

# Occupational Gender Segregation in the Rural and Urban Labor Market of Pakistan

Muhammad Zaheer Khan<sup>1\*</sup>, Rusmawati Said<sup>2</sup>, Nur Syazwani Mazlan<sup>3</sup>, Norashidah Mohamed Nor<sup>4</sup>

<sup>1\*</sup> School of Business and Economics, University Putra, Malaysia.

Email: [Zaheer.onnet@gmail.com](mailto:Zaheer.onnet@gmail.com)

<sup>2</sup> School of Business and Economics, University Putra, Malaysia

<sup>3</sup> School of Business and Economics, University Putra, Malaysia

<sup>4</sup> School of Business and Economics, University Putra, Malaysia

## Abstract

This study provides detailed insight into the extent and pattern of occupational segregation by gender in a multi-group context in Pakistan. Microdata obtained from the labor force survey of Pakistan for years 2013-2018 are pooled to obtain more reliable estimates over time. The local segregation measures are used to study occupational segregation by gender and for several subgroups based on individual and labor market characteristics. The analysis is performed separately for rural and urban areas. Results show significantly high occupational gender segregation in the labor market overall. Females suffer greater occupational segregation than males in all subgroups across regions. It is also found that human capital characteristics such as higher education do not contribute to controlling the occupational segregation in the labor market. The study concludes that the occupational gender segregation in Pakistan can be explained by the devaluation hypothesis and compensating differentials theory.

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## Introduction

Differences in the distribution of demographic groups (e.g., male and female) across the units of establishments such as industrial or occupational groups are referred to as occupational segregation (James and Taeuber, 1985; Blackburn et al., 1995; Reskin, 1993; Charles and Bradley, 2002). Over the years, both economists and sociologists have shown great interest in examining labor market segregation. Considering occupational segregation as a general indicator of labor market inequality, researchers and policymakers have given considerable attention to this issue. Studies on labor market segregation by gender, race, immigration status, and union status are common (Reskin, 1993; Ashenfelter 1997; Anker, 1998; Blau et al., 1998; Altonji and Blank 1999;

Charles and Bradley, 2002; Chang, 2004; England, 1992; and Borjas 1999; Del Río and Alonso-Villar, 2010; Rapoport and Thibout, 2018). Such interest is due partly to the fact that labor market segregation induces efficiency loss and partly to the fact that it yields income inequality (e.g., Bayard et al. 2003; Amuedo-Dorantes and de la Rica 2006; Brynin and Perales 2016, Anspal 2015; Blau and Kahn, 2017; Ismail et al. 2017; Strawiński et al. 2018; Agrawal, 2020). A careful analysis of the effect of occupational segregation by gender is also important because it is valuable to understand the occupational gaps that exist in the labor market (Beller, 1985; Green, 1999).

A detailed investigation of the level and patterns of occupational gender segregation in Pakistan is of particular interest, mainly because persistent gender differences are visible in all domains of the labor market. Comprising almost half of Pakistan's total population (48.76%), women make up a large proportion of informal and unorganized sector workers, with the majority being unpaid family workers involved in primary work. The participation of females in the formal labor market (only 24% of the total female population) is substantially lower than that of men (85% of the total male population). Recent labor force statistics by major industry division shows 67% of the female workers work in the agriculture sector, with 54.56 % out of total 67% working as skilled agricultural and fishery workers and 12.56% working in the elementary occupation, 15% working in manufacturing-related occupations, with 14.26% out of total 15% work as craft and related trade workers. In the education sector 7.16% work of the total workforce is female. Women's participation in the energy, finance, and gas & water sector is abysmally low, and no woman works in the mining sector. Estimates also show that women receive only around 18% of the total labor income in Pakistan, which is the lowest among the neighboring South Asian countries. The Global Gender Gap index (2020) ranked Pakistan at 153 out of 156 countries, while the global wage report (2018-19) ranked the country at the top in terms of the highest mean hourly wage gap out of 73 countries. As a result, it has become increasingly important to analyze the gender wage disparity. Specifically, if there is occupational gender segregation in the labor market (as in Pakistan), this exacerbates the problem. It can be challenging to ensure comparability when certain occupations are dominated by or even exclusively populated by members of one gender.

