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# THE ECONOMIC IMPACT ANALYSIS OF EARNINGS IN LAHORE, PAKISTAN

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## *ABSTRACT*

The rationale of this paper is to investigate the economic impact of gender differential and education on earnings in the city of Lahore, Punjab. It employs Ordinary Least Square (OLS) methodology by using "Pakistan Social and Living Standards Measurement" (PSLM) data of 2010-11. Different levels of education are positively linked with returns to education and experience. Educational returns are the highest at higher education level. Estimations also disclose gender differential in earnings because returns to education for women are lower than men in Lahore. Moreover, when the experience increases the educational returns also increase.

**Contribution/ Originality:** This study documents economic impact of earnings in Lahore, Pakistan. This is one of the very few studies which explore gender disparity in earnings and economic impact on earnings in Lahore. The calculations will help decision makers to deal with a range of earning differentials within city and country on the outline.

## 1. INTRODUCTION

Education is fundamental for development of human capital. Stable and rapid development is not possible for the economy without developed human capital. Any economy can enhance physical capital with the help of developments in its human capital. It is only dependable to utilize all the available resources (natural, manmade) in the most excellent way for the sake of development. Many growth theories consider one dominant factor for economic growth that is education only.

Even if, it is the basic factor to cast a quality impact on earnings, there are various other factors like age, gender, experience and occupation. Normally, earning increases with increase in age. In Pakistan, women get less skilled and professional education compared to men. Women do not take part as full time workers due to household tasks and responsibilities. There are many other social and cultural factors creating masculinity gap in earned income. Resembling with other developed economies, it is obligatory for Pakistan to enhance educational quality and endorse its facilities from corner to corner in the country. In this way, Pakistan can follow the path of progress

like Asian Tigers; Singapore, Hong Kong, Taiwan and South Korea. These nations primarily paid attention to the development of human capital and education played the most distinguish role in their growth process.

For last two decades, Pakistani Governments has taken steps to establish educational institutes and universities. In this regard, almost in all main cities of Pakistan countless universities; public and private were established. It is not only enhancing literacy rate but income in labor market is also positively influenced. Payments in the labor market are becoming free from gender differential because educational prospects for women are quite better now.

After 1947, the capital city of the Punjab Province is Lahore and the second most densely inhabited city in Pakistan. It is renowned by its cultural, historical, traditional, educational, and economic activities. It is also known as "the home of education" because of abundantly sound educational institutions like Government College University, University of the Punjab, King Edward Medical University and many more. All these are well acknowledged by their proficiency in the relevant fields. It would be meaningful to realize the impact of education on returns to education for this significant city. It would be the core of consideration for the policy makers of Punjab and the federal government. The aim of present paper is to investigate the factors affecting returns to education in Lahore by. To facilitate further policy making, its precise objectives are to explore the impact of gender and different level of education on returns to education.

The paper explores and investigates major determinants of personal earnings for Lahore, Punjab, Pakistan. The paper undertakes investigation for the economic impact of education, gender, employment level, age, and experience on returns and computes gender disparity in earnings. The study is quite practical in policy making for the residents of the said city.

## 2. REVIEW OF LITERATURE

Education plays a basic role in any economy. There is an intensive literature about returns to education. Studies have exposed that individuals with higher education earn more than less educated in the labor market. But wage differences between men and women workers exist around the globe. Schultz (1961) evaluates that earnings and schooling have positive and direct association. Speculation in human capital increases employment yields and quite helpful in efficient use of resources. The human capital is a blend of proficiencies like health, training of a person and education. Linkage between education and earnings has always been vigorous and central for research (Becker, 1962).

Mincer (1974) employed his earning function to find that educational stage accomplished by a person has a blow on earnings. Later on Mincerian Earning Function is widely used in studies. Estimation of the earning function by using dummy variables reveals negative association between earning and educational achievements. At different levels of education rate of return is lesser in Pakistan than other developing states (Hamdani, 1977; Haque, 1977). Krueger and Summers (1988) discovered that momentous difference in earnings exists in industries and other sectors. Returns to education are noticeably dissimilar at different stages of education (Khandker, 1990; Ahmad *et al.*, 1991; Schultz, 1993). According to Nonneman and Cortens (1997) social and personal returns to education at secondary level are low but these returns are relatively higher. Social returns to education are drastically greater than private. For tertiary education monetary returns are higher. In Pakistan, Siddiqui *et al.* (1998) and Dollar and Gatti (1999) and Chaudhry (2007) and Awan *et al.* (2009) clarify the implication of women role in the progress of economy. Without upgrading of social and economic status of women, the society cannot obtain the overall wellbeing.

