

## **Becker & Mincerian Models of Human Capital for Pakistan: A Case Study of Islamabad**

**Nadia Asghar<sup>1</sup>, Muhammad Waqas Chughtai<sup>2</sup>**

**Abstract:** Education is considered a key factor for of Human Capital formation which strengthens the society through skills, knowledge and as a result of that innovations take place. The Gary Becker and Mincer developed “Human Capital Model” which was based on relationship of income with level of education and experience. The present study investigates the effect of higher education and level experience on income of teaching staff of public sector educational institutes in Islamabad-Pakistan. There were 120 respondents randomly selected. The Ordinary Least Square (OLS) method was used to empirically examine the relationship among the variables. All coefficients of the variables found positively significant. The study concludes that increase in year of education and experience which ultimately increases income of the teaching staff. Therefore, the higher education plays a major role for enhancing income of teaching staffs of public sector educational institutes in Pakistan.

**Keywords:** higher education; experience; teacher income; human capital; Islamabad-Pakistan

**JEL Classification:** I23

### **1. Introduction**

Education is basic factor for building a good future. It is considered a strong investment in human beings which ultimately produces abilities of earning which ultimately promotes economic development. Education is one of the important factors of Human Capital and other factors i.e. health, professional training, skill development, information technology development, man power planning and migration are also imperative components for Human Resource Development. The Becker (1962) presented the theory of human capital based on the active participation of education as investment in human capital due to its anticipated return in life. Therefore, Education and experience both are the main source of Human Capital Development. The levels of education and experience both are positively significant on level of income. The teaching staffs in educational

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<sup>1</sup>Research Scholar in National Defence University, Pakistan, Address: Sector E-9, Islamabad, Pakistan, Tel.: +(051) 9262761, Corresponding author: nadiaasghar21@yahoo.com.

<sup>2</sup> Research Scholar in National Defence University, Pakistan, Address: Sector E-9, Islamabad, Pakistan, Tel.: +(051) 9262761, e-mail: mwchughtai@yahoo.com.

institutes are enjoying wide range of financial and other benefits through their higher education. Education gives lot of benefits not only to the individuals but also for whole society. In under developing countries like Pakistan, education plays a vital role for removing poverty and income inequalities.

Benefits for the individuals:

- There is a strong correlation between higher education and higher income for both male and female.
- The earning of highly qualified person is high i.e. a person who is highly qualified and teaching in university getting higher income as compare to the person who has only higher secondary school certificate and teaching in a school.

Benefits for the society:

- Higher level of education is removing unemployment, poverty and income inequality from the society.
- Higher level of education is correlated with higher standards of living.

In early 1960s, the role of education had become prominent for growth and development. The empirical work on economic growth with human capital accumulation was done by Denison, Solow and Kuznets etc. Furthermore, the importance of economics of education was amplified due to the work of T. W. Schultz, Gary Becker and other at the University of Chicago. They applied Human Capital Framework to analyze the effects of education and experience on income as economic analysis.

The quality of education becomes a source of economic development. Those societies which are educationally developed have low population growth, low level of fertility, mortality and active role of women in labor force for economic growth. It is because of the education is a way of revolution; therefore societies may depend upon educational institutes to speed up the process of social change through educating the society about the benefits of education.

## **2. Education Sector in Pakistan**

Pakistan is blessed with talented labor force but education sector is not able to face challenges of development due to poor investment on education. The 58% literacy rate of which is low as compared to growing population rate. The low growth of applied knowledge about the utilization of natural resources, new production techniques, unavailability of required skills and opportunities are the constraints for educational development in the country. Education system of Pakistan is facing serious financial and governance problem due poor administration.

According to UNDP Human Development Index Report (2011) the HDI of Pakistan was 0.504 while India and Bangladesh had 0.547 and 0.500 respectively in the year 2011. The government of Pakistan cut down the budget for education sector which seriously affected the development process. The Higher education Commission of Pakistan has initiated number of projects in shape of scholarships for M.Phil & PhD in indigenous and foreign educational institutes to promote quality education and research in the country. The Commission has settled criteria for both private and public sector educational institutes for delivering quality education. By the encouragement from HEC, now the total number of private and public universities is 136. Now, World Bank and other foreign financial aid both are helping the education sector of Pakistan to overcome challenges effectively and efficiently.

### ***Objective of the study***

The objective of this study is to examine the impact of level of education and level of experience on income of public sector teaching staff of educational institutes in Islamabad-Pakistan.

### **3. Literature Review**

**Irfan and Khan (1985)** analyze that the benefits of different level of education found positive impact on return to education however it was different at different level of education.

**Shabbir (1991)** analyzes that short diplomas of education either science or technical as rate of return to education have significant effects at different level.

