Determinants of Wage Growth: An Empirical Analysis of Private Formal Sector in Bahawalpur Division

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Abstract

The focus of the study is to investigate the determinants of wage growth rate in private formal sector of Division Bahawalpur. A sample of 430 individuals is interviewed using a well structured interview schedule by convenient sampling. Ordinary least square method is applied to examine the dependency of growth rate of wage on different variables. Findings reveal that education, gender, experience, household locality and marital status of the respondents positively affect growth of wages at less than 1% level of significance.

Keywords: Wage Growth, Private Formal, Bahawalpur, Education, Gender, Experience, Household Locality, Marital Status.

1. Introduction

Traditionally higher wages have been associated with high education. Theorists of Human capital argue that since wages are meant to reward worker's current and future revenues, graduates with higher levels of education should be paid more than graduates with lower levels of education. Therefore, for investment in education graduates may expect to be paid with certain "extra" financial return (Becker, 1964). Spence (1973) developed an alternative theory to explain the salary bonus paid to academic degree holders. He argued that graduates may posses some natural skills required to get the educational credential, thus, regardless the potential human capital gains obtained in the university, the degree will act as a signal of such innate superior ability.

Becker (1962) and Mincer (1974) argued that education and training are the main determinants of human capital accumulation and in turn, positively and directly related with individuals lifetime wage earning. Returns to education in Mincerian earning function denoted with coefficient of school years that is, how much additional wage earning is taking place with an extra year of schooling. There is wide availability of literature that examines the return to education for various countries. In Pakistan, mostly household surveys known as Nationally Household Surveys do not provide sufficient information about many variables like, completed years of schooling, starting school age, school quality and training related to technical education. Due to these missing variables like missing data on school years completed, researcher can neither estimate potential experience nor compute the impact of one extra year of schooling on respondent's wage earnings. Therefore, the existing literature in Pakistan is lacking in computing total returns to education presented by Mincerian earning function. But in recent years, to concentrate on the imbalances in the social sector government of Pakistan has started Pakistan Integrated Household Survey (PIHS) a nation-wide survey. Rich information provided by this survey on the missing variables is mentioned above.

In our study we will investigate the determinants of wage growth of individuals. For measuring wage growth of individuals we take a case study of Division Bahawalpur of Pakistan. Pakistan has five provinces: Punjab, Sindh, Khyber Pukhtoonkhwa, Baluchistan and Gillgat baltistan. In Punjab province Bahawalpur division is an administrative division. Bahawalpur is located in the southeast of Punjab province. Bahawalpur division is further divided into districts and tehsils. There are three districts in Bahawalpur division: Bahawalpur, Bahawalnagar and Raheem-yar-Khan. These districts are further divided on tehsils level.

Bahawalpur district has five main tehsils: Ahmed-pur-Sharkiya, Bahawalpur, Hasilpur, Khairpur-Tamiwali and Yazman. Bahawalnagar district has five main tehsils: Chishtian, Fortabbas, Haroonabad, Bahawalnagar and Minchinabad. And the third district Raheem-yar-Khan has also four tehsils: Khanpur, Liaqatpur, Raheem-yar-Khan and Sadiqabad.

In this paper our objective is to estimate the determinants of wage growth of individuals in Bahawalpur division. Lot of research has been done in this area but there is no study that is carried out on wage growth of private formal sector in Bahawalpur Division, which allows us for further research work. The findings of this research study will be very helpful for identifying the some determinants of Wage growth of private formal sector in Bahawalpur division

2. Literature Review

Literature review on determinants of wage c of individuals is discussed in this section. Hawke, Anne (1998) explored the impact of computer skills on wage for males and females in Australia. Applying OLS method on the data taken from 1993 Survey of Training and education experience they found that the effect of usage of computer on wage earning differs with respect to different types of uses. Computer skills in it self do not determine the labor market returns, but returns to computer skills are depend upon the type of use of computer undertaking.

Faridi et. al., (2010) investigated the effect of different level of education on students earnings. Applying OLS method on data collected from ground inspection about different levels of education of students they concluded that years of completed education & experience are positively related to income of students.

Ekstrom and Erika (2003) explored the impact of compulsory and upper secondary level of education on earning of individuals using longitudinal individual data. Applying OLS technique on longitudinal individual data she concluded that adult secondary education caused reduction in earnings in case of Swedish males. However, no evidence is found for Swedish females.

Soto (2009) investigated the causality between education and aggregate level of income. By using panel regression, he found that there is a link between completed years of schooling and Gross Domestic Product (GDP). Major conclusion of this study is that an important determinant of income disparity is quality of schooling.

Shah (2007) investigated the determinants of women's earnings. Model was based on Mincerian equation. Applying Mincerian model on data gather on experience, level of education and monthly salary of fe-male teachers from public educational institutions & he conclude that there is positive effect of higher education on earning of female teachers.

Moheyuddin (2005) explored relationship between gender disparity in level of education, income, growth & development. He has done there is positive relationship between improvements in gender equality and per capita income, and for economic growth gender inequality is not good.

