ESTIMATING PRIVATE FINANCIAL RETURN ON INVESTMENT IN EDUCATION IN TANGAIL CITY: A MINCERIAN MODEL ANALYSIS

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Abstract

Several reasons are responsible for income disparity across different nations. Education established itself to be the primary reason for such disparities. Therefore, estimation of return on investments in education has become a great concern of the researchers in recent years. In most of the cases researchers used earnings function for estimating return on investments in education and found lower return for developing and least developed countries. Therefore, the study aimed to investigate the private financial return on investments in education in Tangail City of Bangladesh. To pursue the study, the required data from 100 respondents from the study area were collected. The study employed the Mincerian Model for estimating the rate of private financial return on investments in 1 year education in Tangail City. It found the rate 2.1% which is very low. Parallely, the study also revealed that besides education, type of occupation and job experience had a great influence on the income of people of Tangail City.

Keywords: Private Financial Return, Education, Mincerian Model, Tangail.

JEL classification: I21

1. Introduction

Some nations have greater wealth and population income than other nations. Several reasons are responsible for this income disparity across nations. Education is considered as one of the primary reasons. Hence, the significance of education in determining a sustainable economic growth has been emphasized in endogenous growth theories (e.g., Lucas, 1988) and augmented Solow growth theories (e.g., Mankiw, Romer, & Weil, 1992). Albeit the significance of education in determining human capital, economic growth and individual profits are commonly acknowledged, but to what extent has not been settled yet. However, it is observed that the proportional importance of human capital (skilled) in developing nations is higher in comparison to developed nations (Psacharopoulos, 1994, 1989, 1981).

Education is seen as a crucial component in the development of human capital since it serves as the foundation for all human endeavors. In addition to increasing labor productivity and workforce efficiency, it also creates a highly trained workforce that drives the economy toward long-term economic development. This rise in productivity ensures additional income streams and promotes economic growth. Hence, the link between incomes and social, demographic, and economic characteristics has long been examined by economists. The research on this topic revealed a strong relationship between education, experience and earnings. Most of the earlier studies estimate that, on average, the return to one year of schooling lies between 8 and 13 percent (Kolesnikova, 2010). According to Psacharopoulos and Patrinos (2022), the private average global return to a year of schooling was 9 percent in 2018, which was 8.7 percent before 2000. Furthermore, studies reveal that in addition to education, type of occupation and work experience have a large impact on income. Thus, return on investments in education and its consequences may vary for different groups of people. Hence, this study aims to examine the impact of education on personal income of the residents of Tangail City.

The organization of the study is as follows: In Section 1 the study introduces the issue of the research while Section 2 discusses the review of different literatures as well as their findings. The theoretical background of the study is

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explained in Section 3 while Section 4 explains the methodological part. Section 5 makes a discussion of the results and the whole study is summarized in Section 6.

2. Literature review

Several researches conducted on return on investments in education found a significant relationship between income and the level of education. Waseem (2022) revealed that one year of schooling increases income level by 0.114%. Hence, the study implied that increasing the number of years of education would boost individual earnings and raise the nation's per capita income. Arafat (2018) examined the change in returns to various income variables over cohorts and found a mixed result.

Following Mincer (1974), however, a flurry of publications investigated influential factors that affect people's incomes significantly. The findings of the studies highlighted how important schooling is to people's lifetime wages. Shabbir and Khan (2012) asserted that the rate of return on investments in education was found to be just about 7% in a number of earlier studies, but these studies neglected to take sample selection bias and the endogeneity of education into account. According to the ordinary least square estimate, the average rate of return for the entire sample was 5.4%, with a range of 4.9% to 9% for each extra year of education. After accounting for sample selection bias, the rate of return to one additional year of education rose to 7% for men and fell to roughly 2% for women, with an overall average of 2.2%.

Afzal (2011) aimed to study the major factors influencing the pay of staff (teaching and non-teaching) at general education institutions in Lahore District, Punjab (Pakistan). According to the study's findings, the private financial benefits of education highly depended on the type of schooling. The highest private financial returns on investments in education (9.1%) was showed to be for college personnel. The use of computers was determined to have the biggest beneficial impact (15.3%) across all university staff members.

According to Farooq (2010), the two most significant human capital factors that had the greatest influence on Pakistani workers' monthly wages were their education and experience. Further, the rates of return to the B.A./B.Sc. and M.A./M.Sc. programs were relatively high compare to other educational levels. Workers with degrees in medicine (MBBS) obtained higher returns than those with degrees in other professional fields of education in terms of educational fields of study.

Asadullah (2009) compared the salaries of graduates from public and private schools in Pakistan and Bangladesh. Private school graduates in Pakistan were reported to earn more than their public-school counterparts. Siphambe (2000) provides the most recent private rates of return on investments in education in Botswana using data from a Household Income and Expenditure Survey.

