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INCOME INEQUALITY: EDUCATION AS THE PANACEA

Kesenjangan Pendapatan: Pendidikan Sebagai Solusi

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ABSTRAK

Pemerintah Indonesia telah mengalokasikan anggaran sebesar 20 persen dari total Anggaran Pendapatan dan Belanja Negara (APBN) untuk pendidikan. Oleh sebab itu, sangatlah penting untuk mengetahui apakah anggaran yang dikeluarkan untuk pendidikan memberikan hasil yang besar bagi tiap individu. Penelitian ini menyelidiki tingkat hasil pendidikan di Indonesia, apakah ada perbedaan antara tingkat hasil bagi perempuan dan laki-laki, dan apakah pendidikan dapat membantu mngecilkan jurang perbedaan penghasilan yang makin lebar, sebuah masalah pelik yang dihadapi terutamanya oleh negaranegara berkembang. Dengan menggunakan data Indonesian Family Life Survey (IFLS), data longitudinal dari rumah-rumah tangga di Indonesia, penelitian ini menemukan bahwa, tingkat hasil pendidikan di Indonesia rata-rata adalah 7,5 persen. Penemuan yang menarik bahwa tingkat hasil pendidikan perempuan tidak berbeda dengan laki-laki, mengingat umumnya tingkat hasil pendidikan perempuan lebih besar dari lakilaki, walaupun perbedaan ini cenderung mengecil seiring waktu. Selain itu didapatkan bahwa pendidikan tidak memperlebar kesenjangan pendapatan, walaupun tidak dapat dikatakan bahwa pendidikan dapat mempersempit kesenjangan pendapatan kecuali untuk perempuan, dalam kasus perempuan, pendidikan memang mempersempit kesenjangan pendapatan. Penemuan ini menunjukkan bahwa pemerintah harus memberikan perhatian lebih dalam menyediakan pendidikan bagi perempuan sebagai cara mempersempit kesenjangan pendapatan.

Kata Kunci: perempuan, kesenjangan pendapatan, tingkat hasil pendidikan

ABSTRACT

The Indonesian government has already allocated 20 percent from its budget every year for education. Therefore, it's profound to know whether the budget spent on education is giving significant return. The paper aims to examine the rate of return to education, whether there's a disparity between rate of return to education between females and males, and whether education can help tighten the gap of income inequality which is a crucial issue these days facing emerging countries. This paper is using Mincer Equation as the model and Indonesian Family Life Survey (IFLS), a panel data from Indonesian households, finding the rate of return to education to be 7.5 percent. Interesting finding coming from return to education for females to be not different from males, given that return to education for females usually higher than males, though disparity tends to get smaller over time. In addition, it is found that education is not widening the gap of inequality though we can't say whether income equalizing process through education really occurs except for female case, it is income equalizing. This finding is crucial showing that

the government should pay more focus in educating females as a means to tighten the income inequality gap.

Keywords: female, income inequality, return to education

JEL Classification: E24, I24

I. INTRODUCTION

According to the OECD (2011), emerging countries have levels of income inequality significantly higher than the OECD average. As an emerging economy, Indonesia faces income inequality issues, which is highlighted by a sharp increase in wage inequality between 2001 and 2007. Sakellarious (2009) found that workers at the bottom 20 percent of the earnings distribution experienced a decline in earnings while workers at the top of the earnings distribution enjoyed a significant increase in earnings. Those at the top of earnings distribution are usually highly educated in contrast to the ones at the bottom that are less educated. Education tends to be seen as the social escalator for achieving increased quality of life. While Martins and Pereira (2004) said that schooling is also portrayed as the best tool to erode wage inequality.

This paper aims to examine the rate of return to education in Indonesia and observe whether education can help tightening the gap of inequality in Indonesia. In addition, this paper will observe whether there's a disparity in rate of education between females and males. These studies are important since many emerging economies devote significant amount of their budget for educational purposes. Indonesia spends at a minimum twenty percent of its budget on education alone. The Indonesian government focuses on primary education, which covers elementary and junior high school level, and has a goal that that every Indonesia citizens should at least graduate from junior high school.

