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Estimating Returns to Higher Education in Pakistan

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ABSTRACT

The study estimated returns to various levels of education in Pakistan using the 2008 PSLM survey. The study used various specifications of Mincer-type model to estimate returns to higher education. Analysis showed that as compared to primary education, income of household increased by Rs. 540.3 with attaining education of middle, which further increases by Rs. 919.2 with secondary education. Under-graduates have a per month income of Rs. 3,334.5 higher than those having primary education which further increases to Rs. 4,378 for graduates. Hence, household income per month increases with attaining higher education indicating that private returns to higher education (collectively graduate and undergraduate levels) is the highest as compared to other levels of education. Promoting higher education in the country can be a very useful tool to fight the menace of poverty.

Key Words: Higher Education; Education Returns; Mincer-type model;
JEL Classification: H43; I21; I23 and I2

1 INTRODUCTION

Education improves human capital. It leads to economic and social development of a country. Barro & Lee (2000) reported that education provides skills and knowledge which are advantageous in providing new services with enhanced quality. Their study indicates that differences in economic growth of countries can be elucidated by the development indicators for education, especially, investment in long term education programs. Investment in education has both quantifiable and non-quantifiable (or non-market) benefits. The quantifiable benefits include increase in human productivity, and earnings. The non-quantifiable benefits include increase in the knowledge of the people and produce good and law abiding citizens. In this regard private and social returns to different levels of education have been estimated in large number of developed and developing countries. These studies include Colclough, Kingdon & Patrinos (2010).

Private rate of returns are generally higher than social rate of returns of the investment made in education. Social rates of return consider the costs of education in its calculation and hence lower than the private rate of return. Models estimating returns to the investment made in the education assumes that both input and output markets efficiently function and good earnings are reliable measures of productivity at the margin. The estimates of the return to investment made in education also do not account for external benefits of education. These benefits include the benefits of an individual's education for other people. Basic Education enables the students to learn basic soft skills i.e. reading, writing and numeracy. The application of these skills in day to day life proves productive and helpful to families and communities. Similarly, higher education which includes scientific research renders services that it contributes to the collective wellbeing of the society rather than individual benefits. The presence of such spell over is needed to be incorporated while estimating returns to public education. Important attempts have been made by the researchers to quantify their scale and impact Colm, Vincent & Ian (2010).

Determining the returns to the different levels of investment in education have been remained a question of interest for the researchers. Over the last three decades, researchers like Psacharopoulos (1973, 1981, and 1985) have recapitulated studies relating to the rate of return to education in developing countries. Becker (1962) made important contributions to estimation of returns to the investment made in education. Since then hundreds of studies have been published determining the role of estimating the return to education investment. Card (1999), Ashenfelter, Harmon & Oosterbeek (1999) and Colm,Vincent & Ian (2010) present detailed review of these studies. The results of these reviews continue to strongly influence policies and international aid in the education sector in developing countries, particularly in Sub-Saharan Africa. In terms of social returns, these studies collectively put higher education in third place, following primary and secondary education.

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Pakistan has been investing about 2.2 to 2.4 percent of the GDP during 1995 to 2007 as against the UNESCO recommended level of a minimum of 4 percent of GNP for developing countries. However, during 2007-2008, allocation to education investment increased to 2.49 percent of the country's GDP. But, few studies have estimated returns to education in Pakistan. These studies have not estimated and compared these effects across the provinces. Since, higher education is devolved to provinces under the 18th constitutional ammendments, therefore, it is important for the policy makers in the provinces to know the returns to investment made in education for better formulation of educational policies. For example, the Government of Khyber Pakhtunkhwa recently increased its allocation for the budget of higher education from two percent of the provincial gross domestic product to four percent, increasing the budget to Rs. 64 billion for the year 2012-13. It is a substantial increase given that no estimates of the returns to the investment made in higher education in Khyber Pakhtunkhwa is available.

The objective of this study is to estimate returns to higher education in Pakistan. Education can be defined as a continuous variable (years of education). It is included in the earning equation both in linear and quardetic forms. This specification assumes that the return to education is the same for different education levels, a rather restrictive approach since earnings are determined by the educational level. In the alternative specification education level is used as the determinant of earnings. Hence, this specification allows estimation of different effects of education on earnings. This study estimates the returns to different levels of education as observed in Pakistan i.e. primary (up to five years), middle (5-8 years), secondary (9-10 years), higher secondary (11-12 years), under-graduate (13-14 years) and graduate (above 14 years) of education.

