. The educational profile of the informal sector enterprises was heavily weighted in favor of those with less than primary education accounting for 58.6% of the

**Table 3.2****Workers by Educational Level and Type of Enterprise (%)**

Educational Level N = 8017	Formal Sector		Informal Sector	% of Total
	Large Enterprises	Small Enterprises		
<b>% of Total</b>	<b>22.5</b>	<b>10.4</b>	<b>67.1</b>	<b>100</b>
Less Than Primary	24.2	12.5	58.6	46.1
Primary and Middle	18.3	21.0	23.2	21.9
Matric and Intermediate	30.0	52.1	16.3	23.1
Degree and Higher	27.5	14.4	1.9	8.9
Total	100.0	100.0	100.0	100.0

Source: HRD Project 1994, pp.47

workers while 23.2% had primary and middle level of education. The Survey shows that only 1.9% of those employed in the informal sector had educational qualifications with a degree or higher.

The large and small-scale formal sector enterprises had the highest ratio of those with matric and intermediate level of education 30.0% and 52.1% respectively. Contrary to the informal sector, the small enterprises in the formal sector had the lowest ratio of those with less than primary level of education (12.5%). While the informal sector enterprises had the lowest ratio of those with degree and higher level of education.

Naseem (1996) presented the growth trend in the urban informal sector in Pakistan.

**Table 3.3**

**Annual real growth Rates in The Formal and Informal Manufacturing Sectors in  
Urban Pakistan, 1976-77 – 1983-84 (%)**

	Formal Sector	Informal Sector	
		Small scale	Household
Employment	-1.1	10.3	5.0
Capital stock	15.2	19.56	28.6
Value added	8.7	54.6	4.2
Capital-Labour ratio	16.6	8.3	22.5
Labour productivity	49.4	39.7	67.8
Capital Productivity	-6.0	-2.8	2.9
Real wages for waged workers	5.7	5.0	1.0

Source: Naseem (1996)

Figures presented in the **Table 3.3** clearly indicate that the employment level in formal sector (manufacturing sectors) declined at the rate of 1.1% per annum while the employment levels in the informal sector (small sector) have grown at the annual rate of 10.3%. It is also evident in the table that the capital-labour ratio grew at a faster pace 16.6% to 8.3% in the formal sector vis-a-vis the informal small scale sector. Naseem

arrives at the conclusion that labour productivity and increasing capital intensive technologies within the informal sector have had a net labour displacing effect. Increasing trend in the labour productivity indicates that new productivity increasing capital technologies was rapidly taking place in all sectors. Naseem (1996) concluded that the declining trend in the capital productivity in both sectors (6.0% and 2.8%) served to raise labour efficiency and to invest in human resources especially in formal educational skills as well as raising the technical, vocational and higher educational base of formal sector workers. He has also negated the assumption that the formal sector is highly influenced by the unionization as compared to the informal sector as the real wages in Table 3.3 shows the increasing trend in all sectors (5.7% and 5.0%). The major reason for the rapid growth of the informal sector in Pakistan is attributed to the disappointing growth in the formal sector besides rapid population growth.

### **3.4. Poverty in the Informal Sector**

Though researchers have different views regarding the role of urban informal sector in poverty alleviation, as some of them viewed that the informal sector consists of the poor, so it must be reduced while others have the opinion that it is playing an important role in poverty alleviation through employment creation and income generation, it must be promoted. However, all agree that poverty is a dominant phenomenon in the informal sector. In the past, poverty used to be considered as mainly a rural problem since the dominant proportion of the population lived in rural areas. However, in last two decades with growing urbanization, poverty has become an urban problem.

In case of Pakistan, very few studies have tried to measure the incidence of poverty in the informal sector, though its role is considered very important in poverty alleviation. Guisinger and Irfan (1980) utilized the survey data from Rawalpindi City (1975) and calculated the percentages of workers in the formal and informal sector who were the members of the families living in absolute poverty. They have used poverty line RS.95 per month, considering it the basic requirement for food, clothing and shelter in Rawalpindi. They found that the incidence of poverty in the formal and informal sector was not markedly differently. Results indicate that 5% of the total workers in the

informal sector were living in extreme poverty. They also found that poverty incidence among the employees in the informal sector was 34% and that of self employed was 32%. A study by Nadvi [1980]<sup>3</sup> found a very high incidence of poverty among household units, compared to those in small scale manufacturing units. For the Gujranwala sample, the household enterprise units reported an incidence of 34% while their small-scale counterparts had an incidence level almost a third for the household units.

Results of these studies have been calculated on the basis of separate poverty lines. Computation of the poverty line is again a debatable issue. In past many authors have computed the poverty lines for Pakistan (rural and urban) based on separate criteria. We have taken the poverty line by the World Bank [1995] Rs. 2755 per month, for an average household of six persons and calculated the head count index with the help of our data set. Our results indicate that about 19% of the households in the informal sector lie below the poverty line. The incidence of poverty in domestic service is about 40% while in petty trading it is 15.6% and in transport it is 10.5%. Though these results are hardly representative, they do suggest that the most vulnerable informal services sector is domestic service and that the real opportunities for poverty alleviation lie in expanding employment in the Other Services sector in areas such as petty trading and transport etc.

### **3.5. Results of Other Studies**

Different authors attempting to probe into the urban informal sector and calculate the earnings functions in Pakistan have conducted a few studies.

Burki. A.A & Qaisar-Abbas (1991) used the survey data of 1057 respondents in the informal sector to test whether human capital investment is rewarded or not in this sector. Schooling, experience and vocational training proved the important variables in terms of earnings. Rates of return to various levels of education have also been calculated by using the dummy variables presented in **Table 3.4**

---

<sup>3</sup> Noted from Naseem [1996]

He found that rates of return for primary level of education is higher than secondary and rates of return for workers are higher than self-employed. Vocational training has been found to be an important variable to determine the wage differentials in the urban informal sector.

**Table 3.4**

**Rates of Return to Education Levels for Workers and Self-employed**

Educational Level	Rates of Return	
	workers	self-employed
Primary	7.76	4.69
Secondary	4.11	2.53
Higher	18.00	10.44

Source: Burki. A.A Burki and Abbas Qaisar (1991)

Cohen and Havinga [1988] observed that enterprises with lower levels of capital endowment per worker have lower productivity of labor while small firms with lower level of investment per worker have achieved higher productivity of capital than larger and capital intensive firms. It was found that experience is more important than education both for owner and worker in the urban informal sector of Pakistan.

Kazi Shahnaz [1980] found in the survey conducted in 1980 that the informal sector in Pakistan, which is main source of labor absorption in the urban sector, requires minimum amount of investment for establishment. Workers are recruited only through personal contacts at the same time she described that labor is being exploited by paying low wages. Mainly investment is done by the remittances and the informal sector is the main source of providing skilled labor to the formal sector.

Ahmad, V [1993] explains that the informal sector in Pakistan is handicapped by stagnant technology, low productivity and substandard working conditions, which limits the ability and the will of policy makers to depend on the informal sector to achieve social objectives.

Ahmad et al [1991] while exploring the earnings profiles in the urban informal sector in Pakistan found that primary education has no impact on the earnings in the IS sector, they also concluded that workers with Middle and Matric level of education earn substantially higher than uneducated workers. The article shows that by controlling the experience variable, the hourly earnings increase with the age at a diminishing rate up to 32 years of life and decreases thereafter.

Chaudhary H and S.A. Khan [1990] in their study focus on the socio-economic characteristics of the self-employed in the urban informal sector of Pakistan. The main conclusion of the paper is that the informal sector workers and self-employed belong to the lower strata of the society. Although a sub-group of demand-oriented entrepreneurs is trying to improve their position, their efforts are hampered by a lack of proper premises and capital and by marketing problems. On the other hand, another sub group of marginal entrepreneurs does not have any motivation to improve their position. This is mainly attributed to a lack of capital. The study also shows that self-employment can absorb a large number of unskilled workers and that relatively little capital is required to start a business.

Soon Lee-Ying (1987) used a sample survey of Malaysia for 1262 households and his results describe that wage earners and self-employed are essentially occupationally two different groups and both have a different earnings structure. In his study the robustness of the human capital variables in earnings has been confirmed. He found a 9% increase in the wage rate for each year of schooling, and that the rate of return to schooling of self employed workers is substantially lower about 40% than paid workers. His results indicate that experience is insignificant in the case of self-employed individuals.

Funkhouser Edward (1996) estimated the returns to human capital of the informal sector in a cross-country analysis. He used the sample data for 5 Central American countries. His results suggest that returns of an additional year of schooling vary from 5.1% in El Salvador to 10.0% in Honduras. He found that in all these five countries informal sector comprises of at least three-fifths the returns in the formal sector. In each country he found

the concavity of the experience. He also pointed out that returns to human capital are higher in the formal sector in all of these five countries. Interestingly he concluded that returns to education in the informal sector in these countries are higher than the most developed countries.

### **3.6. Conclusion**

Pakistan is considered to be an extremely poor country in terms of per capita income with a rapidly growing population. In the 1970's this high population growth with massive remittances from Gulf accelerated rural-urban migration that inflated the urban population. Naseem [1996] indicates that the growth rate of the urban population in Pakistan has been 4.4% per annum since 1972. This increasing urban population created the problem of unemployment and underemployment in urban areas. In these circumstances, the underground economy plays an important role to absorb this rapidly growing urban labour force. Economists also believe that besides the urban population growth one of the major reason of the boom in the informal sector in Pakistan is the increase in the budget deficit which forces the government to increase its revenues through higher taxes. In the absence of expenditure reduction or rapid economic growth, the tax burden on the formal economy is rising pushing more activities to the informal sector.

In the absence of the uniform definition of the informal sector, it is hard to measure the size of the informal sector in an economy. However, ESCAP/UN [1995] suggests that it is lot easier to describe the sector than it is to provide an exact definition. In case of Pakistan in order to mark an unambiguous boundary between the formal and informal sectors, the size of the establishment (Less than 10 workers in informal firms) criterion is very much popular. A few studies have been conducted to measure the size of the urban informal sector in Pakistan. A HRD project in 1994 found that the establishments, which are considered the informal sector units, hire 67.1% of the total workers in the urban areas. They also found that trade and simple services are major activities that absorb this labour force. The study also indicates low levels of educational attainments in the informal sector in comparison to the formal sector. Naseem [1996] found that

employment growth trends in the small-scale informal units are much higher than formal counterparts.

It is considered that poverty and the informal sector go side by side in third world economies. A rough indicator to measure the poverty incidence is the head count index, which in our sample estimates based on World bank poverty line indicate the incidence of poverty in the informal sector in Pakistan is 19%, while it is much severe among the domestic servants.



## CHAPTER 4

### DATA ANALYSIS

#### **4.1. Characteristics of Informal Sector Workers**

Mean values of the major variables have been presented in **Table 4.1**. It shows large differences between wage earners and self-employed. The overall mean earnings both for wage earners and self employed individual's accounts for Rs. 3292. Interestingly Self-employed individuals have almost 11% higher earnings as compared to the wage earners from the present job. Mean earnings for the wage earners stand for Rs. 3046.80 while the comparable mean figure for the self-employed stands for Rs. 3413.68. Almost the same pattern has been observed in the years of schooling. On average the schooling years completed by all the respondents is 5.03 years while wage earners have completed only 3.63 years of schooling on average and self employed on average had completed 5.72 years of schooling. It can be guessed from here that education plays an important role in the earnings differentials.

**Table 4.1**  
**Mean Values of Major Variables by Sector of Employment**

	Whole sample	Wage Earners	Self Employed
Earnings Per Month	3292.25	3046.80	3413.68
Years of Schooling	5.03	3.63	5.72
Age (Years)	35.00	36.25	34.39
Experience	24.11	26.79	22.78
No of Cases	142	47	95

Source: Primary survey of Rawalpindi/Islamabad

It is indicated in **Table 4.1** that the self-employed are bit younger than the wage earners. Average age in years for the self employed counts 34.39 while the comparable figure for

the wage earners is 36.25 years. It seems that the urban informal sector has the capacity to absorb young people who cannot enter into the public sector. It can also be observed that even after receiving four years more experience, this could not enable wage earners to earn more than the self-employed. This again strengthens the argument that higher educational attainments have tremendous effect on the earnings of the urban informal sector workers in Pakistan.

**Table 4.2** presents the mean values of the above-mentioned variables taking into account the regional differences. Results clearly indicate that individuals living in Islamabad earn more than the individuals living in Rawalpindi. The same pattern has been observed with respect to schooling.

**Table 4.2**

**Mean Values of Major Variables by Region**

	<b>Whole sample</b>	<b>Islamabad</b>	<b>Rawalpindi</b>
Earnings per months	3292.25	3348.38	3276.57
Years of schooling	5.03	5.93	4.78
Age (Years)	35.00	36.12	34.69
Experience	24.11	24.29	24.06
<b>No of cases</b>	<b>142</b>	<b>31</b>	<b>111</b>

Source: Primary survey of Rawalpindi/Islamabad

A possible reason for this could be that the cost of living in Islamabad is higher and so workers demand higher wages in Islamabad, or there may be less competition among workers therefore they can charge high prices for labor. Average years of schooling in Islamabad are 5.93 while in Rawalpindi it is only 4.78.

**Table 4.3** presents the distribution of mean values of the major variables among the different sectors of the economic activity. The mean income of the workers per month is

highest for those who are employed in the transport sector that is Rs. 3768.4 while the lowest income per month in these activities is by the domestic servants, that is, only Rs. 2007.1. Average monthly earnings for services sector and petty trading sector counted Rs. 3397.4 and 3266.2 respectively.

If we look into the educational levels in these activities, petty trading comes first, which has an average length of schooling of 5.8 years while this sector in terms of earnings comes at number four among these categories. Here the results contradict the human capital theory.

**Table 4.3**

**Mean Values of Major Variables by Occupational Categories**

	<b>PT</b>	<b>DS</b>	<b>T</b>	<b>S</b>	<b>OPS</b>
Earnings per months	3266.2	2007.1	3768.4	3397.4	3500
Years of schooling	5.8	2.2	5.1	5.4	4.8
Age (Years)	33.8	39.8	32.4	35.7	35.4
Experience	22.2	31.7	21.6	24.5	24.6
No of cases	45	14	19	31	33

Source: Primary survey of Rawalpindi/Islamabad

PT for Petty trading, DS for Domestic servant, T for Transport, S for Services (Repair & Maintenance) and OPS for Other personal services

However in the case of domestic servants the results again prove the human capital theory. As indicated domestic servants placed lowest in earnings as well as for schooling Rs. 2007.1 and 2.2 years respectively. A possible explanation could be that often these servants join the job after their retirement, so at the end of this age they are not able to get the market wage rate. It is clear from the age classification that DS is highest among its counterparts which is 39.8 years.