This paper aims to investigate the occupational segregation of male and female workers in Pakistan. As opposed to previous studies, such as Ahmed and Hyder (2008) and Irfan (2013) who measure overall occupational gender segregation in Pakistan, this paper measures not only overall segregation (in a binary context) but also the segregation of several population sub-groups. In doing so, this study first investigates occupational segregation by gender (binary categories). Additionally, we incorporate occupational segregation in a multi-group context, measuring whether age, education, hours of work (part-time/full time), and type of organization (private/public) affects the occupational distributions of men and women in the same way. For this purpose, first, both the men and women are partitioned into young-aged, middle-aged, and elderly workers, giving rise to three target groups for each gender (a total of six target groups); next, four target groups by gender and education (low education and high education), and so on. This paper

uses the local segregation measures proposed by Alonso-Villar and Del R o (2010) to measure occupational segregation in a multi-group context.

This study is structured as follows: the next section briefly describes the overall and local segregation measures proposed by Alonso-Villar and Del R o (2010). The third section presents the data description and the summary statistics. The fourth section presents the results and discussion. And the final section offers the conclusions and recommendations.

## **Measuring Segregation**

Most literature on occupational segregation primarily looks at the overall or aggregate level of segregation. The dissimilarity index proposed by Duncan and Duncan (1955) is the most used despite its well-known limitations; among others, the Karmel and MacLachlan (1988)  $I_p$  index has also gained popularity due to its better normative properties (Bettio and Verashchagina, 2009). However, the dissimilarity index in a multi-group setting necessitates pairwise comparisons between all groups, complicating the interpretation of the results because the comparisons are confined to examining how the groups relate to one another. To overcome these constraints, Silber (1992) expanded the binary segregation index created by Karmel and MacLachlan (1988) to the multidimensional case. Reardon and Firebaugh (2002) and Frankel and Volij (2011) also suggested different multi-group segregation indices that account for all groups' disparities while measuring overall segregation.

These overall measures help provide a summary statistic of the simultaneous distributional discrepancies that exist among all the demographic groups into which society is partitioned (Watts, 2013; Grad n et al., 2015; Kramer and Kramer, 2019). However, obtaining this summarized perspective comes at a cost: since these indices only quantify overall segregation rather than the segregation of each specific group, thus preventing us from learning about their respective specific predicaments.

However, when interested in a specific group, separately measuring its segregation becomes indispensable, following Moir and Selby Smith (1979). They first addressed this concern for the binary case. More recently, Alonso-Villar and Del R o (2010) presented an axiomatic framework to study segregation for any sub-group of the population (referred to as local segregation) in a multi-group context. Local segregation refers to determining the segregation of a particular demographic group (target group) and comparing its distribution to total employment distribution. By doing so, the measure of local segregation permits in-depth analysis of segregation in the labor market by determining how each sub-group contributes to overall segregation. These local segregation measures appear to be particularly useful for highlighting the situations of small sub-groups, whose unequal distributions across units may have a minimal impact on overall

segregation (Del Río and Alonso-Villar, 2015; Agrawal, 2016; Azpitarte et al., 2020; Palencia-Esteban, 2019).

### Measures of Local Segregation

Consider an economy with number of occupations  $j > 1$ , and where  $T$  = total population distributed as:  $t = (t_1, t_2, t_3, \dots, t_j)$ , where  $t_j > 0$  is the number of individuals in  $j^{\text{th}}$  occupation with distribution:  $j = (1, 2, 3, \dots, J)$  and  $T$  can be written as  $T = \sum_j t_j$ ; and  $g$  denotes the target groups (1, 2, 3, ..., G) distributed as:  $c^g = (c_1^g, c_2^g, c_3^g, \dots, c_j^g)$ , where  $c^g$  = could denote the occupation distribution of groups (e.g., male and female in this study).

**Segregation Curves:** Alonso-Villar and Del Río (2010) proposed a variation of the conventional segregation curve to understand the segregation of any sub-group in a multi-group context, referred to as the local segregation curve. On the horizontal axis, the local segregation curve represents the cumulative employment proportion, while the vertical axis represents the cumulative proportion of individuals in the target group.