2. REVIEW OF LITERATURE

Review of the relevant literature has an important place in a research study. It highlights the background of the problem to be examined. It also provides further orientation about the problem and eliminates the possibility of unnecessary duplication of efforts. This chapter brings conceptual and theoretical threads together from current literature on the problem under investigation. The chapter provides foundations to the development of the conceptual and empirical frameworks used to estimate the returns to higher education in Pakistan.

In labour economics the most discussed issue is that whether the rate of return to education has been remained stable over time. While of interest to educators and potential students, this issue has significant implications in economic theory as well. Labour supply and business deals performed between investors and savers respond positively to economic incentive if the benefits to skilled labour are steady and approximately in accordance with the advantages to other long-term investments in capital. Welch (1970) and Carnoy & Marenbach (1975) proposed that research in measurement of the rate of return over time has attested to its long-run stability. Richard Freeman (1975) suggested, however, that a permanent decline occurred in the rate of return to a college education in the early 1970s. He argues that demand growth gradually decreased, while college supply continued to grow despite the drop in returns. Freeman's study captured the attention of many researchers to acknowledge his empirical results.

Welch (1979) demonstrated that the decline in returns can be explained by a large group of new temporary workers and by the concentration of new entrants in the labour market. It has also been questioned that whether the onslaught of economic recession in early 1970s could also explain a temporary decline. Although much energy is already being invested by economists to determine or acknowledge whether government and individual are investing optimally in education sector. Much of this work came from Becker (1962).

From 1995 to 2002, Chinese Household Income Project (CHIP) data, an estimate of return to schooling can be obtained for each individual through Nonparametric Kernel Method (KMs) Li& Racine (2004).It facilitates to assess the heterogeneity in schooling rates of return between and within gender groups in urban China. Substantial heterogeneity observed in schooling coefficients. It also indicates that as labour market performs more effectively in urban areas, the range of heterogeneity in schooling returns reduces over time for both genders.

Songa, Orazem & Wohlgemuth (2008) study the role of mathematical and verbal skills on the return to graduate and professional education in United State. The students with higher average verbal scores in Graduate record examination (GRE) are more likely to attend graduate school whereas students with higher average score in quantitative skills are less likely to attend graduate schools. This sorting effect means that students whose cognitive skills are associated with lower earnings at bachelors level are the most likely to

attend graduate school. They have estimated a model using the standard log earnings framework presented in equation (1).

$$\ln y_i = S_i\beta_s + X_i\beta_x + \mu_i^M\beta_\mu + (\eta_i\beta_\mu + \mu_i) = S_i\beta_s + X_i\beta_x + \mu_i^M\beta_\mu + \xi_i, \quad (1)$$

where $\ln y_i$ is the observed earnings of the ith individual; S_i is the observed schooling level measured by a vector of dummy variables with the value of one indicating the individuals highest degree earned; u_i is a random error term; and $\beta_s, \beta_\mu and \beta_x$ represent, respectively, the estimated return to schooling level, individual attributes and measured ability of the individuals major. The regression error term is $\xi_i = (\eta_i\beta_\mu + u_i)$.

Songa, Orazem & Wohlgemuth (2008) estimated annualized return to masters or doctoral degree from about 5 percent to 7.3 percent and 12.8 percent respectively. While estimated return to professional degree raises from 13.9 percent to 16.6 percent. So these finding correspond to a large increase in relative earnings received by postgraduate degree holders in the United State over the past 20 years.

Songa, Orazem & Wohlgemuth (2008) their primary data source for the study is the Scientist and Engineer Statistics Data System (SESTAT) collected by the National Science Foundation (NSF) in United State. The 1993 wave of SESTAT also incorporated the 1993 National Survey of college graduates, the full sample includes 133,399 individual who received a bachelor's degree between 1939 to 1992.Their working sample excludes individual who received their bachelors degree before 1963 and after 1986.