Comi and Brunello (2000) explored the relationship between education and the effects of education on growth of earnings. They collected the Cohort data from eleven European

countries and they found differences in growth of earnings at different levels of education.

Tinbergen (1971) explored the effects of education on distribution of income. He used cross sectional data and concluded that dispersion in years of education while these dispersions are higher or smaller would reduce level of inequality in USA, Neither land & Canada moderately only.

Asadullah and Niaz (2005) investigated the total labor market returns in Bangladesh. Using Mincer-Beckerian approach he concluded that there is much heterogeneity in returns. Estimates of earning returns are higher for urban sample than rural, and also higher for female than male sample. Method applied on the model is OLS method.

Dah et. al., (2006) explored the determinants of male and female earnings in Urban Lebanon. Applying multiple Regression analysis on cross-sectional data of labor force they found that there is gender differential in earnings in Lebanon.

Aslam and Munazza (2002) investigated the determinants of private return to education for male and female wage earner in Pakistan. Applying OLS, Heckman Correction, 2SLS and Household fixed effects on Pakistan Integrated Household Survey (2002) they found that total labor market returns are higher for males but the returns to education are higher for females. She suggested that there is a probability that parents may have an incentive to allocate more resources in boys than to girls within household.

3. Methodology & Data Sources

The methodology deals with model specification, data requirements and source of data. The paper is based on primary data taken from Division Bahawalpur. The data has been collected to see how growth of earning of individuals is affected by many explanatory variables like education, gender, experience, household locality and marital status.

Bahawalpur division is the area of our research. The entire population related to formal and private sector in Bahawalpur division are considered universe of our study. The relevant data for the study is collected from primary sources. A random sampling method is adopted in order to identify a sample, where each working person in private sector is discovered and interviewed. In interview we asked some questions to the People related to their educations, experiences. Our sample size is 430 respondents in Bahawalpur division. The interview schedule is used because this is the best tool to gather maximum first hand information. The interview schedule was prepared on the bases of a questionnaire. Each respondent was interviewed through structured questionnaire, as structured question are more reliable and they minimize the error of question wording. During the preparation of the interview schedule, care is taken not to include, ambiguous, vague and misleading questions, so, that the questions could be communicated accurately resulting in accurate responses. In this paper both open and closed ended question are used. To be sure about the practicability of the interview schedule and to ensure that all questions were being communicated accurately, a pre-testing was conducted. After pre-testing, some of the questions which were not found appropriate were dropped and some of the questions were modified and added. The interview was completed in 3 weeks. Respondents were asked to express their true personal attitudes and experiences about the particular issue. After interviewing all the respondents, the data was edited.

3.1 Log-Linear Regression

Log Linear regression is an approach to modeling the relationship between a dependent and independent variable in which regressand (dependent variable) is Logarithmic because it measures growth of dependent variable.

3.2 Model Specification and Operational Definitions of Variables

According to our research requirement we have to analyze the impact of variables like education, gender, marital status, household locality and experience on log wage. Our model is log-linear model.

The relationship between the dependent and independent variable is;

Log wage = f (education, gender, experience, household locality, marital status)

Log wage = loge wage measured as log of rupees earned per month.

Education = education measured as Intermediate = 0, Graduation = 1, Masters = 2

Gender = Define gender as Male = 1, Female = 0

Household = Define household locality as Urban = 1, Rural = 0

Marital status= Define marital status Married = 1, Single = 0

4. Results and Discussion

Results of data analysis are discussed in this section. Analysis of data is done using ordinary least square method in SPSS. Determinants of growth rate of wage of private formal sector are explored using log-lin model. Log wage is regressed on gender, education, experience, household locality and marital status. Table 4.1 explains various measures of model fitness as R^2, Adjusted R^2 and Durbin Watson d statistic for the detection of model specification error and autocorrelation. The co-efficient of determination R^2 is an important measure of goodness of fit of fitted regression model that is it finds out how "well" the sample regression line fits the data. More simply, it shows the proportion of variations in dependent variable due to all explanatory variables included in the model. Its value always lie between 0 and 1, greater the value of R^2 larger (closer to 1) the evidence of goodness of fits. In our study $R^2 = 0.661$ which shows that 66.1% variations in log wage is due to all the explanatory variables like gender, education, Experience, Household locality and marital status.

Table 4.1 Model Summary

Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**	**Durbin-Watson**
	0.813	0.661	0.657	0.57377	1.345

Dependent Variable: Log wage

Predictors: (Constant), gender, education, Experience, Household locality, Marital status

If we increase the number of explanatory variables than R^2 increases, to control this effect we adjust the degrees of freedom in R^2 and obtain adjusted R^2. The value of Adjusted R^2 shows that 65.7% variations in log wage due adjusted fluctuations in all explanatory variables included in our model.

We used Durbin Watson d statistic to detect autocorrelation and any type of specification error in our regression model. A rule of thumb, if the value of Durbin-Watson is 2 in an application, than it can be believed that there is no autocorrelation, either positive or negative. Table 1shows that in our model DW is 1.345 so, using table values of DW it is observed that there is no autocorrelation or any type of model specification error.