II. LITERATURE REVIEW

Given the importance of education in easing severity of wage inequality, it does not come as a surprise that there are numerous studies studying returns to education. Blundell et.al (2001) defined return to education as followed:

"There are at least three distinct ways of defining the 'returns to education': (a) the private return, (b) the social return and (c) the labour productivity return. The first of these is made up of the costs and benefits to the individual and is clearly net of any transfers from the state and any taxes paid. The second definition highlights any externalities or spill-over effects and includes transfers and taxes. The final definition simply relates to the gross increase in labour productivity (or growth). A key component of each of these measures is the impact of education on earnings. This is perhaps the aspect of returns to education measurement where statistical methods have been most developed and most fruitfully deployed"

Psacharopoulos (1994) used Mincer-type models in developing countries to estimate returns to education and found an average return rate of 8% in Asian countries, excluding China, which averaged 11%. Psacharopoulos conducted the first comprehensive study on estimating private rates of return to education in developing countries. He found that the private returns to education are highest at the primary level and it will decline by the level of schooling and country's per capita income. However, other experts have challenged this notion that primary education offers the highest rates of return. Duraisamy (2000) uses Indian households to shows that returns to education are positively related to the level of education until the secondary level and it is negatively related beyond secondary level. Appleton (2000) uses Uganda Household Data and finds that college graduates receive a much higher

rate of annual rate of return, about 18 percent, compared to non-college education level that yields around 7 to 8 percent.

Siphambe (2009) using Mincerian Earnings Function found that rates of return in rise by level of education, the empirical fitness of the human capital model is quite robust, education is not income equalizing, women are paid less than men despite being on average more highly educated than men. Chirwa and Matita (2009) found that on average, an additional year of schooling increases life time earnings by 10 percent. Returns from various levels of education increase as the levels of education increase from 5 percent from primary level to 65 percent from university education. Farooq (2011) examined returns to primary and middle standard education of both the male and female workers were lower as compared to higher levels of education in Pakistan.

There are some studies focusing on returns to education in Indonesia. Newhouse and Suryadarma (2011) use the Indonesia Family Life Survey (IFLS) data to estimate the effect of senior secondary education on incomes. Senior secondary is schooling that emphasizes academic performance and students are expected to continue to college in contrast to vocational secondary schools, which place more emphasis on technical skills so that the students are ready to enter the labor market upon the completion of the study. Females get higher rates of return than males from vocational secondary schooling. They estimate that individuals who complete senior secondary schooling receive about 40 percent higher wages than those who do not graduate from senior secondary school. Another study conducted by Duflo (2001), analyzes the impact of 61,000 new schools built between 1973 and 1978. She finds the economic returns to education ranging from 6.8 to 10.6 percent. Carneiro et.al (2009) found that the return to upper secondary schooling varies widely across individuals: it can be as high as 50 percent per year of schooling for those very likely to enroll in upper secondary schooling, or as low as 10 percent for those very unlikely to do so. Byron and Takahashi (1989) estimate a 15–17% rate of return per year of schooling from 1981 data for urban Java.

Psacharopoulus (1994) stated that educating female is marginally more profitable than educating male. Another finding by Chirwa and Matita⁹ showed that female workers particularly at the higher level of education tend to have higher rates of return to education than male workers. Dougherty (2003) using national Longitudinal Survey of Youth (NLSY) observed that return to education for female is greater by two percentage points compared to males in United States. He reasoned that female samples in NLSY perform better academically and work in the sectors that relatively value education highly. Farouq¹⁰ analyzed return to education for Males and Females worker in Pakistan by province, he found that female worker earned higher rates of returns in all the provinces indicating better prospects for female workers. He mentioned that field of study such as medical, engineering, agriculture and computer science give higher return to females rather than to males. Tansel (2010) found that the returns to education estimates for women in Turkey are higher than that of men throughout the period considered by about two to five percentage points. In addition, returns to education declined significantly from 1994 to the 2002. Returns to education for men did not change much throughout the period 2002-2005 while that for women declined by five percent from 2002 to 2003 and one percent from 2004 to 2005. Beudry and Lewis (2012) found that over the 1980s and 1990s the US wage differentials between men and women (with similar observable characteristics) declined significantly at the same time, the returns to education increased