Niaz (2009) studies return to Private and Public education in Bangladesh and Pakistan. The main objective of the study is to look at wage differences between Private and Public graduates in Bangladesh and Pakistan within the context of Private and Public schools in South Asia. While evidence in support of wage advantage of private school graduates in Bangladesh is lacking, Pakistani private school graduates are found to earn more than public school graduates. They presented the following model in equation (2)

$$\min_{\beta(\theta)} \left\langle \sum_{i:y_i \geq x_i\beta(\theta)} \theta \left| y_i - x_i\beta(\theta) \right| + \sum_{i:y_i < x_i\beta(\theta)} (1-\theta) \left| y_i - x_i\beta(\theta) \right| \right\rangle \quad (2)$$

Niaz (2009) assumed that Return to education do not vary across levels of education in Pakistan and Bangladesh. In both countries, graduates from Private Schools have more year of schooling. They found that in Bangladesh the earning premium of Private Schools graduates is driven mostly by characteristic endowment of waged workers and the market return to these characteristics is rather negative. In contrast, the data from Pakistan indicates that a substantial proportion of private school premium remain consistent after excluding small differences in attributes of the individuals.. They conclude that Private Schools are more effective than public schools in Pakistan as compared to those in Bangladesh.

Niaz (2009) the source of dat for Bangladesh is the relevant household survey from the Household Income and Expenditure Survey (HIES) conducted in1999 to 2000 by the Bangladesh Bureau of Statistics. For Pakistan they used Pakistan Integrated Household survey (PIHS) conducted in 2000 to 2001.

Niaz (2009) analyz that the annual growth rates in per-capita income average accelerated from about 1.6% per annum in the first half of the 1980s to 3.6% by the latter half of the 1990s, and to 5.0% from the late 1990s to the 2000. In rural Bangladesh poverty is main factor behind the masses failure to invest sufficient money or resources in children's education. The reason for household underinvestment in boys' education in rural Bangladesh is that the rate of return to education may not exceed the returns from alternative investments and the household's own discount rate, especially for the poor. According to Mincerian estimation techniques, the annual rate of return to education for males varies from 9.2% in 1996 (World Bank, 2000) to 6.2% in 2000. The rate of return to education for females is reportedly larger. These rates of return to education suggest that rural Bangladeshi households have had some incentive to invest in their children's education. Estimates of these returns to investment in education differ across regions which include urban and rural, poor and non-poor

Jung & Choi (2009) study that how technological changes influence supplemental educational earnings between Science and Engineering (S&E) Occupation and non-Science and Engineering Occupation. They conclude that Science and Engineering occupation demand specific knowledge and skills and thus their vulnerability to Technological changes varies as compared with other disciplines of education. To test the hypothesis, they used modified Mincerian Earning Equation and built the model presented in equation (3).

$$\ln w_{ij} = \beta_0 + \beta_1 EDU_i + \beta_2 EXP_i + \frac{\beta_3 (EXP_i)^2}{100} + \beta_4 TENURE_i + \frac{\beta_5 (TENURE_i)^2}{100} + \beta_6 AREA + \beta_7 MARRIED + \sum_t \beta_t YEAR_t + \sum_j \beta_j IND_j + \delta S\&E_i + u_{ij} \quad (3)$$

where $w_{ij}$is the hourly earnings of individual j; EDU_i represents the year of schooling of individual i; EXP_i represents the potential labour market experience (= age-year of schooling-6) of individual i; $TENURE_i$, tenure year of individual i; $AREA_i = 1$ if individual i resides in seoul area, otherwise $AREA_i = 0$; $MARRIED_i = 1$, if individual i is married with spouse, otherwi $MARRIED_i = 0$; $YEAR_t$, year dummies, with 1998 as a reference year; IND_j, industry dummies, with manufacturing industry as reference industry; $S\&E_i = 1$ if individual i holds S&E occupation, otherwise $S\&E_i = 0$.

Jung & Choi (2009) found a positive and significant earning effect of Skill-biased Technological Change (SBTC) for male workers not only for those in Science and Engineering occupation but also for those in Non-Science and Engineering occupations. Considering that Science and Technology specific skills are more important for Science and Engineering workers whereas general skills are more critical to non-S&E occupation,

Therefore they suggest that the skill-biased technological changes that occurred in Korea dominate Science and Engineering specific skills as well as general skills occupations . They also found that Quantile regression results suggest that the earning effects of SBTC is more apparent for male S&E workers as compared with Non-Science and Engineering workers.

