RATE OF RETURN FOR HIGHER EDUCATION IN VIETNAM: A DISCIPLINE BASE COMPARATIVE ANALYSIS

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Abstract

In Vietnam, higher education has been highly appreciated by the public as well as policymakers as a bachelor's degree is believed to be a competitive advantage for future career. Although the effect of higher education on wage is quite obviously in Vietnam, the effect of university major on wage is not much mention in previous research. Using the Labor Forced Survey (LFS 2019), to match with the university's training sectors according to the Circular No: 06/2018/TT-BGDDT dated February 28, 2018, the paper estimates the average rate of return to a university degree in Vietnam with discipline based comparative analysis using Mincer method and propose some recommendations and suggestions for higher education in Vietnam. The result shows that the average monthly salary of works is at VND 7.2 million with training or special qualifications - university receive a high salary by around 11.11% which is up to VND 8 million per month. In comparison of all major study, the incomes are different, but the gaps are not significant.

Keywords: *Higher education in Vietnam, Rate of returns on education, University's discipline*

1. Introduction

Economists have traditionally sought to identify the rates of return for educational investments because of the implications for total economic growth, and also to mention the help it provides individuals in determining how much they should invest in their education. Higher education is central to creating a knowledge economy and it is critical for economic development in general. However, in most countries, higher education (and especially university education) remains expensive. So, one popular question that has been asked by many universities and college students is: Is university education a good investment? To get the answer, there is a growing body of empirical literature that investigates the rate of return for higher education. In general, the papers have confirmed that better-educated people are receiving higher wages rather than less-educated people by the studies of Mincer (1991), Åberg (2003), Zhigang and Shunfeng (2006), England (2010) of Harberger et.al (2012). To estimate the rate of return to higher education, most of the papers use production function in the Mincer model way in order to achieve log-linear equation with household survey data and the result indicates that educational achievement seems to be a dominant forecaster of

labor-market outcomes. The members of better-educated households suggest not to accepting low salaried works (Akguc, 2011; Comola and Mello, 2011; Purnastuti, 2012; Magdalyn, 2013).

Concerning the choice of college major, there is a significant amount of empirical evidence suggests that earnings potential affects individuals' choice of college major (Willis and Rosen, 1979; Zarkin, 1985; Berger, 1988). There is less definitive evidence on the extent to which lifetime earnings considerations factor into college major choices, though, as suggested above, it is clear that there are significant differences in rates of return according to one's major (Carnevale et al., 2012), and recessions and economic fluctuations can have significant and persistent effects on new college graduates that depends, in part, on the major with which they enter the labor market (Oreopoulos et al., 2012). Work that focuses on connecting field of study to potential future earning generally relies on strong forecasting assumptions. Accordingly, Berger (1988) estimates the relationship between a college student's predicted future earnings and choice between five broad fields of study. In models that attempt to correct for self-selection bias, assuming individual ability and cohort affects earnings but not college major, he finds evidence suggesting that students are likely to choose majors that offer greater lifetime earnings streams. Similar to Berger, Beffy et al. (2012) estimate the relationship between expected earnings and college major across broad fields of study, and they attempt to account for self-selection by exploiting variations in the relative earnings returns induced by the business cycle. They find heterogeneous responses to changes in anticipated earnings and conclude that the elasticity of major choices is modest and primarily driven by non-pecuniary factors.

In Vietnam, higher education has been highly appreciated by the public as well as policymakers as a bachelor's degree is believed to be a competitive advantage for future career. There are some papers investigated the effect of higher education on wage. Despite the difference in data and method, the impact of education on wage appears to be always positive. In 2008, university education is expected to raise individual wage rate by 68%, ceteris paribus (Doan, 2011). By selecting the survey subjects are wage earners in the Mekong Delta, using descriptive statistical methods of the variables in the model, Pham (2012) shows that education is an important determinant of personal income, thereby confirming the benefits of education for learners in the market economy. The conclusion is quite similar in Le (2015), Tran et al. (2018). Although the effect of higher education on wage is quite obviously in Vietnam, but up to now, there in only research of Tran et al. (2018) mention about the effect of university major on wage, but in this research, the list of university's main majors and also the Vietnam's industrial classification of General Statistic Office is out of date, thus this paper by using Labor Forced Survey (LFS 2019), to match with the university's training sectors according to the Circular No: 06/2018/TT-BGDDT dated February 28, 2018 to estimate the average rate of return to a university degree in Vietnam with discipline based comparative analysis using Mincer method and propose some recommendations and suggestions for higher education in Vietnam.