Alonso-Villar and Del Río (2010) presented the following measures in other to quantify the segregation of each target group.

$$G^g = \frac{\sum_{ij} \frac{t_i t_j}{T^2} \left| \frac{c_i^g}{t_i} - \frac{c_j^g}{t_j} \right|}{2 \frac{c^g}{T}} \dots \dots (1)$$

The first measure  $G^g$  used to study the local segregation is a variant of the conventional Gini index. The second measure represents the index based on the generalized entropy family, where: ( $\alpha$  can be interpreted as a segregation aversion parameter). Third, the multi-groups index  $D^g$  is a variant' of the dissimilarity index proposed by Moir and Selby (1979).

$$\Phi_\alpha^g = \sum_j \frac{c_j^g}{c^g} \ln \left( \frac{c_j^g / c^g}{t_j / T} \right) \dots (2)$$

$$D^g = \frac{1}{2} \sum_j \left| \frac{c_j^g}{c^g} - \frac{t_j}{T} \right| \dots (3)$$

As shown in Alonso-Villar and Del Río (2010),  $G^g$  and  $\Phi_\alpha^g$  Show better normative properties, but  $D^g$  has a more straightforward interpretation. It is important to note that both  $G^g$   $D^g$  ranges between

0 and 1, while  $\Phi_a^g$  Measures are not necessarily ranging between 0 and 1, but they can still be transformed within this range.

These indices are also consistent with several overall measures. The latter are weighted means of the local segregation indices applied to each of the mutually exclusive groups, with weights equal to their shares of the total workforce. The  $I_p^g$  index is consistent with the Multi-group Index of Dissimilarity  $I_p$  proposed by Karmel and MacLachlan (1988) and later extended by Silber (1992) in a multi-group context.

$$I_p = \sum_g \frac{C^g}{T} D^g$$

The Gini index  $G^g$  proposed by Alonso-Villar and Del R o (2010) is the weighted mean of the conventional Gini index and coincides with the unbounded version of the multi-group Gini index developed by Reardon and Firebaugh (2002):

$$G = \sum_g \frac{C^g}{T} G^g$$

Finally, the mutual information index proposed by Theil and Finizza (1971) and characterized by (Frankel and Volij, 2007) can be expressed as the mean of one of the local indexes proposed by Alonso-Villar and Del R o (2010) by weighing each target group by its demographic weight, which allows one to determine the contribution of each group to overall segregation.

$$M = \sum_g \frac{C^g}{T} \Phi_1(c^g; t).$$

It is important to note that the way the local segregation is measured does not require pairwise comparisons among groups; because the procedure by which a group's segregation is quantified does not necessitate pairwise comparisons among groups and is compliant with the procedure by which overall segregation is measured in a multi-group case, because, aggregating the mutually exclusive population sub-groups (using the weighted demographic shares of each group) is equal to the overall segregation.

## Data Description and Summary Statistics

This study is based on the pooled data from Pakistan labor force surveys (2013-2018). The labor force survey, conducted by the statistical bureau of Pakistan is a cross-sectional survey that provides microdata incorporating annual estimates of detailed labor market characteristics. The

sample for this study consists of the civilian labor force aged between 15-65 working full time in different sectors of the economy. The sample is limited to paid employees; own account workers and contributing family workers are excluded. After excluding the observations with missing values, the total sample is 64,946. Most of the labor force comprises male workers (86.46%).

The data set available for researchers includes occupation at the three-digit level using ISCO-08. Table 1 presents the summary statistics related to labor force composition across occupations (based on ISCO 3-digit occupational classification employed in rural and urban areas of the country). In rural areas, a majority of the female labor force clusters around three occupations: agricultural, forestry, and fishery laborer (58.14%); food processing, woodworking, garment, and other craft and related trades workers (15.64%) and teaching (8.96), while the male labor force is relatively more evenly distributed, majority of the male workers are working as: laborers in mining, construction, manufacturing and transport (30.69%); agricultural, forestry and Fishery laborer (14.48%), and building and related trades workers (9.32%). In the urban area, a large majority of the female labor force is working as teaching professionals (33.85%); food processing, woodworking, garment, and other craft and related trades workers (20.11%), and cleaners and helpers (16.54), while the male workers are more evenly distributed across occupations with the highest proportion of male workers in the laborers in mining, construction, manufacturing, and transport (15.36%).