Jung & Choi (2009) uses the data from the Korean Labour and Income Panel Survey (KLIPS) 1998 to 2005, a survey of the household and individual in Korea. The KLIPS provide information about the socio-economic characteristics of the individuals, such as labour market status, age, year of schooling, region of work place, tenure, as well as monthly wages and working hours for 1998 onwards.

Abdoulaye & Bity (2010) reported that in the past 15 years in Sub-Saharan Africa, there is a substantial expansion in enrolment at all the three levels of learning. Governments have, devoted more resources to higher education under pressure from students, teachers and families, effectively changing the strongly recommended order of priorities given by their international aid agencies. A considerable number of graduates from higher learning swarm into the market due to the rapid growth in education industry. Have these recent developments affected returns to higher education in Sub-Saharan Africa over the last decade? The answer to exactly this type of question should be the basis of the decision to invest more or less in this level of education.

Green & Zhu (2010) study increasing dispersion in the return to graduate education in Britain's and relate this development to rising over qualification. They distinguish between "real" and "formal" over qualification. Real over qualification is associated with job dissatisfaction. While formal over qualification has been increasing over time. Real qualification has been steady or rising only slowly. In line with convention they defined an individual to be overqualified if her or his own qualification (Q) exceed her jobs required qualification (RQ) presented in equation (4).

Over qualification dummy: $Q = 1$ if $RQ_i < Q_i$, $OQ = 0$ if $RQ_i \geq Q_i$ (4)

In line with convention they defined an individual to be overqualified (under qualified) if her own qualification (Q) exceed (are less then) her job's required qualification (RQ).where index i takes on value 0 to 4.From 1992 onward in a 14 years period, the number of overqualified people increased significantly. Furthermore, successive age groups entering employment have been experiencing greater over qualification. Among women graduates over qualification ratio went high from 23 percent to 32 during the period from 2001vto 2006. Therefore the standard implication drawn is that the state should provide regular information on the distribution of the return to graduate education.

Green & Zhu (2010) uses the data from the 2006 UK Skills Survey, along with the three earlier surveys: employment in Britain in 1992, The 1997 Skill survey and the 2001 Skills survey. The 2006 Skill survey was designed to be comparable with the earlier survey. The 2006 survey covered employed people aged 20 to 65 across the UK with an achieved sample of 7,787 individual.

Warunsiri & Mcnown (2010) study the rate of return to education in Thailand for workers born during 1946 to 1947 through Pseudo-panel approach. This approach takes into account the unobservable individual characteristics such as ability or motivation that may influence the estimated rate of return to education. One strong result that there is a downward bias in estimates of the rate of return to education is based on individual data. They developed a model expressed in equation (5)

$$\overline{E_{ct}} = \beta_0 \overline{\delta_{ct}} + \beta_1 \overline{X_{ct}} + \beta_2 \overline{X_{ct}^2} + \overline{\mu_{ct}} . \quad (5)$$

Where $\overline{E}_{ct}$ and $\overline{x}_{ct}$ can be represented as year of education and year of experience (or age). C (C= 1, C) is defined as cohorts, based on year of birth by tracking birth year cohort. The term $\overline{u}_{ct}$ is heteroskedastic, leading to biased standard error and $\overline{\delta}_{ct}$ is the cohort mean of δ_{it}.

3. METHODOLOGY

3.1 Data: Data use in this paper is taken from Pakistan Social and Living Standard Measurement (PSLM) 2008. PSLM data on Education is a good source to observe the progress in education Sector. Besides other socio-economic and demographic information, PSLM survey provides data on education level and income of the household head and is suitable for estimation of the Mincer kind of models. The sample size of PSLM for the year 2008 was 15,512 households, including 6,388 households from Punjab, 3,734 household from Sindh, 2,794 households from Khyber Pakhtunkhwa and 2,170 households from Baluchistan.