Using the Mincerian Earnings Function's the study found that (1) rates of return increase with degree of education, (2) the empirical fitness of the human capital model is relatively strong, (3) education does not equalize income, and (4) women are paid less than males despite having, on average, higher levels of education. Hence, the previous literatures found mixed results in the extent of return on investments in education and its impacts on earnings.

3. Theoretical background

3.1 Human Capital Theory

Human capital refers to the productive investments embodied in people, such as their knowledge, abilities, and health, which are frequently the results of financial investments in healthcare, education, and on-the-job training. However, education positively enhances wellbeing. For instance, education enhances empowerment and autonomy in

important life areas, such as the ability for civic engagement, the freedom to make healthcare decisions, and the freedom to select one's own spouse. A common schematic illustration of the trade-offs involved in the decision to continue education is showed in Figure 1. It is anticipated that the person will work from the time he or she graduates from high school until they become retired disabled, or they pass away. It is assumed that this age is 66. There are two earnings profiles showed: one for workers with only a primary education and the other for individuals with a complete secondary education but no higher education. It is believed that Junior school (JSC) graduates start working at the age of 13 and higher secondary school (HSC) graduates at the age of 17. Four years of income are lost when a person decides to continue their education through secondary school. According to the diagram labels, this is the indirect cost, that is opportunity cost.

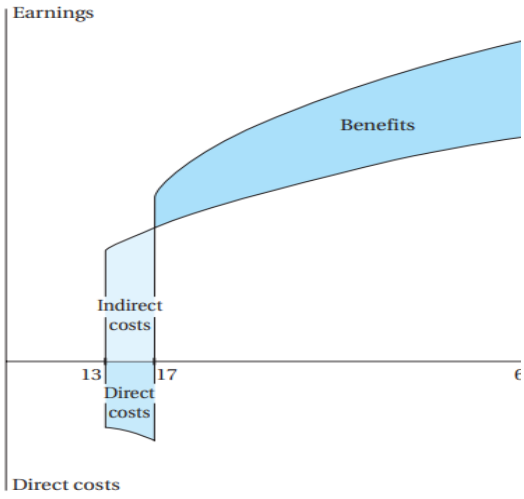

Figure 1. *Financial trade-offs in the decision to continue education*
Source: Adopted from Todaro and Smith (2014).

If a young person (child) works part-time, which is overlooked here for the sake of simplicity, then just a portion of the indirect-cost area is applicable. There is also a direct cost, which includes fees, uniforms, books and other expenses that would not have been incurred if the student had dropped out of school after the first few grades. But, as it can be seen from Figure 1, over the course of their lifetime, the individual generates more money per year than they would have with simply an elementary education.

3.2 Return on Investments in Education

Basically, return on investments in education includes social rate of return and private rate of return to education. The rise in earnings from an extra year of education for an individual who choose to invest in education is known as the private rate of returns, but the gain in national income from the same year of education is known as the social rate of returns.

Return on investments in education is the benefit from investing in education. This benefit can take the shape of money or other social benefits like respect, prominence, status etc. According to Blundell, Dearden, Goodman, and Reed's classification (2000), there are three basic types of returns on investments in higher education:

- The private financial return on investments in education – increases incomes or job chances for individuals.
- The private non-financial returns on investments in education – increase people's welfare (e.g., easy access to highly paid jobs, better working environment and so on) but not reflected in their measured incomes.
- The social returns on investments in education – refers to obtaining a degree that is advantageous to other members of society. It goes beyond private educational outcomes. It can be seen as the advantageous externalities of education.

4. Methodology

4.1 Data collection

The study is mainly based on primary data. The study used a multi-stage sampling technique for data collection. The Tangail City area is selected purposively for the study and then the study selected the respondents randomly. A structured questionnaire is designed in order to collect information from the people of Tangail City and face to face interviews are conducted with 100 respondents (different age, gender, education, occupation, experience, etc.) during October 2022.

4.2 The model

The Mincerian earnings function is a single equation model that explains wage income as a function of schooling and experience. It is named after Jacob Mincer, the father of modern labor economics. Lemieux (2006) argues that it is "one of the most widely used models in empirical economics".

The equation has been examined on many datasets. In the past 40 years, Jacob Mincer's approach created numerous and persistent applications. The natural logarithm of income is the dependent variable in the basic model, and the explanatory factors are education, experience, and experience-squared. The model is showed below:

$$\ln y = \ln y_0 + rS + \beta_1 X + \beta_2 X^2 + \varepsilon$$

Where the variables have the following meanings: y is earnings, y_0 is the earnings of someone with no education and no experience, S is years of schooling, X is years of potential labour market experience, the parameters r, β_1, β_2 are the coefficients for private financial returns on investments in schooling and experience, respectively, while ε is error term.