## 4.2. Earnings

Earnings have been an extremely important variable in all of these small surveys. In the

first place income directly affects the standard of living and well being of that person and his or her family. In the second place, the level of earnings serves as a rough indicator of the level of productivity.

**Table 4.4****Households Income from All Sources**

	<b>PT</b>	<b>DS</b>	<b>T</b>	<b>S</b>	<b>OPS</b>	<b>Total</b>
< 1000	-	14.3	-	3.2	-	2.1
1001 - 2000	2.2	7.1	10.5	9.7	-	4.9
2001 - 3000	24.4	35.7	5.3	29.0	12.1	21.1
3001 - 5000	48.90	35.7	36.8	22.6	60.6	43.0
5001 - 10000	24.4	7.1	47.4	35.5	18.2	26.8
10001 - 15000	-	-	-	-	3.0	0.7
15001 - 20000	-	-	-	-	6.1	1.4
<b>Table Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: Primary survey of Rawalpindi/Islamabad

**Table 4.4** presents for each economic activity the distribution of workers by occupational activities. Approximately 28 percent of the workers covered in this survey, earned less than Rs. 3000/- per month. On the whole families with the highest earnings are those whose head of household is employed in the OPS group of the urban informal sector. As a whole 28.9% of the total workers earned more than Rs. 5000/- per month. However, only 24.4% in PT, 7.1% in DS and 27.3% workers in OPS earn more than Rs 5000 per month in their respective sectors. It is considerably interesting that most workers in each sector of economic activity in the urban informal sector fall into the band of Rs. 3000 to Rs. 5000 per month on average. For instance, 60.6% of the workers employed by OPS fall into this category. Beyond any doubt, the highest incomes are earned by the most flourishing OPS sector in the informal sector.

It would be interesting to know how the differences in earnings by type of enterprise relate to the level of education and to occupation. In other words, to what extent can the relatively lower earnings of persons employed in the informal sector be attributed to their level of education?

Results shown in the **Table 4.5** indicate that on average the monthly income of all the respondents is Rs. 3292 while the workers, who have educational level below primary, earn Rs. 2702 per month, the comparable figure for the primary level of schooling is Rs. 2826. It is evident from the table that the mean earnings per month goes up with the level of education up to middle standard of education but after that it shows a declining trend. It

**Table 4.5**

**Average Monthly Earnings by Type of Economic Sector and Educational Level**

<b>Education</b>	<b>PT</b>	<b>DS</b>	<b>T</b>	<b>S</b>	<b>OPS</b>	<b>Total</b>
Below primary (0-3)	2621 (26.7)	1822 (64.3)	3714 (36.8)	2604 (41.9)	2907 (45.5)	2702 (39.4)
Primary (4-5)	2845 (22.2)	2250 (28.6)	2000 (5.3)	4350 (6.5)	2800 (12.1)	2826.2 (14.8)
Middle (6-8)	4050 (22.2)	2700 (7.10)	4075 (42.1)	3445 (19.4)	4700 (15.2)	3999 (21.1)
Matric (9-10)	3558 (22.2)	-	4000 (10.5)	4762 (25.8)	3240 (15.2)	3915 (17.6)
Higher (11-14)	3667 (6.7)	-	3000 (5.3)	2000 (6.5)	5250 (12.1)	3900 (7.0)
<b>Table Total</b>	<b>3266</b> <b>(100.0)</b>	<b>2007</b> <b>(100.0)</b>	<b>3768</b> <b>(100.0)</b>	<b>3397</b> <b>(100.0)</b>	<b>3500</b> <b>(100.0)</b>	<b>3292</b> <b>(100.0)</b>

Source: Primary survey of Rawalpindi/Islamabad

- Values in parenthesis are the percentage of total workers in respective sector

- Values in parenthesis in Column (1) show the years of schooling completed

also shows that mean earnings are lowest among those who have less than primary level of education which is Rs. 2702 and highest among those with middle level of education which registers as Rs. 3999 on average. Given this pattern, we can say that education in the urban informal sector pays off up to certain level. If we assume the differences in productivity, the results can be interpreted to mean that workers with primary level of education are 5 percent more productive than the workers who have an educational level below primary in IS of Pakistan. Similarly workers with middle level of education are 2 percent more productive than the workers with matriculation level of education.

However, the pattern differs a bit when we see the results of the different sectors of the

economy. Though the highest paid workers are those which have middle level education except those in the services sector. However, the workers which have education below primary level employed by the Transport and OPS, are more productive than the workers who completed the primary level of schooling. Workers employed by the transport sector are the highest paid on average Rs. 3768 compared to all the other sectors of the economy. In other words they earn 14 percent higher on average of the total workers employed by the IS (Informal sector).

Age earnings profile has been constructed for wage earners and self employed respectively. **Table 4.6** shows the mean age earnings profiles according to education and occupation for the urban informal sector of Pakistan. Earnings differ significantly by educational attainments. The higher the level of educational attainments, the higher is the mean earnings. For example, the mean earnings of household per month ranged from Rs. 4094.64 for below primary or no educational category to Rs. 5450.2 for those who had higher level of education for both occupational categories. It is evident from the table that the probability of earnings is almost double for those who have primary education compared to their counterparts who have below primary or no education at all. It shows that individuals with primary level of education earn almost 33 percent higher than the individuals who have below primary or no education. It is also shown in the table that a person with higher level of education would tend to earn 1.3 times higher than a person with no education or less than primary level of education.

Mean earnings differ according to the life cycle of the employed persons significantly irrespective of their educational attainments. For example, the mean earnings per month of households for both occupational categories increased from Rs. 3800 for age group of 20-24 to Rs. 5240 for age group 35-39 then declined somewhat in the age group of 50-54, which counts Rs. 3722 per month<sup>4</sup>.

---

<sup>4</sup> In the age group of 15-19 the mean income is Rs. 4700, it is ignored in the analysis because that is only one individual who has been reported in this age group. So it is not the mean income of the whole age group. Any inference based on this figure may be misleading.

**Table 4.6**

**Mean Age Earnings Profile by Level of Education and Occupation,  
(Household Income From All Sources)<sup>5</sup>**

Age Group	Educational Level					Total
	Below primary	Primary 4-5	Middle 6-8	Matric 9-10	Higher 11-14	
	<b>Wage Earners</b>					
15-19	4700	-	-	-	-	4700
20-24	2500	-	-	4200	-	3067
25-29	3300	1200	-	5500	-	3629
30-34	5400	-	4733	9800	-	5433
35-39	2650	6000	-	-	-	4325
40-44	3293	-	2950	-	7000	3714
45-49	4500	2500	4333	-	-	4083
50-54	3075	-	-	7500	-	3960
60+	-	4600	-	-	-	4600
<b>Total</b>	<b>3702.31</b>	<b>4060</b>	<b>4435</b>	<b>6500</b>	<b>7000</b>	<b>4264.04</b>
	<b>Self Employed</b>					
15-19	-	-	-	-	-	-
20-24	3250	3250	6000	4167	-	4167
25-29	7520	3914	9000	4013	5357	5485
30-34	5260	6200	5127	4000	4000	5095
35-39	3800	4600	3625	5300	6000	4407
40-44	3384	5600	-	6750	-	4502
45-49	3087	3900	4333	7000	-	4015
50-54	4500	3000	3500	2700	-	3425
60+	-	-	-	-	-	-
<b>Total</b>	<b>4434.67</b>	<b>4253.13</b>	<b>5251</b>	<b>4924</b>	<b>5278</b>	<b>4759</b>
	<b>Table Total</b>					
15-19	4700	-	-	-	-	4700
20-24	2750	3250	6000	4175	-	3800
25-29	5644	3575	9000	4385	5357	5114
30-34	5330	6200	4959	6900	4000	5240
35-39	3417	5300	3625	5300	6000	4389
40-44	3350	5600	2950	6750	7000	4240
45-49	3558	3433	4333	7000	-	4041
50-54	3360	3000	3500	5100	-	3722
60+	-	4600	-	-	-	4600
<b>Total</b>	<b>4095</b>	<b>4207</b>	<b>4979</b>	<b>5239</b>	<b>5450</b>	<b>4595</b>

Source: Primary survey of Rawalpindi/ Islamabad

### 4.3. Literacy

It has been found that a large proportion of the workers in urban informal sector is

**Table 4.7**

**Percentage Distribution of Respondents by Level of Education**

	PT	DS	T	S	OPS	Wage Earners	Self employed
Below Primary	26.7	64.3	36.8	41.9	45.5	55.3	31.6
Primary	22.2	28.6	5.3	6.5	12.1	10.6	16.8
Middle	22.2	7.1	42.1	19.4	15.2	21.3	21.1
Matric	22.2	-	10.5	25.8	15.2	10.6	21.1
Higher	6.7	-	5.3	6.5	12.1	2.1	9.5

Source: Primary survey of Rawalpindi/ Islamabad

illiterate. It suggests that this informal sector is the major source of employment for these illiterate persons<sup>6</sup>.

Results shown in Table 4.7 sheds light on the differences of the education level between wage earners and self employed and also among the different sectors of economic activity in the informal sector. Results indicate that 55.3 percent of the wage earners and 31 percent of self-employed have not completed primary level of education. If we have a cursory look at all the economic sectors, the Domestic Servant's category looks more vulnerable in getting no education. 64.3 per cent of the total domestic servants have education less than primary level, though the number of domestic servants covered in the sample are too small, however, it might be concluded from this that schooling is not paying off in this sector. On the other end more than 32 percent of the informal sector workers in repair & maintenance services have an educational level more than

<sup>5</sup> Distribution of respondents by level of education and experience see in Appendix 8

<sup>6</sup> Pak/Netherlands project on HRD, Informal Sector Employment in Pakistan ((1994)

matriculation. Here the conclusion can be drawn that in this sector employees are semi skilled workers, which acts as entry barriers. In the transport sector, the highest proportion is 42.1 percent had completed middle level of education. In the personal services category 45.5 per cent workers had not completed the primary level of education. However, in petty trading workers are evenly distributed among different levels of education but again the highest proportion belongs to the below primary level of education which is 26.7 percent.

#### **4.4. Training**

Contribution of training in terms of earnings in urban informal sector has been much debated since the concept of Urban Informal Sector unearthed by ILO. Burki [1993]<sup>7</sup> explains that vocational training has positive and significant contributions to the earnings of the urban informal sector workers. Bilquees, F & S. Hamid [1989]<sup>8</sup> also recommended that training programs in different skills would be highly beneficial in terms of earnings for the women in the Kachi Abadies in Pakistan.

In the present survey, results indicate that 50.7 percent of the total workers in this urban informal sector received on the job training. Results of the survey are reported in **Table 4.8.**

Results in **Table 4.8** indicate that the highest proportion of the services sector has received on the job training, that is, 31.9 percent of the total workers who received on the job training and 74.2 percent of the total workers in the services sector. In the transport sector 73.7 percent of its total workers received on the job training. But in the case of the domestic Servants 85.7 of its total workers have not received on the job training and it becomes 17.1 percent of the total workers who never received any on the job training. In terms of

---

<sup>7</sup> Burki, A.A and M.A. Khan (1993), Returns to human Capital In The Informal Sector: Some Evidence, In S. Ghayyur (ed.) the informal sector of Pakistan: Problems and policies, QUA/FES, Islamabad

<sup>8</sup> Bilquees and S. Hamid (1989), A Socio-Economic profile of poor women in Katchi Abadis, report on a survey in Rawalpindi, PIDE/FES, Islamabad

**Table 4.8****Distribution of Workers Who Received On the Job Training (%)**

Occupation	Yes		No		Total %
	%	N	%	N	
Petty Trading	28.9 (18.1)	13	71.1 (45.7)	32	100.0 (63.8)
Domestic servant	14.3 (2.8)	2	85.7 (17.1)	12	100.0 (19.9)
Transport	73.7 (19.4)	14	26.3 (7.1)	5	100.0 (26.50)
Services	74.2 (31.9)	23	25.8 (11.4)	8	100.0 (43.3)
Other person Services	60.6 (27.8)	20	39.4 (18.6)	13	100.0 (46.4)
Table Total	(100.0)	72	(100.0)	70	100.0

Source: Primary survey of Rawalpindi and Islamabad

\*\* Values in parenthesis are percentages of the total that say yes or no

earnings these results corroborate the results of the previous studies that advocate for the positive relationship between on the job training and earnings. As indicated in **Table 4.3** that domestic servants have the lowest earnings of its counterparts and they have the lowest training also. However, it might be the result of entry requirement for different occupational sectors. It is also possible that domestic servants have no need of training, while the repair and maintenance services sector has some limitations of training to enter the sector.

#### 4.5. Migration Status

It is a common notion that the urban informal sector is a temporary phenomenon and that migrants to urban areas are particularly likely to find employment in the formal sector. However, the results of this survey do not support this assumption.

Results in **Table 4.9** indicate that about 90 percent of the total respondents have been staying in the current location for more than two years. So, it can not be concluded that migrants stay in the informal sector just for a while to find a new job. Similarly 84.2 percent of the total respondents described that their family is not living in the rural areas.

**Table 4.9****Migration Status: Current stay in this location (%)**

	<b>PT</b>	<b>DS</b>	<b>T</b>	<b>S</b>	<b>OPS</b>	<b>Total</b>
Less than 6 months	4.4	14.3	-	6.5	3.0	4.9
Between 6-12 months	-	-	5.3	-	-	0.7
Between 1-2 years	2.2	-	10.5	9.7	6.1	5.6
More than two years	93.3	85.7	84.2	83.9	90.9	88.7
<b>Table Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: Primary Survey of Rawalpindi/Islamabad

#### **4.6. Problems Faced by Sector**

The information about the most immediate problem faced by the informal sector enterprises has been reported in **Table 4.10**. In our sample survey more than 92% respondents disclosed that they had not changed their occupation for more than two years and 64% never considered entering any other occupation. It indicated that the informal sector is not a temporary phenomenon but it is a permanent source of employment. However, the enterprises in this sector in Pakistan are facing too many problems to enhance their earnings.