2. Method

2.1. Method

The paper uses the Mincer equation model based on human capital theory to explain the effect of trained labor on wages and income. According to this model, salary income is explained based on schooling, experience, and experience squared:

$$LnY_i = \beta_0 + \beta_1 S_i + \beta_2 X_i + \beta_3 X_i^2 + e_i, \quad (1)$$

In which, LnY is the logarithm of salary, S is number of years of schooling or represents the variable of professional and technical qualifications, Xi is experience (year), X^2 is experience squared, and β_0 is the constant intercept of the model. Then random, and unobserved components are known as e $\sim$N $(0, \sigma_2)$.

In addition to information on training in the basic Mincer income model, explanatory variables such as workplace characteristics, professional occupation and individual characteristics of employees are added, which allows research to grasp or to capture partial heterogeneity of observed variables in equations (Bartel, 1995).

$$LnY_i = \beta_0 + \beta_1 S_i + \beta_2 X_i + \beta_3 X_i^2 + \beta_4 X_i + e_i \quad (2)$$

Statistical analyses based on non-randomly selected samples can lead to erroneous conclusions. To correct bias from non-randomly selected samples or otherwise incidentally truncated dependent variables, a pervasive issue in quantitative social sciences when using observational data, it is often used the Heckman correction, a two-step statistical approach (Heckman J. (1979)

Step 1, regression of determinants of wage employment using the probit model.

The results of step 1 estimation will obtain Mills variable, according to Heckman (1979), Mills variable is controlled for the second stage of the regression model.

Step 2, the model to estimate wages based on the Mincer model according to Heckman's adjusted method

2.2. Data

Currently, Vietnam higher education system consists of 07 main sectors, including Education science and teacher training, Art; Business, Management and Law; Social sciences and humanities; Health care; Maths, statistic, and computer science; Services and social service (Ministry of Education and Training, 2018). According to General Statistic Office (2018), university majors can be divided into 24 groups, including: Science education and teacher training; Art; Humanities; Social and behavioural sciences; Press and information; Business and Management; Law; Human science; Natural sciences; Math and statistics; Computers and information technology; Production and processing; Architecture and construction; Agriculture, forestry and fishery; Veterinary; Health; Hotels, tourism, sports and personal services; Military and Defense, etc. So, in this paper we match the university major of GSO with 07 main sectors of Ministry of education and Training to make the discipline base comparative analysis

This paper examines the rate of return to university education based on and Labor Forced Survey (LFS 2019), which was taken by General Statistics Office of Vietnam. The LFS 2019 was conducted nation-wide with a sample size of 824,116 individuals which were representative at national, regional, urban, rural and provincial levels. It provided an up- to-date source of data on labor to be used in policy design, monitoring and evaluation of policies and programs. The survey collected information during four periods, each period in one quarter from the first quarter to the fourth quarter in 2018 through face-to-face interviews conducted by interviewers with labor in sample enumeration areas. Large sample size, on the one hand, offers more precise estimates. On the other hand, that facilitates separate analyses on specific sub-populations, such as: group by technical qualifications, age group, major of training or type of employment.

3. Results

3.1. Description of data

Based on the LFS 2019, the average monthly salary of labour is about 7.2 million. Workers with university degrees receive highest rate of salary, about 8 million per month; Primary, intermediate and college respectively receive 6.9, 5.9 and 6.2 million respectively. This situation is the same with all training major sector. In term of wage by field of major, employees trained in the Service sector receive of about 7.9 million per month, the highest average salary per month among major sectors, while the wage per month in health sector is the lowest. However, when compare the level of wage by field of major among labour has university degree, although employees trained in the Service sector still get highest wage, but the second is people trained in health sector. The lowest wage among university degree workers is Education science and teacher training (table 1).

Table 1: Average monthly salary of employees by fields of majors and certifications.

Unit: thousand VND

	Primary degree	Intermediate Degree	College degree	University degree	Total
Total	6,917	5,946	6,270	8,075	7,228
Education science and teacher training	1,100	4,959	6,051	6,908	6,530
Art	7,039	5,627	6,059	7,533	6,735
Business, Management and Law	5,227	5,731	6,381	8,042	7,490
Social sciences and humanities	591	4,452	6,030	7,173	6,843
Maths, statistic, and computer science	5,748	6,200	6,507	8,643	7,274
Health	5,085	5,334	5,521	8,667	6,319
Services and social service	7,268	6,861	6,651	9,317	7,914
Others	5,744	5,056	6,358	7,364	6,292

Source: Calculate based on LFS 2019

By fields of majors and genders, the salary for men is 7.8 million per month, 6.5 million higher than that of women. If the employee is trained in Education science and Teacher training, the salary for men is 7.45 million per month and for women is 6.24 million per month. If they are trained in the Art field, the average salary of the two genders is quite balanced with about 6.7 million per month. In Business and Management and Law, the salary is 8.4 million per month. In general, in almost every field of training, wages for men are higher than for women.

