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Earnings Oriented Educational System: A Case Study of the Workforce of Lahore Institutions

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ABSTRACT

This study explores the factors that affect the earnings and estimates returns to education (RTEdu.) for the workforce of educational institutions in Lahore-Pakistan. Primary data were collected by the researcher from a sample of 8327 respondents. The factors such as workforce education, experience, training, computer use, gender, marital status, institution sector from where the respondent has completed his/her Secondary School Certificate, nature of job, family background, and family status are found to be contributing to the earnings of the workforce of various categories of the educational institutions. RTEdu. for the workforce of schools, colleges and universities increases, on average, by 12.4, 15.8, and 12.5 percent, respectively for every one year increase in schooling. RTEdu. has been found higher for the workforce of various categories of private sector as compared to the workforce of various categories of public sector educational institutions. The results of this study provide a clear cut support to the *human capital theory* in Pakistan. The concavity in experience-earning profile is also observed. The returns to M.Phil and Ph.D. levels of education for the teaching workforce of private sector universities are found to be higher than that of their counterparts in public sector universities. This study recommends some solid measures that address, reduce and minimize the ever widening relative earning differentials that arise due to occupation basis.

Keywords: Returns to education and earning differentials.
JEL Classification: I21, I24, I25, P36, P46, J01, J21, O15.

1. Introduction

The importance of education as a basis of income differentials is well recognized in both theoretical and empirical literature. Education, experience, trainings and skills are the main levers for acquiring and accumulating human capital. Dearth of basic education, health and skills has always been remained the major causes of any multidimensional concept of poverty. Some nations are richer and prosperous than others. Education proved itself to be the main cause of these variations across nations. The importance of education and hence human capital in determining individual earnings and economic growth is widely recognized but how much economic growth can be accelrated by expanding only formal education has yet not been very settled.

Besides education, there are other factors for example working experience, training acquired, computer skills, publications, gender, marital status, sector from where the respondent has acquired his/her secondary school certificate (SSC.sector), nature of job, family background, and family status that determine individual's earnings. Identification of factors that determine workforce earnings can help in designing and formulating policies, not only to boost up the social and economic status of the workforce but also to minimize the overall inequalities between regions and gender regarding income distribution.

The positive linkage between formal education and earnings is well established in empirical literature in case of Pakistan (Abbas & Foreman-Peck, 2007; Afzal, 2011; Ahmad & Sirageldin, 1994; Asadullah, 2005, 2009; Ashraf & Ashraf, 1993a; 1993b; Ashraf, 2011; Aslam, 2007; Arif & Iqbal, 2008; Aslam, Bari & Kingdon, 2008; Awan *et al*, 2008; Guisinger, Henderson & Scully, 1984; Hamdani, 1977; Haq,

1977; Hyder, 2007; Khan & Irfan, 1985; Kurosaki & Khan , 2006; Nasir, 1998; Nasir & Nazli, 2000; Nasir, 2002; Nasir, 1999; Nazli, 2004; Pasha & Wasti , 1989; Qureshi & Arif, 2001; Riboud, Savchenko & Tan, 2006; Siddiqui & Siddiqui, 1998; Shabbir, 1991; 1994; Shabbir & Khan, 1991; and Shah, 2007) and in abroad (Ashenfelter, Harmon & Oosterbeck, 1990; Carnoy, 1997; Cohn & Addison, 1998; Griffin & Edwards, 1993; Griffin & Ganderton, 1996; Kurosaki & Khan , 2006; Light, 1998; Mincer, 1974; Mace, 1992; Psacharopoulos & Layard, 1979; Psacharopoulos, 1985; and Preston, 1997). Blaug (1972) claims, "The universality of this positive association between education and earnings is one of the most striking findings of modern social science" (p. 54). The above mentioned studies related to Pakistan have investigated the rate of RTEdu. and earning differentials and found enhancing role of education in determining the earnings of the individuals. Education and earnings of the workforce are directly correlated in case of Pakistan. The above Pakistan's studies have examined gender, occupation, region and sector specific earning differentials.

There is a variety of factors-traditional and non-traditional, major and minor, and educational and non-educational which play a decisive role in determining the earnings of both teaching and non-teaching workforce of educational institutions of Pakistan. Differential labour market RTEdu. for teaching (both male and female) and non-teaching (both male and female) workforce in private as well as public sector educational institutions is one of the potential explanations for large gender and occupation earning differentials in Pakistan. The present study empirically tested this argument by first examining the role of different major determinants (such as education, actual work experience, training acquired, computer skills, publications, gender, marital status, sector from where the respondent has completed his/her secondary school certificate (SSC.sector), nature of job, father education, workforce car ownership) on the workforce earnings profiles and then estimate the rate of RTEdu. for the workforce of institutions of general education, located in Lahore district of Punjab province of Pakistan. Education, work experience, trainings and use of computer are considered the four main means for acquiring human capital, with education being the primary for almost all categories of the workforce. Human capital is embodied in individuals. Individual's human capital is affected by their innate ability, investment in education and, last but not the least, on the pre service and on job trainings and work done with the use of computer.

1.1. Objectives of the Study

The study was carried out for the workforce of general education institutions of Lahore District of Punjab, Pakistan to achieve the following objectives:

1. To explore the connection between individual's earnings and major determinants of earnings and to evaluate the rate of RTEdu, when education of the workforce is measured by 'years of schooling completed'.
2. To evaluate the variation in earnings with the workforce level of education (such as SSC, Intermediate, Graduation, Master, M.Phil and Ph.D.) and its nature.
3. To explore the nature of education-earnings relationship for both teaching and non-teaching workforce of both private and public sector educational institutions.
4. To see whether the rate of RTEdu. diminishes as the level of educational institutions of the workforce rises, *i.e.*, from schools to colleges and to universities where they work.
5. To test the validity of the Psacharopoulos (1994) finding for the workforce of educational institutions such that the private sector workforce has a higher rate of RTEdu. than that of the public sector.

1.2. Research Questions

The present study is planned to test the following hypotheses:

1. Is there any linkage between individual's earnings and major determinants of earnings for the workforce of educational institutions?
2. Are the RTEdu. and the level of education of the workforce related to each other?
3. Is the nature of education-earning relationship for both teaching and non-teaching workforce same for each category of educational institutions?
4. Are the categories (schools, colleges, universities) of the workforce related to their RTEdu.?
5. Is the marginal rate of RTEdu. for the workforce of private sector educational institutions higher than that of their counterparts in public sector educational institutions?

1.3. Significance of the Study

This research is of great value for individuals as to decide whether to pursue further education or to join the labour market. Individuals will prefer to continue further formal education, if they expect that the present value of the marginal benefit of schooling ($PVMB_S$) ≥ the present value of the marginal cost of schooling ($PVMC_S$). Public decision makers want to know how to allocate scarce resources between education sector and other sectors of the economy and among various categories of education (school, college, university). The results of this study serve as a guideline to education policy makers in Pakistan, particularly relating to efficient allocation of scarce resources among various levels of educational institutions, and how funding and access to various levels of educational institutions affects equity.

Furthermore, most of the nationally representative surveys in Pakistan do not include information on variables/factors, especially about the workforce of all types of educational institutions that determine person's earnings. Information on actual working experience, computer skills, total number of actual working hours, No. of publications etc., is lacking in almost in all nationally representative surveys of Pakistan. That is why this study has its own significance in empirical literature, because it is based on purposive primary data collected by the researcher on the workforce of institutions of general education.

This study is also *delimited* to the PFRTEdu. (*i.e.,* wage benefits of education or purely private monetary gains) rather than private non-financial and social RTEdu. (*i.e.,* intrinsic value of education) as real test of private non-financial and social returns to investment in education deserve another independent study. It is further delimited to the employees of institutions of general education only. This is because the general and the professional education including technical education cannot be treated at par as the determinants of two types of education are expected to be different. The research productivity was only measured by number of research papers published in research journals instead of using citations or h-index due to non availability of the variables (*e.g.,* articles in the top 30 journals) used in constructing such indexes.

2. Review of Related Literature

The linkage between education and its wagw benefit is well known in market economies. Human capital theory that is mainly based on education has supplied the basis for the investigation of effect of education on earnings since the late1950s. Human capital theory explains that a large gradation in earnings by level of education reflects returns to individual's investment in education (Wu & Xie, 2003).

Ashenfelter, Harmon & Oosterbeck (1990); Carnoy (1997); Cohn & Addison (1998); Griffin & Edwards (1993); Griffin & Ganderton (1996); Griliches (1977); Light (1998); Mace (1992); Mincer (1974); Psacharopoulos (1985); Psacharopoulos & Layard (1979); Preston (1997) and Afzal (2011) used "Earning Function" to set up a linkage between earnings and education and evaluated the rates of RTEdu.. The results of all these studies supported the positive association between education and earnings. Harmon, Oosterbeek & Walker (2000) found that the European countries like UK had 7-9 percent returns to a year of schooling which was higher than the Nordic countries. They also explained that if the simple OLS method is applied then the RTEdu. at school level becomes more stable.

More educated workers received higher earnings as compared to less educated (Mincer, 1974; Takii, 2003). The returns to an additional year of schooling are relatively higher than an additional year of job-specific experience. Higher level of education leads to more earnings as the employment experience lengthens (Kirby & Riley, 2004). Knight (1979) observes that workers with certain levels of education may be more productive in one particular occupation and would thus receive high wages. Knight & Sabot (1990) found a positive linkage between variables of human capital and the level of skills of an individual.

Walsh (1998) noted that the returns to investment in formal schooling seemed to be higher than that of investment in vocational training, especially when the latter is out of job. He also noted higher returns to investment in primary education than that in higher education. Behrman, Ross & Sabot (2008) estimated rates of return to improving school quality *versus* increasing quantity in terms of labor earnings for rural Pakistan. Their results pointed out that rates of return were much higher for investing in primary school quality or quantity than for investing in middle schools.

Knight & Song (2003) for China found that returns to college education rose from 4.9 percent in 1988 to 15.0 percent in 1995. Using the data from fourteen consecutive years of Urban Household Surveys (1988-2001) for China, Zhang, *et al.* (2005) concluded that there had been a dramatic and consistent increase in the rate of RTEdu. in urban China. The rate of RTEdu. was only 4 percent in 1988, it had risen to 10.2 percent by 1999. Similarly, RTEdu. was consistently higher for female than for male. In addition,

they also found that the returns to schooling were lower in richer provinces, *i.e.*, in Guangdong, Zhejiang and Liaoning.

Using CHIP 1995 data, Li & Luo (2004) estimated returns to schooling for young workers in urban China. They found that the rate of return was 08 percent and 15 percent, respectively estimated by OLS and IV methods. The results of their study were robust using either parental education or sibling variables as instruments. Heckman & Li (2004) estimated mean returns to four year college attendance in 2000 and found 29 percent returns by using OLS and 56 percent by using IV method. The high mean returns to four year college attendance are surprising.

A few attempts by Hamdani (1977), Haq (1977) and Guisinger, Henderson & Scully (1984) using data from 1975 Socio-Economic Survey of Rawalpindi (Pakistan); Khan & Irfan (1985) using the Population Labor Force and Migration Survey (PLMS); Pasha & Wasti (1989); Shabbir (1991; 1994) and Shabbir & Khan (1991) by using data from PLMS, 1979; Ashraf & Ashraf (1993; 1996) using data from 1975 Socio-Economic Survey of Rawalpindi (Pakistan) and data for industrial groups from Household Income and Expenditure Surveys (HIES), 1979 and 1985-86; Ahmad & Sirageldin (1994); Nasir (1998); Siddiqui & Siddiqui (1998); Nasir (1999); Nasir & Nazli (2000) using data from the PIHS, 1995-96, which covered 12,622 households, and more than 84,000 individuals; Nasir (2002)) using data from the PIHS, 1995-96; Nazli (2004) using data from the Pakistan Socio-Economic Survey (PSES) 1998-99; Asadullah, 2005, 2009; Riboud, Savchenko &Tan, 2006; Aslam (2007) using the PIHS, 2002; Aslam, Bari & Kingdon (2010); Hyder (2007) using data from the Pakistan Labor Force Survey (PLFS), 2001-02; Abbas & Foreman-Peck (2007) using data from the Pakistan Social and Living Standards Measurement Survey (PSLSMS), 2004-05; Shah (2007); Ashraf (2011) using 2001-02 PIHS (PIHS) data have been made to investigate RTEdu. and earning differentials by using secondary source data such as PSLSMS, PLFS and PIHS in Pakistan labour market.

All of the above studies on Pakistan about PRTEdu. were mostly out dated and often constrained by data, number of variables included and methods of estimation. Comparison between the results of the above studies on Pakistan was little bit difficult. However, two consistent findings from these studied emerged: *(i)* rate of RTEdu. in Pakistan was lower than that of other developing countries and *(ii)* rate of PFR increases with the level of education. There is hardly any study, except Afzal (2011) based on primary data collected by the researcher himself that estimates the RTEdu., traditional and non-traditional determinants of individual's personal earnings and earning differentials of the general educational institutions workforce of Pakistan education labour market.

All the above described studies were found close to the topic of the ensuing study. They were quite different from each other due to adoption of different technically objectives and hypotheses oriented concerning. However, the findings derived from these studies were consistent with one another despite the adoption of technically different procedures. The returns to investment in formal schooling seemed to be higher with level of educational status. Certain studies also revealed significant difference in the rate of returns due to education, experience, gender, public vs private sector and rural-urban divide. The high level of formal education and actual working experience have proved as an instrumental tool in changing the wage/earning structure labour market.

The present empirical study differs from previous studies conducted in Pakistan on the basis of *nature of data* (primary data personally collected by the researcher), *sample size* (8327 observations), *geographical study area* (Lahore: the second most populous district of Pakistan), *occupation of the workforce* (teaching and non-teaching *workforce*), and *the sectors* (both private and public) of educational institutions.

3. Method and Procedure

To estimate major determinants of earnings and rate of RTEdu., economists often make use of "***Human Capital Earnings Function Approach"*** **(**a primary econometric model) and is attributed to the work of Becker (1964) and Mincer (1974). With the consequent, this study applied Mincerian style Human Capital Earnings Function Approach (Basic as well as Augmented) to estimate RTEdu. and to determine the factors that affect the earnings of the workforce working at educational institutions in Pakistan. According to Bjorklund & Kjellstrom (2002), the Mincerian (1974) model is popular because of its pragmatic use of results from human capital theory to derive and estimate earnings equation. Taking the logarithm of earnings as the dependent variable, controlling for years of experience and other characteristics of the respondent, the coefficient associated with years of schooling (an independent variable) is interpreted as the percent change in RTEdu.

3.1. Population of the Study

The entire teaching and non-teaching workforce working at schools, colleges and universities of Lahore District of Province Punjab, Pakistan constituted the population of the study.

3.2. Sample

In order to get a representative sample size and to ease of management and assuring quality, the Lahore District of Punjab was divided into ten towns, namely, Lahore Cantt, Aziz Bhatti Town, Data Ganj Bukhsh Town , Allama Iqbal Town, Nishtar Town, Ravi Town, Shalimar Town, Wahga Town, Samanabad Town, and Gulberg Town. The institutions included in the population were categorized in schools, colleges and universities. The sample was drawn from the teaching and non-teaching workforce working in these institutions from all towns. A multistage stratified random sampling technique was employed for collection of data. In the first stage, institutions were selected at random and in the second stage, the respondents (teachers and non-teachers) were also selected at random and interviewed for data collection. The selected number of sample institutions were distributed between public and private sector proportionally; Schools=750 (Public=312, Private=438) out of 1250 (Public=520, Private=730), Colleges= 62 (Public=27, Private=35) out of 83 (Public=36, Private=47), and Universities = 9 (Public= 3, Private=6) out of 14 (Public= 6, Private=8). The workforce was further classified on gender (male and female) and occupation (teaching and non-teaching) basis. The overall sample of this study comprised of 8327 teaching and non-teaching workforce from the 821 selected educational institutions.