Whereas researchers, Nasir (1999) and Khan and Toor (2003) exposed the fact that there is a wide gap of earnings between private and public school graduates in Pakistan. Private sector gives more benefits towards income. Literacy rate, school quality, skills and technical training are employed on the earning prospective of paid persons in Pakistan. Positive relationship is found between level of education and income (Nasir and Nazli, 2000;

Kingdon and Unni, 2001; Kirby and Riley, 2004). The returns to education mostly have positive linkage with levels of education considerably and there is gender differential in earnings (Trostel *et al.*, 2002; Khan and Toor, 2003; Naderi and Mace, 2003; Kurosaki and Khan, 2006). For Bangladesh, Asadullah (2006) observed that returns to education, as compared to rural labor force are higher for urban labor force.

While for USA, Heckman *et al.* (2008) anticipates the rate of return by taking up income taxes, nonlinearities and tuition expenditures in the relationship of wages and school practice. The outcome shows that earnings augment in both the cases but higher school education return rates are much higher than the lower levels. In education, Chaudhry and Rahman (2009) find a pessimistic affect of gender disparity on rural poverty for Pakistan. It is exposed that education diminishes poverty in less developed countries. Chaudhry *et al.* (2010) observe a momentous affect of education and health on female earnings in Pakistan.

According to Farooq (2011) male workers earn extra amount than women workers. It is analyzed that returns to higher education are larger than the primary and middle education. Afzal (2011) find out the main determinants affecting an individual's earning and private school education gives greater rewards than public school education. Haq *et al.* (2012) scrutinizes that there is gender differential in earnings to advanced level of education in Bahawalpur Division. Male earnings are more than women's at higher education level in Pakistan. At bachelor level, women income exceeds male earnings. In Pakistan, Awan *et al.* (2013) investigate the linkage between socio-economic factors and human capital. The results show that workers with higher levels of education earn more potentially than with lesser education.

There are mixed results from the review of literature based on social, economic, and cultural aspects of different countries. It is concluded that higher education levels rapidity increase wages, and play a fundamental responsibility in dropping gender gap in earnings.

## 3. METHODOLOGY

The paper employs Pakistan Social and Living Standards Measurement (PSLM) of 2010-11. Mincerian approach (Mincer, 1974) is widely used for finding the earning function. Using the Mincerian earning function the study explores the relationship between education and gender differential on earnings as well as some other important factors of earnings. Multiple regression models are used for finding the factors of personal earnings in Lahore, Pakistan. In this paper education is taken as a direct variable of human capital whereas experience is considered as a proxy of human capital which was:

Experience = age–school starting age – education

Due to non availability of reliable data in Pakistan the school starting age is taken as 5 years

The detail of the regression model is:

$$\ln y = \alpha_0 + \sum_{i=1}^{n} \alpha i Xi + ui$$

Where

In = natural Logarithm

y = Salary (rupees) of individual \ month

Xi = this includes X1i……Xni factors of monthly salary. These factors are education, gender, employment level, age, experience etc.

ui = Error term.

By applying ordinary least squares technique, the study estimates following the models.

$\ln y = \alpha_0 + \alpha_1$ Ed 1+ $\alpha_2$ Ed 2 + $\alpha_3$ Ed 3+ $\alpha_4$ Ed 4 + $\alpha_5$ Ed 5+ $\alpha_6$ Ed 6+ $\alpha_7$ Emp1+ $\alpha_8$ Emp 2 + $\alpha_9$ Emp 3+ $\alpha_{10}$ Emp 4+ $\alpha_{11}$ Gen + $\alpha_{12}$ Ex + $\alpha_{13}$ Ex square + $u_1$ (1)

$$\ln y = \alpha_0 + \alpha_1 Ed\ 1 + \alpha_2 Ed\ 2 + \alpha_3 Ed\ 3 + \alpha_4 Ed\ 4 + \alpha_5 Ed\ 5 + \alpha_6 Ed\ 6 + \alpha 7\ Ag1 + \alpha_8 Ag\ 2 + \alpha_9 Ag\ 3 + \alpha_{10} Ag4 + \alpha_{11} Ag5 + \alpha_{12} Ag6 + \alpha_{13} Ag7 + \alpha_{14} Ag8 + \alpha_{15} Ag9 + \alpha_{16} Gen + u_2 \quad (2)$$

$$\ln y = \alpha_0 + \alpha_1 Ed\ 1 + \alpha_2 Ed\ 2 + \alpha_3 Ed\ 3 + \alpha_4 Ed\ 4 + \alpha_5 Ed\ 5 + \alpha_6 Ed\ 6 + \alpha_7 Ag1 + \alpha_8 Ag\ 2 + \alpha 9\ Ag\ 3 + \alpha_{10} Ag\ 4 + \alpha_{11} Ag\ 5 + \alpha_{12} Ag\ 6 + \alpha_{13} Ag\ 7 + \alpha_{14} Ag\ 8 + \alpha_{15} A\ 9 + \alpha_{16} Emp1 + \alpha_{18} Emp\ 2 + \alpha_{19} Emp3 + \alpha_{20} Emp\ 4 + u_3 \quad (3)$$

The paper uses different levels of education, different levels of employment, gender, experience, experience square, age and different groups of age.

