

Occupational Gender Segregation and Its Determinants, an Analysis of Pakistan Labor Force Market

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Received July 13, 2013; Revised July 27, 2013; Accepted July 30, 2013

Abstract This paper explores that there is gender segregation in the Pakistan labor force market. To calculate this segregation data from Pakistan labor force survey 2009-10 has been used and Duncan index technique was used to calculate the segregation index. Researcher considered nine major professions to check the segregation index. After finding the segregation indices this paper finds the determinants of this segregation. This paper examines the impact of age, gender, training, province and education on segregation index. It was found that in the profession of the manager there was higher segregation comparatively. It was also observed that an increase in the educational segregation decreases. It is suggested that education should be improved so that the segregation may be reduced.

Keywords: occupational, gender segregation, determinants, Pakistan labor force market

Cite This Article: Muhammad Irfan, Sofia Anwar, and Waqar Akram. "Occupational Gender Segregation and its Determinants, an Analysis of Pakistan Labor Force Market." *American Journal of Educational Research* 1, no. 7 (2013): 221-224. doi: 10.12691/education-1-7-1.

1. Introduction

Gender segregation means difference in participation of male and females in different occupations that may be arises due to certain reasons like education, age, experience, skills, geographical boundaries, working environment and job satisfaction etc. it is usually observed that females are lesser than the males in many working areas except some professions which are highly associated with females [1]. This segregation can slow down the economic and social growth of the country. It was observed that gender segregation in developed countries is lesser than the developing countries.

Human being can differentiate themselves by acquiring education, skill, training, experience etc. after that they have to choose the profession where they can perform very well. There may be many reasons for choosing a profession for example earnings, status, management, job security, authorities, working hours, gender, personal interest, white collar, blue collar etc. With these reasons gender segregation was observed in the labor market of Pakistan, the literature review will throw some light on these reasons. Due to lower education girls could not earn more than boys hence their participation in National income; economic growth and development remain insignificant. He concluded that there was income inequality and educational inequality especially in UDCs that put a negative impact on economic growth [2].

The human capital development has remained an important issue in every era and for every nation. The nation who does have differences based on gender is considered as developing nations. The disparities are based on gender, race, color, ethnic group etc. By reducing these disparities an individual will be more productive and more satisfied with his work. Similarly by enhancing the productivity of an individual the production of a nation will improve. That nation will move towards economic growth and development although there are many other factors that would influence the economic growth and development [3].

This research will use cross sectional data that are collected from different respondent at a single time period for analysis purposes. The data from Pakistan Labor Force Survey 2009-2010 will be used for estimating the gender segregation. Duncan's index of Segregation will be used to calculate the level of segregation further more Tobit model will be used to find the findings because the dependent variable has more than two values, this methodology can give accurate results.

Pakistan is a populous country of the world in mid of the 2008 the total population was 160.9 million. Furthermore the population of Pakistan is increasing rapidly with 1.8 percent (2008) at this velocity the total population of Pakistan might be reached double in 2045. In these conditions Pakistan has to provide employment opportunity to maximum labor force, reduce the wage differentials due to gender, improve the working

¹ See Gender Inequality in Education: Impact on Income, Growth and Development.

² See Occupational Sex Segregation And Economic Development
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environment, increase technical knowledge, use their resources to best of planning, reduce the gap between supply and demand of trained and educated labor force, increase the female labor force participation [4]. For all these complications Government has to take some concrete steps otherwise this would be a greatest threat to exist of a peaceful country.

The inequality in labor force participation, earnings, racial and wage is also found in the labor market of Pakistan. To check the dissimilarity index Duncan's approach can be applied. These inequalities are due to many reasons like education, age, skills, geographical boundaries and training etc. Here we will find the disparities in different professions that are due to gender. The occupations are categorized on the basis of similarity of skills that essentially require to fulfil the duties or task of that particular occupation. ISCO-88 has defined four level of aggregation consisting of 10 major groups, 28 sub major groups, 116 minor groups and 390 unit groups. We were considering 10 major occupations but our data set "Pakistan labor force survey 2009-10" did not pertain the accurate and useful detail of 10th occupation that was "army". So we would use the below detailed 9 major profession, that have been categorized according to ISCO (³ International Standard Classification of Occupation 2008) rules and regulations.