III. METHODOLOGY

The data is obtained from two waves of Indonesian Family Life Survey (IFLS). The Indonesian Family Life Survey (IFLS) is an on-going longitudinal survey in Indonesia. The sample which is collected from 13 out of 27 provinces is representative of about 83% of the Indonesian population since the 13

provinces have total population of about 83% of total population in Indonesia. The total individuals surveyed are about 30,000 individuals. The first wave of the IFLS (IFLS1) was conducted by RAND in 1993/94 in collaboration with Lembaga Demografi, University of Indonesia. IFLS2 and IFLS2+ were conducted in 1997 and 1998, respectively, by RAND in collaboration with UCLA and Lembaga Demografi, University of Indonesia. IFLS2+ covered a 25% sub-sample of the IFLS households. IFLS3, which was fielded in 2000 and covered the full sample, was conducted by RAND in collaboration with the Population Research center, University of Gadjah Mada. The fourth wave of the IFLS (IFLS4), fielded in 2007/2008 covering the full sample, was conducted by RAND, the center for Population and Policy Studies (CPPS) of the University of Gadjah Mada and Survey METRE. The data can be accessed publicly at <u>www.rand.org</u>. In addition, IFLS has been widely used in numerous researches due to its credibility. The third and fourth waves which are from 2000 and 2007 are used in this paper since they are the most recent and more complete.

There are 5714 observations of salaried workers are examined in this paper. 1918 of them are female workers and the remaining 3796 are male workers. In year 2000, 707 observations are working in public sector while 2150 are working in private sector. There's an increase in number of observations who work in public sector becoming 796 people from only 707 in the previous wave. The number of observations who work in private sector has decreased in the second wave of IFLS. There's an increase in number of observations who work in large and medium size over time and the decrease in number of observations who work in small firms. Between 2000 and 2007, there's not much different in the proportion of both male and female who work in either public or private sector.

There are two main methods for estimating private rates of return to education: the elaborate and the Mincer wage function methods⁶. The first method requires the usage of cost of education. This is difficult to calculate and the reasons why the Mincer approach more widely used. Jacob Mincer introduced the Mincer approach through his book *Schooling, Experience, and Earnings* in 1974 Mincer developed a model that use natural logarithm of earnings as a function of years of education and years of potential labor market experience (age minus year of schooling minus six). The basic Mincer equation is:

$$lnY_i = \alpha + \beta_1 S_i + \gamma_1 Exp_i + \gamma_2 Exp_i^2 + \delta X_i + u_i$$

Y is a measure of income, earnings, or wage rates. S is a measure of schooling. Exp_i is total actual experience, which is estimated as experience=age-years of schooling-6, and considered to be a measure of years of potential experience. X_i represents control variables, and I am use gender, location and marital status.

The model used in this paper is as following:

Logsalary_i $t = \alpha_i t + \lambda_i t + \beta_1 years_of_schooling + \beta_2 exper + \beta_3 exper 2 + \beta_4 tenure + \beta_5 public + \beta_6 large + \beta_7 medium + \beta_i X_i + y07 + \varepsilon_i t$

Fixed effect regression is employed in this paper. Started with OLS regression, further coefficients are estimated using random effect as a comparison. The Breusch_Pagan Lagrange Multiplier (LM) test result showed that random effect results are preferred compared to OLS regressions. Haussman test is later performed to seek whether fixed effect estimations are more efficient compare to random effect estimation. The test showed that fixed effect regression give more efficient estimation, thus going to be elaborated in this paper.