The details of the variables are:

Ed 1 = Binary variable is 1 when individual is having primary education level and 0 if not

Ed 2 = Binary variable is 1 when individual is having middle education level and 0 if not

Ed 3 = Binary variable is 1 when individual is having metric education level and 0 if not.

Ed 4 = Binary variable is 1 when individual is having intermediate education level and 0 if not.

Ed 5 = Binary variable is 1when individual is having higher education degree and 0 if not.

Ed 6 = Binary variable is 1 when individual is having other qualification level and 0 if not.

Ed 7 = Binary variable is 1 when individual is illiterate and 0 if not

Emp 1= Binary variable is 1 when individual is employee and 0 if not.

Emp 2= Binary variable is 1 when individual is employer and 0 if not.

Emp 3= Binary variable is 1when individual is self employed and 0 if not

Emp 4= Binary variable is 1 when individual is from Agriculture sector and 0 if not.

Gen = Binary variable is 1 when individual is male and 0 if not.

Ex = age – 5 –education

Ex Square =Square of experience

Ag 1 = Binary variable, which is 1 if age lies in the range of 15-19 years and 0 if not.

Ag 2 = Binary variable, which is equal to 1 if age lies in the range of 20-24 years and 0 if not.

Ag 3 = Binary variable, which is equal to 1 if age lies in the range of 25-29 years and 0 if not.

Ag 4 = Binary variable, which is equal to 1 if age lies in the range of 30-34 years and 0 if not.

Ag 5 = Binary variable, which is equal to 1 if age lies in the range of 35-39 years and 0 if not.

Ag 6 = Binary variable, which is equal to 1 if age lies in the range of 40-44 years and 0 if not.

Ag 7 = Binary variable, which is equal to 1 if age lies in the range of 45-49 years and 0 if not.

Ag 8 = Binary variable, which is equal to 1 if age lies in the range of 50-54 years and 0 if not.

Ag 9 = Binary variable, which is equal to 1 if age is between 55-59 years and 0 if not.

Ag 10 = Binary variable, which is equal to 1 if age lies in the range of 60 and over years and 0 if not.

## 4. EMPIRICAL ANALYSIS

Various level of education, level of employments, gender ,experience and square of experience are considered as independent variable where as log of monthly earnings is considered as a dependent variable. Using Ordinary least squares technique, it is investigated that all the variables are significant while Ed 1, Ed 2 and Ed 3 are insignificant. Another important finding is that differential in earnings are existed between male workers and female workers in Lahore. Nunez and Livanos (2010) also explored the similar result in wages for Greece and United Kingdom.

There is a direct association between earnings and experience. As the experience of worker increases, the earnings of the particular worker also increase. These results show the positive correlation between the education level and earnings. It means that earnings of an individual could be increased after each additional year of education, so the result just follows the human capital theory.

The paper also explores that all the levels of employment are significant and the self employed earn the highest of all the employment levels

**Table-1.** Education gains against various education and employment levels

| | Coefficient | Std. Error | T-statistics | Sig. |
|---|---|---|---|---|
| (Constant) | 7.122 | .315 | 22.643 | .000 |
| Gen | .683 | .121 | 5.664 | .000 |
| Ex | .035 | .008 | 4.338 | .000 |
| Ex Square | -0.003 | .001 | -2.997 | .003 |
| Ed1 | .250 | .241 | 1.037 | .300 |
| Ed 2 | .336 | .241 | 1.395 | .163 |
| Ed 3 | .533 | .240 | 2.221 | .026 |
| Ed 4 | .852 | .243 | 3.508 | .000 |
| Ed 5 | 1.457 | .241 | 6.039 | .000 |
| Ed 6 | 1.154 | .297 | 3.885 | .000 |
| Emp 1 | .662 | .136 | 4.869 | .000 |
| Emp 2 | 1.517 | .157 | 9.666 | .000 |
| Emp 3 | .943 | .137 | 6.877 | .000 |
| Emp 4 | .707 | .167 | 4.237 | .000 |
| R Square | 0.415 | Std. Error of the Estimate | | 0.62757 |
| Adjusted R Square | 0.409 | F-Statistics | | 74.248 |

**Note:** Illiterate is the reference category in educational dummies; in employment categories, other sector is the reference category

Model 2 displays different age groups to explore the productive age. The highest productive age group is 35-39 years. This model also shows the direct correlation between education and educational gains. Highly educated persons earn more than the less educated persons like in model 1. The coefficient of gender is also positive like in model 1which shows that earnings of male workers are higher than female workers.