**Table 1: Composition of Labor force Across Occupations**

Occupation	Rural		Urban	
	Male	Female	Male	Female
Chief executives, senior officials and legislators	0.10	0.05	0.88	0.42
Administrative and commercial managers	0.11	0.03	0.91	0.35
Production and specialized services managers	0.25	0.10	1.28	0.89
Hospitality, retail and other services managers	0.07	0.00	0.25	0.00
Science and engineering professionals	0.09	0.00	0.81	0.11
Health professionals	0.11	0.18	0.66	2.58
Teaching professionals	4.95	8.96	4.00	33.85
Business and administration professionals	0.19	0.00	1.89	0.28
Information and communications technology professionals	0.03	0.00	0.21	0.14
Legal, social and cultural professional	1.06	0.08	1.12	0.35
Science and engineering associate professionals	0.81	0.05	1.78	0.21
Health associate professionals	0.80	2.81	1.21	3.90
Business and administration associate professionals	1.15	0.08	2.86	0.35
Legal, social, cultural and related associate professionals	0.37	0.05	0.62	0.21
Information and communications technicians	0.12	0.03	0.59	0.04
General and keyboard clerks	1.45	0.08	3.79	0.67
Customer services clerks	0.18	0.05	0.81	0.35
Numerical and material recording clerks	0.39	0.02	1.06	0.25

Other clerical support workers	0.17	0.02	0.52	0.04
Personal services	3.94	0.40	4.22	1.98
Sales workers	2.99	0.17	8.95	0.89
Personal care workers	0.03	0.22	0.04	0.85
Protective services workers	3.66	0.13	3.98	0.18
Market-oriented skilled agricultural workers	0.57	0.07	0.40	0.04
Market-oriented skilled forestry, fishery and hunting workers	0.25	0.00	0.10	0.00
Subsistence farmers, fishers, hunters and gatherers	0.01	0.00	0.00	0.00
Building and related trades workers, excluding electricians	9.32	0.77	6.72	0.39
Metal, machinery and related trades workers	2.35	0.07	4.82	0.35
Handicraft and printing workers	0.63	2.04	1.48	1.59
Electrical and electronic trades workers	1.09	0.00	2.11	0.14
Food processing, woodworking, garment, and other craft and related trades workers	3.75	15.64	8.19	20.11
Stationary plant and machine operators	3.58	0.35	5.00	1.49
Assemblers	0.03	0.00	0.05	0.00
Drivers and mobile plant operators	6.71	0.13	6.41	0.18
Cleaners and helpers	2.13	5.44	2.61	16.54
Agricultural, forestry, and fishery laborer	14.48	58.14	1.62	4.00
Laborers in mining, construction, manufacturing and transport	30.69	3.43	15.36	3.19
Food preparation assistants	0.01	0.00	0.03	0.00
Street and related sales and service workers	0.03	0.00	0.04	0.04
Refuse workers and other elementary workers	1.70	0.37	2.65	3.05
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

Source: Author's own calculation based on data used in the study

Table 2 presents the gender composition of the labor force in different occupations. Using the 3-digit occupations based on ISCO-08 classifications, it can be seen that almost all occupations are male-dominated. In rural areas, the occupational category of personal care workers has the largest share of the female labor force (59%), followed by food processing, woodworking, garment, and other craft and related trades workers (42.51%), and agricultural, forestry and fishery laborer (41.59%). In the urban region, the occupational category of personal care workers is the most feminized occupation with 75% females, followed by teaching professionals (48.10%) and cleaners and helpers (44.31%).

**Table 2: Gender Composition of Labor Force in Different Occupations**

Occupations	Rural		Urban	
	Male	Female	Male	Female
Chief executives, senior officials, and legislators	91.43	8.57	95.63	4.37
Administrative and commercial managers	94.87	5.13	95.77	4.23
Production and specialized services managers	93.41	6.59	93.81	6.19
Hospitality, retail and other services managers	100	0.00	100.0	0.00