According to Wooldridge, fixed effects model contain observation specific variables, α_i , that capture all unobserved, time constant factors that affect Logsalary_i. The error ε_i is called idiosyncratic error or time varying error and depicts the unobserved factors that change overtime and affect the dependent variable. The strength of the fixed effect model is that it allows arbitrary correlation between α_i and explanatory variables in any time periods such that it can avoid the omitted variable bias case.

This paper uses wage equation that's very risky in relation to endogeneity issue since salary isn't just a representation of the level of education but also the representation of the ability and motivation of the person that can't be captured just by how long the person is in school. The person who can achieve a higher educational level might have a higher IQ, more highly motivated and more likely coming from educated family. Any explanatory variables that are constant overtime will be swept away and in my fixed effect regression it would be gender (represented by variable "female").

Further a quantile regression is applied to observe the return to education across the earnings distribution to seek which quantile of the distributions who gets most of the return to education. If the lower quantiles whom are characterized by having low salaries and low skill that benefit the most from education then the notion that education help reducing inequality is valid. But if the returns to education are mostly enjoyed by those at the top of the earnings distribution whom are characterized by having high salaries and high skill then it is proven otherwise. Quantile regression is a statistical procedure intended to estimate conditional quantile functions and a full range of other conditional quantile by minimizing asymmetrically weighted absolute residuals in analogy with classical linear regression methods, based on minimizing sums of squared residuals.

In order to seek whether there's a disparity between the return to education between male and female, the gender dummy is interacted with the years of schooling variable. If this variable is statistically significant then the null that there's a disparity in return to education between male and female is proven.

Log of hourly wage indexed to inflation
Years spent on school
Years of experience (Age-years of schooling-6)
Exper square
Years spent on the current job
=1 if married, 0 otherwise
=1 if living in rural area, 0 otherwise
=1 if female, 0 otherwise
Return to education for female compared to male
=1 if working in public sector, 0 otherwise
=1 if working in a large firms (>100 employees), 0 otherwise
=1 if working in a medium size firms (20-99 employees), 0 otherwise
=1 if working in a small firms (<20 employees), 0 otherwise
types of industries dummies
=1 if 2000, 0 otherwise
=1 if 2007, 0 otherwise

Table 3.1. Variable Descriptions

Source : Author's calculation using Stata

IV. ANALYSIS AND DISCUSSION

In Table 4.1, OLS, Random Effect and Fixed Effect regression results are compared. Random effect regression is more preferred than OLS based on Breusch-Pagan Lagrange Multiplier (LM) test. Further using Hausman test, fixed effect regression is more preferred than random effect. The only variable that falls out due to the fixed effect regression is the variable *female* that represents gender since it does not change overtime. The fixed effects will also capture unobservable characteristics of individuals (e.g. work ethic) that are correlated with wages.

The return to education is far less compared to OLS regression results. It's only 7.5 percent compared to 9.9 percent in the OLS regressions based on year and Random Effect regression. All of these

results are statistically significant at 1 percent level. The paper uses the result from the fixed effect regression which is 7.5 percent, this means that every one additional year spent in education, it will increase the wage at 7.5 percent. This finding is almost in line with the finding from Psacharapoulus⁵ that the rate of education in Asian countries is around 8 percent. Experiences as well as tenure are both very statistically significant at 1 percent level either, that shows how experience and tenure play very important role in determining someone's income.

The variable *exper* shows that every one additional year of experience, it will increase the wage by 5.1 percent. Tenure that's also statistically very significantly affecting wage shows that every one additional year of tenure, it will increase the wage at 0.7 percent, the magnitude is not as big as return to education and experience to affect someone's wage. A very surprising result from variable *yosfem* that's not statistically significant which means that return to education for females isn't different from that of males. This is surprising given that return to education for females higher than males are usually the norm¹⁵. But it's most likely that the disparity in return to education between females and males gets smaller in developed countries compared to developing countries. As Tansel¹⁷ discovered in Turkey that return to education in females gets smaller since 2002 till 2005 while for male remain stable.