The universe of this survey consists of all urban and rural areas of the four provinces and Islamabad excluding military restricted areas. In 2008, PSLM comprised of 1113 enumeration blocks. Each city/town has been divided into enumeration blocks consisting of 200-250 households identifiable through sketch map. Each enumeration block has been classified into three categories of income groups i.e. low, middle and high, keeping in view the living standard of the majority of the people. List of villages available by Population Census Organization obtained as a result of Population Census 1998 has been taken as rural frame. For urban area Islamabad, Lahore, Gujranwala, Faisalabad, Rawalpindi, Multan, Bahawalpur, Sargodha, Sialkot, Karachi, Hyderabad, Sukkur, Peshawar and Quetta have been selected as large sized cities each of these cities constitute aseparate section and has further sub divided according to low, middle and high income groups. After excluding population of large sized cities the remaining urban population in each defunct division in all provinces has been grouped together to form a layer. For rural areas each district from Punjab, Sindh and KPK provinces has been grouped together to constitute a layer .Whereas non-operational administrative division has been treated as section of Baluchistan province.

3.2 Econometric Analysis: The study estimates the monetary private returns to education of a risk neutral individual. If non-monetary returns to education exist, then the model used in this study underestimate the returns from education. Private non-monetary returns include own health, spouse and family health, fertility, higher saving rates, improved family life (Haveman and Wolfe, 1984) and own's wealth (Oreopoulos, 2007). Public non-monetary benefits of higher education include crime reduction, social cohesion, technological change and charitable giving (Haveman and Wolfe, 1984). Another benefit of higher education is increased turnover in elections (Milligan, Moretti, and Oreopoulos, 2004; Dee, 2004).

This study proposes a Mincer type model to estimate return to higher education. The proposed model is given as under.

$$\ln(y_i) = \alpha_0 + \beta_i H_i + \gamma \mathbf{X} + v_i \quad (1)$$

where y_i is the logarithm of monthly income (or wage) of household i, H_i is the years of higher education, $\mathbf{X}$ is a matrix of explanatory variables including socio-economic and demographic variables, α, β and γ are the parameters to be estimated and v_i represents the random error term. Parameter β is the focus of this study which shows the effect of higher education on monthly income (or wage). The model is also estimated using linear specification.

4. RESULTS AND DISCUSSION

4.1 Educational Profile of the Country: It is acknowledged that education is the one of the most important factor contributing to poverty reduction. Education plays an overarching role and has a harsh impact on all aspects of human life. It is a central investment for human and economic development. One of the main objectives of MDGs is to improve the percentage of literate Population. As compared to other SAARC countries Pakistan literacy rates are Very low. From the last few years the primary objective of the government is to improve the level and quality of education. Great importance is given to the primary level education because it built the core of the literate population. Literacy and primary level education enrolment rates in Pakistan have shown progress during last five years but are still low compared with the countries of the region. This problem arises because of the basic communication and continuously multiple system of education that uncertainly blocks quality of education.

According to the PSLM survey 2008, out of the total uneducated (i.e. those who have never attended a school) in the country, 40.7 percent belong to Punjab, 20.5 percent to Sind, 22.5 to Khyber Pakhtunkhwa and 16.3 to Baluchistan. About 42.6 percent of Punjab's population have no formal education. The same in Sind, Khyber Pakhtunkhwa and Baluchistan are 37.6, 52.9 and 54.7 percent, respectively.

Similarly the proportion out of total Primary educated in the country, 43.7 percent belong to Punjab, 33.2 percent belong to Sind, 12.4 percent to Khyber Pakhtunkhwa and 10.6 percent to Baluchistan. About 15.6 percent of Punjab population have primary education. The same in Sind, Khyber Pakhtunkhwa and Baluchistan are 20.8, 9.9 and 12.1 percent, respectively shown in table 4.1.

Table 4.1 reported that out of total middle education level in the country, 52.3 percent belong to Punjab, 19.0 percent belong to Sind, 18.3 percent belong to Khyber Pakhtunkhwa and 10.4 percent belong to Baluchistan. About 12.5 percent of Punjab population have middle level education. The same in Sind, Khyber Pakhtunkhwa and Baluchistan are 7.9, 9.8 and 7.9 percent, respectively.

Out of the total SSC education (i.e. those who have attended SSC level) in the country, 50 percent belong to Punjab, 21 percent belong to Sind, 18.5 percent belong to Khyber Pakhtunkhwa and 10.4 percent belong to Baluchistan. Above 17.2 percent of Punjab population have SSC level education. The same in Sind, Khyber Pakhtunkhwa and Baluchistan are 12.7, 14.3 and 11.5 percent respectively.

