The Gender Wage Discrimination In Different Areas

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Date : January , 2020
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Introduction

During the history of the US, the gender wage gap has been considered as one of the main social-economic problems. Averagely, men earn more than women. Francine and Lawrence (1995) stated that the United States had a large differentials around 65 to 75 percent in the late 1980s. Moreover, Meng and Zhang (2001) suggested that there is a huge gap in wages between residents in urban areas and people from rural areas. While many economists and policy makers tried to solve this problem, this appeared continuously as a social-economic problem. Analyzing how the gender and the places where people live (urban 0, urban1) have impacts on their earnings will help to solve these problems through making new policies in the future.

This paper will explore mainly on whether the gender wage gap exists, and if the wage gap is present, is the gender wage gap in urban area smaller than in rural area while taking account of other explanatory variables such as family living in poverty, years of schooling of parents , years of schooling and working experience of the individuals. With these survey data, this research paper will be focus on the question: Which difficulties do females in rural area encounter when they want to argue a higher wage?

To investigate this research question, this paper will randomly draw and analyze 3000 samples which were collected in the ‘National Longitudinal Survey of Youth 1979’ from 1979 to 1994 in the USA. Among the samples, urban 2 and poverty n/a was dropped out in order to make the data clearly. Other statistical methods, including OLS, will be used to analyze these data.

In the rest of this research paper, relationships between the gender wage gap and the correlated variables will be discussed in details, together with a few considerable

theories about human capital. After that regression models and methods used to analyze the data will be introduced. Following the models, tables such as descriptive statistics, regression models of human capital and gender will be interpreted. Subsequent to this, analysis with respect to the research question will be raised above.

Theoretical Framework

In the research paper of Stanley and Jarrell (1998), they have calculated that the gender wage gap with a mean of 0.2904 which can be seen as 33.7% ($t=11.4$; $p<0.01$) of the female wage by using a 41-estimated sample. It is a significant gender discrimination on wages. According to human capital theory, the assets of people which can produce economic values, for example ones creativity, knowledge and working experiences, are directly linked to the wage determination. To illustrate the gender wage gap, the differences on human capitals of males and females should be considered. This paper will assess the differences through individuals' years of schooling, family background and employers' discrimination preferences.

Connell (1994) mentions that children raised from poor families are generally considered the least successful ones by the traditional measurements. They are also hard to be educated in normal ways. This brings out the effect of poverty on earnings. These children do not have conditions to go to school. They need to start working at young ages to support their households. Because of the low level of education, they can only handle the simple work without any techniques and get minimum wage hereafter. The poverty can influence the wage determinations through preventing children from becoming civilized which narrows down the way to gain a higher payment in the future.

Nelly (1990) stated that in most countries, females have a serious lower enrollment rate than males, meaning that averagely speaking, females have a lower chance of getting education than males. However, the years of schooling is directly correlated to the wage determination since people tend to believe that a person who has spent

more time on schooling acquired more knowledge and skills and can bare with the assignments better.

Nelly (1990) also found that females from a lower level of family background often register the lowest level of education. This shows that the cultures and the environments that females are brought up with, also called socialization, act as powerful forces which influence their chances of getting different levels of education. The level of gender socialization seems to vary from place to place. Urban areas are often considered modern and prosperous with many educational institutions built comparing with rural areas. This leads to a greater accessibility of education naturally. The awareness of gender equality is also more widespread in cities whereas people are not so open-minded in countrysides. When there are only few amount of education provided in rural areas, people tend to give the opportunities to males. Thus, females have more equal opportunity to be educated in urban areas. However, the different probabilities of being educated due to the limited amount of education provided and distinctive levels of gender discrimination in different areas create the gender gap in education.