Science and engineering professionals	100	0.00	98.39	1.61
Health professionals	77.55	22.45	69.16	30.84
Teaching professionals	75.67	24.33	51.90	48.10
Business and administration professionals	100.0	0.00	98.38	1.62
Information and communications technology professionals	100.0	0.00	92.16	7.84
Legal, social, and cultural professional	98.62	1.38	96.17	3.83
Science and engineering associate professionals	98.91	1.09	98.77	1.23
Health associate professionals	61.47	38.53	71.20	28.80
Business and administration associate professionals	98.72	1.28	98.47	1.53
Legal, social, cultural, and related associate professionals	97.67	2.33	95.86	4.14
Information and communications technicians	95.35	4.65	99.25	0.75
General and keyboard clerks	98.98	1.02	97.82	2.18
Customer services clerks	95.31	4.69	94.82	5.18
Numerical and material recording clerks	99.24	0.76	97.14	2.86
Other clerical support workers	98.28	1.72	99.16	0.84
Personal services	98.22	1.78	94.43	5.57
Sales workers	98.90	1.10	98.77	1.23
Personal care workers	40.91	59.09	25.00	75.00
Protective services workers	99.34	0.64	99.45	0.55
Market-oriented skilled agricultural workers	97.96	2.04	98.91	1.09
Market-oriented skilled forestry, fishery and hunting workers	100.0	0.00	100.0	0.00
Subsistence farmers, fishers, hunters and gatherers	100.0	0.00	100.0	0.00
Building and related trades workers, excluding electricians	98.55	1.45	99.28	0.72
Metal, machinery and related trades workers	99.50	0.50	99.09	0.91
Handicraft and printing workers	63.58	36.42	88.10	11.90
Electrical and electronic trades workers	100.0	0.00	99.45	0.84
Food processing, woodworking, garment, and other craft and related trades workers	57.49	42.51	76.45	23.55
Stationary plant and machine operators	98.28	1.72	96.40	3.60
Assemblers	100.0	0.00	100.0	0.00
Drivers and mobile plant operators	99.65	0.35	99.65	0.35
Cleaners and helpers	68.78	21.22	55.69	44.31
Agricultural, forestry and fishery laborer	58.41	41.59	76.36	23.64
Laborers in mining, construction, manufacturing and transport	98.05	1.95	97.46	2.54
Food preparation assistants	100.0	0.00	100.0	0.00
Street and related sales and service workers	100.0	0.00	88.89	11.11
Refuse workers and other elementary workers	96.29	3.71	87.41	12.59

Source: Author's own calculation based on data used in the study



## Results and Discussion

### Occupational Segregation by Gender Across Rural and Urban Regions

We quantify the occupational segregation between men and women in rural and urban regions. Each point on the segregation curve represents the proportion of males (female) employed in each cumulative decile of total employment. The first cumulative decile encompasses the occupations where the male (female) has the smallest relative presence; it accounts for 10% of the total employment distribution. Similarly, the second cumulative decile accounts for 20% of the total employment distribution with the lowest relative presence of male (female) workers across occupations. Thus, decile by decile, the local segregation curve demonstrates that the target group is underrepresented in the labor force relative to the structure of the economy's employment structure. If the occupational distribution of the target group appears to be the same as the distribution of total employment, no segregation would exist for the (demographic) groups, and the local segregation curve would be equal to the bisector.

Figure 1 plots the segregation curve for male and female workers working in different occupations in the rural (represented by R) and urban (represented by U) regions. The cumulative proportion of total employment is presented on the horizontal axis, while the cumulative balance of each gender group is given on the vertical axis. The curve corresponding to male workers for rural and urban regions is above that of female workers. This implies that women suffer higher occupational segregation in the labor market, both in rural and urban areas