Total HSSC with in education level in the country, 40.4 percent belong to Punjab, 32.7 percent belong to Sind, 15.8 percent belong to Khyber Pakhtunkhwa and 11.1 percent belong to Baluchistan. In Punjab about 5.5 percent population have HSSC formal education. The same in Sind, Khyber Pakhtunkhwa and Baluchistan are 7.8, 4.8 and 4.8 percent, respectively shown in table 4.1.

Total Graduate with in education level in the country, 33.1 percent belong to Punjab, 40.1 percent belong to Sind, 15.5 percent belong to Khyber Pakhtunkhwa and 11.3 percent belong to Baluchistan. In Punjab 3.6 percent population have Graduate formal education. The same in Sind, Khyber Pakhtunkhwa and Baluchistan are 7.6, 3.8 and 3.9 percent respectively shown in table 4.1

Total Post-graduate with in education level in the country, 31 percent belong to Punjab, 32.5 percent belong to Sind, 20.3 percent belong to Khyber Pakhtunkhwa and 16.2 percent belong to Baluchistan. About 3percent of the Punjab population have Post-graduate education. The same in Sind, Khyber Pakhtunkhwa and Baluchistan are 5.5, 4.4 and 5 percent, respectively provided in table 1.

Table 4.2 shows the categories of education level in rural and urban areas. Where the proportion of un-educated is 73 percent in rural area and 27 percent in urban area, which is a huge gape similarly on the other side if we look for the proportion of post graduate in rural area its just 24.4 percent and in urban area its 75.6 percent which is completely opposite to the percentage of the uneducated. So the gape shows that rural areas still need development so that the illiteracy rate could be decreased.

Table 4.3 shows the monthly income of uneducated and educated by educational level across the four provinces. Monthly income for uneducated in Khyber Pakhtunkhwa is 5,567 Rs/month which is maximum as compared to other three provinces, for primary level the maximum monthly income is in Baluchistan 6,677 Rs/month, for middle level the maximum monthly income is in Punjab 7,854 Rs/month, for SSC level the maximum monthly income is in Punjab 10,521 Rs/month, maximum monthly income for HSSC level is also in Punjab 17,313 Rs/month, maximum monthly income for graduate level is in Punjab is 18,097 Rs/month and maximum monthly income for post graduate lies in Punjab is 24,767 Rs/month respectively. Overall results shows that in Pakistan average monthly income is 8518 Rs/month for 9163 cases.

4.2 Returns to Higher Education: Three specifications are used to estimate returns to various levels of education. The first specification (Table 4.4) estimates returns to various levels of education (i.e. primary, middle, secondary, higher secondary, undergraduate and post graduate) to estimate their returns. Table 4.5 shows returns to higher education (i.e. collectively graduates and undergraduates) as compared to other levels of education while table 4.6 presents disaggregated returns of education by splitting other levels of education into primary, middle and secondary levels.

The models fitted that data very well as 31 to 45 percent of the variation in the dependent variable is explained by the independent variables. F-statistics for all the estimated models is statistically significant indicating that all the independent variables collectively statistically significantly determine the dependent variable. Table 4.4 shows that all the variables, with the exception of dummies representing Punjab and poverty, are statistically significant. Urban population earn Rs. 1107.4 per month per household higher than those living in rural areas. Similarly, employed and self-employed earned Rs. 4970.5 and Rs. 2,135.5 per month higher as compared to the base category of other employment.

The model shows that household's income per month increases as education level increases. As compared to the base category of primary education, income of household increases by Rs. 540.3 with attaining education of middle, this further increases by Rs. 919.2 with secondary education. Under-graduates have a per month income of Rs. 3,334.5 higher than the base category of primary education which further increases to Rs. 4,378 for those having graduate education. Hence, household income per month increases with attaining higher education indicating that private returns to higher education (collectively graduate and undergraduate levels) is the highest as compared to other levels of education.