**Baro (2000)** determines the impact of human capital and physical capital stocks on growth rate of 98 sample countries for the year 1960 to 1985. He concludes that the physical capital has a negative impact on growth rate while human capital has a positive impact on the growth rate of the sample countries.

**Nazli and Nasir (2000)** design a human capital model for Pakistan in which natural logarithm of monthly income was taken as dependent variable (linear function) with independent variables level of schooling and level of experience and its square. They analyze that each education level give 7% return to the earner and the higher level of education gives higher level of income. Further studies conclude that approximately 7% to 8% rise in income with extra year of schooling

**Shah (2000)** states the formal education is important part of human capital. It is universally accepted that the education is playing vital role for the development of the country. She also concludes that higher education gives enhancement to the income of the women teachers in public sector educational institutes in Pakistan.

**Sylwester (2002)** empirically examines through the sample of fifty countries that more resources utilize on education contribute high income. She concludes that expenditures on public education are correlated with the reduction of income inequality.

**Khilji (2005)** analyzes that education can accelerate economic growth of Pakistan and human capital is considered one the important component for economic acceleration. He also concludes that effective policies are needed for productive employment and growing human capital.

**Hunzai (2009)** concludes that quality education always provokes prosperity and economic development in the country. It is because of the teacher who is equipped with values, attitudes skills, and knowledge which he transfers to the student and those may become a part of the development of the country. Therefore, high qualified teaching staffs in the educational institutes become the source of sustainable quality education and development.

**Fatima and Kakar (2012)** analyze that education plays a key role for the development of human capital. The completed years of education and years of education have positive impact on monthly income of the teachers in public sector educational institutes in Pakistan.

#### **4. Material & Methods**

##### **Data Collection**

There were 120 teachers (sample of respondents) selected through random sampling technique from the educational institutes of Islamabad Pakistan. The collected data was based on years of education, years of experience and monthly income of the selected respondents. The public sector educational institutes include school, colleges & universities were chosen.

##### **Data Estimation**

The different categories of teachers were based on different level of education, experience and income. The first education level is Intermediate (12 years of schooling) while the highest level of education is Doctorate of Philosophy (PhD = 21 years of schooling). The first level of experience is 1 year while the highest level of experience is 35 years. The minimum level of income is Rs. 5,000/- to Rs. 2,50,000/-. Then income is based on experience, title and other training programs e.g. JVT and SST for school teachers along with some additional qualification like B.Ed and M.Ed. The teaching staffs in colleges and universities are appointed with position of Lecturer, Assistant Professor, Associate Professor and Professor. This teaching staff is working on Basic Pay Scale (BPS) or Tenure Track System (TTS). The staff that is entitled with TTS getting additional income as compared to BPS

staff. The variable of the study consists on the level of education, level of experience and level of income of the teaching staff of the public sector education institutes of Islamabad-Pakistan.

**Hypothesis**

H<sub>0</sub>: there is no significant impact of higher education & experience on income.

H<sub>1</sub>: there is significant impact of higher education & Experience on income.

**The Model**

The Becker (1964) and Mincer (1974) developed the Human Capital model. In this model, natural logarithm of monthly income is the linear function of complete years of schooling, experience and its square. The following two types of educations show the Mincerian Equations for Human capital Model

$$\text{LnY} = \beta_0 + \beta_1 \text{Edu} + \beta_2 \text{Exp} + \beta_3 (\text{Exp})^2 + \mu \quad (\text{Equation - 1})$$

Where

LnY = Natural Logarithm of Monthly Income

Edu = Years of Education (Schooling)

Exp = Years of Teaching Experience

$\beta_1, \beta_2,$  and  $\beta_3$  = Slopes of coefficients

$\beta_0$  = Constant

$\mu$  = Error Term

The income is different at different level of education along with rise in experience. Therefore, to examine the income at different level of education, the Ordinary least Square (OLS) model is used to examine the log linear equation having dummy variables. The equation is as following:

$$\text{LnY} = \beta_0 + \beta_1 D_1 + \beta_2 D_2 + \beta_3 D_3 + \beta_4 D_4 + \beta_5 D_5 + \beta_6 \text{Exp} + \beta_7 (\text{Exp})^2 + \mu \quad (\text{Equation - 2})$$