Results of our sample survey in Rawalpindi/Islamabad indicate that the most immediate problem faced by respondents was identified as either lack of work or over work. This could be interpreted to mean that the informal sector activities require longer hours of work as well as suffer from insufficiency of work to earn an adequate living. These results support the view of Kamal (1993) who doubts the potential of the labor absorption by the informal sector unless the sufficient demand exists for such activities. The highest percentage of those who stated that most immediate problem is lack of work, were engaged in the services in the services sector that counts 48.4%. The next most important problem especially in the petty trading and transport sector is too many competitors.

Contrary to expectations, harassment by police is a permanent problem for Petty Trading. 13.3% of workers in PT and 10.55% of workers in Transport have described such harassment as their most immediate problem.

**Table 4.10**

Percentage Distribution of the Most Immediate Problems Faced by the Respondents To Enhance the Earnings						
	PT	DS	T	S	OPS	Total
NA	4.4	-	5.3	3.2	9.1	4.9
Transport	20.0	7.1	-	3.2	6.1	9.2
Overwork	8.9	50.0	10.5	16.2	36.4	21.1
Lack of work	4.4	21.4	15.8	48.4	21.2	21.1
Too many Competitors	24.4	-	42.1	12.9	18.2	20.4
Harassment by police	13.3	7.1	10.5	6.5	0.03	8.5
Lack of demand	13.3	14.3	5.3	3.2	3.0	7.7
Raw material	11.1	-	-	6.5	3.0	5.6
Lack of workers	-	-	10.5	-	-	1.4
<b>Table Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: Primary survey of Rawalpindi/Islamabad

#### 4.7. Conclusion

In this chapter the findings of the survey concerning the major characteristics of Urban Informal Services sector (Rawalpindi/Islamabad) employment has been presented. It has been found that average household size in the urban informal sector is 6.53. Household's average monthly income for the whole sample is Rs. 4595 while on average the monthly income of the respondents from their present job is Rs. 3292. Our survey shows that 33 percent of the total respondents earn their money by offering their services in the labor market and 67 percent have the status of self-employed.

On the basis of the findings of the survey, results exhibit a large difference between wage earners and self-employed in terms of mean earnings and the mean values of the human capital variables. Results show that overall the mean earnings per month of the respondents from the present job is higher for those who were self-employed by almost 11% higher as compare to the wage earners. On average the schooling years completed by all the respondents is 5.03 while wage earners have completed only 3.63 years of schooling on average and self-employed on average had completed 5.72 years of schooling. When we have looked into regional differences, results show that individuals living in Islamabad have an edge over the individuals whom are living in Rawalpindi in earnings as well as in schooling. It might be the result that high cost of living is associated

with Islamabad.

By looking across the economic activities, the Transport sector seems to be leading in terms of mean earnings per month, amongst all of its counterparts. The mean earnings of the transport workers is reported RS.3768.4 per month while the domestic servants earn on RS.2007.1 per month. It is also indicated in the survey that approximately 46% of total workers covered in this survey, earned less than Rs.300 per month. On the whole with the highest earnings are those who are employed in the OPS group of urban informal sector. It is interesting to note that most sectors in each area of economic activity in this survey fall into the band of Rs.5000 per month in their respective sectors.

Concerning the educational level and earnings, it is found that mean earnings go up with the level of education till the middle standard of education but after that it shows a declining trend. It shows that mean earnings are lowest for those who are uneducated or have less than primary level of education which is RS.2702 while highest earnings are associated with middle level of education that is RS.3999 per month. Results also indicate that 55.3% of wage earners and 31% in self-employed have not completed primary level of education. Among the different economic activities, DS comes at the lowest end. Where workers do not have any education, it accounts for 64.3% of the total domestic servants who are uneducated or having less than primary level of education.

In the informal sector 49.3% workers have never received any on the job training. Results show that the highest proportion of the services sector has received on the job training that is 31.9% of the total workers who received on the job training and 74.2% of the total workers in the services sector.

All the results are based on a relatively small sample survey conducted in two cities of Pakistan, as a consequence, results of this survey hardly be considered representative for the informal sector in all of Pakistan, however, they can give an indication.



## CHAPTER 5

### REGRESSION ESTIMATES

#### **5.1. Introduction**

Human capital theory developed by Becker [1964] and Mincer [1974] provides a framework to analyze wage determination. These earnings functions by Mincer are a standard specification that is considered a departure point to measure the individuals productivity. In this chapter the earnings function has been estimated. It is observed in the economic literature that most of the studies comparing the impact of schooling on earnings restrict their empirical analysis to wage and salary workers or employees. Empirical evidence shows that in the urban informal sector, majority of the labor force is self-employed. So, the differences in return to schooling may better be described as the result of the occupational choice.

The informal sector has been segregated into small-scale activities that are most efficient on a small-scale level. Estimation has been segregated into subgroups of wage earners and self-employed. Then separate equations have been estimated for the two cities, Rawalpindi/Islamabad. Later on this informal sector has been divided into five small-scale activities namely, Petty trading (PT), Domestic Servant (DS), Transport (T), Repair & maintenance; Services (S) and Other Personal Services (OPS). Lastly the equations are estimated separately for all of these sub-groups of the sector. I have estimated the equations with and without the interaction term and all the results have been reported separately.

#### **5.2. Earnings Functions for Wage Earners and Self-employed**

**Table 5.1** presents the results for the whole sample and for both of the subgroups, wage earners and self-employed as well as with and without interaction term separately. In addition to this, a dummy variable for on the job training has been also included in the estimation.

**Table 5.1**
**Earnings Functions for Wage Earners and Self-employed (Log of Daily Earnings as dependent Variable)**

	Whole Sample			Wage Earners			Self Employed		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Int.	4.101	3.89	3.77	4.06	3.74	3.36	4.030	3.88	3.93
Sch	0.034 (1.44)**	0.046 (1.94)*	.057 (5.50)*	-0.012 (-.29)	0.008 (.19)	0.059 (3.06)*	0.045 (1.56)**	0.056 (1.91)*	0.062 (4.10)*
EXP	.037 (1.70)*	0.044 (1.98)*	0.050 (2.90)*	0.044 (1.18)	0.054 (1.41)**	.074 (2.15)**	.043 (1.46)**	.046 (1.54)**	0.043 (1.90)*
EXP2	-0.0006 (1.72)*	-0.0007 (2.03)*	-0.0008 (2.58)*	-0.0007 (1.17)	-0.0009 (1.54)**	-.001 (2.00)**	-0.0007 (1.43)**	-0.0008 (1.47)**	-0.0007 (1.62)
Sch*EXP	0.0007 (.824)	0.0004 (0.52)	-	.002 (1.22)	.002 (1.27)	-	0.0002 (2.15)*	-0.0002 (2.15)	-
Dj	-0.198 (2.76)*	-	-	-0.303 (1.76)	-	-	-0.169 (2.07)*	-	-
R2	0.24	0.21	0.45	0.29	0.23	0.21	0.22	0.18	0.18
RSS	22.48	23.74	23.78	8.13	9.12	9.48	13.33	13.98	13.98
N	142	142	142	47	47	47	95	95	95

- Values in parenthesis are t-statistics

\* Significant at the 5% level.

\*\* Significant at 10% level.

Results in the first equation of the **Table 5.1** include, schooling , experience, experience squared, the interaction term and the binary variable for on the job training. Results in equation (1) show that all the human capital variables are significant. However, the interaction term has been proven insignificant. It suggests that Mincerian specification would have been approximately appropriate for the whole sample as well as for the subgroups in the estimation.

The results show that income is an increasing function of education and experience. Differentiation of equation with respect to schooling gives the impact of additional year of schooling on the individuals earnings. It is shown that the impact of an additional year of schooling and experience on earnings is 3.4 and 3.7 percent respectively equation (1). Equation (2) and (3) represent the results by excluding the interaction term and dummy

variable of on the job training. After the exclusion of these variables the contribution of schooling in individuals earnings has been increased from 3.4 percent to 5.7 percent while the incremental contribution by experience has increased slightly from 3.7 percent to 5 percent only. It implies that schooling is affected negatively by the variables Sch\*Exp and Dj.

In the second phase wage equations are estimated separately for the subgroups of wage earners and self-employed. There are significant differences in the parameter estimates between the self-employed and wage earners. In self-employed for all three regressions, the effects of schooling on earnings is highly significant. However, in the case of wage earners the co-efficient of schooling becomes highly significant only after removing the interaction term and Dj. For self-employed the estimated coefficient implies a 6.2 percent increase in wage rate for each additional year of schooling Eq (9). By applying the Mincer's earnings functions, results indicate that the rates of return to schooling for the urban informal sector individuals who are self employed is substantially higher, about 10.7% higher than the wage earners [Eq (6) and (9)]. The estimates for experience in the self-employed category are lower than those for wage earners as it is evident from the Eq (6) and (9), that a one-year increase in experience would tend to increase the wage by about 7.4 percent for the wage earners while the comparable figure for the self-employed is only 4.3 percent. In all of the equations, the negative co-efficient of Experience Square (EXP2) shows that workers face a concave experience-earnings profile. Our results are in corroboration with Burki (1991), Guisinger and Irfan (1980) and Khan (1983).

The dummy variable specification for different levels of education is presented in **Appendix 7**. By looking the results of equations with different level of education in **Appendix 7**, it becomes clear that returns to education for all levels are higher for self employed. Interestingly earnings in the wage earners group have a negative relation with incremental educational level. For the whole sample earnings tend to increase as the level of educational attainment increases. Among the educational categories considered, a sharp variation was observed among wage earners and self-employed. By using several binary

variables for different level of education, results corroborate our previous inference from the estimation presented in **Table 5.1** that schooling has a greater impact on self employed earnings as compared to the wage earners while experience shows somewhat better contribution in the earnings of the wage earners. In the wage earners group, middle standard level of education has the lowest reward while highest goes to the individuals who have higher level of education. In contrast for self employed highest reward would tend to go for individuals who attained the matriculation level of education. The coefficient of the work experience for both wage earners and self employed are statistically significant at 5% level. Dummy variable for on the job training is significant and has the expected sign in all the three equations. It can be interpreted that individuals who do not have on the job-training earn 33.7% less than the individuals who attain on the job-training in the wage earners group while the comparable figure for the self employed stands at 17%.

In summary, the general conclusion can be drawn that education in the urban informal sector ( both for wage earners and self employed) is an important and strong source of variation in earnings and investment in education exhibits decent returns across the sectors. At a gross level, the positive relationship of schooling and earnings support the hypothesis that education is an investment that receives pecuniary returns in labour market.

### **5.3. Earnings Differentials By Region**

In this section it would be explored whether earnings differentials exist among individuals living in two cities Rawalpindi/Islamabad. Separate equations for Rawalpindi and Islamabad and with & without interaction term and Dj have been estimated. Results are presented in **Table 5.2**. Regression results indicate that both schooling and experience have a significant impact on earnings in both cities. However, for Rawalpindi they have more of an impact as compared to Islamabad. Most of the coefficients have the expected sign. Results in **Table 5.2** show that one-year increase in schooling would tend to increase in earnings in Rawalpindi by 6.2% while it is about 94% higher in comparison to

Islamabad. It is also shown that a one-year increase in experience will increase earnings in Islamabad by about 4.7% and the comparable figure for Rawalpindi is 5.6%. Experience Square (EXP2) is negative and significant in both areas confirming the concavity of the experience earnings profile. In Islamabad, the partial impact of on the job training (Dj) is zero because the coefficient is not significantly different from zero. In case of Islamabad

**Table 5.2****Earnings Functions for Region (Log of Daily Earnings as Dependent Variable)**

	Whole Sample			Islamabad			Rawalpindi		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Int.	4.101	3.91	3.77	4.13	4.14	4.01	4.03	3.80	3.68
Sch	0.034 (1.44)**	0.051 (4.96)*	0.056 (5.50)*	0.030 (0.59)	0.029 (1.25)**	0.032 (1.44)**	0.035 (1.29)**	0.055 (4.71)*	0.062 (5.24)*
EXP	0.037 (1.70)*	0.048 (2.78)*	0.050 (2.90)*	0.046 (1.12)	0.044 (1.54)*	.047 (1.64)**	0.040 (0.16)	.054 (2.42)*	.056 (2.40)*
EXP2	-0.0006 (1.72)*	-0.0007 (2.41)*	-0.0008 (2.58)*	-0.0007 (1.26)	-0.0007 (1.47)**	-0.0008 (1.54)**	-0.0006 (1.34)	-0.0008 (2.04)*	-0.0009 (2.14)*
Sch*EXP	0.0007 (0.824)	-0.192 (2.70)*	-	-0.0007 (0.03)	-	-	0.0008 (0.80)	-	-
Dj	-0.198 (2.76)*	-	-	-0.117 (0.72)	-0.117 (0.73)	-	-0.237 (2.80)*	-0.226 (2.71)*	-
R2	0.24	0.24	0.20	0.0.14	0.14	0.13	0.28	0.28	0.23
RSS	22.48	22.59	23.78	4.63	4.63	4.73	17.37	17.48	18.69
N	142	142	142	31	31	31	111	111	111

Values in parenthesis are t-statistics

\* Significant at the 5% level.

\*\* Significant at 10% level.

the 13% variation in earnings is explained by the human capital variables while in Rawalpindi 23% of variation is explained by the same variables. It implies that in Islamabad factors other than human capital variables, are very important in determining income.

In response to the question of why human capital is rewarded less in Islamabad as compare to Rawalpindi while on average the earnings are higher in Islamabad, this can be attributed to the high cost of living is associated with Islamabad as compare to Rawalpindi. Another explanation can be given that in the case of human capital it might be

the selectivity bias, as the labor market in Islamabad for the informal sector workers is only a refuge employment while in Rawalpindi it is permanent source of employment. It can also be possible that interviewees who have been selected from Islamabad are mostly domestic servants or the wage earners who always get the less returns as compared to the self employed ( See Table 5.1) It could also be the result of the small sample collected from Islamabad.

#### **5.4. Earnings Differentials in Small Scale Economic Activities:**

Chenery and Syrquin [1975] found that growth elasticity for services sector in LDCs is relatively high. During the 1960s, transportation, construction and commerce sectors experienced a rapid increase in both value added and employment. The predominant composition of urban informal sector in developing countries is in petty trading and personal services. However, the nature of many of such services is changing. Thus, while the domestic servants have been replaced by the introduction of home appliances and the services of stable people, cab drivers have been substituted by automobile mechanics and garage workers, taxi drivers and urban transport workers in general. However, these technical changes have also been accompanied by the expansion of the demand for these services with the rise in per capita income.