A sample of 8327 [[University respondents = 1933 out of 17146 {Public University respondents = 1720 out of 14879((teaching workforce = 457 (male = 262 and female = 195)) and (non-teaching workforce = 1263 (male = 1163 and female = 100))} and {Private University respondents = 213 out of 2267((teaching workforce = 72 (male = 41 and female = 31)) and (non-teaching workforce =141 (male =79 and female = 62))}], [*College respondents = 2000* out of 3901 {Public college respondents = 1643 out of 2561 ((teaching workforce = 1238 (male = 393 and female = 843)) and (non-teaching workforce = 405 (male = 332 and female = 73))} and {Private college respondents = 357 out of 1340 (teaching workforce = 279 (male = 131 and female = 148)) and (non-teaching workforce = 78 (male = 58 and female = 20))}] and [School respondents = 4394 out of 61350 {Public school respondents = 1527 out of 15771 ((teaching workforce = 1320 (male = 386 and female = 934)) and (non-teaching workforce = 207 (male = 155 and female = 52))} and {Private school respondents = 2867 out of 45579 ((teaching workforce = 2591 (male = 474 and female = 2117)) and (non-teaching workforce = 276 (male = 192 and female = 84))}]] teaching and non-teaching workforce was selected). The selected sample seemed to be the true representative of the population (Gay, 1998; p. 125).

3.3. Instrumentation

The unit of analysis for this study is a full time workforce (both teaching and non-teaching) aged 18-75 years of the public and private sector educational institutions of Lahore District of the Punjab. Employees working less than 06 hours per day were excluded from the analysis on the grounds that they are not full time employees. Similarly data of those few employees who recorded their "normal" working time as more than 15 hours per day was also not included in the analysis as the normal working hours in Pakistan are 6-10 hours/day.

Data were collected from the workforce (both teaching and non-teaching) of the educational institutions by using the questionnaire. The questionnaire used for data collection was got validated through opinion of experts in the field of economics and education and then pre-tested in the field to make it understandable for every respondent. Questionnaire was improved based on the response rate of the respondents and results of the pre-test. The data obtained through survey was analyzed by using OLS econometric technique.

The survey based on questionnaire included the workforce of three levels of educational institutions *i*.e., school (grades 1-10), college (grades 11-14) and university (grades 15 and above). To estimate the overall rate of PFR to schooling, a particular number of years of schooling were given to each category. The years assigned to each category of educational institutions are as follows: university and higher level of education (16 years and above), college level education (11 to 14 years), school level education (5 to 10 years). University and higher level of education was further divided into Master level education (16 years) and higher (*i.e.,* M.Phil, Ph.D. and Post Ph.D.) leval of education (above 16 years). College level education included intermediate and secondary school levels of education (12 years) and degree (graduation) level of education (14 years). School level of education is further divided into three levels:

Primary (5 years of schooling), Elementary (8 years of schooling) and Secondary (10 years of schooling).

3.4. Model Specification

To identify the determinants of earnings and to estimate the rate of RTEdu., this study considered the following models:

Model 1: Mincer and Mincerian Type Earnings Function

The Mincer Basic Human Capital Earnings Function

According to Mincer (1974) 'Human Capital Earnings Function Model', the natural log of individuals earnings in a given time period can be decomposed into an additive function of a linear education term and a quadratic experience term:

$$\ln Y_i = \beta_0 + \beta_1 \text{Edu}_i + \beta_2 \text{Experi}_i + \beta_3 \text{Experi}_i^{\,2} + \varepsilon_i \qquad \text{(Basic Model)}$$

Mincerian Type Earnings Function

The "Mincerian Type Earnings Function" or "Augmented Version of Earnings Function" is specified in the form of regression model as:

$$\ln Y_i = \beta_0 + \beta_1 \text{Edu}_i + \beta_2 \text{Experi}_i + \beta_3 \text{Experi}_i^{\,2} + \sum_{i=1}^{k} \beta_i X_i + \varepsilon_i \qquad \text{(Model 1)}$$

The ***specific form*** of the model 1, when education is measured by ***'years of schooling completed'***, is as under:

$$lnY_i = \beta_0 + \beta_1 \text{Edu}_i + \beta_2 \text{Experi}_i + \beta_3 \text{Experi}_i^{\,2} + \text{Other Variables} + \varepsilon_i$$

$$lnY_i = \beta_0 + \beta_1 \text{Edu}_i + \beta_2 \text{Experi}_i + \beta_3 \text{Experi}_i^{\,2} + \beta_4 \text{Train}_i + \beta_5 \text{Compu}_i + \beta_6 \text{Pub}_i + \beta_7 \text{Gend}_i + \beta_8 \text{M.status}_i + \beta_9 \text{SSC.sector}_i + \beta_{10} \text{J.nature}_i + \beta_{11} \text{F.backi} + \beta_{12} \text{F.statu}_i + \varepsilon_i \qquad \text{(Model 1.1)}$$

Where in all above models:

ln = Natural logarithm

lnY_i = Natural logarithm of Y_i and 'Y_i' stands for the net earnings per hour of teaching/non-teaching workforce of school, college and university in the fiscal year 2011. Net hourly earnings includes net salary from the main job and from other jobs, plus income from occasional jobs (*e.g.*, payment from research project, script marking *etc.*) other than running a private business or income from farming a family agricultural land, plus income from entrepreneurial ship.

Edu_i = Education of the i^{th} workforce. Edu_i includes individual's education/qualifications in both 'years of schooling completed' and 'levels of education'.

In empirical literature, estimates of rate of RTEdu. have been made both per one more year of schooling and per level of education basis. The study utilized two measures of education *(a)* workforce education in years (referred to as schooling). This intends to capture the quantity dimension of education *(b)* highest education qualification acquired (referred to as education level). This variable was expected to determine the quality dimension of education. Education is the main explanatory variable in the earnings equation being estimated in this study. The estimated coefficient β_1 associated with Edu_i (when Edu_i is measured by 'years of schooling completed') measures the marginal rate of PFR (i.e., the percentage change in earnings due to Edu_i or the proportionate effect on earnings of an incremental to Edu_i) to an additional year of schooling. The percentage change in earnings resulting from one additional year of schooling is typically interpreted as the 'Marginal Rate of Returns to Schooling' (MRRS) or simply 'Returns to Education' (RTEdu.). Thus, the present study interchangeably uses the concepts of MRRS and RTEdu.. In this study, it is expected that $\beta_1 > 0$.

The survey includes two measures of education *i.e.,* 'number of years of schooling completed' and 'level of education acquired' such as education at school level (Primary, Middle, Matric), education at college level (Intermediate and Graduation) and education at university level (Master, M.Phil and Ph.D. and post Ph.D). The survey includes seven categories of education based on degrees/certificates. This survey avoids errors in estimating the 'years of schooling' from levels of schooling by asking direct question of 'number of years of schooling completed'' from the respondents. Using 'years of schooling completed' as the single measure of education restricts the marginal effect of schooling to be the same

regardless of level of education. The marginal rate of returns may differ at different levels of education.

$Experi_i$ = Total number of years of actual work experience of the i^{th} individual.

This study provides information on working experience by asking a direct question in the survey: total number of years worked up to the time of survey or total number of years of job experience at the time of survey. Previous studies in Pakistan, however, have estimated 'working experience' also known as 'potential working experience' based on years of schooling and school going age. Since this type of estimate of work experience does not take into account for varying times spent to get specific education degrees/certificate or any period of unemployment (waiting or frictional unemployment), so this sort of work experience is likely to overestimate the years of job experience that, in turn, underestimates the rate of returns to education. This study avoids the problems of underestimation of RTEdu. by taking data on 'actual work experience' instead of 'potential work experience'.

$Experii^2$ = Square of actual work experience of the i^{th} individual.

A positive value of the coefficient of the variable 'experience' and negative value of the coefficient of 'experience square term' reflect the concavity of the experience-earnings profile. The concavity in experience-earning profile would reflect that additional years of experience will lead to high earnings, but at decreasing rate.

$Train_i$ = Formal training acquired (dichotomous variable = '1' if workforce has got training, '0' otherwise.) by the i^{th} respondent. The impact of post schooling/in service training on earnings is found substantially positive in many developing countries including Pakistan (Jimenez & Kugler, 1986; Van der Gaag & Vijverberg, 1989; Nasir, 1999).

$Compu_i$ = Computer literacy/skills that was proxied by use of computer and internet at at home and work ('1' for using computer and internet and '0' for not using computer and internet at work place and at home) of the i^{th} respondent. This study differs from other studies because of the use of 'computer index' rather than simply using 'dummy variable representing computer and internet uses as have been done by Afzal (2011). Since schooling, training and use of computer and internet are major type of investment, so this study expected the positive linkage between earnings and use of computer and internet.

Pub_i = Number of research articles published in journals of national and international repute by the i^{th} respondent. The relationship between earnings and research publications is expected to be positive if publications were derived from the funded research, whereas the relationship between earnings and research publication was negative if the publication were derived from non funded research as the workforce cannot perform earning activities while involving in research.

$Gend_i$ = Gender ('1' for male workforce and '0' for female) of the i^{th} respondent. The relationship between earnings and male were expected to be positive.

$M.status_i$ = Marital status ('1' for married and '0' for unmarried) of the i^{th} respondent. The sign of the relationship between earnings and marital status was subjected to empirical outcome.

$SSC.sector_i$ = Institution sector from where the i^{th} respondent has completed his/her Secondary School Certificate ('1' for government institution and '0' for private institution). The relationship between earnings and SSC was ex ante unclear.

Following Heckman & Hotz (1986), Ashenfelter and Zimmerman (1997), Afzal (2011) and others, this study attempts to control for ***individual ability***, which is known to bias the estimates of the RTEdu., by using the educational attainment of the individual's parents (father and/or mother) as proxies. ***Parents' education*** may either have a direct effect on the earnings of workforce in the labour market (through family connections and nepotism, *etc.*) or indirect effect through its effect on schooling quality. Such types of arguments make a case to include parents' education as to control variables in "Earnings Functions" rather than use them as an instrument for workforce education. Inclusion of parents' education or background variable merely increases the erratic performance of the earnings function (Griliches, 1977).

$F.back_i$ = Family background (measured by the i^{th} workforce father education in years of schooling) of the i^{th} respondent. Armitage & Sabot (1987) for Kenya and Tanzania,

Liu *et al.* (2000) for Taiwan, Neuman (1991) for Israel and Patrinos (1995) for Greece, San-Segundo & Valiente (2003) for Spain and Afzal (2011) for Pakistan have used father's education as a measure of family background in their studies. Afzal (2011) found a direct relationship between earnings of the workforce and their father education in case of Pakistan.

In some regions (*e.g.*, in upper Punjab province of Pakistan) of Pakistan, an individual is known by his/her father's name, education, profession and income *etc.* In general, high education of parents tends to be coupled with high educational outcomes of their children and *vice versa*. *Family background variables must be the part of the earnings model, because omitting it may overstate returns by 8 to 9 percent (Agnarsson & Carlin, 2002)*. Individuals who have brought up by better educated parents were considered to acquire more education and that, in turn, lead to higher earnings. This study expected the positive linkage between earnings and family background.

F. status$_i$ = Family status of the i^{th} respondent and was measured by workforce car ownership ('1' for having car ownership and '0' for not having car ownership): Workforce car ownership was one of the most important indicators of family status. Owning at least one car is considered as one of the most important indicators of family status in many developing countries, especially in Pakistan. Car(s) and home ownership is deemed as a high family status in Pakistan (Afzal, 2011). So, this study expects the positive linkage between earnings and family status.

β_i = Regression coefficient measuring returns to the i^{th} respective explanatory variable.

ε = Random error term which is used to capture the affect of *(i)* unobserved characteristics or random forces or influence of innumerable chance forces *(ii)* the measurement error in the dependent variable *(iii)* the use of the inappropriate functional form of the model.

There exists hardly any previous empirical work, except Afzal (2011), using data for the workforce of educational institutions of Pakistan that has included together the education, actual working experience in a market, computer use index, number of publications/articles, sector from where the respondent has acquired his/her secondary school certificate (SSC), nature of job, family background measured by father education, and family status measured by car ownership of the workforce in an earnings equation. The rationale for their inclusion in the above model was that they were expected to contribute significantly to the earnings of the workforce of educational institutions.

Since various levels of education impart different skills in workforce and hence affect earnings of the workforce in different ways. It would be misleading to assume a constant/uniform rate of returns for all levels of education. Following most of empirical studies in Pakistan and abroad, this empirical work also utilized *dummy variable technique* to indicate the effect of various levels of education on workforce earnings. This study utilized seven dummy variables for schools, colleges and universities workforce for measuring various levels of education in Pakistan: Middle/Elementary (8 years of schooling), Matric/Secondary (10 years of schooling), Intermediate (12 years of schooling), Graduation (14 years of schooling), Master (16 years of schooling), M.Phil (18 years of schooling) and Ph.D. and post Ph.D. (20-21 years of schooling). The workforce holding Ph.D. and post Ph.D. level of education are relatively scarce. The omitted level of education (also called base variable or reference group) is the Middle level of education. A priori expectation was that earnings of workforce would monotonically rise with the level of education.

The *specific form* of the earnings model (known as Extended or Dummy specification), when education is measured by *'level of education acquired'*, is as under:

$$\ln \text{Earning}_i = \beta_0 + \beta_1 \text{Edu}_i + \beta_2 \text{Experi}_i + \beta_3 \text{Experi}_i^2 + \text{Other Variables} + \varepsilon_i$$

$$\ln \text{Earning}_i = \beta_0 + \beta_1 D_{SSC} + \beta_2 D_{Inter} + \beta_3 D_{Grad} + \beta_4 D_{Master} + \beta_5 D_{M.phil} + \beta_6 D_{Ph.D.} + \beta_7 \text{Experi}_i + \beta_8 \text{Experi}_i^2 + \beta_9 \text{Train}_i + \beta_{10} \text{Compu}_i + \beta_{11} \text{Pub}_i + \beta_{12} \text{Gend}_i + \beta_{13} \text{M.status}_i + \beta_{14} \text{SSC.sector}_i + \beta_{15} \text{J.nature}_i + \beta_{16} \text{F.back}_i + \beta_{17} \text{F.statu}_i + \varepsilon_i \quad \text{(Model 1.2)}$$

Where:

Edu_i = 'level of education acquired' of the i^{th} respondent.

D_{ssc} = Dummy for SSC level of education ('1' = SSC, '0' = Otherwise).

D_{Inter} = Dummy for Intermediate level of education ('1' = Inter, '0' = Otherwise). D_{Grad} = Dummy for Graduation level of education ('1' = Grad, '0' = Otherwise).

D_{Master} = Dummy for Master level of education ('1' = Master, '0' = Otherwise).

$D_{M.Phil}$ = Dummy for M.Phil level of education (1=M.Phil, '0' = Otherwise).

$D_{Ph.D.}$ = Dummy for Ph.D. and Post Ph.D. levels of education (1= Ph.D., '0' = Otherwise).

The coefficient associated with the dummy of various education levels of Model 1.2 measures an increase in earnings by acquiring respective level of education rather than reference category (Middle level of education in the present case). In semilogarithmic regressions, the regression coefficient measures the percent change in the dependent variable for a 1 unit change in the explanatory variable if and only if the explanatory variable is quantitative. This semielasticity interpretation of regression coefficient does not hold if the explanatory variable is a dummy variable. This study utilized a device suggested by Halvorsen & Palmquist (1980) to obtain semielasticity for dummy regressors. Semielasticity for dummy regressors can be obtained by taking the anti ln of estimated dummy coefficient and subtracting 1 from it and multiplying the difference by 100 (for more detail see Gujarati and Porter (2009), pp. 298).

