Gender Earnings Inequality and Discrimination in the Pakistani Labor Market

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Abstract

In this paper it has been tried to estimate the monthly earnings differentials between male and female labor force in Pakistan's labor market using the data of the most recent Pakistan Social and Living Standard Measurement (PSLM) survey 2004-05. The study decomposed the monthly earnings differentials between male and female labor force following the Oaxaca (1973) and Cotton (1988) methodology, while for the estimation of the rates of return to human capital and other non-human capital variables; the study used the Mincerian (1974) model. The decomposition of earnings differentials between male and female labor force indicate that there is a huge discrimination against female workers in the labor market of Pakistan. The PSLM (2004-05) data supports the hypothesis that male workers enjoy an economic advantage over the female workers having the same characteristics in the labor market of Pakistan. Eliminating this discrimination against the female worker with a more focus and more investment in female's education and schooling is needed for reducing the earnings differentials between them.

Keywords: Gender disparity, Discrimination, Labor market, Pakistan

Introduction

It is generally agreed upon that females do not enjoy equal rights and status especially in less developed countries of the globe. They are discriminated in all walks of life. Various theoretical and empirical studies show gender inequality in salaries, earnings, income and even in pay scales. These empirical research studies confirm that female workers

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earn low than their male counter parts. This gender earnings gap between male and female in the labor market is due to both the contribution of human capital difference and pure discrimination.[1] Although female workers have been catching up but at a slow rate. The cause of this slow catching up process is that females do most of the work in their houses and they are mostly responsible for taking care of their children.[2]

The objective of this paper is to investigate the human capital and other non human capital determinants of the male and female earnings gap in Pakistan for the year 2004-05 using earnings decomposition technique of Oaxaca and Cotton.[3]

Data and Method

For this paper, the data of the Pakistan social and living standard measurement (PSLM) survey [4] for the year 2004-05 has been used. This survey contains almost all the relevant information needed for this paper. The PSLM (2004-05) survey covers 91,319 household members both male and female. Out of this number, 47,161 (51.6%) were male while 44,158 (48.4%) were female through out Pakistan. The mean age of the female labor force was 32.16 years while of male labor force the mean age was 36.7 years. The urban-rural divide shows that rural population in Pakistan is greater than urban therefore, 60.3 percent of the survey constitute the rural while the remaining 39.7 percent of the survey is from urban areas.[5]

The data of the PSLM (2004-05) survey are the best source for an adequate analysis of monthly earnings differentials. Information about individual monthly earnings, which is the dependant variable in this study is provided in this survey.

To decompose the monthly earnings of the labor force, the study used the Oaxaca and Cotton methodology.[6] The Mincerian equation was

estimated separately for male and female labor force. The equation for male labor force was:

$$InY_m = \beta X_{mi} + u_i \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(1)$$

While for female labor force:

$$InY_f = \beta X_{fi} + u_i \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots..(2)$$

Where Y_m and Y_f represents the log monthly earnings of male and female workers while X_{mi} and X_{fi} shows the vector of independent variables influencing the earnings of the labor force.

Oaxaca developed a discrimination coefficient represented by the symbol D.[7] It is the ratio of the actual male-female earnings ratio minus the non-discriminating male-female earnings ratio whole divided by the non-discriminating male-female earnings ratio. Symbolically;

$$D = \frac{(Y_m / Y_f) - (Y_m / Y_f)^0}{(Y_m / Y_f)^0} \dots\dots\dots\dots\dots\dots\dots(3)$$

The value of D can also be derived by the discrimination coefficient developed by cottton.[8] According to him:

$$D = \frac{\left(Y_m / Y_f\right) - \left(MP_m / MP_f\right)}{\left(MP_m / MP_f\right)} \dots\dots\dots\dots\dots(4)$$

Where $\left(Y_m / Y_f\right)$ is the ratio of male and female earnings while $\left(MP_m / MP_f\right)$ is the ratio of marginal productivity of male and female worker in the labor market.

Male and female worker in the labor market differ in personal characteristics which results in income differences in the labor market. The study decomposed their earning differences in both the differences

in earnings due to differences in productivity and secondly differences due to gender discrimination in the labor market.

$$In(Y_m) - In(Y_f) = f(X_{mi}) - f(X_{fi}) \dots\dots\dots\dots\dots\dots\dots\dots(5)$$

The above equation 5 and some manipulations gives the following earnings decomposition :[9]

$$In(Y_m) - In(Y_f) = \beta_m (X_{mi} - X_{fi}) + In(D+1) \dots\dots\dots\dots\dots(6)$$

or

$$In(Y_m) - In(Y_f) = \beta_f (X_{mi} - X_{fi}) + In(D+1) \dots\dots\dots\dots\dots(7)$$

The first term on the right hand side of the equation 6 and 7 measures the earnings differentials between male and female due to differences in personal characteristics and the second term measures the gender discrimination in the labor market.