Results in Table 5..3 show the pattern of returns to human capital variables of the five small scale economic activities, Petty trading (PT), Domestic servants (DS), Transport (T), Services [repair & maintenance] (S) and Other Personal Services (OPS) of the urban informal sector in Pakistan. Regression results show that all the coefficients of human capital variables have the anticipated sign and are statistically significant at the 5% level except the DS who are small in sample, only 10%. It is evident in the table that private rate of return to schooling {eq (3), (9), (12), and (13)} for PT is 3.4%, for Transport it is 2.5%, Services 4.4% and for OPS it is 17.5%. It can be concluded that schooling is highest rewarded in OPS and lowest for the Transport workers. The co-efficient of on the job-training is statistically significant only in petty trading it explains that PT workers who do not have on the job-training earn 30.2% less than the individuals who attained on

**Table 5.3**

Earnings for Small Scale Activities (Log of Daily Earnings as Dependent Variable)															
	PT			DS			T			S			OPS		
Int.	4.49	4.07	4.784	3.50	3.74	3.84	3.338	3.03	3.05	4.76	4.67	3.35	1.768	1.87	2.97
Sch	0.089 (2.34)*	0.106 (2.68)*	0.034 (1.83)*	-0.030 (0.18)	-0.011 (0.07)	0.078 (1.60)*	0.021 (0.53)	0.028 (0.78)	0.025 (1.5)**	-0.072 (1.94)*	-0.06 (1.94)*	0.044 (2.41)*	0.175 (2.35)*	0.166 (2.28)*	0.085 (4.25)*
EXP	0.002 (0.04)	0.018 (0.42)	-0.022 (0.56)	0.0056 (0.10)	-0.001 (0.02)	-0.015 (0.31)	0.129 (1.98)*	0.151 (2.77)*	0.150 (2.89)*	0.014 (0.40)	0.018 (0.52)*	.104 (3.51)*	0.175 (2.37)*	0.167 (2.31)*	0.095 (2.56)*
EXP2	0.0003 (0.27)	-0.000009 (0.12)	0.0004 (0.47)	0.0001 (0.11)	0.0002 (0.24)	0.0004 (0.71)	-0.0026 (1.88)*	-0.003 (2.70)*	-0.003 (2.75)*	0.0005 (0.96)	-0.0006 (1.08)	-0.001 (3.39)*	-0.002 (2.12)*	-0.002 (2.08)*	-0.001 (1.92)*
Sch*EXP	-0.0023 (1.54)	-0.003 (2.03)*	-	0.004 (.72)	0.003 (0.63)	-	-0.0002 (0.13)	-0.0001 (0.08)	-	0.005 (3.56)*	0.005 (3.62)*	-	-0.0037 (1.27)*	-0.003 (1.15)	-
Dj	-0.302 (2.46)*	-	-	0.161 (0.47)	-	-	-0.109 (0.62)	-	-	-0.064 (0.46)	-	-	-0.119 (0.71)*	-	-
R2	0.34	0.23	0.16	0.47	0.46	0.43	0.39	0.37	0.36	0.59	0.59	0.38	0.44	0.42	0.40
RSS	4.99	5.76	6.36	1.35	1.39	1.45	.83	.85	.86	2.35	2.37	3.58	4.18	4.26	4.47
N	45	45	45	14	14	14	19	19	19	31	31	31	33	33	33

- Values in parenthesis are t-statistics

\* Significant at the 5% level of Significance

\*\*Significant at 10% level

the job training.  $R^2$  is very respectable across the categories.

The coefficient of Experience Square (EXP2) in PT is positive which shows that people do not earn less even in the old age. On the other hand the highest reward for experience are shown in T sector, which are 15% with an additional year of experience. Results in

**Table 5.4**

**Earnings Functions for Small-Scale Activities (Log of Daily Earnings as Dep. Variable)**

	<b>PT (1)</b>	<b>DS (2)</b>	<b>T (3)</b>	<b>S (4)</b>	<b>OPS (5)</b>
Intercept	5.14	4.02	3.09	3.67	2.86
D2	0.086 (0.52)	0.103 (0.35)	0.434 (1.56)*	.0356 (1.12)	0.138 (0.61)
D3	0.326 (1.93)*	-	0.196 (1.25)	0.122 (0.53)	0.601 (2.97)*
D4	0.324 (1.65)**	-	0.172 (0.80)	0.464 (2.44)*	0.564 (2.12)*
D5	0.323 (1.22)	-	0.201 (0.57)	0.172 (0.45)	1.32 (4.25)*
EXP	-0.036 (0.88)	-0.019 (0.32)	0.155 (2.37)*	0.085 (2.26)*	0.112 (2.68)*
EXP2	0.0007 (0.85)	0.0006 (0.66)	-0.003 (2.33)*	-0.002 (2.29)*	-.002 (2.15)*
Dj	-0.324 (2.46)*	-0.05 (0.15)	0.037 (0.21)	-.014 (0.08)*	-0.061 (0.38)
R2	0.32	0.38	.54	0.42	0.52
RSS	5.16	1.60	0.66	3.33	3.56
N	45	14	19	31	33

- Values in parenthesis are t-statistics

\* Significant at the 5% level.

\*\* Significant at 10% level.

**Table 5.4** indicates that highest rewards are going to the individuals who have middle level of education and employed by the OPS sector these are 60.1% more than those with primary education. Only in the transport sector is D2 significant, and it shows 43.4%

higher rewards as compare to the reference group which is uneducated or having less than 3 years of schooling. In general it can be concluded that human capital variables are contributing to the earnings among all of these categories. On the job training is only important for petty traders while experience is highest paying in transport sector. Except for PT, among all the categories Experience Square (EXP2) exhibits concavity.

## 5.5. Parameter Stability Test

*When we run regression with sample data we assume that the data are sampled from the same population to which the population regression line applies. But what if our sample lumps together data that do not really belong together inasmuch as the sample model does not apply to them? It is often useful, therefore, to test for parameter instability across different samples before we decide to pool the data. [Mukerjee et al, pp 230]*

To test whether the data for wage earners and self-employed, Rawalpindi and Islamabad and all economic activities can be pooled or not, the Chow test is the most relevant test. In this section the Chow test will be applied as follows:

$$\ln Y = \alpha_0 + \alpha_1 Sch + \alpha_2 EXP + \alpha_3 EXP^2 + \varepsilon_1 \quad (\text{Wage Earners})$$

$$\ln Y = \beta_0 + \beta_1 Sch + \beta_2 EX + \beta_3 EXP^2 + \varepsilon_2 \quad (\text{Self-employed})$$

$$H_0 : \alpha_0 = \beta_0, \alpha_1 = \beta_1, \alpha_2 = \beta_2, \alpha_3 = \beta_3$$

$H_1$  : Alternative hypothesis entails that at least one of these equalities does not hold.

$$m = 4$$

$$K_u = 8$$

$$N = 142$$

Where m is the number of restriction , Ku is the number of independent variables including intercept and n denotes the total number of observations.

$$F_{(m, n-ku)} = \frac{\frac{RSS_r - (RSS_1 + RSS_2)}{RSS_1 + RSS_2} \times \frac{n - K_u}{m}}{\frac{23.78 - (9.48 + 13.98)}{9.48 + 13.98} \times \frac{142 - 8}{4}} = 0.457$$

While the critical value is equal to 2.37 at 5% level, the calculated value is much lower than the critical value, so we accept the null hypothesis that it is not valid to pool the data for wage earners and self employed. By applying the F test we conclude that we should not deal with it separately.

Similarly for the Rawalpindi and Islamabad and for all small-scale economic activities Chow test has been applied and found the same result. Reasons could be so small sample.

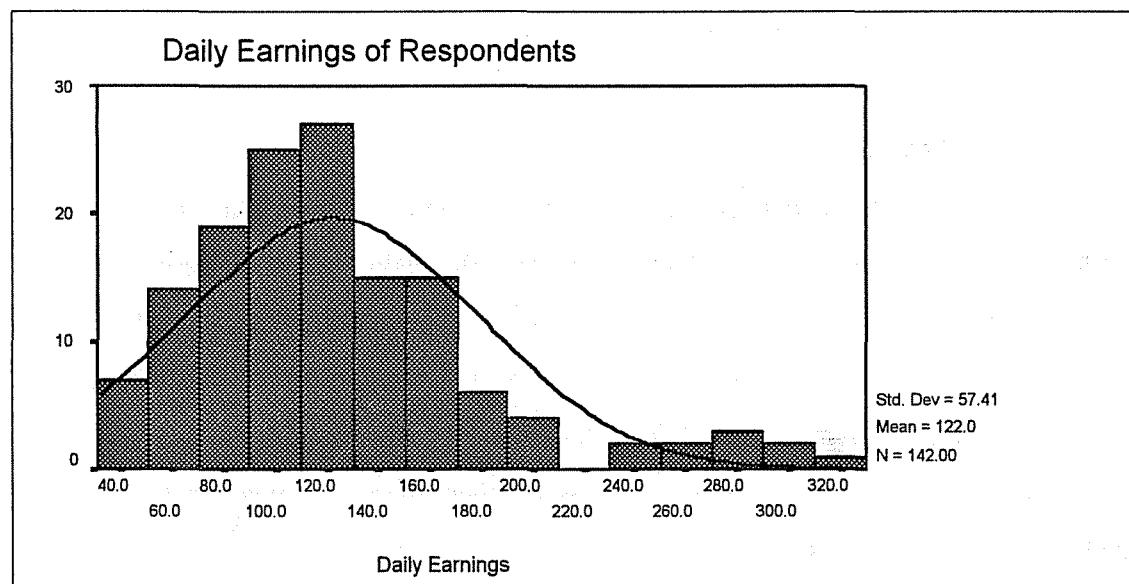
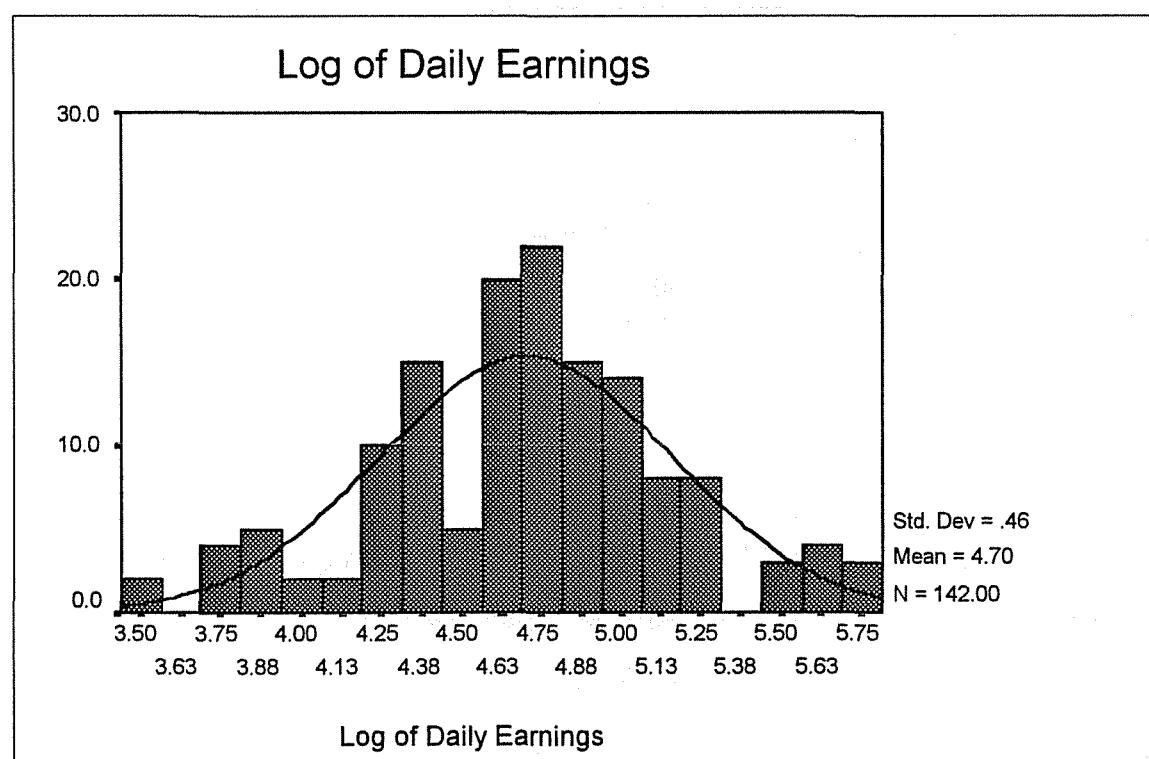
### 5.6. Normality Test

Modern statistical techniques stress more on the role of data model specification. Implicitly in the earnings functions, it is assumed that the data is normally distributed. If it is not so, it is important to make it normally distributed otherwise it can create a problem in estimation and hypothesis testing. It is observed that the presence of any outlier or skewness in distribution of any of the variable could mislead any inference made by that estimation. More often in this univariate analysis -data distribution- mean based and order based techniques are used. The mean of the variable is important to look into the distribution of variable. However, this measure tells us little about the data. To cope with this problem generally it is useful to look into the shape of the empirical distribution, which shows the pattern of variable of the data<sup>9</sup>.