The rate of private financial returns (PFR) to various levels of education can be estimated as fallow:

$$ROR_{edu} = (Edu_n - Edu_{n-1})/(T_t - T_{t-1})$$

Where:

ROR_{edu} = Rate of returns to each level of education

Edu_n = Earning equation coefficient at current level of education

Edu_{n-1} = Earning equation coefficient at previous level of education

T_t = Time spent in current level of education

T_{t-1} = Time spent in previous level of education

Data used in this study do not include information on innate ability or motivation of the workforce. The data do not have any information on quality of schooling. The analysis is based on the assumption that the quality of schooling is the same within the private and public sectors of educational institutions. Quality of education is assumed to be the same across all levels of education. Our estimates are restricted to wage earners of educational institutions and cannot be generalized to the entire population. Education has many benefits other than its contribution to the earnings for the workforce. Ignoring such type of factors may lead to underestimation of the RTEdu.

The estimation technique commonly used for "Mincerian Type Earnings Function" is the OLS. The OLS, however, may bias the estimates of RTEdu. because of the omitted variables, especially omission of the innate ability or motivation variable. Unobservable individual innate ability may be correlated with individual's schooling, and thus the OLS estimates will overestimate the returns to education. Alternative approaches to deal with this ability bias include adding proxies for "unobservable ability" (Griliches & Mason, 1972), the "siblings" approach (Taubman, 1976), and the "natural experiment" approach (Rosenzweig & Wolpin, 2000). The present study has included family background and status variables in the model to cater unobservable ability bias. Controversies still exist in literature concerning whether the omitted ability variables bias the OLS estimates, as well as concerning the extent of the potential bias. This study ignores this issue because of non availability of data on best proxies of ability variables in the present survey conducted by the researches. Detailed discussion on omitted ability bias in estimating returns to schooling in China can be found in Li & Luo (2001).

The RTEdu. based on the OLS estimates are subject to various sources of bias and literature provides alternative estimation strategies to tackle such issues (see Harmon & Walker, 1995 and Ashenfelter, Harmon & Oosterbeek, 1999). The instrumental variables (IV) technique has been rightly recommended and used to account for the endogeneity of education. Owing to the lack of information on the proper instruments (such as the quarter of birth as used by Angrist & Krueger (1991), distance to school as applied by Kane & Rouse (1993), living in university town as used by Conneely & Uusitalo (1997) and education policy reforms or innate ability or motivation measures in the data set collected by the researcher) the sensitivity of OLS estimates to such sources of bias cannot be explored in the present study. A valid instrument is prerequisite for applying IV technique. Even a *weak* correlation between the instruments and the errors will lead the IV technique to be biased toward the OLS (Bound, Jaeger & Baker 1995).

Furthermore, Card (1999, 2001) concluded that the magnitude of the total bias (that arises due to omitted "ability" and/or "family socioeconomic status" of the workforce which were expected to overstate the wage function returns to education) in estimated returns was small, probably the upward "omitted variable" bias was roughly offset by the downward bias that arise due to errors in measurement of education. In the literature, the consensus view about the net effect of the bias that arises from 'measurement error' and from the 'omission of ability' in the regression seems to be a small upward bias. Reviewing the results of twin studies, Card (1999) argued that the net bias in OLS estimates of the returns to schooling was likely to be around 10 percent. Card (2001) reaffirms Griliches (1970) conclusion that the effect of ability and related factors does not exceed 10 percent of the estimated schooling coefficient.

The problem of endogeneity of education results from (a) unobserved determinants of education such as innate ability or motivation that also affects earnings and (b) unobserved errors in measurement of education, or both. The unobservable are common in developing countries like Pakistan. This study has included some more control variables such as family background and status in the main regression to avoid the problem of endogeneity.

Another reason of applying OLS method in the present study in estimating the "Earnings Function" and examining the rate of RTEdu. is that in almost all of the existing studies for Pakistan have estimated "Earnings Function" and examined the rate of RTEdu. by using standard OLS methodology. This study also utilizes OLS method so that the results of this study can be easily compared to existing studies conducted in Pakistan.

4. Empirical Results and their Analysis

This section presents empirical results as found by the use of semilogarithmic regression model. After interpreting descriptive statistics in *section I*, the interpretation of empirical results along with their analysis have also been presented in various sections of this section. Ordinary Least Squares (OLS) estimated results of the semilogarithmic earnings equation for the workforce of various categories of educational institutions, when education of each type of workforce is measured by 'number of years of schooling completed' is *presented in section II* of this section. This section also computes compares and contrasts the rate of PFR to various factors and earning differentials among various categories of educational institutions workforce. The estimated results of the semilogarithmic earnings equation for the workforce of various categories of educational institutions, when education of each type of workforce is measured by 'level of education acquired' are presented in *section III* of this section.

The descriptive statistics in *Table 1* show that the average *earnings* per hour of college level workforce is found to be the highest *i.e.,* Rs.95.6**,** while the average earnings *of school and university levels workforce* are found to be Rs.47.1 and Rs.69.4, respectively. This means that *workforce of colleges* earns the highest, while the *schools workforce* earns the lowest.

The descriptive statistics in *Table 2* show that the average earnings per hour of the *workforce of entire public sectors educational institutions* (Rs. 75.2) has been found higher than the average earnings (Rs. 39.6) of *entire private sectors educational institutions workforce*. The results in *Table 2* also reveal that the average earnings per hour for the entire teaching and entire non-teaching *workforce of public sectors educational institutions* has been found higher than the average earnings of the entire teaching and entire non-teaching *workforce of private sectors educational institutions*. The results in *Table 3* show that the public sector teaching workforce of schools, colleges and universities has been found to earn more than that of their counterparts in private sector schools. The public sector non-teaching workforce of schools and colleges has been found to earn more than that of their counterparts in private sector, while public sector non-teaching workforce of universities has been found to earn surprisingly 21percent (68 - 46.6) less than that of their counterparts in private sector universities. In short, the descriptive analysis given in Tables 1, 2, 3(a) and 3(b) show that the average earnings per hour of each and every category of the *workforce of public sectors educational institutions*, except *non-teaching workforce of public sector universities* has been found higher than that of their counterparts in *private sector educational institutions*.

It has also been observed as reported in *Table 1* that the average working hours per day of schools, colleges and universities workforce are 8.09, 7.57 and 8.86 hours, respectively. This means that the teaching and non-teaching workforce of colleges earn more and spend less time in working than that of *universities and schools workforce*. This finding is quite consistent with Afzal (2011). The more earnings of the college level workforce by spending less time per day needs to be addressed and explored further.

Table-1. Descriptive statistics of the workforce of educational institutions

	Workforce of various levels of educational institutions									**Workforce of all/entire educational institutions**		
	Schools			**Colleges**			**Universities**					
	Mean	S.D	C.V (%)	Mean	S.D	C.V (%)	Mean	S.D	C.V (%)	Mean	S.D	C.V (%)
Earnings (in Rs.)	47.1*	__	__	95.6*	__	__	69.4*	__	__	57.4*	__	__
ln Earnings	3.74	0.73	19.60	4.56	0.78	17.01	4.24	0.83	19.64	4.05	0.84	20.82

Continue

Edu (in years)	14.30	2.17	15.15	15.21	2.65	17.42	13.88	3.56	25.66	14.44	2.67	18.49
Experi (in years)	8.45	8.29	98.09	13.59	10.17	74.82	12.57	10.22	81.27	10.64	9.53	89.56
(Experi^2/100)** (in years)	1.40	2.48	176.60	2.88	3.47	120.44	2.62	3.63	138.42	2.04	3.11	152.26
Train (Yes=1)	0.45	0.50	111.09	0.35	0.48	137.52	0.25	0.43	175.24	0.38	0.48	128.73
Comp.uses	-0.11	0.96	-843.48	-0.03	0.96	-3133.6	0.30	1.06	356.17	0.00	1.00	56147.3
Gend (Male = 1)	0.27	0.45	163.63	0.46	0.50	109.25	0.80	0.40	49.64	0.44	0.50	112.98
M.status (Maried=1)	0.49	0.50	102.17	0.69	0.46	66.89	0.65	0.48	72.85	0.58	0.49	85.83
SSC.sector (Govt=1)	0.65	0.48	73.43	0.78	0.42	53.74	0.77	0.42	55.10	0.71	0.46	64.33
J.nature (Permanent=1)	0.69	0.46	67.46	0.77	0.42	54.28	0.83	0.37	44.64	0.74	0.44	59.00
F.edu (in years)	10.64	5.16	48.51	11.13	5.26	47.27	9.22	5.97	64.73	10.43	5.43	52.04
R.car (Ownership=1)	0.19	0.39	205.56	0.40	0.49	122.76	0.24	0.43	178.23	0.25	0.43	172.10
Hour worked per day	8.09	__	__	7.57	__	__	8.86	__	__	8.12	__	__
Obs.	4394			2000			1933			8327		

* represents average earnings per hour.
** The square of the experience is divided by 100 to make its coefficient representative.
The average of binary variables gives the proportions of ones in the sample.
S.D and C.V are for 'Standard Deviation 'and 'Coefficient of Variation', respectively.

Table-2. Descriptive statistics of the workforce of educational institutions by sector (aggregated)

	Public Sector									**Private Sector**								
	Teaching Workforce			**Non-teaching Workforce**			**All/Entire Workforce**			**Teaching Workforce**			**Non-teaching Workforce**			**All/Entire Workforce**		
	Mean	S.D	C.V (%)	Mean	S.D	C.V (%)	Mean	S.D	C.V (%)	Mean	S.D	C.V (%)	Mean	S.D	C.V (%)	Mean	S.D	C.V (%)
Earnings (in Rs.)	104.6*	__	__	43.8*	__	__	75.2*	__	__	39.3*	__	__	41.3*	__	__	39.6*	__	__
ln Earnings	4.65	0.75	16.08	3.78	0.55	14.60	4.32	0.80	18.55	3.67	0.77	20.86	3.72	0.73	19.49	3.68	0.76	20.57
Edu (in years)	15.94	1.95	12.23	11.68	3.09	26.41	14.31	3.20	22.40	14.80	1.72	11.63	12.92	2.75	21.30	14.54	1.99	13.72
Experi (in years)	13.46	10.17	75.54	13.82	10.16	73.51	13.60	10.16	74.75	5.84	5.53	94.69	9.78	9.64	98.55	6.31	6.05	95.80
(Experi^2/100) (in years)	2.84	3.48	122.24	2.94	3.55	120.78	2.88	3.51	121.67	0.65	1.18	182.66	1.90	3.51	185.16	0.76	1.39	181.99
Train(Yes=1)	0.55	0.50	91.21	0.14	0.35	249.85	0.39	0.49	125.19	0.39	0.49	125.03	0.16	0.37	226.31	0.36	0.48	134.06
Comp.uses	0.07	1.00	1453.33	-0.23	0.99	-424.63	-0.05	1.01	-2141.68	0.08	0.97	1172.73	0.01	1.01	20190.94	0.07	0.98	1365.36
Gend (Male = 1)	0.33	0.47	140.92	0.88	0.32	36.75	0.54	0.50	91.50	0.22	0.42	187.44	0.69	0.46	66.32	0.29	0.45	156.57
M.status (Maried=1)	0.70	0.46	65.81	0.71	0.45	63.20	0.70	0.46	64.80	0.36	0.48	133.86	0.60	0.49	81.73	0.39	0.49	124.28
SSC.sector (Govt=1)	0.77	0.42	54.84	0.84	0.37	43.66	0.80	0.40	50.61	0.56	0.50	88.20	0.69	0.46	66.95	0.58	0.49	84.93
J.nature (Permanent=1)	0.78	0.41	53.05	0.87	0.33	37.86	0.82	0.39	47.40	0.62	0.49	79.10	0.76	0.43	56.94	0.64	0.48	75.76
F.edu (in years)	11.81	4.71	39.88	7.22	5.91	81.78	10.05	5.66	56.31	11.40	4.68	41.04	8.40	6.17	73.38	10.97	5.03	45.87
R.car (Ownership=1)	0.41	0.49	120.98	0.07	0.26	359.11	0.28	0.45	161.21	0.22	0.41	188.37	0.19	0.40	204.08	0.22	0.41	190.44
Obs.	3015			1875			4890			2942			495			3437		

* represents average earnings per hour.
The average of binary variables gives the proportions of ones in the sample.
S.D and C.V are for 'Standard Deviation 'and 'Coefficient of Variation', respectively.

Table-3(a). Descriptive statistics of the workforce of public sector educational institutions by sector (disaggregated)

	Public Sector																	
	Teaching Workforce									Non-teaching Workforce								
	School			College			University			School			College			University		
	Mean	S.D	C.V (%)	Mean	S.D	C.V (%)	Mean	S.D	C.V (%)	Mean	S.D	C.V (%)	Mean	S.D	C.V (%)	Mean	S.D	C.V (%)
Earnings (in Rs.)	66.7*	—	—	137.0*	—	—	194.4*	—	—	33.1*	—	—	43.8*	—	—	45.6*	—	—
ln Earnings	4.20	0.66	15.78	4.92	0.64	12.97	5.27	0.51	9.64	3.50	0.54	15.36	3.78	0.56	14.74	3.82	0.54	14.09
Edu (in years)	14.81	1.96	13.24	16.40	0.78	4.77	17.74	1.88	10.62	9.82	3.27	33.28	10.98	3.04	27.66	12.22	2.90	23.76
Experi (in years)	13.45	9.99	74.22	13.96	9.99	71.57	12.11	11.01	90.95	12.41	9.24	74.47	15.95	10.71	67.11	13.37	10.04	75.05
(Experi2/100) (in years)	2.81	3.38	120.53	2.95	3.28	111.49	2.68	4.18	156.15	2.39	2.73	114.44	3.69	3.88	105.09	2.79	3.53	126.41
Train (Yes=1)	0.67	0.47	70.74	0.42	0.49	118.14	0.54	0.50	91.50	0.14	0.34	253.45	0.14	0.35	247.39	0.14	0.34	250.27
Comp.uses	-0.27	0.91	-340.39	0.05	0.95	1985.14	1.10	0.67	60.94	-0.67	0.77	-114.79	-0.53	0.85	-161.69	-0.07	1.03	-1499.61
Pub.Articles				2.25	0.61	27.19	13.98	11.18	79.98									
Gend (Male = 1)	0.28	0.45	159.10	0.32	0.46	147.52	0.54	0.50	92.71	0.75	0.43	58.06	0.82	0.38	46.56	0.92	0.27	29.18
.status (Maried=1)	0.71	0.45	63.49	0.70	0.46	64.81	0.64	0.48	75.61	0.74	0.44	59.55	0.80	0.40	50.83	0.68	0.46	67.86
SSC.sector (Govt=1)	0.80	0.40	49.90	0.76	0.43	55.95	0.70	0.46	66.19	0.86	0.35	41.27	0.87	0.33	38.43	0.83	0.38	45.69
J.nature(Permanent=1)	0.83	0.38	46.07	0.76	0.42	55.46	0.69	0.46	66.53	0.81	0.39	48.30	0.83	0.38	45.37	0.90	0.30	33.45
F.edu (in years)	10.81	5.06	46.82	12.59	4.16	33.05	12.58	4.52	35.92	6.43	5.72	88.96	6.57	5.89	89.69	7.57	5.92	78.23
R.car (Ownership=1)	0.21	0.41	191.93	0.54	0.50	91.66	0.59	0.49	83.69	0.03	0.18	535.82	0.09	0.28	325.54	0.07	0.26	354.83
Obs.	**1320**			**1238**			**457**			**207**			**405**			**1263**		

* represents average earnings per hour.
The average of binary variables gives the proportions of ones in the sample.
S.D and C.V are for 'Standard Deviation', and 'Coefficient of Variation', respectively.