**Table-2.** Education gains at various levels and age groups.

| | Coefficients | Std. Error | T-statistics | Sig. |
|---|---|---|---|---|
| (Constant) | 8.673 | .294 | 29.543 | .000 |
| Gen | .741 | .128 | 5.787 | .000 |
| Ag 1 | -.860 | .478 | -1.801 | .072 |
| Ag 2 | -.444 | .167 | -2.662 | .008 |
| Ag 3 | -.342 | .099 | -3.437 | .001 |
| Ag 4 | -.251 | .088 | -2.859 | .004 |
| Ag 5 | .257 | .085 | -3.035 | .000 |
| Ag 6 | -.106 | .084 | -1.260 | .208 |
| Ag 7 | -.060 | .086 | -.692 | .489 |
| Ag 8 | .055 | .086 | .639 | .523 |
| Ag 9 | .092 | .095 | .970 | .332 |
| Ed 1 | .179 | .256 | .697 | .486 |
| Ed 2 | .223 | .255 | .874 | .382 |
| Ed 3 | .441 | .254 | 1.732 | .083 |
| Ed 4 | .720 | .257 | 2.802 | .005 |
| Ed 5 | 1.296 | .255 | 5.082 | .000 |
| Ed 6 | .834 | .314 | 2.659 | .008 |
| R Square | .341 | Std. Error of the Estimate | | .66642 |
| Adjusted R Square | .334 | F-Statistics | | 44.635 |

In model 3 intermediate, higher and others education levels are significant while primary, middle and metric levels are not significant. The results are similar with the results of model 1 and 2, so higher economic gains are related with the higher level of education.

**Table-3.** Education gains against various age and employment groups.

| | Coefficients | Std. Error | T-statistics | Sig. |
|---|---|---|---|---|
| (Constant) | 7.887 | .306 | 25.745 | .000 |
| Gen | .680 | .121 | 5.613 | .000 |
| Ag 1 | -.863 | .451 | -1.913 | .056 |
| Ag 2 | -.377 | .158 | -2.388 | .017 |
| Ag 3 | -.250 | .095 | -2.638 | .008 |
| Ag 4 | -.224 | .083 | -2.690 | .007 |
| Ag 5 | .207 | .080 | -2.583 | .000 |
| Ag 6 | -.101 | .080 | -1.274 | .203 |
| Ag 7 | -.024 | .082 | -.297 | .767 |
| Ag 8 | .042 | .082 | .519 | .604 |
| Ag 9 | .075 | .090 | .835 | .404 |
| Ed 1 | .225 | .242 | .929 | .353 |
| Ed 2 | .280 | .241 | 1.162 | .245 |
| Ed 3 | .462 | .240 | 1.920 | .055 |
| Ed 4 | .753 | .243 | 3.100 | .002 |
| Ed 5 | 1.333 | .241 | 5.527 | .000 |
| Ed 6 | .919 | .296 | 3.102 | .002 |
| Emp 1 | .658 | .137 | 4.807 | .000 |
| Emp 2 | 1.527 | .158 | 9.681 | .000 |
| Emp 3 | .940 | .138 | 6.818 | .000 |
| Emp 4 | .721 | .168 | 4.302 | .000 |
| R Square | .414 | Std. Error of the Estimate | | .62944 |
| Adjusted R Square | .406 | F-Statistics | | 49.125 |

## 5. CONCLUSION

Education is an integral part for the development of human capital. The objective of this paper is to explore the effect of education and gender differential on the earnings for Lahore (Pakistan). From the results, it can be concluded that as the education level increases, earnings of an individual also increases. Another important finding is that gender differential is existed in labor market. Male workers earned 68.3% higher than the female workers. Moreover the results show that educational returns are increased by 0.03% with the experience. Earning function is concave because the sign of experience square is negative. All the employment levels are significant and it shows that self employed can earn 151% more than all the individuals in other occupations.

## 6. POLICY RECOMMENDATIONS

- It is necessary to reduce the difference in gender in the labor market for the rapid economic progress of the country.
- Government should take the effective steps for increasing the female education rate in the country and also minimize the difference in wage rate between male workers and their female counterparts.
- Polices should be made by the government to improve the quality of education because this l would be helpful for increasing the higher gains from education.

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