In the next specification (Table 4.5), graduate and undergraduate categories are lumped as one and rest of the education levels are grouped as another category. The model shows that as compared to all other levels of education, households having higher education earn Rs. 3,389.9 per month higher. Hence, on average private returns to higher education is about Rs. 3,389.9 per month. In table 4.8, three broad categories of education i.e. middle, secondary and higher education are included in the model. Results of this specification show that households having a graduate or post-graduate household head earned Rs. 3,677.9 more than those having primary education. All these results, re-enforces the fact higher education has the highest returns as compared to any other level of education.

Conclusions and Recommendations: This study estimates returns to various levels of education using the 2008 PSLM survey. The survey shows that formal literacy rate is highest in Punjab (44.8 percent), followed by Sind (27.8 percent), Khyber Pakhtunkhwa (16.4 percent) and Baluchistan (11.1 percent). There is a huge gap between the formal literacy of rural and urban areas. The proportion of un-educated is 73 percent in rural area as compared to 27 percent in urban area.

The survey shows that 40.7 percent of uneducated belong to Punjab, 20.5 percent to Sind, 22.5 to Khyber Pakhtunkhwa and 16.3 to Baluchistan. Similarly 43.7 percent of the primary educated population belong to Punjab, 33.2 percent belong to Sind, 12.4 percent to Khyber Pakhtunkhwa and 10.6 percent to Baluchistan. In case of middle education, 52.3 percent of them belong to Punjab, 19.0 percent belong to Sind, 18.3 percent belong to Khyber Pakhtunkhwa and 10.4 percent belong to Baluchistan. Half of the population having secondary level of education belong to Punjab, 21 percent belong to Sind, 18.5 percent belong to Khyber Pakhtunkhwa and 10.4 percent belong to Baluchistan. About 40.4 percent of population having HSSC belong to Punjab, 32.7 percent belong to Sind, 15.8 percent belong to Khyber Pakhtunkhwa and 11.1 percent belong toBaluchistan. Punjab hosts 33.1 percent of the graduates, Sind 40.1 percent, Khyber Pakhtunkhwa 15.5 percent and Baluchistan 11.3 percent.

The study used various specifications to estimate returns to higher education. Results show that as compared to the base category of primary education, income of household increases by Rs. 540.3 with attaining education of middle, which further increases by Rs. 919.2 with secondary education. Under-graduates have a per month income of Rs. 3,334.5 higher than the base category of primary education which further increases to Rs. 4,378 for those having graduate education. Hence, household income per month increases with attaining higher education indicating that private returns to higher education (collectively graduate and undergraduate levels) is the highest as compared to other levels of education. However, on average, households having higher education, earn Rs. 3,389.9 per month higher as compared to all other levels of education.

The study showed that higher education has very high returns and hence it should be promoted throughout the country. Promoting higher education can be a very useful tool to fight the menace of poverty in the country.

Table 4.1: Formal educational levels across the provinces

Category	Punjab	Sind	KP	Baluchistan	All
Un-educated	2,782 (18.3)	1402 (9.2)	1536 (10.1)	1118 (7.4)	6838 (45.0)
Primary (Up to 5 years)	1,020(6.7)	775(5.1)	289(1.9)	248(1.6)	2332(15.3)
Middle (6-8 years)	816(5.4)	296(1.9)	286(1.9)	162(1.1)	1560(10.3)
SSC (9-10 years)	1,126(7.4)	473(3.1)	416(2.7)	235(1.5)	2250(14.8)
HSSC (11-12 years)	357(2.3)	289(1.9)	140(0.9)	98(0.6)	884(5.8)
Graduates (13-14 years)	234(1.5)	284(1.9)	110(0.7)	80(0.5)	708(4.7)
Post-graduates (Above 14 years)	195(1.3)	205(1.3)	128(0.8)	102(0.7)	630(4.1)
All	6,530(43)	3724(24.5)	2905(19.1)	2043(13.4)	15202(100)

Table 4.2: Categories of educational level in Rural and Urban areas.