Table-3(b). Descriptive statistics of the workforce of private sector educational institutions by sector (disaggregated)

	Private Sector																	
	Teaching Workforce									Non-teaching Workforce								
	School			College			University			School			College			University		
	Mean	S.D	C.V (%)	Mean	S.D	C.V (%)	Mean	S.D	C.V (%)	Mean	S.D	C.V (%)	Mean	S.D	C.V (%)	Mean	S.D	C.V (%)
Earnings (in Rs.)	34.8*	—	—	87.4*	—	—	152.9*	—	—	32.5*	—	—	39.6*	—	—	68.0*	—	—
ln Earnings	3.55	0.68	19.15	4.47	0.65	14.56	5.03	0.83	16.61	3.48	0.64	18.31	3.68	0.74	20.04	4.22	0.63	14.88
Edu (in years)	14.60	1.67	11.43	16.02	0.96	5.97	17.51	1.66	9.49	12.18	2.44	19.99	12.69	3.31	26.06	14.48	2.35	16.21
Experi (in years)	5.43	5.13	94.34	9.47	8.19	86.54	7.91	7.64	96.64	9.95	9.61	96.64	10.30	11.59	112.55	9.29	8.92	95.93
(Experi2/100) (in years)	0.56	1.04	186.81	1.56	2.68	171.46	1.20	1.89	157.23	1.91	3.43	179.42	2.39	4.96	207.82	1.65	2.93	177.44
Train (Yes=1)	0.39	0.49	124.43	0.35	0.48	135.08	0.44	0.50	112.59	0.15	0.36	236.47	0.24	0.43	177.36	0.14	0.35	246.84
Comp.uses	0.03	0.96	3424.64	0.32	0.91	284.36	1.13	0.69	61.26	-0.29	1.00	-341.42	0.06	0.99	1689.48	0.56	0.79	142.07
Pub.Articles				2.33	0.47	20.13	15.05	7.13	47.39									
Gend (Male = 1)	0.18	0.39	211.38	0.47	0.50	106.48	0.65	0.48	73.44	0.70	0.46	66.26	0.74	0.44	59.10	0.67	0.47	70.96
M.status (Maried=1)	0.34	0.47	140.19	0.53	0.50	94.93	0.46	0.50	109.47	0.66	0.47	72.00	0.53	0.50	95.61	0.52	0.50	95.49
SSC.sector (Govt=1)	0.55	0.50	90.90	0.70	0.46	65.19	0.56	0.50	90.07	0.73	0.44	60.64	0.77	0.42	55.13	0.57	0.50	87.63
J.nature (Permanent=1)	0.60	0.49	81.57	0.75	0.43	57.98	0.63	0.49	78.00	0.75	0.43	57.84	0.68	0.47	69.12	0.81	0.39	48.84
F.edu (in years)	11.29	4.70	41.61	12.02	4.35	36.18	12.82	4.84	37.75	6.89	6.23	90.44	8.48	6.03	71.14	11.32	4.98	43.97
R.car (Ownership=1)	0.20	0.40	201.06	0.30	0.46	152.64	0.68	0.47	68.99	0.14	0.35	250.72	0.08	0.27	348.65	0.37	0.48	131.29
Obs.	**2591**			**279**			**72**			**276**			**78**			**141**		

* represents average earnings per hour.
The average of binary variables gives the proportions of ones in the sample.
S.D and C.V are for 'Standard Deviation', and 'Coefficient of Variation', respectively.

To determine the rate of RTEdu. and the major factors that affect individual's earnings, a semilogarithmic econometric model was estimated by using OLS method for data sets of all categories of educational institutions workforce. Various specifications *i.e., (i)* for the workforce of schools, colleges and universities *(ii)* for the workforce of entire public and entire private sector educational institutions (aggregated) *(iii)* for the workforce of public and private sector schools, colleges' and universities (disaggregated) have been estimated and the results of ones that are free from econometric problems are presented in Tables 4, 5 and 6, respectively.

Section II (Tables 4, 5 and 6) of this section presents OLS estimated results of semilogarithmic earnings equations for the *workforce of all categories of educational institutions* , when education of each type of workforce is measured by 'number of years of schooling completed'.

Table 4 provides OLS estimates of 'Basic Earnings Equations' (also known as 'Basic Model') as well as of 'Augmented Earnings Equations' (also known as 'Augmented Model') for the workforce of schools, colleges and universities, using workforce education in years, actual work experience in years, and also actual work experience in quadratic term, as the main explanatory variables. Table 5 presents the OLS estimated results of the semilogarithmic earnings equations (both Basic and Augmented) for the *workforce of entire public and entire private sector educational institutions*, when education of each sector of workforce is measured by 'number of years of schooling completed'. *Table 6* presents the OLS estimated results of the semilogarithmic earnings equations (both Basic and Augmented) for the *workforce of public and private sector schools, for the workforce of public and private sector colleges, and for the workforce of public and private sector universities*, when education of each sector of workforce is measured by 'number of years of schooling completed'. This section also compares and contrasts the rate of PFR to various factors and earning differentials among various categories of the

workforce of educational institutions, when education of workforce is measured by 'number of years of schooling completed'.

The results presented in *Table 4* reveal that the factors that positively contributed to the earnings of *schools workforce* are 'years of schooling completed', actual working experience, training acquired, computer use, gender, marital status, SSC.sector, nature of job, family background, and family status variables.

The results presented in *Table 4* also reveal that the factors that positively and significantly contributed to the earnings of *colleges' and universities workforce* are 'years of schooling completed', actual working experience, training acquired, computer use, marital status, family background, and family status variables. Gender variable contributed negatively and significantly to the earnings of both *colleges'* and universities workforce, while the SSC.sector and family background variables contributed positively but insignificantly to the *universities workforce*.

The results in *Table 4* show that the goodness of fit of 'Augmented Model' estimates has been found more satisfactory. The Adj.R^2 increases remarkably compared to that found in the case of 'Basic Model'. The F-statistic consistently

Table-4. OLS Regression results: Model 1.1 Dependent variable: ln earnings, where the education of the workforce of various levels of educational institutions is measured by 'year of education completed'

	Workforce of various levels of educational institutions			**Workforce of all/entire educational institutions**
	Schools	**Colleges**	**Universities**	
Basic Model				
Constant	1.093 (0.000)	1.159 (0.000)	1.467 (0.000)	0.878 (0.000)
Edu (in years)	0.151 (0.000)	0.182 (0.000)	0.177 (0.000)	0.180 (0.000)
Experi (in years)	0.072 (0.000)	0.068 (0.000)	0.025 (0.000)	0.072 (0.000)
(Experi^2/100)* (in years)	-0.087 (0.000)	-0.100 (0.000)	-0.003 (0.814)	-0.092 (0.000)
Augmented Model				
Constant	1.168 (0.000)	1.339 (0.000)	2.152 (0.000)	0.970 (0.000)
Edu (in years)	0.124 (0.000)	0.158 (0.000)	0.125 (0.000)	.151 (00.000)
Experi (in years)	0.045 (0.000)	0.042 (0.000)	0.029 (0.000)	0.046 (0.000)
(Experi^2/100)* (in years)	-0.034 (0.000)	-0.047 (0.000)	-0.011 (0.327)	-.043 (0.000)
Train (Yes=1)	0.053 (0.001)	0.038 (0.100)	0.182 (0.000)	0.010 (0.414)
Comp.uses	0.073 (0.000)	0.0004 (0.973)	0.072 (0.000)	0.075 (0.000)
Gend (Male = 1)	0.232 (0.000)	-0.037 (0.135)	-0.156 (0.000)	0.192 (0.000)
M.status (Maried=1)	0.185 (0.000)	0.107 (0.000)	0.058 (0.048)	0.154 (0.000)
SSC.sector (Govt=1)	0.053 (0.001)	0.000 (0.989)	0.010 (0.719)	0.066 (0.000)
J.nature (Permanent=1)	0.160 (0.000)	0.219 (0.000)	-0.090 (0.004)	0.136 (0.000)
F.edu (in years)	0.010 (0.000)	0.005 (0.042)	0.002 (0.257)	0.009 (0.000)
R.car (Ownership=1)	0.197 (0.000)	0.226 (0.000)	0.366 (0.000)	0.315 (0.000)

Continue

Obs.	4394	2000	1933	8327
Adj. R^2(Basic model)	*0.465*	*0.598*	*0.618*	*0.547*
Adj. R^2(Augmented model)	*0.537*	*0.636*	*0.676*	*0.608*
F Statistic(Basic model)	*1274.21 (0.000)*	*991.64 (0.000)*	*1044.56 (0.000)*	*3348.30 (0.000)*
F Statistic (Augmented model)	*464.917 (0.000)*	*318.47 (0.000)*	*366.95 (0.000)*	*1173.00 (0.000)*

Values in parentheses are p-values.

*Experience square term is divided by 100 to get its coefficient value other than zero.

Rejects the null hypothesis that all the explanatory variables additional to those in the Basic Model are jointly equal to zero.

The results of 'Basic Model' presented in *Table 4* also show that the rate of RTEdu. has been found to be the highest for *college level workforce*. This finding is quite consistent to the Afzal (2011) findings in case of the workforce of educational institutions of general nature. The coefficient for education variable of 'Augmented Model' shrinks remarkably as compared to those obtained in Basic Model, confirming that the variables added to this specification do affect RTEdu.. The highest shrink (29.4 percent) has been found in case of *universities workforce*. This means that factors other than education and experience that affect the individual's earnings are more important for *universities workforce*. This highest (18.2 percent and 15.8 percent in case of 'Basic Model' and 'Augmented Model', respectively) rate of RTEdu. for *colleges workforce* as compared to *schools workforce* (15.1 percent and 12.4 percent in case of 'Basic Model' and 'Augmented Model', respectively) and universities workforce (17.7 percent and 12.5 percent in case of 'Basic Model' and 'Augmented Model', respectively) may be the result of doing extra work by *colleges workforce* as private tutors, especially in private sector colleges for additional income as well as performing double duties for extra payment. This may also be the result of flexible duty timing at *colleges* as compared to those at *schools* and *universities*. The duty timings for the *schools workforce* are more than those for *colleges and universities workforce*. The *teaching workforce at universities* keeps themselves busy in their academic research, where as the *non-teaching workforce at universities* keeps themselves busy in their office affairs. *Universities teaching workforce* spends more time on publications, as certain number of published articles has become part and parcel of their promotions or for higher scale of salary. The RTEdu. for the workforce of schools, colleges and universities found by this study is slightly higher than the returns for the low and middle income countries as founded by Psacharopoulos & Patrinos (2002).

The results in *Table 4* also imply that the rate of RTEdu. does not diminish as the workforce level of educational institutions rises. This is evident from the results presented in *Table 4 i.e.,* 15.1 percent for *schools workforce*, 18.2 percent for *colleges' workforce* and 17.7 percent for *universities workforce*. This finding is not consistent with the findings of Psacharopoulos (1994).

Table 5 results reveal that the factors that significantly and positively contributed to the earnings of the *workforce of both entire public sector and entire private sector educational institutions* are 'years of schooling completed', actual working experience, computer use, marital status, nature of job, family background, and family status variables. The training and SSC.sector variables contributed positively, but insignificantly to the earnings of both *entire public sector and entire private sector educational institutions workforce.*

The 'Basic Model' as well as 'Augmented Model' results presented in *Table 5* reveals that the rate of RTEdu. has been found to be the higher for *the workforce of entire, teaching and non-teaching private sector educational institutions* as compared to their *counterparts in public sector educational institutions*. This study recommends more financial benefits in the form of more allowances or increments against improving educational qualifications to the *workforce of public sector educational institutions*.

The coefficient for schooling variable of 'Augmented Model' shrinks remarkably as compared to those obtained in 'Basic Model', confirming that the variables added to this specification do affect RTEdu.. The highest shrink (35.6 percent) has been found for *non-teaching workforce of private sector educational institutions*. This means that factors other than education and experience that affect the individual's earnings are more important for the *non-teaching workforce of private sector educational institutions*. The rate of RTEdu. for the *workforce of entire public sector educational institutions* increases, on average by 16.6 percent (Basic Model) and 13.5 percent (Augmented Model), while the rate of RTEdu. for the *workforce of entire private sector educational institutions* increases, on average, by 21.2 (Basic Model) and 15.5 percent (Augmented Model) for every one year increase in schooling. The

RTEdu. for the *teaching as well as non-teaching workforce of public sector educational institutions* has been found to be less as compared to their counterparts in *private sector educational institutions*.

Out of the teaching and non-teaching workforce of public as well as private sector educational institutions, the lowest (9.6 percent in 'Basic Model' and 7.6 percent in 'Augmented Model') RTEdu. has been found for *non-teaching workforce of public sector educational institutions*. While revising educational policies, *the non-teaching workforce of public sector educational institutions* must be given some financial incentives as they improve their qualifications.

The higher marginal rate of RTEdu. for *the workforce of private sector educational institutions* as compared to *public sector educational institutions workforce* is quiet consistent with the finding of Psacharopoulos (1994).

The results given in *Table 6* indicate that *out of the workforce of entire public sector educational institutions*, the rate of RTEdu. for the *teaching workforce of public sector schools* has been found to be the highest (14.3 percent) whereas, it is found to be 6.5 and 10.0 percent for the *teaching workforce of public sector colleges* and *public sector universities*, respectively. *Out of the workforce of entire private sector educational institutions*, the rate of RTEdu. for the *teaching workforce of private sector universities* has been found to be the highest (23.0 percent), whereas the same has been found to be the lowest (17.4 percent) for *the teaching workforce of private sector schools*. This also means that the *teaching workforce of private sector universities* has been found to earn 13 (13 = 23 – 10) percent more than that of *their counterparts in public sector universities. Out of the teaching workforce of public as well as private sector educational institutions*, the *teaching workforce of private sector universities* has been found to earn highest returns (23.0 percent in Basic Model), whereas the same has been found to be the lowest (6.5 percent in Basic Model) for the *teaching workforce of private sector colleges*. Financial as well as non financial incentives may further be introduced to keep at power and retain experienced *teaching workforce at public sector colleges and universities*.

public sector colleges has been found to be the highest (9.8 percent) whereas, it is found to be 8.9 and 9.6 percent for the *non-teaching workforce of public sector schools* and *public sector universities*, respectively. *Out of the workforce of entire private sector educational institutions*, the rate of RTEdu. for the *non-teaching workforce of private sector universities* has been found to be the highest (19.0 percent), whereas the same has been found to be the lowest (12.9 percent) for *non-teaching workforce of private sector colleges*. According to the Augmented Model results in *Table 6*, the ***non-teaching*** *workforce of public sector universities* has been found to earn 3 percent less than that of their counterparts in *private sector universities*.