To detect any normality in the data both quick exploratory checks and formal tests have been applied in this paper. Figures 1&2 presents histograms for the distribution of the earnings variable using the semi logarithmic and linear specification. In these figures logarithmic distribution conforms much more closely to the normal distribution than for the linear distribution, which confirms the correct model specification. Another method to detect skewness in the data, is to compare the sample mean with that of the sample median. It is evident in Appendix 5 that mean daily earnings RS. 121.9 is greater than the sample median Rs. 114.3, That indicates the positive skewness which has been removed

---

<sup>9</sup> For detail see Mukerjee *et al*, 1998, pp. 78-91

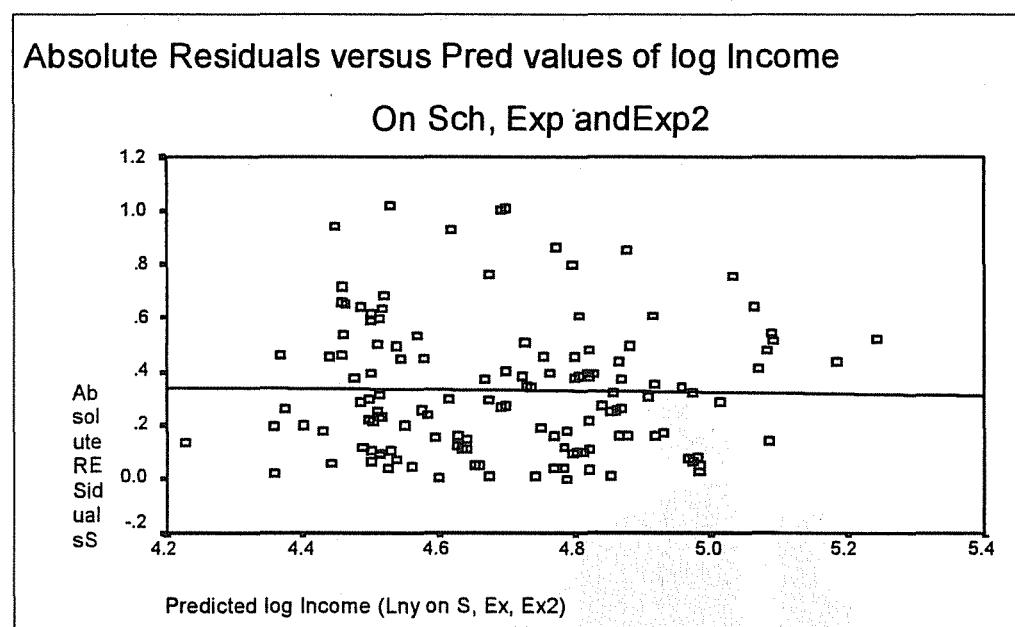
**Fig: 1****Figure 2**

from the data by taking the logarithmic form of the variable daily earnings,. After taking

the log of daily earnings, the mean and median come very close to each other. All the other variables show that the sample has been drawn from a normal distribution<sup>10</sup>. Box plots of the variable have not shown any outlier.

### 5.7. Hetroscedasticity

In cross section data, hetroscedasticity is the most common problem. The presence of hetroscedasticity inflates the t-values, which can mislead the making of any inference from estimated coefficients. So, in the basic specification of the model it is assumed that the disturbance term is homoscedastic with respect to schooling and experience. Hetroscedasticity can be easily detected from the plot of absolute residuals against the predicted values of regression<sup>11</sup>. Glejser's test is another important measure to detect hetroscedasticity in the data **Figure 3**.



Both of the measures have been utilized in this paper to detect hetroskedasticity in the model. Glejser's test involves regressing absolute residuals separately on the explanatory variables, on their inverse and square roots. Then t-test is used to test whether the slope

<sup>10</sup> For detail see Appendix 5

<sup>11</sup> If the plot of absolute residuals shows spread of points vertically wider and wider with the increase in the predicted values or vice versa, it is the indicator of the presence of Hetroskedasticity ( For detail see Mukerjee *et al*, 1998, pp. 254).

coefficients are significantly different from zero<sup>12</sup>. The t-tests for the slope coefficients equal to zero are significant, hence the hypothesis of the heteroscedasticity is rejected.

## 5.8 Selectivity Bias

It has been argued that to estimate the semilogarithmic wage equation especially in the low or middle-income countries, mostly sample selectivity is ignored. It has been stressed by a number of authors that to estimate the wage equations, it is important to test and correct for sample selectivity to estimate appropriate rates of return otherwise results could be biased.

Sample selectivity arises when some of the wage determinant factors could not be covered in the sample. For example the wage rate an individual receives is not only the wage rate offered but one should also take into account his job search policies, especially when two groups of the population's wage is being compared [Gronau, R. (1974)]. The problem of sample selectivity bias may also arise when the sample consists of more than two categories of workers and how the sample is drawn. In short, if the sample of a particular group i.e., self-employed, is not drawn randomly from the population of that particular group, results might be misleading [Rizwana 1995]. In the language of econometrics it can be explained like when  $\mu_i$  and  $\varepsilon_i$  are co-related, estimation of the wage equation by ordinary least square [OLS] will result in sample selection bias [ $\mu_i$  &  $\varepsilon_i$  are error terms of population and sample respectively]. In this case coefficients might be overestimated.

Several methods can be applied to correct this selectivity bias. Lee [1983] explains that if we assume that  $\varepsilon_i$  not normally distributed then it can be transformed to normality by the transformation  $J(\varepsilon_i) = \Phi^{-1}(\varepsilon_i)$  where  $\Phi^{-1}$  involves the inverse of the standard normal

---

<sup>12</sup>  $\ln Y_i = 4.486 + 0.0004 \text{Sch}$   
 $(4.90)$   
 $\ln Y_i = 4.69 + 0.031/\text{Sch}$   
 $(0.12)$   
 $\ln Y_i = 4.46 + 0.130 \sqrt{\text{Sch}}$   
 $(4.58)$

distribution. If  $J(\varepsilon_i)$  and  $\mu_i$  are bivariate normal, it can be replaced in the wage equation for estimation. He says it selectivity bias corrected wage equation which could produce reliable results. Hickman [1979] introduced the "Inverse Mills Ratios" to overcome the problem of selectivity bias. In this method, a separate probit function is estimated to find the probability of one being in a particular group of employment. By including this variable in the model, the equation is estimated again. If this new variable proves to be significantly different from zero and positive, it would indicate positive selectivity bias and vice versa.

### 5.9. General Test of Independence<sup>13</sup>

In the case where the data is qualitative instead of quantitative, it is not possible to measure the degree of association by means of the correlation coefficients. A general test of association is proposed by Thomas.J.J (1983) to measure the association between two variables.

**Table 5.5**  
**Actual Frequency Table**

		Education					Total
		Below Primary	Primary	Middle	Matric	Higher	
Income level	≤ 3000	43	13	11	9	6	82
	3000 > 8000	13	8	19	16	4	60
		56	21	30	25	10	142

--Values in parenthesis are expected frequencies

Since data presented in Table 5.5 is not suitable for correlation analysis, if we assume that education and earnings are independent, the expected frequency table can be constructed by calculating the probability of a person, expected in the range of less than Rs.3000 per month and having less than 3 years of schooling and so on. In a random selection, the probability of a person expected in this range would be  $56/142 = 0.394$ . If we assume that educational attainment and earnings are mutually exclusive, we would expect that total

persons in the range of less than Rs.3000 earnings and having less than 3 years of schooling would be  $82 \times 0.394 = 32$ . Similarly all the other values can be filled in the same way, presented in **Table 5.6**

**Table 5.6**  
**Expected Frequencies Table**

		Education				Total	
		Below Primary	Primary	Middle	Matric	Higher	
Income level							Total
	$\leq 3000$	32	12	17	14	7	82
$3000 > 8000$	24	9	13	11	3		60
	56	21	30	25	10		142

The degree of freedom has been calculated by  $(r-1)(c-1)$  where  $r$  stands for rows and  $c$  for columns and is 4. The following  $\chi^2$  value has been calculated:

$$\begin{aligned}\chi^2 = & (43-32)^2/3 + (13-24)^2/24 + (13-12)^2/12 + (8-9)^2/9 + (11-17)^2/17 \\ & + (19-13)^2/13 + (9-14)^2/14 + (16-11)^2/11 + (6-7)^2/7 + (4-3)^2/3 = 18.43\end{aligned}$$

At the 95% probability level with 4 degrees of freedom the critical value is 9.48. Since our calculated value of  $\chi^2$  is 18.43 which is greater than 9.48, we reject the hypothesis that there is no association between education and earnings in the urban informal sector of Pakistan.

## 5.10. Robustness Test

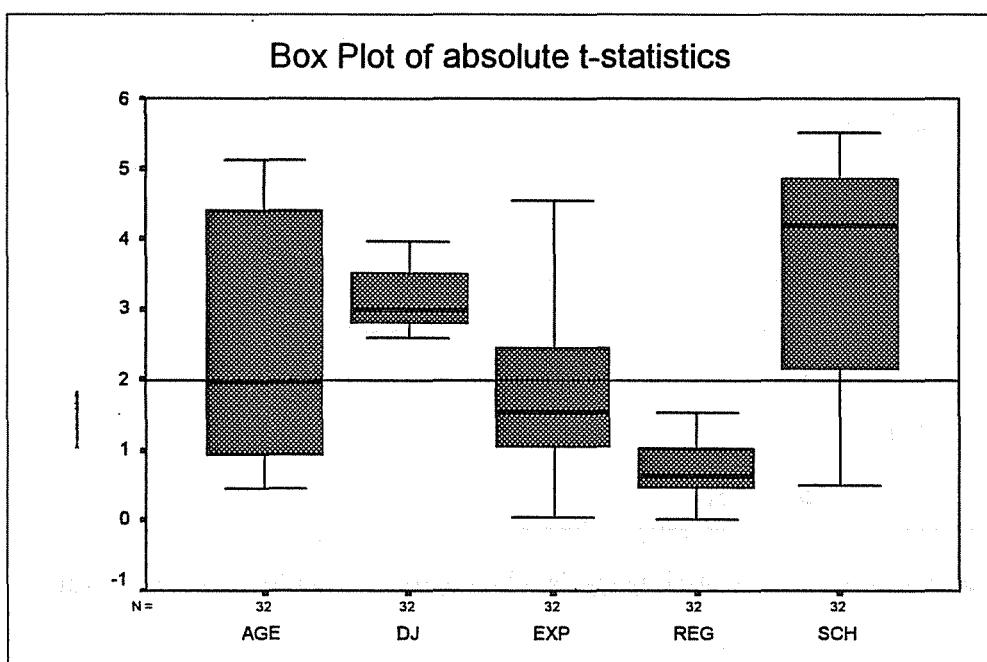
To make sense of the regression coefficients, robustness is presented in graphical as well as by statistical methods<sup>14</sup>. A visual representation is given in **Figures 4&5, which show the box**, plots of the absolute t-statistics and normalized coefficients. Each coefficient is

<sup>13</sup> For detail see, Thomas.J.J (1983)

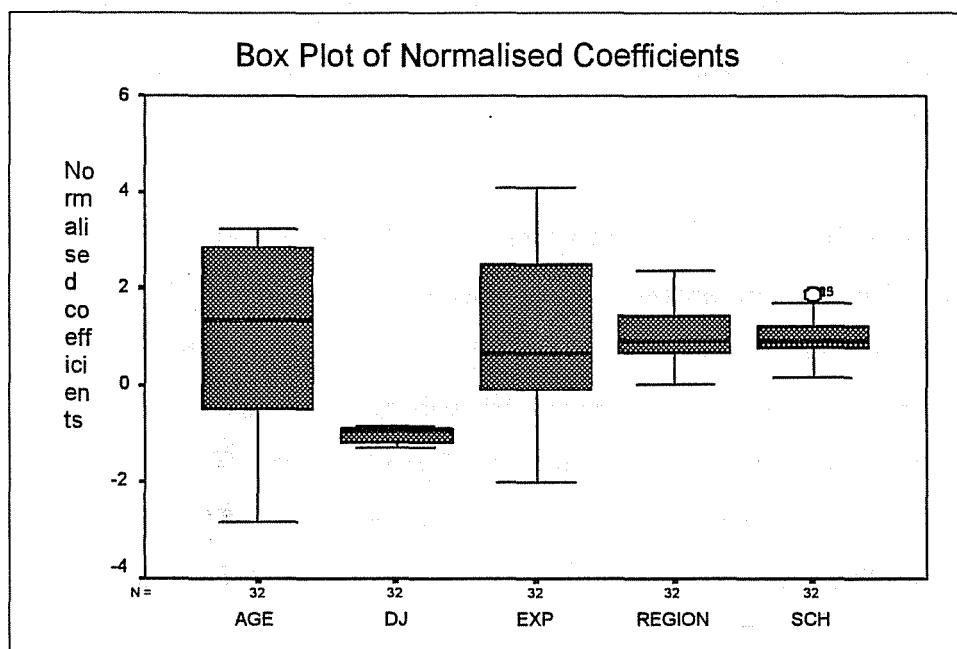
<sup>14</sup> See Mukherjee *et al*; 1998. Pp.198-204

normalized by the average of the absolute values of the coefficients for that variables across all estimated equations.

**Figure 4**



Results of all 63 regression estimates are presented in **Appendix 6**. Comparative box plots have been shown in **Figures 4&5**. **Figure 4** represents box plots of the absolute t-statistics and **Figure 5** shows the box plots of the normalized coefficients. Box plots of the absolute t-statistics show that estimates of the variables on the job training and schooling are the most stable variables among all its counterparts. In contrast, the coefficient of the dummy variable for region (Rawalpindi/ Islamabad) proves highly insignificant in all the specifications (Fig 4). This is in corroboration with the Chow test result presented in the previous section. In general , it can be said that the coefficients of the human capital variables are stable, with partial exception of the experience variable, across the specifications. It is also evident in **Appendix 6** that some of the important variables in some specifications have the wrong signs.

**Figure 5**

It can be concluded from this fragility analysis that schooling proves to be a robust and statistically significant variable in all alternative specifications. As expected higher earnings in the urban informal sector is associated with schooling. Almost half of the coefficients of experience also show significant results. Contrary to expectations, the age variable shows fragile results. The regional dummy variable is insignificant in all the alternative specifications. The other important result is that the dummy variable of on the job-training shows much more robust and significant results, it shows a positive association between earnings and training in the urban informal services sector of Pakistan.<sup>15</sup>

### **5.11. Conclusion**

The chapter presents the results of wage differentials with respect to human capital accumulation in the Urban Informal Services sector of Pakistan. In the regression results it is shown that schooling is more profitable to the self-employed in comparison to wage earners. These results support the results of studies by Burki [1991], Guisinger and Irfan [1980] and Khan [1983]. However, as a whole schooling comes second to experience in

<sup>15</sup> As Yes takes value 0 in Dj and No takes value 1

wage determination in the Urban Informal Sector of Pakistan. With respect to the regional differences, our results indicate that these human capital variables have more importance in Rawalpindi as compare to Islamabad. However, the Chow test proved invalidity of pooling the data for both regions.

The robustness test proves that most of our variables are stable and robust across the alternative specification. This test also proves the insignificance of the regional difference that has also been supported by the Chow test, which accepts the hypothesis of the validity of pooling data for the two regions (Rawalpindi/Islamabad). The general test of independence strengthens our results by rejecting the hypothesis that there is no association between education and earnings in the Urban Informal sector of Pakistan. A visual representation and Glejser's test could not find any clue about Hetroscedasticity in the model specification.