Besides the objective reasons, there are also subjective reasons which explain that why a certain gender is preferred in the labour market. Aigner and Cain (1977) has found that, when firms have imperfect information about the job applicants, they tend to make choices according to some obvious characteristics, for instance gender. Kim and Cary (2017) stated that around 42% of females have claimed that they are discriminated in their working environment simply because of their gender. Since ancient time, instead of going to work, females are required to allocate more energy and time on doing housework and taking care of children. At the same time, males are the ones who take the responsibility to be the providers of families and pay less attention on household chores. Therefore, in traditional families, males are often the decision-makers while females are the executors. Women seem to be less effective than men as managers. This inherent impression may contribute to the employers' preferences discrimination to the potential employees during the recruiting time. The opportunity of getting a certain job or a certain wage level is not equivalent for males and females.

Based on the theories mentioned above, this paper will be interested in testing the hypothesis: Females usually fail to reach a higher level of human capital than males, and

they are always underpaid comparing with males with the same level of human capital. The question raised in the introduction: “Which difficulties do females in rural area encounter when they want to argue a higher wage?” can be reached by testing the hypothesis.

Methods

The sample used in this research paper was collected by National Longitudinal Survey of Youth 1979(NLSY79) in 2002, which was consisted of 1594 (males) and 1406 of (females). The complete data set called NLSY79 was conducted in 1979, with 12,686 respondents interviewed, consisted of 6403(males), 6283(females), which is the data that represents American youth, was held every two years. By using the data, relationship between gender wage gap and where people live (urban or not) will be tested in this paper with methods of OLS and descriptive statistics.

Urban (2) was deleted from the sample, (mention number). The research topic is mainly about gender wage gap in urban (1), rural (0) area, but not deleting urban (2) will make the regression complicated. And it is unclear what does the urban (2) indicate. Since it expresses the impact of living in urban (1) by 2 times of enlargement numerically, it will exert a huge influence on total earnings. The individuals with n/a for poverty, which indicate missing data, were deleted as well to avoid the confusion.

Earnings are calculated in the form of error plus other explanatory variables which are calculated in terms of per unit time. 6 related variables are used in the regression model in total. Continuous variables included in the model includes personal variables are: years of schooling (the highest grade completed as of 2002) expressed in years, working time related variables, EXP C (Total out-of-school work experience) expressed in years, and the last two, family background variables which are SM C (years of schooling of respondent’s mother)and SF C (years of schooling of respondent’s father). Besides these variables, other descriptive statistics were gathered in the form of dummy variables. They are people whose years of schooling are greater than 13 years, S(1) at the same time not living in urban(0), people whose years of schooling is greater than 13 years, S(1) and who is living in urban(1), people whose years of schooling is equal to or smaller than 13 S(1), at the same time not living in urban area(0), years of schooling is same or smaller than 13 S(1) and

living in urban area (1). In the table two , the variable of years of schooling is treated as a dummy variable, with data greater than 13 years denoted as 1 and 0 elsewhere.

In order to test the hypothesis, OLS method will be used for the linear regression model. In this regression model, ln(earnings) is the dependent variable which is controlled by explanatory variables mentioned above. Natural logarithm will be used since the main focus is figuring out the linear correlations between variables instead of focusing on the numerical changes. Control variables are years of schooling, years of schooling of respondent's mother, years of schooling of respondent's father and total out-of-school work experience expressed in years. Also, to be more precise, error and constant term are added in this model. When adding up these variables, and taking error in the account, the model which represents the relationship between earnings and human capital will look as:

ln(earnings) = α + β1(years of schooling) + β2(years of schooling of respondent's mother) + β3(years of schooling of respondent's father) + β4(total out-of-school working experience(years)) + ε

After validating correlation by using the multiple linear regression above, the research will go further by analyzing how the gender and urban have effects on earnings. Unlike the original regression model, the new model considers independent dummy variables. Since the main variable for this research is gender, we generate two separate equations, one for male and one for female, and rearrange the coefficients, by adding up β5(gender* years of schooling) and β6(gender*experience), in order to see the impacts from gender.

ln(earnings) = α+ β1(years of schooling) + β2(years of schooling of respondent's mother) + β3(years of schooling of respondent's father) + β4(total out-of-school work experience(years))+ β5(gender* years of schooling)+ β6(gender*experience) +β7(urban) + ε

By using these two regressions in the restricted samples, it will help to figure out which variables exert more effects on the earnings. By comparing the significance, coefficient and R-squared of each independent continuous variable and dummy variable, hypothesis will be tested and the research question ' Which difficulties do females in rural area encounter when they want to argue a higher wage?' can be answered.