Table-5. OLS Regression results: Model 1.1
Dependent variable: ln earnings, where education of each sector (aggregated) of the workforce is measured by 'year of education completed'

	Workforce of educational institutions by sector(aggregated)					
	Public Sector			**Private Sector**		
	Teaching Workforce	Non-teaching Workforce	Entire Workforce	Teaching Workforce	Non-teaching Workforce	Entire Workforce
Basic Model						
Constant	0.940 (0.000)	2.238 (0.000)	1.385 (0.000)	0.235 (0.000)	1.156 (0.000)	0.529 (0.000)
Edu (in years)	0.196 (0.000)	0.096 (0.000)	0.167 (0.000)	0.212 (0.000)	0.180 (0.000)	0.193 (0.000)
Experi (in years)	0.058 (0.000)	0.035 (0.000)	0.052 (0.000)	0.049 (0.000)	0.038 (0.000)	0.063 (0.000)
(Experi^2/100)* (in years)	-0.068 (0.000)	-0.025 (0.009)	-0.056 (0.000)	0.017 (0.536)	-0.071 (0.001)	-0.074 (0.001)
Augmented Model						
Constant	1.351 (0.000)	2.298 (0.000)	1.626 (0.000)	0.815 (0.000)	1.657 (0.000)	0.843 (0.000)
Edu (in years)	0.151 (0.000)	0.076 (0.000)	0.135 (0.000)	0.155 (0.000)	0.116 (0.000)	0.153 (0.000)

Continue

Experi (in years)	0.047 (0.000)	0.028 (0.000)	0.038 (0.000)	0.024 (0.000)	0.030 (0.000)	0.035 (0.000)
(Experi^2/100)* (in years)	-0.046 (0.000)	-0.009 (0.344)	-0.027 (0.000)	0.055 (0.035)	-0.055 (0.006)	-0.026 (0.216)
Train(Yes=1)	-0.082 (0.000)	0.081 (0.004)	0.012 (0. 420)	0.005 (0.806)	0.105 (0.083)	0.012 (0.540)
Comp.uses	0.086 (0.000)	0.067 (0.000)	0.057 (0.000)	0.103 (0.000)	0.113 (0.000)	0.101 (0.000)
Gend (Male = 1)	0.135 (0.000)	0.012 (0.686)	0.012 (0.456)	0.366 (0.000)	0.143 (0.007)	0.350 (0.000)
M.status (Maried=1)	0.089 (0.001)	0.082 (0.001)	0.101 (0.000)	0.151 (0.000)	0.103 (0.053)	0.149 (0.000)
SSC.sector (Govt=1)	-0.018 (0.427)	0.053 (0.036)	0.017 (0.343)	0.012 (0.541)	-0.047 (0.367)	0.005 (0.782)
J.nature (Permanent=1)	0.122 (0.000)	0.096 (0.001)	0.073 (0.000)	0.141 (0.000)	0.105 (0.041)	0.145 (0.000)
F.edu (in years)	0.012 (0.000)	0.003 (0.080)	0.007 (0.000)	0.009 (0.000)	0.007 (0.163)	0.009 (0.000)
R.car (Ownership=1)	0.260 (0.000)	0.244 (0.000)	0.342 (0.000)	0.196 (0.000)	0.488 (0.000)	0.251 (0.000)
Obs.	3015	1875	4890	2942	495	3437
Adj. R^2(Basic model)	*0.496*	*0.458*	*0.587*	*0.452*	*0.558*	*0.425*
Adj. R^2(Augmented model)	*0.558*	*0.491*	*0.630*	*0.538*	*0.528*	*0.529*
F Statistic(Basic model) *F Statistic(Augmented model)*	*989.30* *(0.000)* *347.14* *(0.000)*	*527.15* *(0.000)* *165.06* *(0.000)*	*2312.73* *(0.000)* *758.04* *(0.000)*	*809.475* *(0.000)* *312.201* *(0.000)*	*138.87* *(0.000)* *57.69* *(0.000)*	*848.166* *(0.000)* *352.080* *(0.000)*

Values in parentheses are p-values.
*Experience square term is divided by 100 to get its coefficient value other than zero.

The results in *Table 6* also indicate that *out of the workforce of entire public sector educational institutions*, the rate of RTEdu. for the *non-teaching workforce of* The *non-teaching workforce of public sector universities* has been found to earn 7 to 8 percent, while the *non-teaching workforce of private sector universities* has been found to earn 10 to 11 percent. Financial as well as non financial incentives may further be introduced to keep at power and retain experienced *non-teaching workforce at public sector colleges and universities*.

In conclusion, financial as well as non financial incentives may further be introduced to keep at power and retain experienced *teaching and non-teaching workforce at public sector colleges and universities*.

The increase in the rate of RTEdu. has been found to be the highest (23.0 percent) for every additional year of schooling in case of *teaching workforce of private sector universities* out of the workforce of various categories of private and public sector educational institution's workforce. The increase in the rate of RTEdu. has been found to be the lowest (6.5 percent in 'Basic Model' and 4.7 in 'Augmented Model') for every additional year of schooling in case of *teaching workforce of public* sector colleges out of various categories of private and public sector educational institution's workforce. The rate of RTEdu. has been found higher for each and every category of *teaching and non-teaching workforce of private sector educational institutions* as compared to each and every category of *teaching and non-teaching workforce of public sector educational institutions.*

The results given in Tables 4, 5 and 6 indicate that the estimated coefficient associated with *actual working experience* is positive and statistically significant in all models of educational institutions workforce, whereas the coefficient associated with the square of experience variable is negative, exhibits parabolic linkage between earnings and actual working experience for *each category of educational institutions workforce, except for the teaching workforce of private sector universities,* implying diminishing PFR to actual working experience after a specific working experience. This also implies that the experience-earning profile is not concave for the *teaching workforce of private sector universities*. The concavity (*i.e.*, earnings increases with the increasing actual working experience but at a decreasing rate) of experience-earning profile is clearly observed from the negative and significant coefficient of

actual working experience squared term. *Table 7* provides a better quantitative picture of the concavity of experience-earning profile.

Table-6. OLS Regression results: Model 1.1 Dependent variable: ln earnings, where education of each sector (disaggregated) of the workforce is measured by year of education completed

	Workforce of educational institutions by sector(disaggregated)											
	Public Sector						Private Sector					
	Teaching Workforce			Non-teaching Workforce			Teaching Workforce			Non-teaching Workforce		
	School	College	Uni	School	College	Uni	School	College	Uni	School	College	Uni
Basic Model												
Constant	1.447 (0.000)	3.086 (0.000)	3.201 (0.000)	2.269 (0.000)	2.281 (0.000)	2.239 (0.000)	0.743 (0.000)	1.066 (0.061)	0.907 (0. 265)	1.210 (0.000)	1.868 (0.000)	1.357 (0.000)
Edu (in years)	0.143 (0.000)	0.065 (0.004)	0.100 (0.000)	0.089 (0.000)	0.098 (0.000)	0.096 (0.000)	0.174 (0.000)	0.186 (0.000)	0.230 (0.000)	0.161 (0.000)	0.129 (0.000)	0.190 (0.000)
Experi (in years)	0.063 (0.000)	0.075 (0.000)	0.036 (0.000)	0.037 (0.001)	0.035 (0.000)	0.035 (0.000)	0.049 (0.000)	0.062 (0.000)	-0.039 (0.341)	0.051 (0.000)	0.029 (0.176)	0.018 (0.180)
(Experi^2/100)* (in years)	-0.072 (0.000)	-0.091 (0.000)	-0.050 (0.000)	-0.045 (0.231)	-0.034 (0.056)	-0.021 (0.083)	0.012 (0.691)	-0.101 (0.003)	0.328 (0.046)	-0.105 (0.000)	-0.048 (0.329)	-0.033 (0.403)
Augmented Model												
Constant	1.511 (0.000)	3.137 (0.000)	3.232 (0.000)	2.184 (0.000)	2.419 (0.000)	2.313 (0.000)	1.181 (0.000)	1.363 (0.015)	0.405 (0.651)	1.579 (0.000)	1.856 (0.000)	2.176 (0.000)
Edu (in years)	0.119 (0.000)	0.047 (0.003)	0.095 (0.000)	0.073 (0.000)	0.074 (0.000)	0.075 (0.000)	0.126 (0.000)	0.144 (0.000)	0.229 (0.000)	0.108 (0.000)	0.102 (0.001)	0.113 (0.000)
Experi (in years)	0.047 (0.000)	0.050 (0.000)	0.031 (0.000)	0.022 (0.057)	0.030 (0.000)	0.028 (0.000)	0.029 (0.000)	0.033 (0.009)	-0.045 (0.311)	0.034 (0.000)	0.010 (0.702)	0.029 (0.055)
(Experi^2/100)* (in years)	-0.040 (0.004)	-0.046 (0.000)	-0.044 (0.000)	-0.014 (0.702)	-0.025 (0.180)	-0.004 (0.722)	0.025 (0.385)	-0.029 (0.407)	0.397 (0.021)	-0.071 (0.005)	-0.015 (0.789)	-0.059 (0.163)
Train (Yes=1)	-0.032 (0.274)	0.036 (0.146)	0.032 (0.000)	-0.014 (0. 895)	0.046 (0.452)	0.102 (0.003)	0.028 (0.181)	-0.066 (0.335)	0.160 (0.260)	0.194 (0.013)	0.184 (0.306)	0.072 (0.501)
Comp.uses	0.073 (0.000)	0.012 (0.395)	0.025 (0.000)	0.106 (0.042)	0.076 (0.007)	0.068 (0.000)	0.090 (0.000)	0.079 (0.047)	0.186 (0.093)	0.089 (0.020)	-0.019 (0.858)	0.143 (0.016)
Pub.Articles		0.050 (0.010)	0.002 (0.000)					0.065 (0.346)	-0.010 (0.328)			
Gend (Male = 1)	0.140 (0.000)	0.012 (0.653)	0.049 (0.000)	0.103 (0.137)	-0.066 (0.230)	0.026 (0.537)	0.331 (0.000)	0.122 (0.083)	0.287 (0.056)	0.301 (0.000)	-0.114 (0.573)	-0.129 (0.173)
M.status (Maried=1)	0.166 (0.000)	0.115 (0.001)	-0.012 (0.000)	0.214 (0.004)	0.000 (0.993)	0.078 (0.011)	0.167 (0.000)	0.112 (0.169)	-0.071 (0.677)	0.070 (0.284)	0.318 (0.093)	0.094 (0.323)
SSC.sector (Govt=1)	0.007 (0.848)	-0.019 (0.490)	-0.016 (0.000)	0.026 (0.767)	0.086 (0.160)	0.050 (0.093)	0.016 (0.424)	-0.101 (0.158)	-0.248 (0.069)	-0.047 (0.466)	0.156 (0.405)	-0.039 (0.643)
J.nature (Permanent=1)	0.172 (0.000)	0.195 (0.000)	-0.021 (0.000)	0.165 (0.040)	0.157 (0.008)	0.065 (0.101)	0.124 (0.000)	0.394 (0.000)	0.212 (0.171)	0.125 (0.043)	0.121 (0.450)	-0.019 (0.843)
F.edu (in years)	0.010 (0.000)	0.002 (0.450)	-0.005 (0.000)	0.005 (0.376)	0.003 (0.503)	0.003 (0.134)	0.010 (0.000)	0.000 (0.941)	0.023 (0.148)	-0.002 (0.771)	0.010 (0.521)	0.011 (0.276)
R.car (Ownership=1)	0.194 (0.000)	0.126 (0.000)	0.148 (0.000)	0.106 (0. 527)	0.359 (0.000)	0.203 (0.000)	0.178 (0.000)	0.173 (0.029)	-0.127 (0.427)	0.555 (0.000)	0.619 (0.042)	0.258 (0.007)
Obs.	***1320***	***1238***	***457***	***207***	***405***	***1263***	***2591***	***279***	***72***	***276***	***78***	***141***
Adj. R^2 (Basic model)	*0.433*	*0.554*	*0.431*	*0.387*	*0.464*	*0.442*	*0.392*	*0.255*	*0.499*	*0.375*	*0.276*	*0.496*
Adj. R^2 (Augmented model)	*0.488*	*0.583*	*0.463*	*0.421*	*0.508*	*0.474*	*0.480*	*0.353*	*0.581*	*0.527*	*0.328*	*0.568*
F Statistic (Basic model)	*336.26 (0.000)*	*512.41 (0.000)*	*116.25 (0.000)*	*44.37 (0.000)*	*117.34 (0.000)*	*334.02 (0.000)*	*557.20 (0.000)*	*32.76 (0.000)*	*24.54 (0.000)*	*55.95 (0.000)*	*10.77 (0.000)*	*46.84 (0.000)*
F Statistic (Augmented model)	*115.252 (0.000)*	*145.24 (0.000)*	*31.86 (0.000)*	*14.62 (0.000)*	*38.96 (0.000)*	*104.30 (0.000)*	*218.33 (0.000)*	*13.65 (0.000)*	*9.19 (0.000)*	*28.86 (0.000)*	*4.41 (0.000)*	*17.76 (0.000)*

Values in parentheses are p-values.

*Experience square term is divided by 100 to get its coefficient value other than zero.

The coefficient of actual working experience variable for *each category of educational institutions workforce*, ***except*** for *the teaching workforce of private sector universities* indicates rise in earnings at decreasing rate for every one additional year of actual working experience. The second last row in *Table 7* presents the rate of PFR to actual working experience for *the workforce of all categories of educational institutions* calculated on average value of experience of each category of educational institutions. The rate of PFR to actual working experience for the *workforce of schools, colleges and universities* has been found 7.2 percent, 6.8 percent and 2.5 percent, respectively. This finding implies that the rate of PFR to actual working experience diminishes as the workforce levels of educational institutions rises.

The rate of PFR to actual working experience has been found higher for the workforce of *entire public sector educational institutions* than that of *the workforce entire private sector educational institutions*. This also means that actual working experience matters more for the *workforce of public sector educational institutions* as compared to the *workforce of private sector educational institutions*. Actual working experience is more important in determining the earnings of the *workforce of public sector educational institutions* as compared to the *workforce of private sector educational institutions*.

Table-7. Rate of private financial returns to experience and concavity of experience-earnings profile

Working experience (years)	**All/entire Workforce**	**Workforce of public sector**	**Workforce of private sector**	**Workforce of Schools**	**Workforce of Colleges**	**Workforce of Universities**
1	0.045	0.037	0.034	0.044	0.041	0.029
5	0.042	0.035	0.032	0.042	0.037	0.028
10	0.037	0.033	0.030	0.038	0.033	0.027
15	0.033	0.030	0.027	0.035	0.028	0.026
20	0.029	0.027	0.025	0.031	0.023	0.025
25	0.025	0.025	0.022	0.028	0.019	0.024
30	0.020	0.022	0.019	0.025	0.014	0.022
35	0.016	0.019	0.017	0.021	0.009	0.021
40	0.012	0.016	0.014	0.018	0.004	0.020
45	0.007	0.014	0.012	0.014	0.000	0.019
At respective category average years of experience	*0.037*	*0.031*	*0.032*	*0.039*	*0.029*	*0.026*
The experience that adds positively to the earnings of the workforce, beyond which it contributes negatively.	*55*	*70*	*67*	*67*	*46*	*Not found because the estimated coefficient. of Experience^2 is insignificant*

The point where actual working experience stops adding positively to the earnings of workforce is defined by $\partial \ln Y/\partial Experi = 0$, and $\partial^2 \ln Y/\partial^2 Experi < 0$, and is calculated from the 'Augmented Earnings Equation' and is given in last row of *Table 7*. The experience level that stops adding positively to the earnings of the *workforce of schools, and colleges* is 67 years, and 46 years, respectively, beyond which these contributes negatively to earnings of the *workforce of schools,* and *colleges*, respectively. The experience level that stops adding positively to the earnings of the *workforce of entire public sector educational institutions* is the 70 years of experience, while 67 years of experience stops adding positively to the earnings of the *workforce of entire private sector educational institutions*, beyond which it contributes negatively to earnings.

The results given in *Table 4* further indicate that the effect of ***trainings*** on the earnings of the *workforce of schools, colleges* and *universities* has been found to be positive and significant. The highest effect (18.2 percent) of the training on the earnings of *universities respondents* has been observed. The results in *Table 5* indicates that the estimated coefficient associated with the training variable for the *workforce of entire public and private sector educational institutions* has been found to be positive, but insignificant. The results in *Table 6* indicate that the rate of returns to trainings is positive and significant only for the *teaching workforce of public sector universities, non-teaching workforce of public sector universities, and non-teaching workforce of private sector schools*.