Where

LnY = Natural Logarithm of Monthly Income

D<sub>1</sub> = 1 for intermediate (12 year of education), 0 otherwise

D<sub>2</sub> = 1 for Graduation (14 year of education), 0 otherwise

D<sub>3</sub> = 1 for Master (16 year of education), 0 otherwise

D<sub>4</sub> = 1 for M.Phil (18 year of education), 0 otherwise

$D_5 = 1$  for PhD (21 year of education), 0 otherwise

Exp = Years of Teaching Experience

$\beta_1, \beta_2, \beta_3, \beta_4,$  and  $\beta_5$  = Slopes of coefficients

$\beta_0$  = Constant

$\mu$  = Error Term

## 5. Empirical Analysis

The result of Equation No 1 shows in Table No 1.1 with significant results. The coefficient of constant is found 8.725 at 5% level of significance while keeping other variables zero. The coefficient of education is 0.197 i.e. 1% increase in education will bring 19.7% increase in income of the teaching staffs. Similarly, the coefficient of experience is calculated 0.082 i.e. 1% increase in year of experience will bring 8.2% increase in income. The value of  $R^2$  presents 87.2% change in come is due to change in year of education and experience. The high value of F-Statistics 243.897 shows that the model is good fit and educational development and experience are significant to the enhancement of the income of the teaching staff in Pakistan.

**Table 1.1. Results of Empirical Analysis (Eq-1)**

Variables	Coefficients	Std. Error	t- Statistics	Prob.
Constant	8.725	0.191	42.435	0.000
Edu	0.197	0.007	20.648	0.000
Exp	0.082	0.006	11.254	0.000
Exp <sup>2</sup>	-0.001	0.000	-4.520	0.000
<b>Dependent Variable: Income</b>				
<b>R-Square: 0.872</b>				
<b>F-Statistics: 243.897</b>				

*Source: Researcher's own calculation*

The results of Equation No 2 show in Table No 1.2 about the significance of the coefficients of the variables. The coefficient of constant is found 10.019 while keep other variables zero, it is significant at 5% level of significance. The coefficient of  $D_1$  (Intermediate = 12 year of education) is 0.011 i.e. 1% increase in intermediate level of education will bring 1.1% increase in income the teachers. The coefficient of  $D_2$  (Graduation = 14 year of education) is found 0.230 which indicates that 1% increase in graduation level will bring 23% increase in income, the coefficient of  $D_3$  (Master = 16 year of education) is calculated 0.784 i.e. 1% percent increase in Master level of education will bring 78.4% increase in income level of the teaching staffs, the coefficient of  $D_4$  (M.Phil = 18 year of education) is 0.937 which shows

1% increase in M.Phil level of education will bring 93.7% increase in income, similarly the coefficient of D<sub>5</sub> (PhD = 21 year of education) is found 1.310 i.e. 1% increase in PhD level of education will bring 131% increase in income of the teaching staff of public sector educational institute in Islamabad-Pakistan. The coefficient of experience is calculated 0.075 i.e. 1% increase in level of experience will bring 7.5% increase in income.

**Table 1.2. Results of Empirical Analysis (Eq-2)**

Variables	Coefficients	Std. Error	t- Statistics	Prob.
<b>Constant</b>	10.019	0.211	98.735	0.000
<b>D<sub>1</sub></b>	0.011	0.071	0.155	0.000
<b>D<sub>2</sub></b>	0.230	0.070	2.981	0.000
<b>D<sub>3</sub></b>	0.784	0.068	10.998	0.000
<b>D<sub>4</sub></b>	0.937	0.100	9.775	0.000
<b>D<sub>5</sub></b>	1.310	0.092	15.452	0.000
<b>Exp</b>	0.075	0.006	11.732	0.000
<b>Exp<sup>2</sup></b>	-0.001	0.0001	-5.846	0.000
<b>Dependent Variable: Income</b>				
<b>R-Square: 0.921</b>				
<b>F-Statistics: 197.211</b>				

*Source: Researcher's own calculation*

Therefore, D<sub>1</sub> < D<sub>2</sub> < D<sub>3</sub> < D<sub>4</sub> < D<sub>5</sub>, it implies that as the level of education increases the income of the teaching staff of educational institute will also be increased.

## 6. Conclusion & Suggestions

It is concluded that higher education and year of experience have significant impact on income of the teaching staffs. Therefore, it has rejected that null hypothesis i.e. there is no significant impact of education and experience on income of the teaching staffs. Education plays a key role for the development of effectiveness and efficiency of labor force work. In any country, students are the assets for future concern and the teachers always play a major role for their personality and educational development through their skills and knowledge. Therefore, higher quality education is important for the country to be an economically developed State.

Following are the suggestions for enhancing higher education in Pakistan.

- Government of Pakistan may increase the percentage share of budget for education sector.

- Higher Education Commission may be strengthened with effective administration and policy for promoting quality education.
- Government may announce maximum scholarships for enhancement of higher education in the country.
- Merit and appropriate allocation of teaching staff may be first priority of the educational institutes for hiring teaching staffs.
- Research, additional qualification and experience may be given incentives in terms of advance increments, promotion and performance based awards.

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