Results

Table 1(Descriptive statistics)

All(n=3000-90-168=2742)			**Mean**	**Std. Dev.**	**Min**	**Max**	
Earnings($)(earnings)			19.67	15.61	2.13	197.23	
-family living in poverty(n=351)			15.43	11.01	2.13	90.71	
-family not living in poverty(n=2391)			20.29	16.09	2.13	197.23	
Years of schooling(s)			13.66	2.45	4.00	20.00	
Years of schooling of respondent's mother(sm)			11.63	2.65	0.00	20.00	
Years of schooling of respondent's father(sf)			11.72	3.44	0.00	20.00	
Total out of school work experience(years)(exp)			16.96	4.41	0.83	23.65	
			Mean	**Std. Dev.**	**Min**	**Max**	
Male (n=1382)	**Urban0** (n=423)	**earnings**	21.16	15.52	4.46	134.61	
		-family living in poverty(n=48)	18.41	10.35	5.00	47.11	
		-family not living in poverty(n=375)	21.51	16.03	4.46	134.61	
		s	13.15	2.43	7.00	20.00	
		sm	11.38	2.36	2.00	18.00	
		sf	11.34	3.39	0.00	20.00	
		exp	18.08	4.08	1.92	23.65	
	Urban1 (n=959)	**earnings**	23.82	19.71	2.13	197.23	
		-family living in poverty(n=105)	17.45	14.00	3.84	90.71	
		-family not living in poverty(n=854)	24.60	20.17	2.13	197.23	
		s	13.85	2.65	4.00	20.00	
		sm	11.92	2.73	0.00	20.00	

		sf	12.24	3.58	0.00	20.00	
		exp	17.76	3.95	0.88	23.60	
			Mean	**vs Male**	**Std. Dev.**	**Min**	**Max**
Female (n=1360)	**Urban0** (n=449)	**earnings**	14.69	-6.47	10.18	2.19	96.15
		-family living in poverty(n=57)	12.27	-6.14	8.32	4.35	44.87
		-family not living in poverty(n=392)	15.04	-6.47	10.39	2.19	96.15
		s	13.18	+0.03	2.14	6.00	20.00
		sm	11.12	-0.26	2.48	0.00	17.00
		sf	10.99	-0.35	3.02	0.00	20.00
		exp	16.12	+1.96	4.80	2.04	23.46
	Urban1 (n=911)	**earnings**	17.06	-6.76	11.16	2.13	120.19
		-family living in poverty(n=141)	14.19	-3.26	9.05	2.13	53.06
		-family not living in poverty(n=770）	17.58	-7.02	11.43	2.28	120.19
		s	13.92	+0.07	2.33	7.00	20.00
		sm	11.69	-0.23	2.72	0.00	20.00
		sf	11.71	-0.53	3.42	0.00	20.00
		exp	16.01	-1.75	4.53	0.83	23.56

Table 1 shows gender wage gap actually exists in the sample that is used. Firstly, average of male's earnings no matter where they live (urban 0, urban 1) are always higher than women' s earnings. Male's average earnings is $21.16 in urban 0 and $23.82 in urban areas while female's average earnings is $14.69 in urban 0 and $17.06 in urban areas. By comparing the gender wage gap in both areas, which is respectively $(21.16-14.69)=$6.47 for males and $(23.82-17.06)=$6.76 for females, it can be concluded here that gender wage gap in urban area is more serious than rural area(urban 0).