3.2. Mincer equation model results

The table below is shortened results of estimating the wage model of workers from the LFS data and by the least squares method (OLS) and the sample error adjustment method (Heckman Selection).

Comparing the estimated coefficients from OLS method and from Heckman, it shows that the impact trend is not different, but there is difference in magnitude. The coefficients athrho (0.026) and lnsigma (-0.461) of the Heckman Selection model are significant at 99% confidence, confirming the existence of the sampling bias, so if estimated by OLS method, results may be skewed then the model estimated by Heckman is perfectly suitable. Model estimation results from the OLS method tend to overestimate the impact of the educational variables compared with the Heckman method. Thus, it may lead to an "over" impact statement.

The report uses the Heckman Selection model estimation results to analyze the impact results. The use of the Heckman method instead of conventional regression is intended to control the endogenous variable problem due to unobserved lack of variables.

Table 2. Results of estimating the wage model of labor

	OLS	Heckman	
Variables	lnwage	lnwage	select
		General	
age	0.051***	0.065***	0.144***
	(0.000)	(0.000)	(0.000)
age2	-0.001***	-0.001***	-0.002***
	(0.000)	(0.000)	(0.000)
Primary	0.123***	0.139***	0.418***
	(0.000)	(0.000)	(0.000)
Intermediate	0.171***	0.113***	0.511***
	(0.000)	(0.000)	(0.000)
College degree	0.224***	0.175***	0.647***
	(0.000)	(0.000)	(0.000)
University degree	0.370***	0.284***	0.780***
	(0.000)	(0.000)	(0.000)
sex	0.158***	0.193***	0.150***
	(0.000)	(0.000)	(0.000)

urbanrural	0.091***	0.096***	-0.173***
	(0.000)	(0.000)	(0.000)
athrho			0.026***
			(0.000)
lnsigma			-0.461***
			(0.000)
Constant	6.475***	5.933***	-3.576***
	(0.000)	(0.001)	(0.001)
Standard errors in parentheses			
*** p<0.01, ** p<0.05, * p<0.1			

Source: Calculate based on LFS 2019

- The impact of higher training:

The group without certification is set as the base variable when comparing dummy variables, the vocational training variable is represented by the primary dummy variable, intermediate and college degree. The estimated results of these variables are statistically significant.

Research results from the Heckman model show that the average salary of the group with college and university degrees or higher is more than that of the untrained group with $(e^{0,284} - 1) * 100\% = 32.8\%$. The trained group at primary level has higher average salary than the untrained group with $(e^{0,139} - 1) * 100\% = 14.9\%$. The group of workers at intermediate vocational level has a higher average salary than the untrained group with $(e^{0,113} - 1) * 100\% = 11.9\%$. And the group of vocational college level has the high average salary than the untrained group with $(e^{0,175} - 1) * 100\% = 19.1\%$. Corresponding impact estimation coefficients from the conventional model OLS are higher than from the Heckman model for intermediate, college and university levels.

Thus, when other factors in the model such as the characteristics of the industry, occupation and region, age, and form of ownership are fixed, entering primary vocational education will bring a higher salary than the untrained, vocational intermediate and college with about 14.9%, 11.9% and 19.1% respectively. This result is completely consistent with previous studies that the higher professional and technical qualifications the worker, the higher the salary. Qualified workers generally will have better positions, and the ability to absorb new knowledge and access to the job when technology changes.