**Figure 1: Occupational Segregation Curve by Gender and Region**

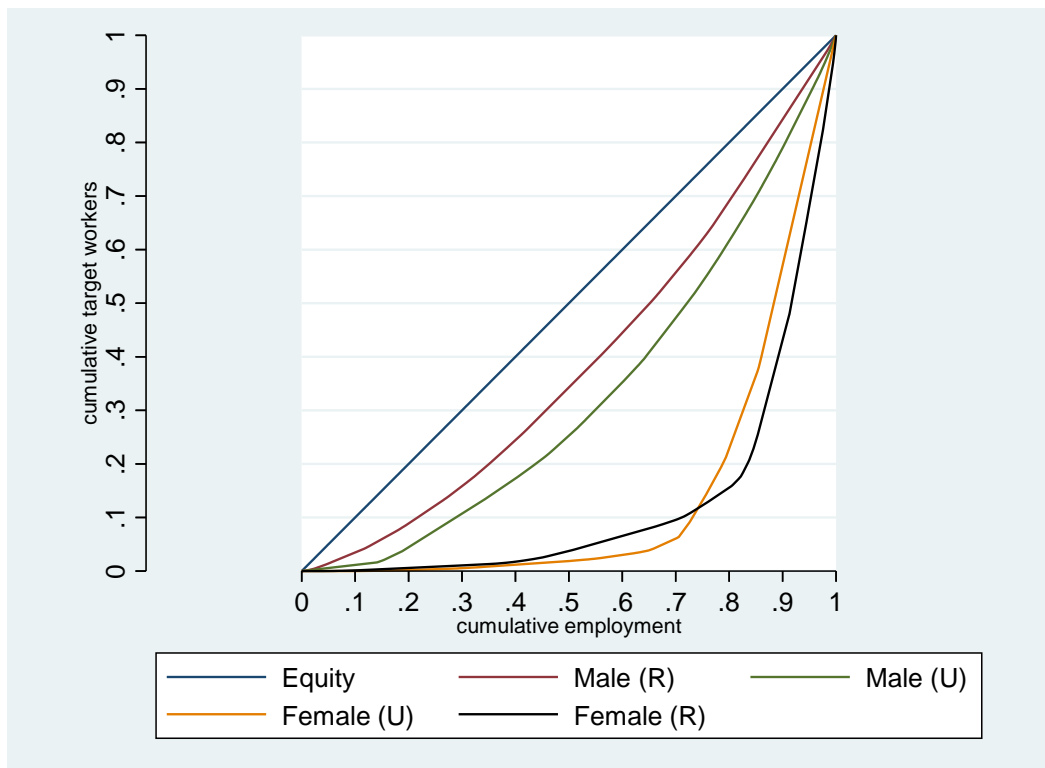


Table 3 presents: (1) the overall segregation based on the mutual information index (M), the multi-group index of dissimilarity (Ip), and the multi-group Gini index (G) by occupation and gender for both female and male labor force; (2) the contributions of each group (male and female) to overall segregation for three indices discussed earlier. According to the three indices, the overall segregation is high in rural areas compared to urban areas; the M index of dissimilarity indicates that female contribution to overall segregation is 81% in rural areas and 86% in urban areas.

**Table 3: Overall Occupational Gender Segregation by Region**

	Rural			Urban		
	M	G	Ip	M	G	Ip
Overall Segregation	0.17	0.22	0.20	0.11	0.13	0.11
Contribution to Overall Segregation						
Male	0.18	0.50	0.50	0.13	0.50	0.50
Female	0.81	0.50	0.50	0.86	0.50	0.50

Source: Author's own calculation based on data used in the study

Table 4 presents the estimates of local segregation indices. In line with the results of overall segregation, all the local indexes:  $\Phi_a$  (that is related to M index of overall segregation) and where  $a = 0.1, 0.5, 1, \text{ and } 2$ ;  $G^g$  (that is related to G index of overall segregation); and  $D^g$  (that is related to Ip index of overall segregation) also show high values for females as compared to males. All the indexes confirm that females suffer higher segregation in both regions than males. A comparison of female workers in both regions shows that females in urban areas suffer higher segregation than those in rural areas. On the other hand, comparison of male workers shows that segregation is higher in rural areas compared to urban areas. The percentage distribution of the labor force shows that most of the labor force belongs to rural areas (67% and 59.91% male).

**Table 4: Occupational Gender Segregation by Region (Local Segregation)**

Local Segregation	$\Phi_{0.1}$	$\Phi_{0.5}$	$\Phi_1$	$\Phi_2$	$Ip^g$	$G^g$	%
<b>Male workers</b>							100
Rural	0.04	0.04	0.03	0.03	0.12	0.13	59.91
Urban	0.01	0.01	0.01	0.01	0.06	0.07	40.09
<b>Female workers</b>							100
Rural	1.42	1.01	0.81	0.78	0.58	0.63	67.89
Urban	1.50	1.08	0.99	0.90	0.61	0.72	32.11

Source: Author's own calculation based on data used in the study

We further proceed with investigating occupational segregation in a multi-group context. In doing so, we partition men and women into young, middle-aged, and elderly workers, giving rise to 3 target groups for each gender (a total of six target groups). Next, to study the segregation by gender

and education level, men and women are partitioned into 'low education and high education groups, given raise to four target groups.

### Occupational Segregation by Gender and Age

According to the statistics, Pakistan is among the top 5 countries with respect to young people as a percentage of the population and is ranked second in South Asia. The improvement in educational attainment is expected to change the occupational composition of the labor force. Thus, it is of considerable interest to study the occupational differences by sex and different age groups. To answer this, the labor force is partitioned into three different age groups and by gender: 15-29 years of age (young), 30-44 years of age (middle-aged), and over 45 years of age (elderly). A total of six target groups are thus considered in the analysis.