In the recent past some authors such as Maddala G.S [1993], Rizwana [1995], Burki [1996] and Dougherty *et al* [1991] concluded that the estimation of Mincer's earnings functions overestimates the returns to human capital variables (Schooling & Experience) and it will shift the earnings profile associated with progressively greater amounts of education. They have included the interaction term proposed by Richard Sabot in the Mincerian model and found it significant. Contrary to their results, we found that the interaction term is insignificant across all the specifications. Our results support Mincer's [1974] specification of the earnings function. However other human capital variable, Schooling & Experience, have consistent results with above-mentioned authors.

## CHAPTER 6

### CONCLUSION AND POLICY IMPLICATIONS

#### 6.1. Conclusion

It has been found that the average household size in the urban informal sector is 6.53. Households' average monthly income for the whole sample is Rs. 4595 while on average the monthly income of the respondents from the present job is Rs. 3292. Our survey shows that 33 percent of the total respondents earn their income by offering their services in the labor market and 67 percent have the status of self-employed. The general conclusion can be drawn that the state can no longer continue a policy of being neglected or indifferent towards the growth of the informal services sector.

On average self-employed workers exceed in mean earnings over wage earners. Self-employed workers with no education or below primary level education earn significantly higher than their counterparts in the wage earners group. The interesting feature is that the increment in earnings with an additional level of education is much higher for the persons who are self-employed as compared to the wage earners group. It can be deduced that self-employed workers with middle level of education tend to earn 23.46 percent higher than those of their counterparts which have primary education while the wage earners can earn only 9.23 percent higher of their counterparts. It implies that education for the self-employed is worth more as compared to the wage earners group. In case of higher level of education, self-employed individuals earn 24.09 percent higher than the individuals who have primary level of education. It suggests that self-employed individuals in the urban informal sector of Pakistan are more advantageous in labor market. It is evident that the highest income for the wage earners falls in the age group of 30-34 while the self employed earn the highest income in the age of 25-29 with the same level of education, below primary or no education. It implies that the learning process is different in different occupations in the informal sector. On the basis of these results, more self-employment schemes can be suggested to the promotion of the urban informal sector in Pakistan.

In terms of earnings, the transport sector comes at top, as its workers have the highest earnings among all of its counterparts, while domestic servants receiving the least. It is found that transport workers on average earn RS.3768 per month while Domestic Servants earn on average RS. 2007.1 per month. It is also noted in the survey that on average 28.9% of the total workers earn more than RS.5000 per month and almost 27% earn between RS.5000 –10000 per month. It indicates that the informal sector has potential to alleviate poverty and provide employment for a large chunk of the masses in Pakistan. Though these figure are not quite representative, however it can be suggested that the most vulnerable informal services sector is domestic service and that the real opportunities for the promotion of informal sector lies in expanding employment in other services sector such as petty trading, transport and other personal services.

Results of the survey do not support the common assumption that the informal sector is a refuge employment and that people stay there only to enter in the formal sector. Results of our small-scale survey in Rawalpindi/Islamabad indicate that 79.9% of the total workers have no connection with rural areas and it also points out that more than 88% of the respondents have been living in the same place for more than two years.

Findings of the survey reveal that the most immediate problem faced by the informal sector workers was either lack of work or an abundance of work. This could be interpreted to mean that the informal sector activities require longer hours of work as well, and suffer from insufficiency of work to earn adequate livings. Harassment by police has been found to be another important problem faced by the informal sector workers, 13.3% of PT and 10.5% of transport sector workers stated it as their most immediate obstacle to enhance their income.

Results of the regression estimates support the view that human capital investment is an important tool in determining the income inequality in the urban informal sector of Pakistan.

It has been also noted that all the human capital variables i.e., schooling, experience and on the job training have positive and significant impacts on earnings in all economic activities in the informal sector of Pakistan. It implies that investment in human capital may improve the marginal productivity of workers.

Mincerian standard specification of the earnings function has been criticized on the grounds that earnings of those with extended schooling continue to grow throughout their working lives and the rate of growth is positively associated with the level of schooling. In contrast, earnings of the unskilled and uneducated workers first increases then reaches to its peak and then starts to decline as physical powers decline. It is suggested that interactive term between schooling and experience should be included in the model to capture the impact of human capital on earnings completely. It is argued that by omitting the interactive term the model overestimates the rates of return to education. In our results, as a whole the term has proved insignificant. However, only in the regression of a sub sample of the Services (repair and maintenance) group which consists of semi skilled workers, it proves to be highly significant and positive. It follows that for the urban informal services sector the traditional Mincerian specification would have been approximately appropriate. The general conclusion can be drawn that in the unskilled services group such as petty trading and domestic service, education and skill are mismatched. It also might be the case that in these services people have been doing the same jobs for generations or natural ability could be another reason. So the education does not have its impact on experience. However, in skilled services such as repair & maintenance Mincerian the standard model is inappropriate and the results without interactive term might be misleading.

Normality test has provided confirmation of the superiority of the semilogarithmic earnings functions over its linear counterparts. Results indicate the normal distribution of the residuals.

A significant difference has been reported in the parameter estimates between the self-employed and wage earners. Results show that rates of return of schooling for the self-

employed are higher as compare to the wage earners. However, the returns for experience are lower for the self employed.

Robustness of human capital variables in the urban informal sector of Pakistan has been proved empirically.

## **6.2. Policy Implications**

In our results it has been indicated that there is a positive relation between education and earnings in the urban informal sector of Pakistan. However, earnings are not uniquely determined on the basis of the educational attainment of workers, rather placement of the worker in a particular job plays higher a role in wage determination. So, solely investment in education would be fallacy of composition. I do suggest that along with the investment in human capital, sufficient investment in physical capital should not be ignored. Firstly, it could be the reason that education is wholly or partly a signaling mechanism rather than increasing productivity. Secondly, by only increasing investment in human capital would tend to shift the supply of skilled labour in a way that would result in diminishing returns instead of increasing than and would produce "qualification inflation" in the sector. Consequently it can be said that though these results indicate a positive relationship between education and productivity, however for a large group of workers there must be opportunities for productive employment if it is desired for there to be higher productive. So, productivity in the urban informal sector can not be improved, until and unless there is investment in physical capital along with the human capital and sufficient demand that would ensure the employment opportunities in the sector.

It can be suggested that to cope with income inequalities, government can no longer continue a policy of being neglectful or indifferent towards the growth of the informal sector in Pakistan. It is noted that promotion of the informal sector can lead towards the possibility of helping the poor without any major threat to the rich and redistribution of the income.

It has been shown in the results that middle level education has the highest rewards to the workers of the urban informal sector. It might be suggested that more investment should be given to the middle level of education , however, it must not be at the cost of primary education. It is also suggested that to benefit more informal sector workers, schools should be established in the localities where the increased participation of these workers should be guaranteed.

On the job training is another area to improve the earnings in the informal sector of Pakistan. More vocational training schools should be established. For this purpose, existing schools could be used on a shift basis. Those people who are employed during the day can also benefited from such programs.

Informal sector should be protected from the whims of the police and other local authorities who are interested more in filling their own coffers rather than improving the working conditions in the informal sector. However, the taxes must be paid by these enterprises.

and the number of nodes in each layer is  $n_1 = n_2 = \dots = n_k = n$ . We denote the total number of nodes by  $N = k n$ .

For a given input vector  $x \in \mathbb{R}^d$ , we can calculate the output of the network by the forward pass.

The forward pass starts with the input  $x$  and passes it through the first layer, which has  $n$  nodes.

The output of the first layer is a vector of length  $n$ , which we denote by  $y_1$ .

We then pass  $y_1$  through the second layer, which also has  $n$  nodes.

The output of the second layer is a vector of length  $n$ , which we denote by  $y_2$ .

We continue this process until we reach the final layer, which has  $n$  nodes.

The output of the final layer is a vector of length  $n$ , which we denote by  $y_k$ .

The forward pass ends with the output  $y_k$ .

This completes the description of the forward pass in a fully connected neural network.

Now let's move on to the backward pass.

The backward pass starts with the output  $y_k$  and propagates back through the layers to update the weights and biases.

The backward pass uses the gradients of the loss function with respect to the weights and biases to update them.

The backward pass ends with the updated weights and biases.

This completes the description of the backward pass in a fully connected neural network.

Now let's move on to the training process.

The training process involves minimizing the loss function with respect to the weights and biases.

The training process uses an optimization algorithm like gradient descent to update the weights and biases.

The training process ends with the trained weights and biases.

This completes the description of the training process in a fully connected neural network.

Now let's move on to the inference process.

The inference process involves using the trained weights and biases to predict the output for a given input.

The inference process uses the forward pass to calculate the output.

The inference process ends with the predicted output.

This completes the description of the inference process in a fully connected neural network.

Now let's move on to the architecture of a fully connected neural network.

The architecture of a fully connected neural network consists of multiple layers of neurons.

The neurons in each layer are fully connected to the neurons in the previous layer.

The neurons in each layer have weights and biases associated with them.

The neurons in each layer also have activation functions applied to their weighted sum of inputs plus bias.

The architecture of a fully connected neural network ends with the final layer, which has the output of the network.

This completes the description of the architecture of a fully connected neural network.

Now let's move on to the applications of a fully connected neural network.

The applications of a fully connected neural network are very diverse and include:

- Classification tasks such as image classification, text classification, and sentiment analysis.

- Regression tasks such as predicting house prices, stock prices, and weather conditions.

- Generative models such as generative adversarial networks (GANs) for generating images and text.

- Recommender systems for recommending products or movies to users based on their past behavior.

- Natural language processing tasks such as named entity recognition, part-of-speech tagging, and machine translation.

- Robotics and control tasks such as object detection, tracking, and navigation.

This completes the description of the applications of a fully connected neural network.

## Bibliography

1. Aftab, Khalid and Rahim Eric (1989), "Barriers to Growth of Informal sector Firms: A case Study" Journal of development studies; 25 (4), July 1989, pp. 490-507.
2. Ahmad, E., F. Arshad, and A. Ahmad, (1991), "Learning and Earning profiles in Pakistan's Informal Sector" Pakistan Economic and Social Review; Winter, pp 77-98.
3. Ahmad, V. (1993), "The Informal Sector: Needs and Options for a policy Framework" in S.Ghayur (ed), "The Informal Sector of Pakistan: Problems and Policies" Quaid-I-Azam University and FES, Islamabad. Pakistan.
4. Ali, Karamat (1990), "Problems of Working Women In the Rural Informal sector of Multan district" Pakistan Economic and Social Commission Review; 28 (2), winter, pp.89-104.
5. Angrist, Joshua D. and Newey Whintney K. (1993), "Over Identification Test in Earnings Functions with Fixed Effects" in (ed) Maddala, G.S. "The Econometrics of Panel data" Vol 2, (Edward Elgar Publishing Limited England), pp 169-75.
6. Ashraf, Birjees & Javed Ashraf (1992) "Estimating the Gender Wage Gap in Rawalpindi City" The Journal of Development Studies, Vol 29 (1) pp. 364-75.
7. Bekkers, H. and Stoffers, W. (1995), "Measuring Informal sector Employment in Pakistan: Testing a New Methodology" International Labour Review; 134 (1), pp. 17-36.
8. Blaugh,Mark (1977) "Economic Theory in Petrodpect" Heinemann Educational Books London.
9. Blaugh, Mark (1990) "Economic Theories, True or False? :Essays in the History and Methodology of Economics" Edward Elgar Publishing Limited England.
10. Blaugh,M. (1969) "Economics Of Education 2" Richard Clay Ltd London.
11. Boumahdi, Richid and Plassard, Jean-Michel (1991) "Another Look On earnings functions: Testing for the demand side" Economic Letters 38 (1992) North-Holand. Pp.73-76.
12. Bromiley, Ray (1994) "Introduction- The Urban Informal Sector: Why Is It Worth Discussing?" World Development, pp 1033-39.
13. Bromley Ray (1979), "The Urban Informal Sector: Critical Perspectives on Employment and Housing Policies". Pergamon Press Germany.
14. Burki, Abid. A and Abbas Qaisar (1991), "Earnings Functions in Pakistan's Informal sector: A case study" Pakistan Development Review; 30 (4), winter, pp.695-703.

15. Burki, Abid.A and Ubaidullah (1992), "Earnings, Training and Employment in Gujranwala's Urban Informal Sector: Evolution or Involution?" Pakistan Economic and Social Review; 30 (1), Summer, pp. 49-67.
16. Burki, Abid-A and Afaqui,-Uzma (1996), "Pakistan's Informal Sector: A review of Evidence and Policy Issues" Pakistan Journal of Applied Economics; 12 (1), Summer. Pp. 1-30
17. Chaudhary, H and S.A. Khan (1990), "Socio-Economic Conditions of the Self-Employed" FES/Government of Pakistan, Islamabad.
18. Cohen, S.I. (1994) "Human Resource Development and Urbanization: Economic Analysis of Policy Making" Published by Avebury Ashgate Publishing Ltd, England.
19. Cohen, S.I. and Havinga, -Ivo-C (1988), "Microeconomic Analysis of the Informal Sector: Results of Sample Survey" Pakistan development Review; 27 (4), Winter, pp. 605-17
20. Dougherty Christopher. R.S and Jimenez. E (1991), "The specification of Earnings Function: Tests and Implications" Economics of Education Review, Vol. 10. No. 2. Pp. 85-98.
21. ESCAP/UN (1995), "The Informal Sector and Urban Poverty Alleviation in Asia and The Pacific" ST/ESCAP/1600, New York
22. Falaris, M. Evangelos (1995) "The Role of Selectivity Bias in estimates of the Rate of Return to Schooling: The Case of Married Women in Venezuela" Economic Development and Cultural Change, Vol 43(2) pp 333-50.
23. Funkhouser Edward (1996), "The Urban Informal Sector In Central America: Household Survey Evidence" World Development, Vol. 24 No. 11, pp. 1737-1751.
24. Ghayur,-Sabur (1994), "Developing Labour Market Information System for Informal Sector in Pakistan" Pakistan Development Review; 33 (4), Part 2 Winter, pp. 1357-67.
25. Gronau, Reuben (1974) "Wage Comparisons- a Selectivity Bias" Journal Of Political Economy, Vol 82(6) pp 1119-43.
26. Guisenger, S. and Irfan, M. (1980), "Pakistan's Informal sector" Journal of Development Studies; 16 (4), July, pp. 412-26.
27. Haque,-Israrul (1994), "Developing Labour Market Information System for Informal Sector in Pakistan: Comments" Pakistan Development Review; 33 (4), Part 2 Winter, pp. 1368-70.
28. Hart.A. Robert and Thomas Moutos (1995), "Human Capital, Employment and Bargaining". Press syndicate of the University of Cambridge.
29. Havinga, -Ivo-C (1987), "Skill formation, Employment and earnings in the Urban Informal Sector: Comments" Pakistan Development Review, Vol. XXVI, No.4, Winter, pp. 718-19.