The results in Tables 4, 5 and 6 further indicate that the ***computer use*** variable has been found to be contributing positively and significantly to the returns for the *workforce of all categories of educational institutions, except for the teaching workforce of public sector colleges and non-teaching workforce of private sector colleges*. The rate of returns to computer use has been found to be the lowest for the *workforce of colleges* (consistent with the findings of Afzal, 2011). The results in *Table 5* indicate that the rate of returns to computer use has been found 8.6 percent, 6.7 percent, and 5.7 percent for the *teaching workforce of public sector, non-teaching workforce of public sector and workforce of entire public sector educational institutions, respectively, while it* has been found 10.3 percent, 11.3 percent, and 10.1 percent for the *teaching workforce of public sector, non-teaching workforce of public sector and workforce of entire public sector educational institutions*, respectively. This means that the workforce of each of *entire, teaching and non-teaching private sector educational institutions* is found to receive higher returns to computer use as compared to their *counterparts working at public sector educational institutions*. The results in *Table 6* also indicate that *out of the workforce of entire public sector educational institutions*, the rate of returns to computer use is found to be the highest (10.6 percent) for *non-teaching workforce of public sector schools. Out of the workforce of entire private sector educational institutions*, the rate of returns to computer use has been observed to be the 18.6 percent (highest) for *teaching workforce of*

private sector universities. The results in *Table 6* also reveal that the rate of returns to computer use for *teaching workforce of private sector universities* has been found to be 7 times more than that of the rate of returns to computer use for *teaching workforce of public sector of universities*. The computer use being an important indicator of individual's as well as institutional productivity and skills must be increased for the workforce of *all levels of educational institutions, especially for the workforce of each of entire, teaching and non-teaching public sector educational institutions and particularly to the teaching workforce of public sector colleges, and non-teaching workforce of private sector colleges.*

The results in *Table 6* further show that the *publications* impact on the earnings of the *teaching workforce of public sector colleges and teaching workforce of public sector of universities* has been estimated and found to be positive and significant, while the impact of publications on the earnings of *teaching workforce of private sector colleges and teaching workforce of private sector universities* has been found to be insignificant.

All the above discussion reveals that the higher returns/earnings coupled with education, actual working experience, training, computer use and publications variables provide a clear support to human capital theory in case of the workforce of educational institutions located in Lahore district of Punjab province of Pakistan. In other words, the highly significance of estimated coefficients associated with education, actual working experience, training and computer use variables indicate the applicability of *Human Capital Model* for the workforce of educational institutions in Pakistan. The greater the workforce education, experience, training and computer use stock is, the greater is his/her earnings in the labour market.

The percentage of variation in dependent variable *i.e.,* ln Earnings for the *workforce of each of the model of educational institutions* has been well explained, as it is noted by the value of $R^2$and adjusted R^2. The regression models for *each category of educational institutions workforce* satisfy the overall goodness of fit criterion as the F-statistic was found highly significant.

In the above discussions, the education of the workforce was measured by the 'years of schooling completed'. The results of the above specified models presented in *Tables 4, 5 and 6* assume that the rate of returns is same or uniform for *various levels of education*. In an alternatively specified models presented in Tables 8, 9 and 10, workforce education is measured by *'level of education acquired'*. Each level of education of the workforce is permitted to have a different effect on individual's future earnings profile. This specification is clearly more flexible and realistic than the specification that takes in education in 'number of years of schooling completed'. It is worth noting here that in Pakistan, job requirement is in terms of 'level of education acquired' rather than 'years of schooling completed'. Since various levels of education impart different skills and knowledge in workforce and hence affect their earnings in different ways. It would be *misleading* to assume a constant/uniform rate of returns for *various levels of education*. Following most of empirical studies in Pakistan and abroad, this empirical work also utilized *dummy variable technique* to indicate the effect of various levels of education on the workforce earnings. This study divides the entire schooling years into *seven* levels of education: Middle/Elementary (8 years of schooling), Matric/Secondary (10 years of schooling), Intermediate (12 years of schooling), Graduation (14 years of schooling), Master (16 years of schooling), M.Phil (18 years of schooling) and Ph.D. and post Ph.D. (20-21 years of schooling). The workforce holding Ph.D. and post Ph.D. levels of education are relatively scarce. The omitted level of education is the Middle level of education. The *Section III* of this section (Tables 8, 9 and 10) presents OLS estimated results for various specifications of the semilogarithmic earnings equations for various categories of educational institutions, *when education of each type of workforce is measured by various levels of education acquired,* instead of measuring education by *'years of schooling completed'*.

Table 8 provides OLS regression estimates of 'Basic Earnings Equation' (also known as 'Basic Model') as well as of 'Augmented Earnings Equation' (also known as 'Augmented Model') *for the workforce of schools, colleges and universities*, using workforce education (in 'levels of education' rather than in 'years of schooling'), actual work experience (in years), and also actual work experience in quadratic term, as the main explanatory variables. *Table 9* presents the OLS estimated results of the semilogarithmic earnings equations (both Basic and Augmented) for the *workforce of entire public and entire private sector educational institutions*, when education of each sector (aggregated) of workforce is measured by levels of education acquired. *Table 10* presents the OLS estimated results of the semilogarithmic earnings equations (both Basic and Augmented) for the *workforce of public and private sector schools, for the workforce of public and private sector colleges, and for the workforce of public and private sector universities*, when education of each sector (disaggregated) of workforce is measured by 'levels of education acquired'. This section also compares and contrasts the rate of returns to various factors and earning differentials among various categories of the workforce of educational institutions.

The Basic as well as Augmented models results given in *Table 8* reveal that, acquiring each of Secondary School Certificate (SSC), Intermediate, Graduation, Master, M.Phil and Ph.D. and Post Ph.D. levels of education rather than Middle level of education has contributed positive and statistical significant to the earnings of the *workforce of schools*, *college*, and *universities*.

The results in *Table 8* also indicate that the contribution of *M.Phil level of education* among all levels of education, as compare to Middle level of education, has been found to be the highest for the *workforce of schools and colleges* (133.2 percent and 115.6 percent according to 'Basic and Augmented models', respectively for *school workforce*, and 164.7 percent and 147.8 percent according to 'Basic and Augmented models',

Table-8. OLS Regression results: Model 1.2 Dependent variable: ln earnings, where the workforce education of various levels of educational institutions is measured by 'level of education acquired'

	Workforce of various levels of educational institutions			**Workforce of all/entire educational institutions**
	Schools	**Colleges**	**Universities**	
Basic Model				
Constant	2.580 (0.000)	2.674 (0.000)	3.135 (0.000)	2.661 (0.000)
Edu (SSC = 1)	0.155 (0.010)	0.219 (0.000)	0.161 (0.000)	0.183 (0.000)
Edu (Inter = 1)	0.262 (0.000)	0.507 (0.000)	0.350 (0.000)	0.338 (0.000)
Edu (Grad = 1)	0.562 (0.000)	0.615 (0.000)	0.542 (0.000)	0.546 (0.000)
Edu (Master = 1)	1.002 (0.000)	1.472 (0.000)	1.232 (0.000)	1.203 (0.000)
Edu (M.Phil = 1)	1.332 (0.000)	1.647 (0.000)	1.808 (0.000)	1.703 (0.000)
Edu (Ph.D. = 1)	0.293 (0.108)	1.599 (0.000)	2.142 (0.000)	1.991 (0.000)
Experi (in years)	0.068 (0.000)	0.070 (0.000)	0.022 (0.000)	0.066 (0.000)
(Experi^2/100)* (in years)	-0.079 (0.000)	-0.102 (0.000)	0.002 (0.830)	-0.081 (0.000)
Augmented Model				
Constant	2.326 (0.000)	2.628 (0.000)	3.252 (0.000)	2.463 (0.000)
Edu (SSC = 1)	0.178 (0.002)	0.189 (0.001)	0.124 (0.004)	0.160 (0.000)
Edu (Inter = 1)	0.327 (0.000)	0.465 (0.000)	0.239 (0.000)	0.302 (0.000)
Edu (Grad = 1)	0.542 (0.000)	0.567 (0.000)	0.375 (0.000)	0.470 (0.000)
Edu (Master = 1)	0.884 (0.000)	1.340 (0.000)	0.874 (0.000)	1.021 (0.000)
Edu (M.Phil = 1)	1.156 (0.000)	1.478 (0.000)	1.330 (0.000)	1.421 (0.000)
Edu (Ph.D. = 1)	0.220 (0.199)	1.401 (0.000)	1.635 (0.000)	1.645 (0.000)
Experi (in years)	0.044 (0.000)	0.045 (0.000)	0.025 (0.000)	0.045 (0.000)
(Experi2/100)* (in years)	-0.032 (0.001)	-0.052 (0.000)	-0.005 (0.665)	-0.040 (0.000)
Train (Yes=1)	0.060 (0.000)	0.039 (0.079)	0.130 (0.000)	0.022 (0.071)

Continue

Comp.uses	0.072 (0.000)	0.015 (0.215)	0.1084 (0.000)	0.075 (0.000)
Gend (Male = 1)	0.215 (0.000)	0.005 (0.840)	-0.098 (0.001)	0.168 (0.000)
M.status (Maried=1)	0.173 (0.000)	0.101 (0.000)	0.035 (0.218)	0.127 (0.000)
SSC.sector (Govt=1)	0.044 (0.009)	-0.009 (0.732)	-0.006 (0.822)	0.044 (0.001)
J.nature (Permanent=1)	0.153 (0.000)	0.237 (0.000)	-0.022 (0.466)	0.135 (0.000)
F.edu (in years)	0.011 (0.000)	0.002 (0.439)	0.005 (0.022)	0.010 (0.000)
R.car (Ownership=1)	0.192 (0.000)	0.196 (0.000)	0.274 (0.000)	0.279 (0.000)
Obs.	4394	2000	1933	8327
Adj. R^2(Basic model)	*0.475*	*0.637*	*0.668*	*0.576*
Adj. R^2(Augmented model)	*0.540*	*0.668*	*0.702*	*0.626*
F Statistic(Basic model)	*498.10 (0.000)*	*439.30 (0.000)*	*487.60 (0.000)*	*1415.45 (0.000)*
F Statistic (Augmented model)	*322.94 (0.000)*	*252.80 (0.000)*	*285.52 (0.000)*	*871.33 (0.000)*

Values in parentheses are p-values.

*Experience square term is divided by 100 to get its coefficient value other than zero.

respectively for *colleges workforce*), while the contribution of *Ph.D. level of education* among all levels of education, as compare to Middle level of education, has been found to be the highest for the *workforce of universities* (214.2 percent and 163.5 percent according to 'Basic and Augmented models', respectively).

The results given in *Table 9* reveal that acquiring each of SSC, Intermediate, Graduation, Master, M.Phil, and Ph.D. levels of education rather than Middle level of education has contributed positive and statistical significant to the earnings for the *workforce of each of entire public sector and entire private sector educational institutions*.

Table-9. OLS Regression results: Model 1.2
Dependent variable: ln earnings, where education of each sector (aggregated) of the workforce is measured by 'level of education acquired'

	Workforce of educational institutions sector(aggregated)					
	Public Sector			**Private Sector**		
	Teaching Workforce	Non-teaching Workforce	Entire Workforce	Teaching Workforce	Non-teaching Workforce	Entire Workforce
Basic Model						
Constant	3.104 (0.000)	2.964 (0.000)	2.817 (0.000)	2.842 (0.000)	2.747 (0.000)	2.435 (0.000)
Edu (SSC = 1)	------	0.235 (0.000)	0.268 (0.000)	------	0.140 (0.357)	0.251 (0.121)
Edu (Inter = 1)	0.061 (0.392)	0.432 (0.000)	0.454 (0.000)	-0.052 (0.434)	0.582 (0.000)	0.385 (0.017)
Edu (Grad = 1)	0.276 (0.000)	0.589 (0.000)	0.624 (0.000)	0.301 (0.000)	0.808 (0.000)	0.721 (0.000)
Edu (Master = 1)	1.032 (0.000)	0.866 (0.000)	1.322 (0.000)	0.794 (0.000)	1.371 (0.000)	1.228 (0.000)
Edu (M.Phil = 1)	1.375 (0.000)	1.430 (0.000)	1.716 (0.000)	1.395 (0.000)	1.901 (0.000)	1.810 (0.000)
Edu (Ph.D. = 1)	1.613 (0.000)	1.729 (0.000)	1.995 (0.000)	2.290 (0.000)	0.210 (0.595)	2.310 (0.000)

Continue

Experi (in years)	0.058 (0.000)	0.034 (0.000)	0.050 (0.000)	0.051 (0.000)	0.043 (0.000)	0.062 (0.000)
(Experi^2/100)* (in years)	-0.065 (0.000)	-0.023 (0.016)	-0.051 (0.000)	0.005 (0.868)	-0.085 (0.000)	-0.082 (0.000)
Augmented Model						
Constant	3.027 (0.000)	2.841 (0.000)	2.760 (0.000)	2.691 (0.000)	2.637 (0.000)	2.245 (0.000)
Edu (SSC = 1)	------	0.206 (0.000)	0.216 (0.000)	------	0.101 (0. 468)	0.248 (0.095)
Edu (Inter = 1)	0.046 (0.488)	0.360 (0.000)	0.362 (0.000)	-0.016 (0.794)	0.397 (0.010)	0.442 (0.003)
Edu (Grad = 1)	0.193 (0.001)	0.482 (0.000)	0.492 (0.000)	0.232 (0.000)	0.537 (0.000)	0.682 (0.000)
Edu (Master = 1)	0.815 (0.000)	0.694 (0.000)	1.091 (0.000)	0.587 (0.000)	0.963 (0.000)	1.060 (0.000)
Edu (M.Phil = 1)	1.071 (0.000)	1.170 (0.000)	1.419 (0.000)	1.010 (0.000)	1.325 (0.000)	1.474 (0.000)
Edu (Ph.D. = 1)	1.241 (0.000)	1.506 (0.000)	1.636 (0.000)	1.907 (0.000)	-0.314 (0.387)	1.991 (0.000)
Experi (in years)	0.047 (0.000)	0.027 (0.000)	0.037 (0.000)	0.026 (0.000)	0.033 (0.000)	0.036 (0.000)
(Experi^2/100)* (in years)	-0.044 (0.000)	-0.008 (0.409)	-0.025 (0.000)	0.043 (0.101)	-0.063 (0.001)	-0.034 (0.103)
Train(Yes=1)	-0.061 (0.001)	0.081 (0.004)	0.022 (0.133)	0.010 (0.629)	0.100 (0.087)	0.018 (0.340)
Comp.uses	0.088 (0.000)	0.061 (0.000)	0.056 (0.000)	0.103 (0.000)	0.088 (0.006)	0.103 (0.000)
Gend (Male = 1)	0.132 (0.000)	0.027 (0.362)	0.030 (0.054)	0.355 (0.000)	0.171 (0.001)	0.327 (0.000)
M.status (Maried=1)	0.082 (0.001)	0.069 (0.006)	0.072 (0.000)	0.150 (0.000)	0.110 (0.034)	0.143 (0.000)
SSC.sector (Govt=1)	-0.021 (0.344)	0.052 (0.041)	0.005 (0.759)	0.011 (0.591)	-0.037 (0.458)	0.000 (0.968)
J.nature (Permanent=1)	0.127 (0.000)	0.107 (0.000)	0.108 (0.000)	0.144 (0.000)	0.087 (0.000)	0.142 (0.000)
F.edu (in years)	0.010 (0.000)	0.003 (0.057)	0.008 (0.000)	0.011 (0.000)	0.007 (0.125)	0.010 (0.000)
R.car (Ownership=1)	0.237 (0.000)	0.226 (0.000)	0.285 (0.000)	0.189 (0.000)	0.479 (0.000)	0.239 (0.000)
Obs.	3015	1875	4890	2942	495	3437
Adj. R^2(Basic model)	*0.523*	*0.464*	*0.621*	*0.458*	*0.494*	*0.437*
Adj. R^2(Augmented model)	*0.577*	*0.493*	*0.654*	*0.543*	*0.586*	*0.531*
F Statistic(Basic model)	*473.94 (0.000)*	*203.69 (0.000)*	*1000.71 (0.000)*	*356.27 (0.000)*	*61.27 (0.000)*	*334.07 (0.000)*
F Statistic(Augmented model)	*275.46 (0.000)*	*114.83 (0.000)*	*579.36 (0.000)*	*233.50 (0.000)*	*44.65 (0.000)*	*244.42 (0.000)*

Values in parentheses are p-values.