- The impact of major variable on the vocationally trained workers` income:

With the variable majors divided into 8 groups, the group "Educational science and Teacher training" was selected as the base group for comparison with the others. The results show that the estimated coefficients of these variables are statistically significant, but the directions of influence of the training fields on the employee's income are different. "Business and Management, Law" and "Services and Social service" are two occupations

that generate higher income for workers than the group of "Education science and Teacher training" with 2.43% and 1.82%, respectively. This shows that although the income is higher, the gap is not much. Compared to the remaining groups of training fields, the group "Educational Science and Teacher Training" has the highest income, the biggest difference is compared to the group of "Others" with 17.59%. followed by the "Healthcare" group with 8.87%. Through the research results, it can be seen that the group "Educational science and Teacher training" generates high income in society. From the olden days, the Vietnamese spirit always highly appreciates the humanity in teaching profession. However, in recent years, implementing the new policy which of taking the graduation exam scores from high schools to serve as a basis for admission to universities also appeared a few shortcomings. The fact is that the number of students applying to schools in the pedagogy is not much, or there are schools of pedagogy that require very low admission scores, even less than 15 points when calculating the combination of 3 subjects for admission. This irrationality leads to the quality of teacher training, which is not high. Therefore, all levels of government need to have synchronous solutions to improve the quality of training in the field of Education Science and Teacher Training. It is necessary to raise the entry standards, create favorable conditions and support tuition fees for pedagogical students. In addition, there is a need for commitment to students about their dedication to education and training after graduating.

Table 3: Mincer equation model results for major of training in university

		(1)	(2)
VARIABLES		lnincome	select
2.gender	It should equal 1 if it's female, then 0 if it's male	-0.185***	-0.422***
		(0.000)	(0.001)
Dummy variables in the field of training, group of comparison: Educational science and teacher			
2.majorgroup	"Art "	-0.015***	-0.271***
		(0.002)	(0.006)
3.majorgroup	"Business and management; law"	0.024***	-0.177***
		(0.001)	(0.002)
4.majorgroup	"Life Science; Natural Science"	-0.065***	-0.279***
		(0.002)	(0.006)
5.majorgroup	"Mathematics and statistics; Computers and information technology; engineering technology; .."	-0.054***	-0.256***
		(0.001)	(0.002)
6.majorgroup	"Health care"	-0.085***	-0.263***
		(0.001)	(0.002)
7.majorgroup	"Social services"	0.018***	-0.233***

		(0.001)	(0.002)
8.majorgroup	"Others"	-0.162***	-0.185***
		(0.001)	(0.004)
5.marriage	separated		0.149***
			(0.011)
athrho			-0.020***
			(0.002)
lnsigma			-0.678***
			(0.000)
Constant		7.527***	0.753***
		(0.004)	(0.009)
Observations		109,478	109,478
Standard errors in parentheses			
*** p<0.01, ** p<0.05, * p<0.1			

4. Discussion and Conclusion

According to the above findings, the average monthly income or salary of works is at VND 7.2 million with training or special qualifications - university receive a high salary by around 11.11% which is up to VND 8 million per month - with higher degree, workers earn up to VND 9.3 million in average per month. This is equal to 16.25% higher than average salary of workers with university degree. Of course, the assumption for this comparison is that this does not consider on the different fields of work, but only the average of all fields is accounted.

At the same time, with the use of Mencer equation measures on the impact of field or major of study on the vocationally trained workers` income. In comparison of all major study, the incomes are different, but the gaps are not significant. For instance, the group of "Educational Science and Teacher Training" reflects the highest income level where If is only 17.59% higher when compared to the group "Others".

The result shows that higher education plays an important role in increasing job opportunities. Higher education has helped select and categorize individuals with different qualifications, providing information to employers to hire or redistribute income between skilled and non-skilled labors. An important issue in education finance is that who should play a major role in higher education finance. In Vietnam, it is often argued that the government should play a major role in financing education and provide capitals for the public and private sectors. This is the basis for educational planners to discuss which method would be best suited to finance education in Vietnam. It is suggested that the Government should determine the optimal method of funding for higher education in Vietnam. The data in the study also shows that the salary in some industries in the category "Business, Management, Law" or "Services" are the highest. Among these industry groups, a prime example is that Hotel management is being considered a "hot" industry. It will bring

employees an income of about 7-10 million per month, with manager and supervisor positions, the average salary is 24 million per month. Because of the favourable conditions to study, and upon graduation, students will ensure a good standard of living due to high income, so it is really reasonable if the tuition fees of these majors are set higher than the other sectors. Tuition for the group of "Business, Management, Law" and "Services" should be considered to match the level of income of workers trained in them.

Conversely, the Government should also consider the tuition fees of low-income sectors of labor. The industries in the "Education science and Teacher training", "Healthcare" or "Arts" category are indispensable factors for society. They ensure a better quality of life physically and mentally. However, the workers trained in this group receive a lower salary than the general level. In order to attract human resources, and to motivate students, the policies should be to exempt, or reduce tuition fees, and increase scholarship for students in these industry groups. This is necessary for us to have fairness, and above all, it meets the needs of the country's development in the present conditions.

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