Results

Estimation results were obtained from the Mincerian earnings function based on separate male and female regression equation. The results show that human capital theory is valid and played a crucial role in earnings of an individual. Both schooling and experience played an important role in determining the earnings of a worker.

Schooling was divided into twelve levels (including professional fields) for the male and female workers in order to estimate their separate impact on earnings. Table 1 contains the regression results for the male and female labor force. The results show that primary schooling raised the earnings of a male worker by 3.04 percent, while its impact for female worker is 2.12 percent.[10] The results reveal that as the level of schooling of the labor force increases, percentage impact on their monthly earnings also increases. The rates of return to middle, matric,

intermediate, bachelor, master, M.Phil and Ph.D levels were 2.6 percent, 7.4 percent, 5.9 percent, 10.3 percent, 9.4 percent, 4 percent, and 2.7 percent respectively for the male worker. While for female worker, the impact of these levels of schooling was: 2.12, 1.4, 4, 7.8, and 16.2 respectively. It should be noted that there were no M.Phil degree holders in the female labor force. The impact of age (proxy for experience) on the earnings of male worker was 4.2 percent while for female worker it was 1.64 percent.

The return to education was greater for female than male especially to intermediate level and on ward shows that the demand for female worker was greater. Regarding professional education, female worker with degree in engineering, medical and agriculture earned greater than her male counterpart as shown in the table 1.

Table 1 Regression results for the male and female labor force				
	Male labor force		Female labor force	
Variables	Coefficients	t-values	Coefficients	t-values
Constant	6.265*	5.981	5.599	0.755
Primary (PRIM)	0.03*	3.838	0.021	1.077
Middle (MID)	0.026*	3.37	0.014	0.75
Matric (MAT)	0.071*	8.667	0.04**	1.727
Higher Secondary (HSEC)	0.058*	7.636	0.075*	3.448
Under Graduation (UGR)	0.098*	12.078	0.15*	6.218
Engineering (ENGG)	0.059*	8.297	0.093*	4.976
Graduation (GRA)	0.09*	11.618	0.318*	13.877
Medical (MB)	0.073*	10.197	0.212*	10.492
Agriculture (AGR)	0.011	1.525	0.047**	2.548
Computer Science (COMP)	0.015**	2.116	0.008	0.397
M.Phil (MPH)	0.04*	5.732	-	-
Ph.D (PHD)	0.027*	3.894	0.03**	1.642
AGE	0.0411*	11.797	0.0162**	1.855
AGE^2	-0.000323*	-9.301	-0.00084	-0.97
Senior Officials and	0.105*	7.608	0.149*	5.691

Managers (SOM)				
Professionals (PROF)	0.051**	2.961	0.089**	1.786
Technicians and Associate Professionals (TAP)	0.052*	3.305	0.042	1.245
Clerics (CL)	0.009	0.597	0.006	0.239
Service, Shop and Sales Workers (SSSW)	0.089**	2.342	0.092	1.587
Skilled Agriculture and Fishery Workers (SAF)	0.083**	2.166	0.079	1.248
Craft and Trade Workers (CTW)	0.034**	2.102	0.018	0.434
Plant and Machinery Operators (PMO)	0.029**	1.568	0.017	0.797
Elementary Occupations (EO)	0.059**	1.862	0.086	1.39
Agriculture, Forestry and Fishing (AFF)	-0.027**	-1.377	-0.089**	-1.968
Mining and Quarrying (MQ)	-0.003	-0.448	0.004	0.222
Manufacturing (MF)	-0.016**	-1.709	-0.036	-1.156
Electricity (ELC)	-0.007	-0.966	-0.004	-0.209
Construction (CON)	-0.013**	-1.421	-0.01	-0.497
Whole Sale and Trade Workers (WRT)	0.002	0.165	-0.02	-0.872
Real Estate and Insurance (REI)	0	0.009	0.045**	2.385
Social and Personal Services (SPS)	-0.044*	-3.994	-0.123**	-3.077
Government (GOVT)	0.01	0.703	0.145*	3.335
Personal Business (PBUS)	0.016	1.135	0.026	0.588
Non-Governmental Organizations (NGO)	-0.005	-0.662	-0.001	-0.054
Sindh (SIND)	-0.005	-0.58	0.03	1.484
North West Frontier Province (NWFP)	-0.014**	-1.753	0.037**	1.863
Balochistan (BAL)	0.013**	1.664	0.065*	3.369
Urban Areas (UR)	0.054*	6.755	0.029	1.317
R^2	0.67		0.316	
F-Statistics	36.642		25.503	
N	19283		2084	

* Significant at 99 percent level, ** Significant at 95 percent level.