30. Henderson. James. W (1983) " *Earnings Functions for the Self-Employed (Comment)*" Journal of Development Economics 13, pp 97-102
31. Hick Man (1979), "Sample Selection Bias as A Specification Error" Econometrica, Vol. 47, No.1, Jan. pp. 153-61
32. ILO (1988), "Employment Promotion in the Informal Sector in Africa". Jobs and Skill Programme for Africa, Addis Ababa.
33. Kamal, A.R (1995), " *Retrenchment Policies and Labour Shedding In Pakistan*" Occasional Paper No. 17, International Labour Organization, Geneva.
34. Kamal. A.R (1993), " *Manpower Statistics of The Informal Sector: Present Status and Future Requirements*" Manpower Division, Government of Pakistan.
35. Kazi Shanaz (1987), "Skill formation, Employment and Earnings in the Urban Informal Sector" Pakistan Development Review, Vol. XXVI, No.4, Winter.
36. Kazi, Shanaz , (1988), " *Microeconomic Analysis of The Informal Sector: Results of Sample Survey*" Pakistan development Review; 27 (4), Winter, pp. 618-19.
37. Kemal, A. R. (1993) " *Manpower Statistics of The Informal Sector : Present Status and Future Requirements*" Papere presented in seminar on Strengthening of Information System of Labour Administration in Pakistan, Manpower Division, Government of Pakistan.
38. Khan, M.Ali (1992), " *On Measuring the Social Opportunity Cost of Labour in the Presence of Tariffs and an Informal sector*" Pakistan development Review; 31 (4), Part 1 Winter, pp. 563-64.
39. Khan, Shaheen (1983), " *An Economic Analysis of Personal Earnings in Urban Formal and Informal Sector of Employment*" Pakistan Economic and Social Review; 21(1&2), Summer/winter, pp. 1-23.
40. Khan, Shaheen (1990), " *An assessment of Changes in The Employment Situation of Pakistani Women in The Informal Sector*" Pakistan economic and Social Review; 28 (2), winter, pp. 137-
41. Lee,A. G (1983), " *Some Approaches to the Correction of Selectivity Bias, and Generalized Econometric Models With Selectivity*" Econometrica: 51, No. 2 pp. 507-12.
42. Lodhi, Akhtar and Pasha, Hafiz. A (1991), " *Housing Demand in developing Countries: A case Study of Karachi in Pakistan*" urban Studies; 28 (4), August, pp. 623-34. .
43. Lushiku, C.A. (1991) " *The Role of The Urban Informal Sector in Providing Income and Employment To The Urban Population: Its Prospects and Constraints A Case Study Of Tanzania*" A Reseach Paper Presented in partial fulfilment of the requirement for obtaining the Degree of Master of Arts in Development Studies, Institute of Social Studies, The Hague, The Netherlands.

44. Mead, Donald.C (1996), " *The Informal Sector Elephant*" World development, Vol 24, No. 10, October. pp. 1611-19
45. Mincer, Jacob (1974) " *Schooling, Experience, And Earnings*" National Bureau Of Economic Research, Columbia University Press New York and London.
46. Naseem S.M. (1996) " *The Informal Service Sector and Poverty Alleviation in Pakistan*" published in "UN-ESCAP, *The Role of Informal Sector In Poverty Alleviation*, (ST/ESCAP/1706) , Bangkok.
47. Niazi, M.K. (1988) " *Overview of Extent and structure of Self-Employment and its Role in the Context of Employment Strategy in Pakistan*" Pakistan Manpower Review Vol. XIV, No. 2.
48. HRD Project (1994), " *Informal Sector Employment In Pakistan: New Approaches And New Insights*", Pakistan/ Netherlands Project with , Ministry of Manpower And Overseas Pakistanis.
49. Patel. U. R and Srivastava. P (1996), " *Macroeconomic Policy and Output Comovent: The formal and informal sector in India*" World Development, Vol. 24, No. 12, pp. 1915-1923
50. Rakowski. C, A (1994), " *Contrapunto: The Informal Sector Debate in Latin America*" State University of New York Press, U.S.A
51. Rodgers, Gerry (1992), " *Comments on" On Measuring the Social Opportunity Cost of Labour in the Presence of Tariffs and an Informal sector*" Pakistan development Review; 31 (4), Part 1 Winter, pp. 563-64.
52. Saeed Muhammed, (1995) " *Educated Unemployed In Pakistan Situation And Prospects*" Research Report No. 95/2 in Research Report Series "Growth Dynamics University Institute Foundation For Economic Research- Rotterdam".
53. Saeed Muhammed, (1995) " *Educated Unemployed In Pakistan Situation And Prospects*" Research Report No. 95/3 in Research Report Series "Growth Dynamics University Institute Foundation For Economic Research- Rotterdam".
54. Sanyal Bishwapriya (1991), " *Organizing the Self-Employed: The politics of The Urban Informal sector*", International Labour Review, Vol. 130, No. 1. Pp 39-55.
55. Schultz, T. W. (1988) " *On Investing In Specialized Human Capital to Attain Increasing Returns*" in Gustav Ranis & T. Paul Schultz (Eds) "The State of Development Economics: Progress and Perspectives"
56. Sethuraman, S.V. (1985) " *Informal Sector In Indonesia An Assessment Of Policies*" Technical Report: "World Employment Program: Urbanization, Informal Sector And Employment"International Labour Office, Geneva.
57. Shabbir Tayyab (1994), " *Mincerian earnings Function for Pakistan*" The Pakistan Development Review, Spring, 33: 1 pp. 1-18
58. Shabbir, Tayyeb (1991), " *Earnings Functions in Pakistan's Informal sector: a case study*" Pakistan Development Review; 30 (4), winter, pp. 704-6

59. Soon Lee-ying (1987), “*Self-Employment vs Wage Employment: Estimation of earnings Functions in LDCs*”, Economics of Education Review, Vol. 6. No. 2. Pp. 81-89.
60. Suárez-Berenguela, Ruben M (1988), “*Informal Sector,Labor Markets, and Returns to Education in Peru*”, LSMS working paper No. 32, The world Bank Washington D.C.
61. Sulman S. Al-Qudsi (1989) “*Returns to Education, Sectoral Pay Differentials and Determinants in Kuwait*” Economics of Education Review, Vol. 8, No. 3, pp. 263-276.
62. Tannen. Michael B (1990), “*New estimates of Returns to schooling in Brazil*” Economics of Education Review, Vol.10, No.2, pp. 123-135.
63. Tesfachew, Taffere (1992) “*Urban And Informal Sector Programme, Government Policies and The Urban Informal Sector in Africa*” Working Paper.” *World Employment Program*”, International Labour office, Geneva.
64. Thomas, J.J. (1983) “*An Introduction to Statistical analysis for Economists*” Weidenfeld and Nicolson London.
65. Wagner. J and Lorenz. W (1988), “*The Earnings Function Under Test*” Economics Letters 27, pp. 95-96.
66. White Howard (1997),”*Patterns of Gender Discrimination: An Examination of the UNDP'S Gender Development Index*”, Paper presented at centre for development studies, university college Dublin, Ireland.
67. World Employment Program: (1990), ”*Informal Sector and Urban Employment, Technology and employment Branch*” International Labour office, Geneva.

the teacher's influence on the pupils' learning. In this paper we will focus on the influence of the teacher's culture on the pupils' learning.

### 1. THEORETICAL FRAMEWORK

The theoretical framework of this paper is based on the theory of the teacher's culture.

The teacher's culture is defined as the teacher's way of thinking, feeling and acting in the classroom.

The teacher's culture is influenced by the teacher's personal experiences, beliefs and values.

The teacher's culture is also influenced by the teacher's professional training and the teacher's work experience.

The teacher's culture is also influenced by the teacher's social environment, such as the teacher's family, friends and colleagues.

The teacher's culture is also influenced by the teacher's educational philosophy, such as the teacher's belief in the importance of the teacher's role in the classroom.

The teacher's culture is also influenced by the teacher's educational philosophy, such as the teacher's belief in the importance of the teacher's role in the classroom.

The teacher's culture is also influenced by the teacher's educational philosophy, such as the teacher's belief in the importance of the teacher's role in the classroom.

The teacher's culture is also influenced by the teacher's educational philosophy, such as the teacher's belief in the importance of the teacher's role in the classroom.

The teacher's culture is also influenced by the teacher's educational philosophy, such as the teacher's belief in the importance of the teacher's role in the classroom.

The teacher's culture is also influenced by the teacher's educational philosophy, such as the teacher's belief in the importance of the teacher's role in the classroom.

The teacher's culture is also influenced by the teacher's educational philosophy, such as the teacher's belief in the importance of the teacher's role in the classroom.

The teacher's culture is also influenced by the teacher's educational philosophy, such as the teacher's belief in the importance of the teacher's role in the classroom.

The teacher's culture is also influenced by the teacher's educational philosophy, such as the teacher's belief in the importance of the teacher's role in the classroom.

The teacher's culture is also influenced by the teacher's educational philosophy, such as the teacher's belief in the importance of the teacher's role in the classroom.

The teacher's culture is also influenced by the teacher's educational philosophy, such as the teacher's belief in the importance of the teacher's role in the classroom.

The teacher's culture is also influenced by the teacher's educational philosophy, such as the teacher's belief in the importance of the teacher's role in the classroom.

The teacher's culture is also influenced by the teacher's educational philosophy, such as the teacher's belief in the importance of the teacher's role in the classroom.

The teacher's culture is also influenced by the teacher's educational philosophy, such as the teacher's belief in the importance of the teacher's role in the classroom.

The teacher's culture is also influenced by the teacher's educational philosophy, such as the teacher's belief in the importance of the teacher's role in the classroom.

The teacher's culture is also influenced by the teacher's educational philosophy, such as the teacher's belief in the importance of the teacher's role in the classroom.

## Appendix 1

### Earnings functions by Occupational groups

	Whole Sample (1)	Wage Earners (2)	Self Employed (3)
Intercept	6.34	6.83	6.45
Sch	0.088 (2.50)*	0.089 (1.23)	0.079 (2.02)*
EXP	0.157 (3.19)*	0.225 (2.51)*	0.165 (2.51)*
EXP2	-0.0046 (1.61)**	-0.008 (1.74)*	-0.005 (1.27)
EXPSCH	-0.006 (1.11)	-0.013 (1.40)**	-0.006 (0.85)
Age	-0.161 (1.88)*	-0.265 (1.88)*	-0.155 (1.25)
Age2	0.004 (1.31)**	0.0078 (1.55)**	0.004 (0.95)
DLOC	0.080 (0.96)	-0.144 (0.92)	-0.085 (0.85)
Stay	0.003 (1.07)	0.010 (2.02)*	-0.0002 (0.07)
Dj	-0.115 (1.67)*	-0.151 (0.88)	-0.078 (0.99)
Days	-0.051 (4.32)*	-0.062 (2.69)*	-0.054 (3.79)*
R2	0.39	0.54	0.38
RSS	17.17	5.24	9.77
F	8.06	3.99	4.84
N	142	47	95
Dw	1.83	2.26	1.79

- Values in parenthesis are t-statistics

\* Significant at the 5% level.

\*\* Significant at 10% level.

## Appendix 2

### Earnings Functions for Occupational group with Dummy variables

	Whole Sample (1)	Wage Earners (2)	Self Employed (3)
Intercept	<b>5.86</b>	<b>5.94</b>	<b>5.96</b>
D2	0.102 (0.76)	0.195 (0.61)	0.094 (0.63)
D3	0.380 (2.24)*	0.311 (0.95)	0.398 (1.98)
D4	0.501 (2.16)*	0.582 (1.17)	0.566 (2.12)*
D5	0.518 (1.71)*	1.32 (1.75)*	0.428 (1.25)
EXP	0.085 (2.48)*	0.131 (1.92)*	0.094 (2.09)*
EXP2	-0.0015 (2.96)*	-0.0018 (1.81)*	-0.0016 (2.30)*
Age	-0.056 (1.05)	-0.089 (1.02)	-0.058 (0.71)
Age2	0.0007 (1.18)	0.0009 (0.83)	0.0006 (0.65)
DLOC	0.073 (0.86)	0.132 (0.81)	0.127 (1.24)
Stay	0.003 (1.07)	0.010 (1.83)	0.0009 (0.33)
Dj	-0.132 (1.89)*	-0.214 (1.15)	-0.095 (1.22)
Days	-0.052 (4.41)*	-0.062 (2.54)*	-0.052 (3.62)
R2	0.39	0.53	0.40
RSS	17.34	5.35	9.45
N	142	47	95

Values in parenthesis are t-statistics

\* Significant at the 5% level.

\*\* Significant at 10% level.