Table 1. Detail of Merged Occupations

Merged Occupations	Micro Occupations
Manager	Legislator or senior officer, corporate manager, general manager, physical or engineering or science professional
Professional	Life science and health science, teaching professional, other professional, physical or engineering or science associate prof
Technical	Life & health source. Associate prof, teaching associate professional, other associate professional
Clerks	Office clerk, customer service clerk
Service	Personal or protective services workers, model or sales person or demonstrators
Skilled	Market oriented skilled Agri/ fishery worker, subsistence Agri. & fishery workers
Craft	Extraction & building trade worker, metal machinery and related trade worker, precision handicraft printing related worker, other craft & related trade worker, stationary plant & related operator
Plant Operator	Machine operator & assemblers, driver and mobile plant operator, sale and service elementary occupation,
Elementary	Laborer in Agri/ fishery, in mining construction manufacturing & transport
Armed forces	Only armed forces (we are not taking this profession for our analysis due to insufficient information and data)

This study has some objectives that are given below:

Objectives

- To find the level of gender segregation.
- To find the factors those are responsible for segregation.
- To make a policy formation in the light of the results that could reduce the disparities.

2. Review of Literature

The literature review through some light on the background of the study and make us familiar with the relevant research work that was undertaken in the past period at national and international level regarding gender based segregation in the occupations.

[5] explored that education plays a vital role in human development as well as there is gender variation in education that is an obstacle in the way of economic and social growth. Education helps the people to choose the occupation that may help them in better earning. They concluded that there was disparity between male and female earnings and occupational choices. [6] explored that there is gender base wage discrimination in the labor market of Pakistan. They concluded that there was low female labor force participation especially in highly paid occupations. They found that age, sex, geographical boundaries and education play a vital role in selecting the professions. As well as [2] found that there was gender inequality in education as well as explored its impact on economic growth and development.

[7] explored that there was superiority of males as compare to females and gender is the basic cause of this differential role. The study was conducted only in Faisalabad district (Punjab province, Pakistan) region. They found that there were some religious and social constraints that prevent the female labor force to participate in the labor market although these constraints are weekend gradually. [8] found that there was gender segregation between earnings and job satisfaction. They worked out on the United Kingdom and United States data, explored that females are more satisfied than males with their jobs while males were earning more than females. They found that females were more satisfied due to low expectations and male were earning more due to high expectations and working hours.

[3] explored that there was occupational gender segregation. Researcher found that in the developed countries the gap in earnings of men and women was reduced gradually. He compared the United States with another 35 developed and underdeveloped countries. He found that the salaries of the women were much closer to the salaries of the men in the developed countries than developing countries. In Pakistan [9] estimated the differential between the earnings of men and women. [4] explored that there were gender base disparities in the Pakistan labor market. They found that social cultural constraint, education and experience were the major cause of less female labor force participation and wage differences. [10] explored that there was gender based discrimination in the labor force and found its impact on motivation, satisfaction, enthusiasm and stress level of the labor force.

[1] found that there was a gap between the earnings of Malaysian labor force within selected occupations. Education, experience and working hours were taken as explanatory variables while earning was taken as explained variable. The research showed the importance of men and women's professions distribution. [11] found that there was gender discrimination and how it affected poverty and development. It was found that there were disparities in earnings, social status, education and decision taking roles of male and females in the targeted research area.

³ Visit

http://www.ilo.org/wcmsp5/groups/public/@dgreports/@stat/documents/meetingdocument/wcms_087943.pdf

Assets endowment was found to have a significant impact on the occupational choice like illiterate and younger households would go towards informal sectors as well as owing to a shortage of natural, monetary and human resources many people found their livelihood from the informal sector [12].

3. Materials and Methods

3.1. Introduction to the Methodology

Tobit model is used for this study, Tobit model is used when we the explained variable is censored nature. The Duncan index is used to calculate the segregation index the same technique was applied by the [3,6].

3.2. Duncan Index

$$D_i = \frac{1}{2} \sum_{i=1}^m \left(\frac{M_i}{M_t} - \frac{F_i}{F_t} \right)$$

Where,

Fi= Number of Females in ith profession

Mi= Number of Males in ith profession

Ft= Total Females in all professions

Mt= Total Males in all professions

3.3. Type and Source of Data

Cross sectional data which is obtained from different entities in a single time period will be used for analysis. The data from Pakistan Labor Force Survey 2009-10 will be used to estimate the gender segregation. The data were collected by the federal bureau of statistics Pakistan with the help of a questionnaire.

3.4. Variables of the Model

Duncan index is ours explained variable while,

We will take gender as an explanatory variable and create the dummy variable for male and female, 1for male 0 for female.

Age has considered as a polynomial form because the Duncan index is a non linear function of age so age would be considered as age square. Provinces are also considered as explanatory variables, dummy variables are generated for the provinces. Blochistan considered as reference category.

Education considered as independent variables after creating three groups of no formal education, from one to below matric (10 years of education) and above matric to post graduation. Training is also considered as an independent variable after creating the dummy variable for training.