In order to estimate the effect of different occupations on the earnings, various occupational categories were included in the regression equation. The results indicated that occupational choice was important in the determination of monthly earnings in the labor market of Pakistan. Further, different industrial groups were also included in the regression equation. The regression results revealed that earnings of both male and female worker were lower in social and personal services than all other industrial groups. The coefficiants for dummy urban areas confirmed that a worker in urban area earned more than a worker working in rural areas. However, the impact was greater for male as compared to female worker. The coefficients for all the four provinces indicated significant inter-provincial differences in earnings for both male and female workers. These coefficients except for Balochistan, were negative showing that the earnings were lower for male workers. On the other hand, for female worker, the coefficients for all the provinces were positive and statistically significant, which revealed that the percentage impact on earnings was greater as compared to male worker.

In order to decompose the male-female earnings differential, the study followed the methodology of Oaxaca and cotton.[11] The impacts of discrimination and differences in personal characteristics of Mincerian model are given in table 2. The second column of the table 2 shows the earnings differential as [In (G+1)], where G is the average earnings of male worker minus the female average monthly earnings. Symbolically,

$$G = \frac{\left(Y_m - Y_f\right)}{\left(Y_f\right)}$$

Putting the values in this formula to get the value of G, the value becomes 1.0332.

Further, this column shows all the independent characteristics that vary by sex. Moreover, this column gives us the adjustment to the monthly earnings differential that can be explained by ($-\beta_f \Delta \overline{X}$), where β_f is the calculated regression coefficient for female worker, while $\Delta \overline{X}$ shows the difference between mean values of the variables for female and male worker ($\Delta \overline{X} = \overline{X}_m - \overline{X}_f$). That is ($-\beta_f \Delta \overline{X}$) shows the adjustment to the earnings differential due to gender differences in personal characteristics. The third column of the table shows the adjustments as percentage of the earnings differential between male and female workers.

Examining the male regression results, 26.3 percent of the monthly earnings differential was explained by differences in the years of age. Primary schooling explained 0.38 percent, middle standard 0.29 percent, secondary schooling 0.70 percent, undergraduate studies explained 2.79 percent while graduation explained 2.538 percent of the monthly earnings differential between male and female worker. In various types of occupations, senior officials and managers explained 0.148 percent, professionals 0.575, Technicians and Associate Professionals 0.073 percent, Service, Shop and Sales Workers 1.381 percent, Skilled Agriculture and Fishery Workers 0.468 percent, Craft and Trade Workers 0.186 percent, Plant and Machinery Operators 0.163 percent while Elementary Occupations explained 0.499 percent of the earnings differential between male and female worker. Regarding various kinds of industries where the workers were employed, Agriculture, Forestry and Fishing explained 0.114 percent, Electricity 0.146 percent and Real Estate and Insurance explained 1.365 percent of earnings differential.

Table 2 The effects of discrimination and differences in characteristics estimated from the fully extended Mincerian model				
	Male Workers Regression weights 2004-05		Female Workers Regression weights 2004-05	
Item	In	Percent	In	Percent
Wage Differential	0.709	100	0.709	100
Adjustment for Sex differences in:				
Education				
PRIM	-0.0027	-0.38	-0.00189	-0.266
MID	-0.00208	-0.239	-0.00112	-0.157
MAT	-0.00497	-0.701	-0.0028	-0.394
HSEC	0	0	0	0
UGR	0.0198	2.792	0.003	0.423
ENGG	0	0	0	0
GRA	0.018	2.538	0.00636	0.897
AGE	-0.186594	-26.311	-0.073548	-10.373
Occupations				
SOM	-0.00105	-0.148	-0.00148	-0.208
PROF	0.00408	0.575	0.00712	1
TAP	0.00052	0.073	0.00042	0.059
CL	-0.0018	-0.025	-0.00012	-0.0169
SSSW	-0.00979	-1.381	-0.01012	-1.427
SAF	-0.00332	-0.468	-0.00316	-0.445
CTW	0.00132	0.186	0.00072	0.101
PMO	-0.00116	-0.163	-0.00068	-0.0959
EO	0.00354	0.499	0.00516	0.727
Industrial Groups				
AFF	-0.00081	-0.114	-0.00267	-0.376
MQ	0.00003	0.00423	-0.00004	-0.00564
MF	0	0	0	0
ELC	0.0007	0.0987	0.00004	0.00564
CON	0.00104	0.146	0.0008	0.112
WRT	-0.0003	-0.0423	0.003	0.423
REI	0	0	-0.00045	-0.0634
SPS	-0.00968	-1.365	-0.02706	-3.816
Organizations				
GOVT	0.0003	0.0423	0.00435	0.613
PBUS	-0.00128	-0.1805	-0.00208	-0.293

NGO	0	0	0	0
Provinces				
SIND	0.00055	0.0775	-0.0033	-0.465
NWFP	0.00056	0.0789	-0.00148	-0.208
BAL	-0.00143	-0.201	-0.00715	-1.008
In (D+1)	0.543	75.34	0.601	85.273
D	0.721		0.822	

In different organizations, PBUS explained 0.18 percent followed by the government sector by 0.042 percent. Regarding different regions, the province of Balochistan explained 0.20 percent, NWFP 0.078 percent, followed by Sindh by 0.077 percent. So, 75.34 percent of monthly earnings differential is unexplained by our explanatory or independent variables and thus attributed to discrimination leaving $\ln(D + 1) = 0.543$. Thus, $D = 0.721$ using male's regression results. This means that male worker would earn 172 percent of a female worker's monthly earnings.