Male average schooling is 13.15(years) in urban 0 and 13.85(years) in urban 1 while female average schooling is 13.18 (years) in urban 0 and 13.92 (years) in urban1, which reveals the fact that years of schooling in urban is always larger comparing with rural areas for both gender. Many results were as expected, but surprisingly, females average years of schooling are always higher than males average years of schooling in both areas which is contrasting what is written in theoretical framework that usually males are the one who earn the chance when only few people get the opportunities to be educated due to lack of education institutions.

Table2

Years of schooling: years >13 =1

Years <=13 =0

	Total	**Male**	**%**	**Female**	**%**
Total respondents	2742	1382	50.3	1360	49.7
Y.O.S(1) & Urban(0)	300	145	48.3	155	51.7
Y.O.S(1) & Urban(1)	864	434	50.2	430	49.8
Y.O.S(0) & Urban(0)	572	278	48.6	294	51.4
Y.O.S(0) & Urban(1)	1006	525	52.2	481	47.8

By designing the graph by dividing years of schooling into two parts in order to make it as dummy variables, putting greater than 13 years of schooling as 1, and others equal to 0 made the graph easier to identify and figure out the relationship between years of schooling and urban with gender.

According to table 2, many of the percentages are hard to compare with since they are all around 48%-52%. The data do not show many differences between gender. In this sample, they are more differences in gender percentage of people whose Y.O.S(0) than Y.O.S(1) in urban area.

Table3 (Regression analysis of human capital model)

ln(earnings) = α + ε + β1(years of schooling) + β2(years of schooling of respondent's mother) + β3(years of schooling of respondent's father) + β4(total out of school work experience(years))

Regression analysis Method: Ordinary Least Squares (OLS) Dependent variable: Natural logarithm of earnings Interpretation of the p-value of each coefficient: *=p<0.05 **=p<0.01 ***=p<0.001		
	Model 1.1	Model 1.2
Coefficient of the Constant	0.293286***	0.261464**
Years of schooling	0.115018***	0.116612***
Years of schooling of respondent's mother	0.003513	0.003900
Years of schooling of respondent's father	0.017935***	0.017730***
Total out-of-school work experience	0.039249***	0.040057***
Excludes respondents whose family lives in poverty	No	Yes
R-Squared	0.3077	0.2845
Number of respondents in the sample	2742	2391

ln(earnings) = α + β1(years of schooling) + β2(years of schooling of respondent's mother) + β3(years of schooling of respondent's father) + β4(total out of school work experience(years)) + ε

Table 3 shows the relationship between earnings and human capital variables such as years of schooling, years of schooling of respondent's mother and father, and lastly, total out-of-school working experience. There are two models in the following graph, divided by whether their family live in poverty or not.

Both models shows significant positive effects of all variables on earnings except years of schooling of respondent's mother. For model 1.1, R- squared is 0.3077, and for model 1.2, R-squared is 0.2845.

Both models shows significant positive effects of all variables on earnings. For model 1.1, R- squared is 0.3077, and for model 1.2, R-squared is 0.2845.

Table 4(Regression analysis of gender)

Regression analysis

Method: Ordinary Least Squares (OLS)

Dependent variable: Natural logarithm of earnings

Interpretation of the p-value of each coefficient: *=p<0.05 **=p<0.01 ***=p<0.001

	Model2.1	Model3.1	Model2.2	Model3.2	Model2.3	Model3.3
Independent variables						
Constant	0.292740***	0.370112***	0.370112***	0.278182**	0.356330**	0.356330**
Years of schooling	0.114774***	0.112395***	0.114743***	0.115701***	0.111923***	0.118284***
Years of schooling of respondent's mother	0.002928	0.003139	0.002996	0.003001	0.006430	-0.000790
Years of schooling of respondent's father	0.015346***	0.006181***	0.023539***	0.014231***	0.005951	0.021703***
Total out of school work experience(years)	0.033369***	0.035306***	0.031332***	0.033973***	0.034374***	0.033836***
Urban	0.020550	0.060498*	-0.019749	0.030712	0.067262*	-0.006505
Male	0.251517***	0.140031	0.140030	0.256968***	0.125511	0.125511
Product term with male gender dummy variable						
Years of schooling		0.002348			0.006361	
Years of schooling of respondent's mother		-0.000143			-0.007221	
Years of schooling of respondent's father		0.017358*			0.015751*	
Total out of school work experience(years)		-0.003974			-0.000538	
Urban		-0.080247*			-0.073767	