3.4.1. Tobit Model

Tobit Regression method was used to explore the factors causing the Occupational Segregation in Pakistan. Tobit regression model is the type of censored regression models; in which dependent variable is observed when there is above or below some cut-off level. The dependent variable used in the study was also between limits of 0 and 1. So the Tobit regression was found to be an appropriate technique to regress the occupational gender segregation index on the number of socioeconomic variables.

It is as,

$$D_{0-1} = \beta_0 + \beta_1 Age + \beta_2 Age^2 + \beta_3 Gender + \beta_4 Province + \beta_5 Training + \beta_6 + \mu_i$$

4. Results and Discussion

By applying the Duncan index formula we calculate the segregation index of different occupations. The value of Duncan index lies between 1 and 0 where, 0 shows that there is no segregation in that particular profession while 1 shows that there is completely segregation in that particular profession. The labor force that is under inspection, are all regular wage vessel.

Table 2. Result of Duncan dissimilarity Index

Result of Duncan indices		
S.No	Professions	Duncan Index
1	Manager	0.0336
2	Professional	0.0040
3	Technical	0.0079
4	Clerks	0.0043
5	Service	0.0138
6	Skilled	0.0316
7	Craft	0.0271
8	Plant	0.0117
9	Elementary	0.0332

From the results of Duncan index it was observed that in the occupation of “Manager” there was higher gender dissimilarity as compare to others Professions. There was the least gender dissimilarity in the occupation of “Professional”.

After calculating the Duncan index we considered Duncan index as explained variable. Tobit model is regressed to find the determinants of this segregation for this purpose we take age, gender, province, training and education as an explanatory variables. The model was as below,

$$D_{0-1} = \beta_0 + \beta_1 Age + \beta_2 Age^2 + \beta_3 Gender + \beta_4 Province + \beta_5 Training + \beta_6 + \mu_i$$

Model was regressed on 72933 observations from the data of Pakistan Labor Force Survey 2009-10

Its results are as under,

Table 3. Results of Tobit Regression

Variables	Coefficients	Standard Err.	t-value
Intercept	.0120935	.0004727	25.58
Age	-.0003105	.0000108	-28.66
Age Sqr.	3.72e-06	1.43e-07	26.03
No formal education	.0095257	.0001175	81.06
Edu from 1 to 9	.0074222	.0001213	61.20
Edu from matric to post graduation	.0012057	.0001269	9.50
Training	.000661	.0000204	32.40
Punjab	.0010126	.0000878	11.53
Sindh	.0005986	.0000953	6.28
KPK	.0002621	.0001106	2.37
Blochistan	-	-	Omitted variable
Gender	.0001059	.000083	1.28

The explanatory variables have different impacts on the Duncan dissimilarity index I further explain these results.

Age has a negative relationship with the dissimilarity index as one year increase in age leads to .0003105 unit

decrease in segregation. While one unit increase in age leads to 0.000000372 unit increase in gender segregation. The variable of age is significantly associated with the segregation index.

Education has positive relationships with segregation but it is noted that as education increases the segregation reduces. As shown when there was no formal education for further one year segregation would increase by .0095257 units similarly by one year increase in primary or middle education it will lead to increase .0074222 units in segregation. Higher education it is significant but lesser than other groups as shown that with one year increase in higher education leads to .0012057 unit increase in segregation. These results were similar to [4,5,9].

Training has also positive relationship with segregation with one month increase in training leads to increase 0.000645 units in segregation.

Provinces have different associations with segregation index we take Blochistan province as a reference category. It is shown that Punjab province has greater segregation .0010126 than Blochistan while the Sindh province has .0005986 segregation as compare to Blochistan while the least segregation is observed in Khyber Pakhtoon Khwa .0002621. It shows when one unit increments occur in the segregation index of Blochistan Punjab, Sindh and KPK their segregation index will increase according to said coefficients.

Gender has also positive association with segregation as we have considered 1 for male and 0 for female so it shows with one male comes into profession the segregation increase to .0001059 units. These results are found alike to the [7,11].

5. Conclusion

It was noted that in every occupation there was gender based segregation, especially in the occupation of Manager, skilled and elementary. Tobit regression found the determinants of this segregation, it was noted that as the age of the respondents increased the segregation reduced and as the education increases the gender based segregation also increases it may due to the selection of the occupations. When people become an educated the select their career of profession with the suitability of their gender as some occupations are gender associated occupations. With similar to education the training has also positive relation to the segregation index, while four

provinces of Pakistan behave differently to one another Punjab was found more sensitive it may be due to the more awareness of the labors about the selection of the professions.

6. Suggestions and Recommendations

- More occupational opportunities should be introduced.
- Career counseling should be introduce at the country level.
- It is suggested that education sector of the country should be improved.
- Female Labor Force Participation in different professions should be encouraged.

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