*Experience square term is divided by 100 to get its coefficient value other than zero.

The results given in *Table 9* further reveal that acquiring each of Intermediate, Graduation, Master, M.Phil, and Ph.D. levels of education rather than SSC level of education has contributed positive and statistical significant to the earnings of *teaching workforce of public sector educational institutions*. The results in *Table 9* also reveal that acquiring each of Graduation, Master, M.Phil, and Ph.D. levels of education rather than SSC level of education has contributed positive and statistical significant to the

earnings of *teaching workforce of private sector educational institutions*. Intermediate level of education rather than SSC level of education has contributed negatively and insignificant to the earnings of *teaching workforce of private sector educational institutions*.

The results given in *Table 9* also show that the levels of education that contributed positively and statistically significantly to the earnings of *non-teaching workforce of* each of *public sector* and *private sector educational institutions* were SSC, Intermediate, Graduation, Master, M.Phil and Ph.D. levels of education.

The statistical results of the 'Basic Model' presented in *Table 9* also indicate that the contribution of *Ph.D. level of education* among all levels of education, as compare to SSC level of education, has been found to be 163.3 percent and 229.0 percent for *each of the teaching workforce of public sector and private sector educational institutions*, respectively. The results in *Table 9* further indicate that the contribution of *Ph.D. level of education* among all levels of education, as compare to Middle level of education, has been found to be 199.5 percent and 231.0 percent for the *workforce of entire public sector and entire private sector educational institutions*, respectively. From the results of both of the Basic as well as Augmented models presented in *Table 9*, it can be concluded that the reward of *Ph.D. level of education* among all levels of education, as compare to SSC level of education is more for the *workforce of private sector educational institutions* as compared to the *workforce of public sector educational institutions*.

The results given in *Table 10* reveal that acquiring each of Intermediate, Graduation, Master, M.Phil and Ph.D. level of education rather than SSC level of education has contributed positively and statistically significant to the earnings of *teaching workforce of public sector schools*. The levels of education that has positive and statistical significant contribution to the earnings of *teaching workforce of private sector schools* were only Intermediate, Graduation, Master, and M.Phil.

Acquiring each of M.Phil and Ph.D. level of education rather than Master level of education has a positive and statistically significant contribution to the earnings of the *teaching workforce of public sector colleges.* Acquiring Master, M.Phil and Ph.D. levels of education rather than Graduation level of education has a positive and statistically significant contribution to the earnings of *teaching workforce of private sector colleges.*

Acquiring each of M.Phil and Ph.D. level of education rather than Master level of education has positively and statistically significantly contributed to the earnings of each of *teaching workforce of public sector and private sector universities*. From the results of both of the Basic as well as Augmented models presented in *Table 10*, it has been found that the reward of each of M.Phil and Ph.D. levels of education among all levels of education, as compare to Master level of education is more for the *teaching workforce of private sector universities* as compared to *teaching workforce of public sector universities*.

The results given in *Table 10* also show that acquiring each of SSC, Intermediate, Graduation, Master, and M.Phil level of education rather than Middle level of education has contributed positive and statistical significant to the earnings of *non-teaching workforce of each of the public sector schools and private sector schools*.

The results given in *Table 10* also show that acquiring each of SSC, Intermediate, Graduation, and Master level of education rather than Middle level of education has contributed positive and statistical significant to the earnings of *non-teaching workforce of each of the public sector and private sector colleges*.

Acquiring SSC, Intermediate, Graduation, Master M.Phil and Ph.D. levels of education rather than Middle level of education has positively and statistically significantly contributed to the earnings of *non-teaching workforce of public sector universities*. Acquiring SSC, Intermediate, Graduation, and Master levels of education rather than Middle level of education has positively and statistically significantly contributed to the earnings of the *non-teaching workforce of private sector universities*.

From the results of both of the Basic as well as Augmented models presented in *Table 10*, it is also found that the reward of almost all levels of education is higher for the *non-teaching workforce of private sector educational institutions* as compared to *non-teaching workforce of public sector educational institutions*.

In conclusion, the reward of M.Phil and Ph.D. levels of education has been found higher for *each of teaching and non-teaching workforce of private sector educational institutions* as compared to their counterparts *working at public sector educational institutions.*

Table-10. OLS Regression results: Model 1.2

Dependent variable: ln earnings, where education of each sector (disaggregated) of the workforce is measured by 'level of education acquired'

	Workforce of educational institutions by sector(disaggregated)											
	Public Sector						Private Sector					
	Teaching Workforce			Non-teaching Workforce			Teaching Workforce			Non-teaching Workforce		
	School	College	University	School	College	University	School	College	University	School	College	University
Basic Model												
Constant	3.050 (0.000)	4.124 (0.000)	4.819 (0.000)	2.941 (0.000)	3.002 (0.000)	2.979 (0.000)	2.753 (0.000)	3.622 (0.000)	4.369	2.723 (0.000)	2.828 (0.000)	3.130 (0.000)
Edu (SSC = 1)	------	------	------	0.317 (0.000)	0.210 (0.000)	0.210 (0.000)	------	------	------	0.248 (0.005)	0.226 (0.432)	0.098 (0.584)
Edu (Inter = 1)	0.067 (0.324)	------	------	0.369 (0.001)	0.426 (0.000)	0.410 (0.000)	0.041 (0.524)	------	------	0.423 (0.000)	0.917 (0.001)	0.444 (0.020)
Edu (Grad = 1)	0.297 (0.000)	------	------	0.584 (0.000)	0.517 (0.000)	0.584 (0.000)	0.382 (0.000)	------	------	0.746 (0.000)	0.649 (0.003)	0.755 (0.000)
Edu (Master = 1)	0.731 (0.000)	------	------	0.763 (0.000)	1.055 (0.000)	0.808 (0.000)	0.802 (0.000)	0.430 (0.000)	------	1.018 (0.000)	1.285 (0.000)	1.370 (0.000)
Edu (M.Phil = 1)	1.051 (0.000)	0.131 (0.000)	0.112 (0.013)	1.501 (0.000)	------	1.429 (0.000)	1.130 (0.000)	0.721 (0.000)	0.479 (0.002)	2.013 (0.000)	------	------
Edu (Ph.D. = 1)	0.918 (0.000)	0.110 (0.092)	0.449 (0.000)	------	------	1.697 (0.000)	------	0.675 (0.050)	0.904 (0.000)	------	------	------
Experi (in years)	0.061 (0.000)	0.075 (0.000)	0.036 (0.000)	0.029 (0.010)	0.036 (0.000)	0.034 (0.000)	0.049 (0.000)	0.063 (0.000)	0.025 (0.526)	0.051 (0.000)	0.025 (0.234)	0.020 (0.097)
(Experi^2/100)* (in years)	-0.068 (0.000)	-0.092 (0.000)	-0.052 (0.000)	-0.025 (0.517)	-0.036 (0.042)	-0.019 (0.106)	0.012 (0.704)	-0.103 (0.003)	0.104 (0.515)	-0.108 (0.000)	-0.044 (0.378)	-0.031 (0.388)
Augmented Model												
Constant	2.858 (0.000)	3.881 (0.000)	4.780 (0.000)	2.767 (0.000)	2.928 (0.000)	2.866 (0.000)	2.623 (0.000)	3.262 (0.000)	3.719 (0.000)	2.555 (0.000)	2.659 (0.000)	3.275 (0.000)
Edu (SSC = 1)	------	------	------	0.304 (0.000)	0.176 (0.001)	0.184 (0.000)	------	------	------	0.205 (0.011)	0.174 (0.566)	0.036 (0.837)
Edu (Inter = 1)	0.059 (0.363)	------	------	0.337 (0.003)	0.348 (0.000)	0.341 (0.000)	0.049 (0.411)	------	------	0.323 (0.002)	0.686 (0.021)	0.061 (0.776)
Edu (Grad = 1)	0.241 (0.000)	------	------	0.443 (0.001)	0.411 (0.000)	0.478 (0.000)	0.294 (0.000)	------	------	0.518 (0.000)	0.520 (0.041)	0.361 (0.052)
Edu (Master = 1)	0.610 (0.000)	------	------	0.536 (0.002)	0.841 (0.000)	0.648 (0.000)	0.595 (0.000)	0.377 (0.000)	------	0.717 (0.000)	1.038 (0.001)	0.848 (0.000)
Edu (M.Phil = 1)	0.906 (0.000)	0.102 (0.003)	0.112 (0.014)	1.080 (0.002)	------	1.178 (0.000)	0.833 (0.000)	0.560 (0.000)	0.263 (0.090)	1.412 (0.000)	------	
Edu (Ph.D. = 1)	0.739 (0.000)	0.036 (0.0579)	0.427 (0.000)	-------	------	1.463 (0.000)	------	0.365 (0.282)	0.796 (0.002)	------	------	
Experi (in years)	0.046 (0.000)	0.051 (0.000)	0.032 (0.000)	0.016 (0.167)	0.032 (0.000)	0.027 (0.000)	0.029 (0.000)	.034 (0.007)	0.017 (0.659)	0.034 (0.000)	0.005 (0.858)	0.027 (0.053)
(Experi2/100)* (in years)	-0.039 (0.004)	-0.046 (0.000)	-0.048 (0.003)	0.000 (0.996)	-0.028 (0.131)	-0.003 (0.815)	0.024 (0.399)	-0.033 (0.351)	0.185 (0.224)	-0.073 (0.004)	-0.008 (0.885)	-0.048 (0.218)
Train (Yes=1)	-0.029 (0.309)	0.037 (0.138)	0.036 (0.336)	0.030 (0.781)	0.044 (0.460)	0.101 (0.003)	0.028 (0.169)	-0.064 (0.349)	0.228 (0.087)	0.185 (0.017)	0.145 (0.424)	0.032 (0.746)
Comp.uses	0.067 (0.000)	0.012 (0.366)	0.027 (0.351)	0.128 (0.025)	0.066 (0.018)	0.062 (0.000)	0.090 (0.000)	0.082 (0.039)	0.235 (0.016)	0.086 (0.024)	-0.028 (0.798)	0.175 (0.008)
Pub.Articles	------	0.054 (0.006)	.002 (0.290)	------	------	------	------	0.087 (0.236)	-0.003 (0.755)	------	------	------
Gend (Male = 1)	0.139 (0.000)	0.011 (0.680)	0.048 (0.253)	0.122 (0.089)	-0.027 (0.628)	0.025 (0.562)	0.326 (0.000)	0.126 (0.076)	0.284 (0.032)	0.286 (0.000)	-0.057 (0.782)	-0.074 (0.406)
M.status (Maried=1)	0.151 (0.000)	0.114 (0.001)	-0.014 (0.774)	0.206 (0.008)	-0.018 (0.757)	0.071 (0.020)	0.164 (0.000)	0.107 (0.189)	-0.004 (0.981)	0.071 (0.280)	0.340 (0.081)	0.055 (0.535)
SSC.sector (Govt=1)	0.003 (0.939)	-0.019 (0.498)	-0.020 (0.625)	0.020 (0.835)	0.075 (0.216)	0.046 (0.122)	0.015 (0.459)	-0.105 (0.146)	-0.079 (0.505)	-0.013 (0.848)	0.068 (0.726)	-0.021 (0.785)
J.nature (Permanent=1)	0.172 (0.000)	0.195 (0.000)	-0.030 (0.493)	0.141 (0.089)	0.162 (0.005)	0.088 (0.027)	0.122 (0.000)	0.395 (0.000)	0.264 (0.064)	0.136 (0.030)	0.119 (0.489)	0.008 (0.931)
F.edu (in years)	0.010 (0.000)	0.002 (0.475)	-0.005 (0.297)	0.004 (0.518)	0.003 (0.438)	0.004 (0.091)	0.010 (0.000)	-0.001 (0.875)	0.025 (0.107)	-0.003 (0.637)	0.012 (0.453)	0.006 (0.491)
R.car (Ownership=1)	0.186 (0.000)	0.127 (0.000)	0.145 (0.000)	0.088 (0.618)	0.292 (0.000)	0.178 (0.000)	0.176 (0.000)	0.181 (0.024)	-0.322 (0.031)	0.556 (0.000)	0.457 (0.143)	0.208 (0.019)
Obs.	***1320***	***1238***	***457***	***207***	***405***	***1263***	***2591***	***279***	***67***	***276***	***78***	***141***
Adj. R^2 (Basic model)	*0.449*	*0.554*	*0.430*	*0.365*	*0.498*	*0.452*	*0.395*	*0.248*	*0.574*	*0.391*	*0.305*	*0.590*
Adj. R^2 (Augmented model)	*0.499*	*0.587*	*0.445*	*0.396*	*0.527*	*0.479*	*0.480*	*0.350*	*0.672*	*0.534*	*0.327*	*0.635*
F Statistic (Basic model)	*154.27 (0.000)*	*383.55 (0.000)*	*87.05 (0.000)*	*17.91 (0.000)*	*67.68 (0.000)*	*130.97 (0.000)*	*282.32 (0.000)*	*19.29 (0.000)*	*23.24 (0.000)*	*26.21 (0.000)*	*6.64 (0.000)*	*34.50 (0.000)*
F Statistic (Augmented model)	*88.60 (0.000)*	*133.97 (0.000)*	*29.18 (0.000)*	*10.00 (0.000)*	*33.11 (0.000)*	*73.59 (0.000)*	*172.06 (0.000)*	*11.70 (0.000)*	*11.41 (0.000)*	*22.03 (0.000)*	*3.67 (0.000)*	*18.42 (0.000)*

Values in parentheses are p-values.

*Experience square term is divided by 100 to get its coefficient value other than zero.

The ***rate of PFR*** to every additional year of schooling for ***various levels of education*** is derived from the estimated coefficient attached with *various education levels* given in Tables 8, 9, and 10 and are presented in Tables 11, 12, and 13, respectively. *Table 11* gives the rate of PFR to every additional year of schooling at various levels of education for the workforce of various levels of educational institutions. *Table 12* presents rate of PFR to every additional year of schooling at various levels of education for the workforce of educational institutions by sector (aggregated). *Table 13* presents rate of PFR to every

additional year of schooling at various levels of education for the workforce of educational institutions by sector (disaggregated).

Table-11. Rate of returns to every additional year of schooling at various levels of education for the workforce of various levels of educational institutions (%)

	Workforce of various levels of educational institutions			**Workforce of all/entire educational institutions**
	Schools	**Colleges**	**Universities**	
Edu (SSC = 1)	7.8	11.0	8.1	9.2
Edu (Inter = 1)	5.4	14.4	9.5	7.8
Edu (Grad = 1)	15.0	5.4	9.6	10.4
Edu (Master = 1)	**22.0**	**42.9**	**34.5**	32.9
Edu (M.Phil = 1)	16.5	8.8	28.8	25.0
Edu (Ph.D. = 1)	-34.6	-1.6	11.1	9.6

The rate of returns in *Table 11* (derived from the estimated coefficient attached with *various education levels* given in *Table 8*) indicate that the rate of PFR to various levels of education declines for *school workforce* till Intermediate level of education, then rise till Master level of education and the again decline till Ph.D. level of education. The rate of PFR to various levels of education increases for *colleges'* workforce till Intermediate level of education, then decline till Graduation level of education, then again increases to Master and then again declines to Ph.D. level of education. The returns in *Table 11* also indicate that the rate of PFR to various levels of education increases for the workforce of *universities* till Master level of education, then decline to Ph.D. level of education. The returns given in *Table 11* also reveal that the rate of returns to Master level of education among all levels of education is found to be the highest for the workforce of *each of schools, colleges and universities*.