Table 4.2 ANOVA

	Model	Sum of Squares	df	Mean Square	F Sig.	
1.	Regression	271.648	5	54.330		
	Residual	139.258	423	0.329	165.027	.000
	Total	410.906	428			

Dependent Variable: Log wage

Predictors: (Constant), gender, education, Experience, Households locality, Marital Status

Table 4.2 gives ANOVA that bifurcates total variations (TSS) in explained (ESS) and unexplained or residual (RSS) variations. In our study ESS is 271.648 which are 66.11% of total variations and this is variations in log wage due to fluctuations in all explanatory variables. The residual sum of square shows the variations in dependent variable that are not due to explanatory variables included in our model. RSS in our study is 139.258 indicates that there is 139.258 variations in log wage due to residuals which is 33.89% of total variations. The use of F-test statistic is made in order to examine the overall significance of the model. Value of F-test statistic is 165.027 which show that model is significant at 100 percent confidence level.

Table 4.3 Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t Sig.		Collinearity Statistics	
	B	Std. Error	Beta			TOL	VIF
(Constant)	7.349	0.073		101.109	0.000		
gender	0.905	0.059	0.462	15.386	0.000	0.89	1.127
education	0.512	0.039	0.382	13.223	0.000	959	1.043
Experience	0.042	0.065	0.285	8.764	0.000	0.76	1.322
Household-locality	0.227	0.066	0.102	3.52	0.000	0.96	1.044
Marital status	0.214	0.066	0.106	3.223	0.001	0.74	1.348

Dependent Variable: Log-wage

Table 4.3 shows regression coefficients. All explanatory variables are given in table 4.3 with their coefficients, level of significance and collinearity statistics as Tolerance and Variance Inflating Factor (VIF). The coefficient of 'Education' is 0.905 which shows that after controlling the effect of all the variables, wage will increase 51.20% due to every higher level

of education and this result is highly statistically significant at zero percent significance level. A person having high level of education earns more wages than a person having low level of education. Therefore, education has a significant role in determining the wages of respondents. The coefficient of 'Experience' shows that after controlling for all the variables, wage will increase 4.2% due to one year increase in experience. And t value is 8.764 that is significant value which is clear from level of significance. Coefficient of household locality which is 0.227 is also significant at 0.000% level of significance. Wage will increase 22.7% due to change in household locality (Rural to Urban). And t value is 3.520 that is also highly statistically significant value. From evidence it is clear that a person located in urban area earns 22.7 percent more than a person located in rural area. Coefficient of marital status is 0.214 which means wages will increase 21.4% as a person gets married. All of these factors significantly and positively affect the wage growth of individuals in Division Bahawalpur.

In our study to check multicollinearity we use Tolerance and Variance inflation factor (VIF) shows in Table 4.5. The larger is the value of VIF the Higher collinear in the variable Xj. In the limit VIF can be finite in case of perfect collinearity. A rule of thumb, if the VIF of a variable is greater then 10, which will happen if R^2j is higher then 0.90, that variable is said be highly collinear. In our study result shows that the value of VIF of variables Gender, Education, Experience, Household locality and marital status are 1.127, 1.043, 1.322, 1.044, and 1.348 respectively. That shows our explanatory variables are not collinear with each other. And multicollinearity doesn't exist in our results among these variables such as Gender, education, experience, household locality and marital status. Another statistic that is inverse of VIF is Tolerance (TOL) is use to check the multicollinearity in our results show in table 4.5. The value of TOL is b/w 0-1. The closer is the value of TOL of a variable to 0, the larger the degree of collinearity of that variable with other Independent variable. On the other hand, the closer TOL of a variable to 1, the greater the evidence that variable is not collinear with the other regressors. Our result shows that the value of TOL of variables is closer to 1, which shows no collinearity of a variable with other regressors. The value of TOL of variables gender, education, experience, household locality and marital status are .888, .959, .756, .958, and .742 respectively. Which is evidence that no variable collinear with other regressors in our results.

5. Conclusion and Suggestions

This study aims at identifying the major determinants of individuals wage growth in Division Bahawalpur. Our results identify that education, experience, gender, marital status and household locality are some of major factors that determine individual's earning growth in Division Bahawalpur. On the basis of results, we conclude that level of education, experience, gender; household locality and marital status have positive impact on wage growth. Marital status of an individual has positive impact on his/her wage growth as 1 is assigned to married and 0 otherwise, so, married persons get higher wages in private formal sector as allowances for spouse and children for education and health are added in wages, hence give rise to wages. Household locality has positive impact on wage growth means the person living in urban locality gets higher wage growth as compared to others because of competition among employers and higher employment opportunities and existence of well reputed employers in urban areas as well as having big city allowance as percentage of basic salary. Similarly,

gender has positive impact as males wage growth is higher than that of females because of difference in productivity in many jobs especially in sales and marketing.

Keeping in view results of our study, it is suggested that education should be enhanced to get higher wages in formal private sector. Similarly, if individuals shift from rural to urban areas, then they get increase in their wages in the form of some big city allowances or any other way.

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