Product term with female dummy variable						
Years of schooling			-0.002348			-0.006361
Years of schooling of respondent’s mother			0.000143			0.007221
Years of schooling of respondent’s father			-0.017358*			-0.015751*
Total out of school work experience(years)			0.003974			0.000538
Urban			0.080247*			0.073767
R-Squared	0.3490	0.3524	0.3524	0.3287	0.3309	0.3309
Number of respondents in the sample	2742	2742	2742	2391	2391	2391

Table 4 shows 6 regression model analysis on whether gender has influence on earnings while taking human capital variables into account. Model 2.1 and 3.2 have significant effects of males on earnings, but both of them do not have significant effects of urban on earnings. Model 3.1 also shows a significant effect of the product term between gender and urban on earnings.

All the 6 models in the table have significant effects of the product term between gender and schooling of respondent’s father on earnings. Model 3.1 and 2.2 have significant effect of the product term between gender and urban, while model 2.3 and 3.2 only have one significant effect of the product term.

Discussion

The gender wage gap is clearly illustrated in table 1. Table 2 concludes that the areas which ones live in are not quite relevant to their years of schooling. Table 3 has included the effect of dummy variable poverty. The value of R-squared drops from 0.3077 to 0.2845 when taking the poverty into account, meaning that it makes the model deviate more from the data. All the models do not fit the data set well enough according to the last table.

In order to solve the question “Which difficulties do females in rural area encounter when they want to argue a higher wage”, the wage determination is simply considered as the measurement of evaluating human capital. The results in table 1 have proven the existence of a gender wage gap in both urban(1) and rural(0) areas at the very first place just like Francine and Lawrence (1995) have said. After that, the paper makes comparisons between the human capital mentioned above to analyze the gender wage gap.

Although the hypothesis and the cited sources, Nelly (1990), have stated that females have a lower chance of getting higher education, the results have an opposite conclusion. It is shown that females have slightly longer time on schooling than males. By simply look at the results, the numbers contradict with the human capital theory. However, the years of schooling cannot represent the level of education of an individuals. It is unclear that whether females need to spend more time on earning the same level of diploma than males or not. To discuss the impact of schooling quality on wage determination, level of diploma seems to be more reliable. Furthermore, the value of years of schooling and even the level of diploma vary over different areas and educational institutions. It is quite hard to present one’s education level numerically. More and deeper researches deal with that will be demanded.

When the years of schooling of parents are considered as parts of one’s human capital, the table 4 shows that the years of schooling of father contribute a lot more than the years of schooling of mother. A more educated father tends to have a larger prompt on children’s learning process. This also points out the role of fathers in families as a result of gender socialization. An interesting phenomenon observed is that mothers’ years of schooling tends to have a tiny positive effect on daughters and negative effect on sons while fathers’ years of schooling have another way around. Yet, the impact from fathers are more effective than mothers according to their p-values. Because of the greater impact from fathers, females have less hope on getting higher level of education.

Overall, females do generate less human capital than males. Moreover, the differences are quite significant. Comparing with the gender wage gap, it is obvious that females' human capital are undervalued. Women earn less than men even if the human capitals are the same. As the paper mentioned above, the opportunity of getting a job is distant for men and women as long as the employers have a preference on gender. The largest obstacle on the way of minimizing the gender wage gap seems to be the gender socialization. What governments can do is eliminating the gender discrimination by setting policies to educate and spread the knowledge of gender equality, though deeper research will be required to develop specific practices.

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