On the other hand, using female regression results for discrimination, differences in years of age explained 10.4 percent of earnings differential between male and female workers in Pakistan. In different levels of education: primary schooling explained 0.266 percent, middle standard 0.157, secondary education 0.39 percent, under-graduation 0.42 percent while graduation top the difference by 0.897 percent of earnings differential between male and female worker. Regarding different occupations, SOM explained 0.20 percent of earnings differential, PROF 1 percent, SSSW 1.427 percent, EO 0.727 percent, while SAF explained 0.445 percent of the difference between both the genders. Among the different kinds of industries, SPS explained 3.81 percent, WRT 0.423 percent, while CON explained 0.112 percent of the earnings differential. The government sector (GOVT) explained 0.61

percent which is the highest percentage of difference in monthly earnings differential in different organizations.

The regional impact was represented by different provinces and urban-rural divide. The province of Balochistan explained 1.008 percent of the earnings differential followed by 0.4665 in Sindh, while NWFP explained 0.208 percent of earnings differential between male and female workers. Collectively 85.273 percent of earnings differential remain unexplained by independent variables included in the model and thus attributed to discrimination leaving In (D + 1) = 0.60. Thus, D = 0.822 using female worker's regression results in 2004-05 in Pakistan, as shown in table 2. This means that male workers with the same characteristics as female workers would earn 182 percent of female worker's monthly earnings, or female worker would earn Rs. 82 for every Rs. 100 earned by male with same individual characteristics.

Summary and Conclusion

The purpose of this paper was to estimate and determine the factors playing an important role in determination of monthly earnings of the individual worker and to decompose the earnings differentials between male and female worker in Pakistan. The empirical findings showed that education and experience of the labor force increased the earnings of the labor force. This finding supported the human capital theory. The study also indicated that higher earnings were associated with higher level of education.

The results revealed that male worker enjoyed an earnings advantage over female worker with the same characteristics. Using male's regression estimates, male worker earned 72 percent more than female. While using female's regression estimates, male worker earned 82 percent more than female worker having the same characteristics.

Moreover, 75 percent to 85 percent of male-female earnings differential was based on gender discrimination in the market.

The main policy implications of this paper are that the approach to increasing the monthly earnings of female labor force to increasing their earnings to be equal to that of male is more emphasis on more investment in education especially of females. Secondly, efforts should also to be made for entering females into high paying occupations like senior officials and managers (SOM) and professionals (PROF).

End Notes:

[1] M. Wang, and F. Cai, Gender Wage Differentials in China's urban Labor Market. World Institute for Development Economics Research. Research Paper No. 146. United Nations University, 2006

[2] M.C Lennon, and S. Rosefeld, Relative Fairness and the Division of homework: the importance of option. Am J Social, 100, 1994, pp. 506-531.

[3] R. Oaxaca, Male-Female Wage Differentials in Urban Labor Markets. International Economic Review, 14 (3), 1973, pp. 693-709; J. Cotton, On the Decomposition of Wage Differential. The Review of Economics and Statistics, 70, 1988, pp. 236-243.

[4] Pakistan Social and Living Standards Measurement Survey, Government of Pakistan, Islamabad, Federal Bureau of Statistics, 2004-05.

[5] Ibid.

[6] R. Oaxaca, Male-Female Wage Differentials in Urban Labor Markets; J. Cotton, On the Decomposition of Wage Differential.

[7] R. Oaxaca, Male-Female Wage Differentials in Urban Labor Markets.

[8] J. Cotton, On the Decomposition of Wage Differential.

[9] See R. Oaxaca, Male-Female Wage Differentials in Urban Labor Markets.

[10] The rates of return to schooling were calculated by taking the anti-log of the estimated coefficient of education of the labor force and subtract 1 from the value. To find the percentages, multiply the derived value by 100 (Gujarati, 1995, p. 171).

[11] R. Oaxaca, Male-Female Wage Differentials in Urban Labor Markets. International Economic Review, 14 (3), 1973, pp. 693-709; J. Cotton, On the Decomposition of Wage Differential. The Review of Economics and Statistics, 70, 1988, pp. 236-243.

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