In the US, the wage differential between males and females gets smaller over 1980's and 1990's (Beaudry and Lewis, 2012). Finding in this paper is in line with Siphambe (2009), in Bostwana, there, female are paid less than men despite being on average more highly educated than male. Our finding here, showing that return to education for female is not different from males can probably occur because:

- a. Our females samples are mostly distributed between the very low educated and the very high. Even for the category of never attending school which means the samples' year of schooling is zero, our female samples are exceeding our male samples, there isn't any other category of number of years of schooling that females sample exceeding males other than this category. At this category, the number of female samples is 62 percent.
- b. It might be that female samples don't work in sectors that value high education, therefore although many of them in the samples are highly educated too, but they are not getting as high salaries as males given the same educational level.

Another interesting finding from Table 4.1 is the variable *public* which is statistically significant at 10 percent level affecting the log salary. This means that employment in public sectors is positively affecting the log salary, workers in public sectors earn 14 percent more compared to workers in private sectors.

Table 4.2 depicts quantile regressions used to seek the rate of return to education for each quantile of earnings distributions. The lower tail shows low income workers, usually characterized with low education and skill, whereas the upper tail shows workers with higher income, education and skill. The main variable which is years of schooling is very statistically significant at one percent level at all quantiles, meaning that return to education is statistically significant at all level of earnings distribution. The rates of return to education are found to be almost similar in all quantiles. This finding shows that in all level of income and education, workers will be benefitted in the same proportion, though this doesn't prove that education will reduce income inequality since the lower tail of the earnings distribution are not the ones who gets most of the return to education, yet it can be said as well that education will not widen the income gap since the rate of return to education for higher tail of the distribution which are dominated by highly educated workers are in the similar rate with the low educated workers at the lower tail.

	(1)	(2)	(3)
Variables	ÔLŚ	Random Effect	Fixed Effect
years_of_schooling	0.099***	0.100***	0.075***
	(0.004)	(0.005)	(0.023)
Exper	0.029***	0.030***	0.051***
	(0.004)	(0.004)	(0.019)
exper2	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)
Tenure	0.014***	0.013***	0.007**
	(0.002)	(0.002)	(0.003)
Married	0.123***	0.113***	0.032
	(0.032)	(0.032)	(0.052)
Rural	-0.023	-0.030	-0.084
	(0.025)	(0.027)	(0.058)
Female	-0.480***	-0.473***	
	(0.060)	(0.066)	
Public	0.298***	0.296***	0.140*
	(0.034)	(0.035)	(0.075)
Yosfem	0.030***	0.030***	-0.040
	(0.005)	(0.006)	(0.027)
Constant	6.890***	6.872***	7.106***
	(0.248)	(0.243)	(0.571)
Observations	5,711	5,711	5,711
R-squared	0.399		0.159
Number of pidlink		2,857	2,857

Table 4.1. OLS by Year and Fixed Effect Regression

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source : Author's calculation using Stata

In addition, the variable *public* is positively very significantly affecting the log salary with 1 percent confident level at almost all quantiles of earning distribution except the top tail. These findings show that employment in public sector benefit those particularly at the lower tail of income distributions since the lower the tail the larger the coefficients showing the larger the magnitude of the impact. It can be inferred that employment in public sector help tighten the income inequality gap since its benefits are mostly enjoyed by workers with lower education and income.