From the returns given in *Table 11*, this study finds that the workforce holding *SSC and Intermediate levels of education* earns highest returns in colleges. The workforce holding *Graduation and Master levels of education* earns highest returns in schools and colleges, respectively. The workforce holding *M.Phil and Ph.D. levels of education* earns highest returns at universities.

Comparing the rate of PFR to every additional year of schooling at various levels of education for *school, college and university levels workforce*, it has been found in *Table 11* that the rate of PFR to every additional year of schooling for each of SSC, Intermediate and Master level of education is higher for the *workforce of college level*. The rate of PFR to every additional year of schooling to Graduation level of education is higher for *schools level workforce*. The rate of PFR to every additional year of schooling to each of M.Phil and Ph.D. level of education is higher for *university level workforce*.

All the above shows that there emerged no obvious pattern on the basis of which this study can conclude about the nature (diminishing or increasing) of the rate of returns to various levels of education for the workforce of educational institutions. Since the rate of returns to Ph.D. level of education is negative for the *workforce of various categories of educational institutions (for the schools and colleges workforce)* except *universities' workforce*, so it is, therefore, recommended that in order to produce and retain more Ph.D. workforce in educational institutions of Pakistan, the salary and other financial and non financial incentives for the workforce holding Ph.D. degrees must be increased. This will, in turn, promote research culture in educational institution of Pakistan. Furthermore, this study found that the rate of returns in Pakistan did not follow the same overall pattern as founded by Psacharopoulos (1994) and Guisinger, Henderson & Scully (1984). According to Psacharopoulos (1994), the highest rate of returns is for primary education. But in case of Pakistan, Psacharopoulos reported 20 percent for primary education, 11 percent for secondary education and 21 percent for higher level of education. While presenting global updates for returns to investment in education, Psacharopoulos & Patrinos (2002) reported 8.4 percent for primary education, 13.7 percent for secondary education, and 31.2 percent for higher level of education in case of Pakistan. Using data for the year 1991, Guisinger, Henderson & Scully (1984) found a positive relationship between rates of return and level of education for Pakistan.

Table-12. Rate of returns to every additional year of schooling at various levels of education for the workforce of educational institutions by sector (aggregated) (%)

	Workforce of educational institutions by sector(aggregated)					
	Public Sector			**Private Sector**		
	Teaching Workforce	Non-teaching Workforce	Entire Workforce	Teaching Workforce	Non-teaching Workforce	All/Entire Workforce
Edu (SSC = 1)	…….	11.8	13.4	------	7.0	12.6
Edu (Inter = 1)	3.1	9.9	9.3	-2.6	**22.1**	6.7
Edu (Grad = 1)	10.8	7.9	8.5	**17.7**	11.3	16.8
Edu (Master = 1)	**37.8**	13.9	34.9	24.7	28.2	25.4
Edu (M.Phil = 1)	17.2	28.2	19.7	**30.1**	26.5	29.1
Edu (Ph.D. = 1)	7.9	10.0	9.3	**29.8**	-56.4	16.7

The returns given in *Table 12* (derived from the estimated coefficient attached with *various education levels* given in Tables 9) indicate that the rate of PFR to each of *SSC, Intermediate and Masters* levels of education for the *workforce of entire public sector educational institutions* has been found higher than the *workforce of entire private sector educational institutions*, while the rate of PFR to *Graduation, M.Phil and Ph.D.* levels of education for the *workforce of entire private sector educational institutions* has been found higher than the *workforce of entire public sector educational institutions.* This means that *entire private sector educational institutions workforce* has higher returns only to *Graduation, M.Phil and Ph.D.* levels of education. This finding is partially consistent with the finding of Psacharopoulos (1994). Psacharopoulos (1994) reported that the private sector has a higher rate of returns than that of the public sector. This study recommends that the *workforce* holding SSC, Intermediate and Masters levels of education are directed to get job at *public sector educational institutions, while* the *workforce holding Graduation, M.Phil and Ph.D.* levels of education are directed to join *private sector educational institutions.*

The returns given in *Table 12* also reveal that the rate of returns to *Master level of education* among all levels of education is found to be the highest for the *teaching workforce* of *public sector educational institutions*, while the rate of returns to *M.Phil level of education* among all levels of education is found to be the highest for the *teaching workforce* of *private sector educational institutions*. The rate of returns to *Ph.D. level of education* among all levels of education is found to be the highest for the *teaching workforce of private sector educational institutions*.

The comparison of rate of PFR to various levels of education for the *workforce of schools, colleges and universities* indicates no clear cut pattern *i.e.,* diminishing or increasing with rising levels of education. These results clearly contradicts with Psacharopoulos (1994) findings that the rate of RTEdu. diminishes as levels of education rises. Comparing the returns to various levels of education for the *teaching and non-teaching workforce of each of the public and private sector educational institutes*, this study finds in *Table 12* that the workforce holding *Intermediate level of education* earns highest returns in *non-teaching profession* in *private sector educational institutions*. The workforce holding *Graduation level of education* earns highest returns in *teaching profession* in *private sector educational institutions*. The workforce holding *Master level of education* earns highest returns in *teaching profession* in *public sector educational institutions*. The workforce holding M.Phil and Ph.D. levels of education earns highest returns in *teaching profession* in *private sector educational institutions*.

The estimated returns given in *Table 13* (derived from the estimated coefficient attached with *various education levels* given in Tables 10) indicate that ***out of public and private sector schools workforce***, the rate of PFR to *Master level of education* among all levels of education, has been found to be the highest for the *teaching workforce of each of public sector schools* (21.7 percent), and *private sector schools* (21.0 percent). The rate of PFR to *M.Phil level of education* among all levels of education has been found to be the highest for the *non-teaching workforce of each of public sector schools* (36.9 percent), and *private sector schools* (49.9 percent).

Table-13. Rate of returns to every additional year of schooling at various levels of education for the workforce of educational institutions by sector (disaggregated) (%)

	Workforce of educational institutions by sector(disaggregated)											
	Public Sector						Private Sector					
	Teaching Workforce			Non-teaching Workforce			Teaching Workforce			Non-teaching Workforce		
	School	College	Uni	School	College	Uni	School	College	Uni	School	College	Uni
Edu (SSC = 1)	------	------	------	15.9	10.5	10.5	------	------	------	12.4	11.3	4.9
Edu (Inter = 1)	3.4	------	------	2.6	10.8	10.0	2.1	------	------	8.8	34.6	17.3
Edu (Grad = 1)	11.5	------	------	10.8	4.6	8.7	17.1	------	------	16.2	-13.4	15.6
Edu (Master = 1)	21.7	------	------	9.0	26.9	11.2	21.0	21.5	------	13.6	31.8	30.8
Edu (M.Phil = 1)	**16.0**	6.6	5.6	**36.9**	------	**31.1**	16.4	14.6	**24.0**	**49.8**	------	------
Edu (Ph.D. = 1)	-4.4	-0.7	**11.2**	------	------	8.9	------	-1.5	**14.2**	------	------	------

The estimated returns given in *Table 13* also indicate that ***out of public and private sector colleges***, the rate of PFR to *M.Phil level of education* among all levels of education has been found to be the highest for the *non-teaching workforce of public sector colleges* (26.9 percent). The rate of PFR to *Intermediate level of education* among all levels of education has been found to be the highest for the *non-teaching workforce of private sector colleges* (34.6 percent).

The estimated returns given in *Table 13* also show that ***out of public and private sector universities workforce***, the rate of PFR to *Ph.D. level of education* among all levels of education, has been found to be the highest for the *teaching workforce of public sector universities* (11.2 percent), while in case of *teaching workforce of private sector universities,* the *M.Phil level of education* among all levels of education has been found to give the highest returns (24.0 percent). The rate of PFR to *M.Phil level of education* among all levels of education has been found the highest for the *non-teaching workforce of public sector universities* (31.1 percent), while in case of *non-teaching workforce of private sector universities, Master level of education* among all levels of education has been found to give the highest returns (30.8 percent). The returns to *M.Phil and Ph.D. levels of education* for the *teaching workforce of private sector universities is found higher than that of the teaching workforce of public sector universities.* This also implies that it would be more beneficial for the workforce holding M.Phil and Ph.D. levels of education to get work at *private sector universities rather than public sector universities*. To retain the workforce holding *M.Phil and Ph.D. levels of education at public sector universities, public sector universities* must initiate some tangible financial and non financial incentives to its teaching workforce.

5. Conclusions and Recommendations

5.1. Conclusion

The present research work has been carried out to identify the major determinants of earnings and to estimate the RTEdu for the workforce working in general education institutions of Lahore District of Punjab Pakistan. This study is based on a sample of 8327 teaching and non-teaching workforce of schools, colleges, and universities. The primary data on the sample of 8327 respondents has been collected by the researcher himself by using the survey method through questionnaire.

The **factors** such as 'years of schooling completed', actual working experience, training acquired, computer use, gender, marital status, sector from where the respondent has completed his/her secondary school certificate (SSC.sector), nature of job, family background, and family status variables contributed positively and significantly to the earnings of ***school workforce***. The **factors** that positively and significantly contributed to the earnings of ***college and university workforce*** are years of schooling completed, actual working experience, training acquired, computer use, marital status, family background, and family status variables. Gender variable contributed negatively and significantly to the earnings of both *college* and university workforce, while SSC.sector and family background variables contributed positively but insignificantly to the university workforce. The **factors** that positively and significantly contributed to the earnings of the *workforce of both* ***entire public sector and entire private sector educational institutions*** are 'years of schooling completed', actual working experience, computer use, marital status, nature of job, family background, and family status variables. The training and SSC.sector variables contributed positively, but insignificantly to the earnings of both *entire public sector and entire private sector educational institutions workforce.*

The marginal rate of RTEdu. by using OLS method for the *workforce of schools, colleges and universities* increases, on the average, by 12.4, 15.8 and 12.5 percent, respectively for every additional year of schooling. The marginal rate of RTEdu. for *the workforce of various categories of private sector educational institutions* has been found to be higher than that of the *workforce of various categories of public sector educational institutions*. The lowest RTEdu. has been found *for non-teaching workforce of public sector educational institutions*.

The comparison of rate of PFR to various levels of education for the *workforce of schools, colleges and universities* indicates no clear cut pattern *i.e.*, diminishing or increasing with rising levels of education. This clearly contradicts with Psacharopoulos (1994) findings that the rate of RTEdu. is diminishing with rising levels of education. The results also show that the workforce holding *Intermediate level of education* earns highest returns in *non-teaching profession in private sector educational institutions*. The workforce having *Graduation level of education* earns highest returns in *teaching profession in private sector educational institutions*. The workforce having *Master level of education* earns highest returns in *teaching profession in public sector* educational

institutions. The workforce having *M.Phil and Ph.D. levels of education* earns highest returns in *teaching profession in private sector educational institutions*.

This study also concludes from the findings that *out of public and private sector schools workforce*, the rate of PFR to *Master level of education* among all levels of education, has been found to be the highest for the *teaching workforce of each of public sector schools*, and *private sector schools*. The rate of PFR to *M.Phil level of education* among all levels of education has been found to be the highest for the *non-teaching workforce of each of public sector schools*, and *private sector schools*. It has been also found that *out of public and private sector colleges*, the rate of PFR to *M.Phil level of education* among all levels of education has been found to be the highest for the non-teaching *workforce of public sector colleges*. The rate of PFR to *Intermediate level of education* among all levels of education has been found to be the highest for the *non-teaching workforce of private sector colleges*. *Out of public and private sector universities workforce*, the rate of PFR to *Ph.D. level of education* among all levels of education, has been found to be the highest for the *teaching workforce of public sector universities*, while in case of *teaching workforce of private sector universities*, the *M.Phill level of education* among all levels of education has been found to yield the highest returns. The rate of PFR to *M.Phil level of education* among all levels of education has been found to be the highest for the *non-teaching workforce of public sector universities*, while in case of *non-teaching workforce of private sector universities;* the Master level of education among all levels of education has been found to give the highest returns. The returns to *M.Phil and Ph.D. levels of education* for the *teaching workforce of private sector universities is found higher than that of the teaching workforce of public sector universities.*

Higher returns coupled with education, actual work experience, training, computer use and publications provide a clear support to *Human Capital Theory* in case of the workforce of educational institutions located in Lahore District of Punjab, Pakistan. The *concavity in experience-earning profile* has been also observed in this study.

5.2. Recommendations

Keeping in view the findings, this study recommends:

a. The major determinants of the earnings found in this study must be considered while formulating any policy that intends to raise the earnings status of the workforce of educational institutions.

b. It would be more beneficial for the workforce holding M.Phil and Ph.D. levels of education to get work at *private sector universities rather than public sector universities as* this study finds higher returns for the workforce holding M.Phil and Ph.D. levels of education in *private sector universities* rather than *public sector universities*. *To get highest returns, this study also direct* the workforce holding *Intermediate level of education* to join *non-teaching profession in private sector educational institutions*. The workforce holding *Graduation level of education* is directed to get job in *teaching profession in private sector educational institutions*. The workforce holding *Master level of education* is directed to join the *teaching profession in public sector educational institutions*, while the workforce holding *M.Phil and Ph.D. level of education* is directed to join the *teaching profession in private sector educational institutions*.

c. To promote education and enhance *teaching workforce* productivity at *private sector educational institutions*, the earnings of *teaching workforce of private sector educational institutions* must be raised at least equals to the earnings level of *teaching workforce of public sector educational institutions*, as it has been noted that the per hour average earnings of the workforce of *public sector schools, colleges and universities* has been found more than that of the workforce of *private sector schools, colleges and universities*. The causes of low earnings for the *teaching workforce of private sector educational institutions* must be explored further by undertaking an independent study. To provide quality education and sound base to the education system of Pakistan, the salary/earnings of *schools workforce* may be enhanced.

d. Financial as well as non financial incentives may further be introduced to keep at power and retain experienced *teaching and non-teaching workforce at public sector colleges and universities* of Pakistan.

e. The high relative occupation earning differentials in favour of teaching workforce for almost *all categories of educational institutions*, especially for the *workforce of* ***public sector*** *educational institutions* needs special attention of the government and other education policy makers in Pakistan as the teaching workforce has been found earning more than their non-teaching counterparts for *all categories of educational institutions except for teaching workforce of public sector colleges*. Some measures like award of special pay scales/grades for *non-teaching workforce*, especially the *non-teaching workforce of public sector educational institutions* and particular to *non-teaching workforce of public sector universities* must be introduced to minimize this mountaineering relative occupation earning differentials in education market of Pakistan.

f. The *schools level workforce* has been found to be the lowest in earnings as well as having car ownership. In order to attract more educated workforce at schools, it is recommended that the government as well as the owners of *private sector schools* should take some solid steps to provide transportation facility or enhance their transportation allowance to schools workforce along with boosting their earnings, so that their productivity could be enhanced and sound base will be provided to the education sector of Pakistan.

g. More resources should be allocated to *college level education* as it yields highest returns. The workforce of colleges must enhance their qualifications.

h. The mean earnings of the workforce working at *public and private sector educational institutions* are found to be highly differential. It is, therefore, recommended that the policy makers must design a uniform salary

structure to minimize the shuffling of the workforce between *private and public sector educational institutions*.

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