### Appendix 3

#### Distribution of Average Monthly Earnings of Households by Region and Educational Level

	Below Primary (0-3)				Primary (4-5)				Middle (6-8)			
	Monthly Earnings				Monthly Earnings				Monthly Earnings			
REGION	N	Col%	Row %	Mean	N	Col %	Row %	Mean	N	Col %	Row %	Mean
Rawalpindi	47	83.93	42.34	2629.79	16	76.19	14.41	2909.37	23	76.66	20.72	3990
Islamabad	9	16.07	29.03	3077.77	5	23.8	16.12	2560	7	23.33	22.58	4028.57
Table Total	56	100	39.44	2701.78	21	100	14.78	2826.19	30	100	21.12	3999

(Continued)

	Matric (9-10)				Higher (11-14)				Table Total			
	Monthly Earnings				Monthly Earnings				Monthly Earnings			
REGION	N	Col %	Row %	Mean	N	Col %	Row %	Mean	N	Col %	Row %	Mean
Rawalpindi	18	72	16.21	4043.33	7	70	6.3	4142.85	111	78.16	100	3276.57
Islamabad	7	28	22.58	3585.71	3	30	9.67	3333.33	31	21.83	100	3348.38
Table Total	25	100	17.6	3915.2	10	100	7.04	3900	142	100	100	3292.25

#### Appendix 4

#### Distribution of Average Monthly Earnings of Households by Occupation and Educational Level

Occupation	Below Primary (0-3)				Primay (4-5)				Middle (6-8)			
	Monthly Earnings				Monthly Earnings				MonthlyEarnings			
	N	Col %	Row %	Mean	N	Col %	Row %	Mean	N	Col %	Row %	Mean
Petti trading	12	21.42	26.66	2620.83	10	47.61	22.22	2845	10	33.333333	22.222222	4050
Domestic Servant	9	16.0	64.28	1822.22	4	19.04	28.57	2250	1	3.3333333	7.142857	2700
Transport	7	12.5	36.84	3714.28	1	4.76	5.26	2000	8	26.66667	42.10526	4075
Services	13	23.21	41.93	2603.84	2	9.52	6.45	4350	6	20	19.35484	3445
Otherpersonal services	15	26.78	45.45	2906.66	4	19.0	12.12	2800	5	16.66667	15.15152	4700
<b>Table Total</b>	<b>56</b>	<b>100</b>	<b>39.43</b>	<b>2701.78</b>	<b>21</b>	<b>100</b>	<b>14.78</b>	<b>2826.19</b>	<b>30</b>	<b>100</b>	<b>21.12676</b>	<b>3999</b>

(Continued)

Occupation	Matric (9-10)				Higher (11-14)				Table Total			
	Monthly eranings				Monthly Earnings				Monthly Earnings			
	N	Col %	Row %	Mean	N	Col %	Row %	Mean	N	Col %	Row %	Mean
Petti trading	10	40	22.2	3558	3	30	6.66	3666.667	45	31.69	100	3266.22
Domestic (S)	-	-	-	-	-	-	-	-	14	9.85	100	2007.14
Transport	2	8	10.52	4000	1	10	5.26	3000	19	13.38	100	3768.42
Services	8	32	25.80	4762.5	2	20	6.45	2000	31	21.83	100	3397.42
Otherpersonal services	5	20	15.15	3240	4	40	12.12	5250	33	23.23	100	3500.00
<b>Table Total</b>	<b>25</b>	<b>100</b>	<b>17.60</b>	<b>3915.2</b>	<b>10</b>	<b>100</b>	<b>7.04</b>	<b>3900</b>	<b>142</b>	<b>100</b>	<b>100</b>	<b>3292.25</b>

## Appendix 5

### Normality Test Statistics

	N		Mean	Median	Mode	Std. Deviation
	Valid	Missing	Statistic	Statistic	Statistic	Statistic
AGE	142	0	35.007	34	30	8.519
EXP	142	0	24.112	24	16	10.091
EXP2	142	0	682.549	576	256	519.612
Sch	142	0	5.035	5	0	4.124
Dj	142	0	0.492	0	0	0.501
REGION	142	0	0.218	0	0	0.414
EXPSCH	142	0	94.788	86	0	86.980
Monthly eranings	142	0	3292.254	3000	3000	1442.703
Daily Earnings	142	0	121.955	114.359	100	57.410
Log of daily Earnings	142	0	4.700	4.739	4.60517	0.459

(Continued)

	Skewness		Kurtosis		Minimum	Maximum
	Statisti c	Std. Error	Statistic	Std. Error	Statistic	Statistic
AGE	0.416	0.203	-0.562	0.404	17	61
EXP	0.213	0.203	-0.796	0.404	5	51
EXP2	0.912	0.203	0.390	0.404	25	2601
Sch	0.155	0.203	-1.262	0.404	0	14
Dj	0.028	0.203	-2.027	0.404	0	1
REGION	1.378	0.203	-0.101	0.404	0	1
EXPSCH	0.770	0.203	0.091	0.404	0	360
Monthly eranings	1.116	0.203	1.382	0.404	1000	8000
Daily Earnings	1.296	0.203	2.007	0.404	33.33	318.181
Log of daily Earnings	-0.156	0.203	0.260	0.404	3.50	5.76

## Appendix.6

**Results of Multiple Regression Equations (ln of Y dependent)**

Var	Const	Sch	Exp	Exp2	age	region	Dj	R2
1	4.48	0.042 (.9)	-	-	-	-	-	0.14
2	4.81	-	-0.005 (-.26)	-	-	-	-	0.011
3	4.78	-	-	-1.135 (-1.53)	-	-	-	0.02
4	4.61	-	-	-	0.002 (0.54)	-	-	0.002
5	4.69	-	-	-	-	0.063 (0.67)	-	0.003
6	4.84	-	-	-	-	-	-0.276 (-3.73)	0.09
7	4.28	0.051 (5.0)	0.007 (1.59)	-	-	-	-	0.16
8	4.41	0.047 (4.72)	-	0.00007 (0.93)	-	-	-	0.15
9	4.41	0.045 (5.1)	-	-	0.006 (1.43)	-	-	0.16
10	4.48	0.042 (4.84)	-	-	-	0.014 (0.16)	-	0.15
11	4.61	0.036 (4.11)	-	-	-	-	-0.196 (-2.7)	0.19
12	4.55	-	0.02 (1.12)	-0.0005 (-1.41)	-	-	-	0.02
13	4.06	-	-0.04 (-4.56)	-	0.046 (4.4)	-	-	0.13
14	4.8	-	-0.005 (-1.26)	-	-	0.064 (0.63)	-	0.01
15	4.88	-	-0.002 (-0.55)	-	-	-	-0.268 (-3.54)	0.09
16	3.49	-	-	-0.0008 (-5.36)	0.052 (5.13)	-	-	0.17
17	4.76	-	-	-0.0004 (-1.57)	-	0.071 (0.76)	-	0.02
18	4.87	-	-	0.00005 (-0.81)	-	-	-0.263 (-3.48)	0.09
19	4.61	-	-	-	0.002 (0.49)	0.059 (0.63)	-	0.005
20	4.68	-	-	-	0.005 (1.08)	-	-0.287 (-3.86)	0.1
21	4.82	-	-	-	-	0.107 (1.19)	-0.288 (-3.87)	0.1
22	3.77	0.057 (5.51)	0.05 (2.9)	-0.0008 (-2.58)	-	-	-	0.2
23	4.56	0.095 (2.54)	0.051 (1.39)	-	-0.045 (-1.21)	-	-	0.17
24	4.28	0.052 (4.93)	0.007 (1.57)	-	-	0.002 (0.02)	-	0.16
25	4.39	0.046	0.007	-	-	-	-0.206	0.21

		(4.49)	(1.84)				(-2.86)	
26	3.72	0.018 (1.08)		-0.0005 (-1.85)	0.037			0.18
27	4.41	0.047 (4.63)		0.00007 (0.92)		0.002 (0.03)		0.15
28	4.52	0.042 (4.2)		0.00009 (1.22)			-0.204 (-2.81)	0.2
29	4.26	0.045 (5.03)			0.006 (1.42)	0.002 (0.03)		0.16
30	4.36	0.038 (4.34)			0.007 (1.74)		-0.208 (-2.87)	0.21
31	4.61	0.035 (3.95)				0.053 (0.061)	-0.204 (-2.763)	0.19
32	3.5	-	-0.0006 (-0.04)	-0.0008 (-2.61)	0.052 (4.96)			0.17
33	4.48	-	0.025 (1.33)	-0.0005 (-1.62)		0.101 (1.06)		0.03
34	4.64	-	0.02 (1.17)	-0.0004 (-1.32)			-0.264 (-3.49)	0.1
35	4.06	-	-0.04 (-4.5)		0.046 (4.32)	0.006 (0.07)		0.13
36	4.19	-	-0.034 (-3.94)		0.041 (4.06)		-0.227 (-3.13)	0.19
37	4.86	-	-0.002 (-0.53)			0.106 (1.17)	-0.279 (-3.67)	0.1
38	3.48	-		-0.0008 (-5.34)	0.052 (5.09)	0.054 (0.63)		0.17
39	3.67	-		-0.0007 (-4.71)	0.047 (4.77)		-0.213 (-3.0)	0.22
40	4.85	-		0.00006 (-0.86)		0.109 (1.21)	-0.274 (-3.61)	0.1
41	4.67	-			0.004 (1.01)	0.102 (1.13)	-0.297 (-3.97)	0.11
42	3.99	0.07 (2.35)	0.079 (2.08)	-0.0008 (-2.42)	-0.031 (-0.58)			0.2
43	3.75	0.056 (5.4)	0.053 (2.95)	-0.0008 (-2.65)		0.052 (0.6)		0.2
44	3.92	0.051 (4.97)	0.048 (2.79)	-0.0007 (-2.41)			-0.192 (-2.7)	0.24
45	4.56	0.095 (2.53)	0.051 (1.38)		-0.045 (-1.21)	0.006 (0.07)		0.17
46	4.57	0.075 (1.99)	0.036 (0.99)		-0.029 (-0.79)		-0.197 (-2.69)	0.21
47	4.39	0.045 (4.33)	0.007 (1.79)			0.041 (0.48)	-0.212 (-2.89)	0.21
48	3.7	0.016 (0.95)		-0.0006 (-1.89)	0.038 (2.18)	0.035 (0.39)		0.18
49	3.82	0.012 (0.74)		-0.0005 (-1.87)	0.037 (2.25)		-0.207 (-2.88)	0.23
50	4.52	0.041 (4.01)		0.00009 (1.15)		0.041 (0.47)	-0.21 (-2.84)	0.20
51	4.36	0.038 (4.18)			0.007 (1.69)	0.042 (0.48)	-0.213 (-2.91)	0.21
52	3.47		0.002 (0.12)	-0.0009 (-2.68)	0.051 (4.86)	0.057 (0.64)		0.17
53	3.67		0.001 (0.08)	-0.0008 (-2.44)	0.047 (4.59)		-0.213 (-2.99)	0.22
54	4.55		0.027 (1.5)	-0.0005 (-1.65)		0.142 (1.54)	-0.278 (-3.67)	0.12

55	4.2		-0.033 (-3.79)		0.04 (3.89)	0.048 (0.55)	-0.233 (-3.17)	0.19
56	3.68			-0.0007 (-4.67)	0.047 (4.71)	0.087 (1.04)	-0.222 (-3.11)	0.23
57	3.97	0.087 (2.33)	0.082 (2.13)	-0.0008 (-2.49)	-0.032 (-0.85)	0.053 (0.60)		0.21
58	4.03	0.068 (1.83)	0.064 (1.68)	-0.0007 (-2.31)	-0.017 (-0.47)		-0.187 (-2.59)	0.24
59	3.88	0.05 (4.79)	0.051 (2.93)	-0.0008 (-2.57)		0.088 (1.02)	-0.203 (-2.82)	0.25
60	4.57	0.074 (1.97)	0.036 (0.99)		-0.029 (-0.79)	0.042 (0.49)	-0.203 (-2.73)	0.21
61	3.78	0.008 (0.49)		-0.0006 (-2.01)	0.04 (2.36)	0.076 (0.87)	-0.217 (-2.98)	0.23
62	3.63		0.006 (0.36)	-0.0008 (-2.62)	0.046 (4.42)	0.095 (1.09)	-0.224 (-3.12)	0.23
63	3.99	0.066 (1.75)	0.066 (1.75)	-0.0008 (-2.47)	-0.017 (-0.46)	0.087 (1.0)	-0.198 (-2.71)	0.25

■ Values in Parenthesis are t-statics

## Appendix 7

### Earnings Function By Occupational Group (With Sch as Dummy Variable) Log of Daily Earnings as dependent Variable

	Whole Sample (1)	Wage Earners (2)	Self Employed (3)
Intercept	4.020	3.944	4.18
D2	0.085 (0.79)	0.019 (0.08)	0.086 (0.69)
D3	0.356 (3.59)*	0.165 (0.80)	.371 (3.09)*
D4	0.460 (4.08)*	0.157 (0.56)	0.485 (3.79)*
D5	0.517 (3.07)*	1.103 (2.29)*	.362 (1.95)*
EXP	.044 (2.39)*	0.049 (1.31)**	0.035 (1.42)**
EXP2	0.0004 (2.39)*	0.0007 (1.09)	0.0006 (1.24)
Dj	-0.196 (2.68)	-0.337 (1.91)*	-0.170 (2.08)*
R2	0.24	0.32	0.23
RSS	22.62	7.77	13.03
N	142	47	95

- Values in parenthesis are t-statistics

\* Significant at the 5% level

\*\* Significant at 10% level

## Appendix 8

### Distribution of Respondents by age, level of education and Occupation

Age Group	Educational Level					Total
	Below primary	Primary 4-5	Middle 6-8	Matric 9-10	Higher 11-14	
<b>Wage Earners</b>						
15-19	1	-	-	-	-	1
20-24	2	-	-	1	-	3
25-29	4	1	-	2	-	7
30-34	5	-	6	1	-	12
35-39	2	2	-	-	-	4
40-44	6	-	1	-	1	8
45-49	2	1	3	-	-	6
50-54	4	-	-	1	-	5
60+	-	1	-	-	-	1
<b>Total</b>	<b>26</b>	<b>5</b>	<b>10</b>	<b>5</b>	<b>1</b>	<b>47</b>
<b>Self Employed</b>						
15-19	-	-	-	-	-	-
20-24	1	1	1	3	-	6
25-29	5	7	3	6	7	28
30-34	5	1	8	1	1	16
35-39	4	2	4	4	1	15
40-44	10	2	-	4	-	16
45-49	4	2	3	1	-	10
50-54	1	1	1	1	-	4
60+	-	-	-	-	-	-
<b>Total</b>	<b>30</b>	<b>16</b>	<b>20</b>	<b>20</b>	<b>9</b>	<b>95</b>
<b>Table Total</b>						
15-19	1	-	-	-	-	1
20-24	3	1	1	4	-	9
25-29	9	8	3	8	7	35
30-34	10	1	14	2	1	28
35-39	6	4	4	4	1	19
40-44	16	2	1	4	1	24
45-49	6	3	6	1	-	16
50-54	5	1	1	2	-	9
60+	-	1	-	-	-	1
<b>Total</b>		<b>21</b>	<b>30</b>	<b>25</b>	<b>10</b>	<b>142</b>

Source: Primary survey of Rawalpindi/ Islamabad