(1) 0 0.10	(2) 0 0.25	(3) 0 0.50	(4) 0 0.75	(5) 0 0.90
.	τ <u>–</u>	τ-	L -	U -
0.100***	0.110***	0.108***	0.109***	0.104***
(0.013)	(0.007)	(0.005)	(0.005)	(0.011)
0.037***	0.028***	0.028***	0.026***	0.014
(0.012)	(0.007)	(0.005)	(0.005)	(0.010)
-0.001**	-0.000***	-0.000***	-0.000***	-0.000
(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
0.459***	0.431***	0.357***	0.176***	0.053
(0.116)	(0.064)	(0.045)	(0.042)	(0.091)
7.336***	6.151***	6.704***	7.200***	8.552***
(0.201)	(0.334)	(0.279)	(0.237)	(0.231)
2,855	2,855	2,855	2,855	2,855
	(1) Q_0.10 0.100*** (0.013) 0.037*** (0.012) -0.001** (0.000) 0.459*** (0.116) 7.336*** (0.201) 2,855	$\begin{array}{c c} (1) & (2) \\ Q_0.10 & Q_0.25 \\ \hline 0.100^{***} & 0.110^{***} \\ (0.013) & (0.007) \\ 0.037^{***} & 0.028^{***} \\ (0.012) & (0.007) \\ -0.001^{**} & -0.000^{***} \\ (0.000) & (0.000) \\ 0.459^{***} & 0.431^{***} \\ (0.116) & (0.064) \\ 7.336^{***} & 6.151^{***} \\ (0.201) & (0.334) \\ \hline 2,855 & 2,855 \\ \end{array}$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$

Table 4.2. Quantile Regressions

*** p<0.01, ** p<0.05, * p<0.1

Source : Author's calculation using Stata

In order to examine the rate of return to education across quantiles of earnings distribution for females, the quantile regression for female is run as depicted in Table 4.3. The main variable which is years of schooling is very statistically significant at one percent level at all quantiles, meaning that education is statistically significant affecting wage at all level of earnings distribution. The return to education are higher at the lower tail, around 11 and 12 percent, at the top of the earning distribution is at 9 percent. This finding shows that education benefit female workers at all level of earnings distribution especially the ones at the lower tail of earnings distribution. If many female workers at the lower tails are getting educated and getting higher return to their investment in education, it will help tightening the wage gap between the poor and the rich and further will tighten the inequality that tends to get more severe these days. Education helps tightening the inequality is in principal in line with finding from Psacharapoulus⁶ saying that returns to schooling decline by the level of schooling. The bigger the return to schooling at the lower educational level will give bigger implication in tightening income inequality in the society. Duraisamy⁷ finding is similar. Return to education will get higher as reaching the secondary level and then going down. In the opposite, higher return to education at the higher educational level, tend to create wider income inequality. Some findings supporting the higher return to education bigger at the higher educational level are made by Siphambe⁸, Appleton⁷, Farooq¹⁰, Chirwa and Matita⁹.

Table 4.3 depicts that employment in public sector also benefit female that are at the lower tail at earning distribution. It shows that employment in public sector for females can boost income equalizing process since it benefits more workers at the lower tail rather than the upper ones.

Variables	(1) 0 0.10	(2) 0 0.25	(3) 0 0.50	(4) 0 0.75	(5) 0 0.90
	<u> </u>	<u>v</u> -	L -	L -	L -
years_of_schooling	0.114***	0.128***	0.126***	0.114***	0.090***
	(0.026)	(0.012)	(0.009)	(0.008)	(0.018)
exper	0.020	0.013	0.021***	0.025***	-0.016
	(0.021)	(0.011)	(0.008)	(0.007)	(0.014)
exper2	-0.000	-0.000	-0.000*	-0.000***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
public	0.811***	0.662***	0.525***	0.319***	0.307**
	(0.236)	(0.108)	(0.078)	(0.063)	(0.133)
Constant	5.640***	5.521***	6.433***	7.004***	7.525***
	(0.487)	(0.327)	(0.394)	(0.203)	(0.293)
Observations	959	959	959	959	959
Standard errors in narentheses					

Table 4.3.	Quantile	Regressions	for Female
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*** p<0.01, ** p<0.05, * p<0.1

Source : Author's calculation using Stata

Table 4.4 depicts quantile regressions for male. The returns to education for male are very statistically significant in all level of earnings distribution. Unlike in females case in which return to education is higher in the lower tail of the distribution, return to education for males are evenly distributed in all quantiles of earnings distribution. This finding shows that in all level of income and education, males will be benefitted in the same proportion. These findings are very unique, acknowledging that although the rate of return to education for females are not higher than males as usually the case, but their rate of return to education proven to be helpful in tightening the gap of income inequality among females since the rates are higher for female workers at the lower level of earnings distribution.