Categories	Rural	Urban
Un-educated	5105(33.2)	1891(12.3)
Primary (Up to 5 years)	1502(9.8)	830(5.4)
Middle (6-8 years)	861(5.6)	699(4.6)
SSC (9-10 years)	1109(7.2)	1141(7.4)
HSSC (11-12 years)	326(2.1)	558(3.6)
Graduate (13-14 years)	209(1.4)	499(3.2)
Post-graduate (Above 14 years)	154(1)	476(3.1)
All	9266(60.3)	6094(39.7)

Table 4.3: Monthly income of educated and non-educated by educational level across the province of Pakistan (Rs/Month)

Category	Punjab		Sind		KP		Baluchistan		Total	
	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N
Un-educated	5,438.2	1261	4799.1	806	5567.6	566	5558.2	605	5324.1	3238
Primary (Up to 5 years)	6,525.1	657	6089.5	501	6667.4	163	6677.9	194	6415.9	1515
Middle (6-8 years)	7,854.5	504	7141.8	233	6375.7	170	7217.4	138	7370.9	1045
SSC (9-10 years)	10,521.7	768	7985.1	383	7577.2	239	8202.4	187	9184.4	1577
HSSC (11-12 years)	17,313.2	253	9547.8	252	10427.8	91	9467.5	83	12549.3	679
Graduate (13-14 years)	18,097.9	188	15735.3	246	12449.0	74	11488.9	72	15554.7	580
Post-graduate (Above 14 years)	24,767.2	172	21176.4	182	20147.9	95	16771.3	80	21493.0	529
Pakistan	9262.8	3803	8364.3	2603	7809.1	1398	7463.4	1359	8518.9	9163

Source: Authors calculations using PSLM data (2008)
F-statistics 285.893 (0.000) shows that significant differences exists in the means of income.

Table 4.4: Regression estimates of the returns to various levels of education in Pakistan (Liner Model)

Variable	Parameter	Standard error	t-Ratio	P>t
Punjab	-135.6	84.134	-1.61	0.107
Sind	-675.8	89.660	-7.54	0.000
KP	-809.1	95.951	-8.43	0.000
Urban	1,107.4	66.462	16.66	0.000
Self-Employed	2,135.5	85.228	25.06	0.000
Employed	4,970.5	84.480	58.84	0.000
Poor	-49.5	103.089	-0.48	0.631
Middle	540.3	94.909	5.69	0.000
Secondary	919.2	93.420	9.84	0.000
Higher Secondary	1,808.8	167.384	10.81	0.000
Graduate	3,334.5	224.010	14.89	0.000
Post Graduate	4,378.2	309.137	14.16	0.000
Family Size	146.4	8.644	16.93	0.000
Per Capita Expenditure	2.8	0.197	14.40	0.000
Constant	-4,003.8	195.782	-20.45	0.000
F-Statistics	542.18 (0.000)	Adjusted R-squared	0.453	

Table 4.5: Regression estimates of the returns to higher education in Pakistan (Liner Model)

Variable	Parameter	standard error	t-Ratio	P>t
Punjab	-110.9	84.884	-1.31	0.191
Sind	-673.5	90.679	-7.43	0.000
KP	-802.1	97.031	-8.27	0.000
Urban	1,164.1	67.079	17.35	0.000
Self-Employed	2,226.5	85.913	25.92	0.000
Employed	5,115.6	84.784	60.34	0.000
Poor	-10.6	104.238	-0.10	0.919
Higher Education	3,388.9	184.862	18.33	0.000
Family Size	157.5	8.707	18.08	0.000
Per Capita Expenditure	3.1	0.199	15.46	0.000
Constant	-4,244.9	197.273	-21.52	0.000
F-Statistic	720.8(0.000)	Adjusted R-squared	0.440	

Table 4.6: Regression estimates of the returns to middle, secondary and higher education in Pakistan (Liner Model)

Variable	Parameter	standard error	t-Ratio	P>t
Punjab	-151.4*	84.199	-1.80	0.072
Sind	-676.8	89.795	-7.54	0.000
KP	-812.5	96.092	-8.46	0.000
Urban	1,110.4	66.566	16.68	0.000
Self-Employed	2,138.6	85.362	25.05	0.000
Employed	4,981.5	84.584	58.89	0.000
Poor	-45.6	103.251	-0.44	0.659
Middle	539.1	95.060	5.67	0.000
Secondary	1,110.1	84.814	13.09	0.000
Higher Education	3,677.9	184.385	19.95	0.000
Family Size	147.0	8.657	16.98	0.000
Per Capita Expenditure	2.8	0.198	14.42	0.000
Constant	-4,016.8	196.077	-20.49	0.000
F-Statistics	627.94(0.000)	Adjusted R-squared	0.4514	

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