4.3 Specification of the model

The specified form of the model can be demonstrated explicitly with the following equation:

$$\text{Log INC} = \beta 0 + \beta 1(\text{AGE}) + \beta 2(\text{GEN}) + \beta 3(\text{EDU}) + \beta 4(\text{INS}) + \beta 5(\text{INST}) + \beta 6(\text{OCU}) + \beta 7(\text{OCUT}) + \beta 8(\text{OCUP}) + \beta 9(\text{OCUF}) + \beta 10(\text{HOW}) + \beta 11(\text{EXP}) + \beta 12(\text{EXP}^2) + \varepsilon$$

Where, AGE stands for the age of individual, GEN is a dummy variable for Gender of individual (Male=1, Female=0), EDU refers to Years of schooling, INS is a dummy variable for Institute (Government=1, Non-government=0), INST is a dummy for Institute Type (Technical=1, Non-technical=0), OCU refers to Individual's occupation which is also a dummy variable (Government=1, Non-government=0), OCUT is dummy variable for Occupation Type (Technical=1, Non-technical=0), OCUP is for Occupation Type (Permanent=1, Temporary=0), OCUF is for occupation type (full time = 1, otherwise = 0), HOW: Hours of work, EXP: Years of current job, EXP^2: Squared value of the years of current job.

However, the study used different diagnostic tests for the regression analysis applied in this research.

The heteroscedasticity test is done by the Breusch-Pagan/Cook-Weisberg test in Stata. The multicollinearity test is done by the Variance Inflation Factor (VIF) test in Stata. The Ramsey RESET test is used for finding whether or not there are any omitted variables in the model.

5. Discussion of results

5.1 Regression results

The regression results are showed in Table 1.

Table 1. *Regression results*

Variable	Coefficient	Standard Error	T	P>t [95%
AGE	-0.0031	0.00486	-0.63	0.528
GEN	0.09779	0.07422	1.32	0.191
EDU	0.02169**	0.01058	2.05	0.043
INS	-0.0789	0.07159	-1.1	0.274
INST	0.02851	0.15892	0.18	0.858
OCU	0.04279	0.08131	0.53	0.600
OCUT	0.25416	0.17377	1.46	0.147
OCUP	0.47927**	0.19698	2.43	0.017
OCUF	-0.2453	0.20967	-1.17	0.245
HOW	0.02408	0.02397	1	0.318
EXP	0.02831**	0.01344	2.11	0.038
EXP2	-0.0005	0.00035	-1.53	0.131
_cons	3.66978	0.35965	10.2	0.000

Mean VIF= 4.90, $chi^2(1) = 0.50$, Prob > $chi^2 = 0.4780$, F (3, 84) = 2.11, Prob > F = 0.10

Source: Author's calculation

The coefficient of EDU* shows that the rate of return in the study area is 2.1% that is if the education increases by 1 year, the income of the respondents will increase by Tk. 0.021 on average. Afzal (2011) found the rate 5.1% in their study in Pakistan and Sabbir and Khan (2012) found the rate 5.4%. Therefore, the rate of return on investments in education is vary in the study area compare to previous studies and the world and Asian average, 10.1% and 9.6%, respectively (Psacharopoulos, 1994). The coefficient of occupation type OCUP** (permanent/temporary) shows that, if one respondent switches his/her job from temporary to permanent, then their average income will be increased by 47%. The coefficient of experience EXP*** shows that 1 extra year of job experience of the respondents will increase respondents' income by 2.8%. However, Kitai (2018) found that gender has a great influence on personal income of economically active Turkish population. Cunha *et al*. (2023) found that personal income significantly depends on working hours. Diagnostic test of the study explored that, there is no multicollinearity and heteroscedasticity problems in the analysis.

6. Conclusion

This study is an effort to investigate the private financial return on investments in education in Tangail City. With this aim, the study attempts to investigate the economic variability of the variables affecting income by the implementation of the Mincerian model. The study shows that, education, occupation and experience have significant effect on earnings. The rate of return on investments in 1year education in Tangail City is 2.1%, the rate of return for 1 year of job experience is 2.8% and the rate of increasing income for switching job from temporary to permanent is 47%. It is considered that education has a significant impact on income albeit it is still very low. So, if the local government of Tangail City as well as the government of Bangladesh takes some steps to improve the educational conditions then the earnings of the people will

increase in a significant way. Parallelly, as income depends on occupation too, the government should take some steps to create more government jobs to improve the living standards of the people of Tangail City.

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