Variables	(1) 0 0.10	(2) 0 0.25	(3) 0 0.50	(4) 0 0.75	(5) 0 0.90
	L -	<u> </u>	<u> </u>	<u> </u>	<u> </u>
years_of_schooling	0.103***	0.097***	0.098***	0.103***	0.105***
	(0.015)	(0.007)	(0.005)	(0.006)	(0.015)
exper	0.050***	0.043***	0.034***	0.032***	0.027*
-	(0.019)	(0.009)	(0.006)	(0.006)	(0.015)
exper2	-0.001*	-0.001***	-0.001***	-0.000***	-0.000
-	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
public	0.169	0.313***	0.316***	0.108**	-0.192
	(0.155)	(0.069)	(0.048)	(0.050)	(0.126)
Constant	6.181***	6.681***	7.124***	7.195***	8.486***
	(0.352)	(0.449)	(0.297)	(0.349)	(0.316)
Observations	1,896	1,896	1,896	1,896	1,896
	Standard errors in parentheses				
	*** p<0.01, ** p<0.05, * p<0.1				

Table 4.4. Quantile Regressions for Male

Source : Author's calculation using Stata

Interesting finding from Table 4.4, the variable *public* are statistically significantly affecting the log salary for males in second, third and fourth quantile but not the first quantile. The first quantile is filled with workers with lowest salary and education level. This means the income equalizing process through employment in public sector for male is not as profound for males given as well the lowest tail of income distribution is not significantly affected by it. The magnitude of the benefit of employment in public sector for males also lower compared to females.

V. CONCLUSION AND POLICY RECOMMENDATION

Income inequality has been seen as very serious issues for decades, particularly now. OECD has put emerging countries as the one who face the highest risk in income inequality. The wage gap has risen sharply throughout 2001 to 2007 as researched by Sakellariou², and the trend seems to continue to date. Education has always been seen as a social escalator to help particularly the poor to escape from poverty. This notion is supported by some studies believe in the opposite directions that rate of return to educations are the highest at the primary and secondary level rather than at the college level. On the contrary, some previous studies also said that despite the fact that education giving return to all level of education, the income inequality can get even wider since the rate of returns are different across the level of education and the higher the educational level, the rate gets even higher.

This paper uses the longitudinal data set from IFLS, from 5714 observers, working in both private and public sector coming from two waves of IFLS (2000 and 2007), to estimate the rate of return to education. The rate is found to be 7.5 percent which is in line with finding from Psacharapoulus⁵ saying that the rate of return of education in Asian countries is around 8 percent. Another interesting finding from this paper is that return to education for females is not different from males since usually the rate of return to education for females is usually higher than males. Some of the reasons probably because the female samples are the majority at the level of never attending school or in other word zero year of schooling which doesn't happen in another level of year of schooling. Many of female samples also receive higher education, they're about 46 percent in the level of receiving more than 12 years of schooling, this number is big given that female samples is only about 30 percent in total. But it might be that they don't work in sectors that don't value education as much as sectors in which male samples work.

To examine whether education can help tighten the income inequality gap, the quantile regression analysis is done, the result shows that education is very statistically significantly affecting wage in the similar rates across the earnings distribution. This is also the case when the quantile regression for males was done. This means that although rate of return doesn't prove to tighten the gap on income inequality since the rates are similar for all earnings distribution not showing the bigger rates for workers at the lower tail, but that education widen the income inequality isn't proven as well since workers at the higher tail with higher level of education also get the same rates or return to education. A different finding is shown for females' case. Their rates of return to education are higher for workers at the lower tail of the earnings distribution. This shows that for females, education can help to tighten the gap in income inequality since workers that are benefitted the most from education are those at the lower tail.

Another interesting finding is that public sector workers earn more compared to their peers in private sector. Public sector employment also help income equalizing process since it benefits workers particularly at the lower tail of earning distributions. The income equalizing process for public sector employment is more profound for female compared to male workers.

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