The results of local segregation indexes are presented in Table 5. The comparison of rural and urban regions shows that female workers (in any age group) suffer more segregation than male workers in any age group. Rural males and females in the elderly face the highest segregation; elderly female workers show a higher segregation level than elderly male workers. On the other hand, comparing females across age groups shows high segregation among the middle age group in the urban region. The comparison of urban males shows higher segregation among elderly male workers. In both areas, the middle-aged workers show relatively low segregation compared to young and elderly workers. However, since most of the population in the labor market of Pakistan is aged between 15-30, it can be expected that the occupational segregation would diminish for the young aged labor force, Del R o and Alonso-Villar (2010) for Spain; and Agrawal, 2016) for India also reported similar findings.

**Table 5: Occupational Gender Segregation by Age**

Local Segregation	$\Phi_{0.1}$	$\Phi_{0.5}$	$\Phi_1$	$\Phi_2$	$I_p^g$	$G^g$
<b>Rural</b>						
<b>Female workers</b>						
< 30 years of age	1.49	1.00	0.81	0.83	0.57	0.64
30-45 years of age	1.15	0.81	0.62	0.54	0.59	0.63
>45 years of age	2.26	1.25	0.93	0.9	0.60	0.67
<b>Male workers</b>						
< 30 years of age	0.097	0.093	0.090	0.089	0.18	0.23
30-45 years of age	0.058	0.056	0.054	0.052	0.14	0.18
>45 years of age	0.12	0.11	0.11	0.12	0.17	0.25
<b>Urban</b>						
<b>Female workers</b>						
< 30 years of age	1.39	1.03	0.94	1.24	0.59	0.70
30-45 years of age	1.90	1.26	1.10	1.46	0.64	0.75
>45 years of age	0.95	0.99	1.49	1.49	0.54	0.70
<b>Male workers</b>						
< 30 years of age	0.14	0.12	0.10	0.09	0.18	0.24

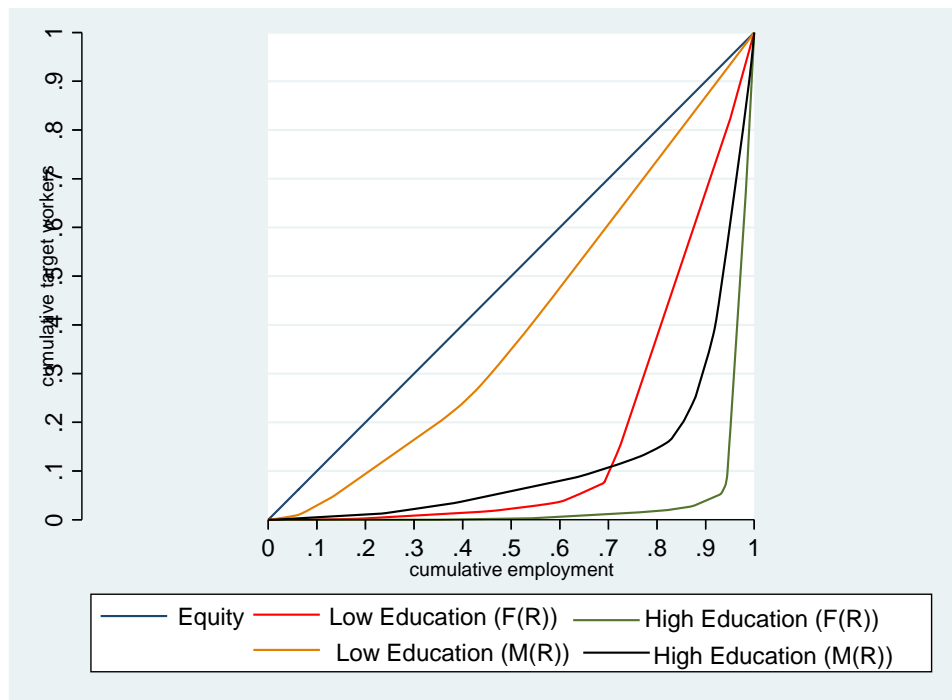
30-45 years of age	0.03	0.03	0.03	0.03	0.10	0.15
>45 years of age	0.14	0.12	0.12	0.13	0.19	0.27

Source: Author's own calculation based on data used in the study

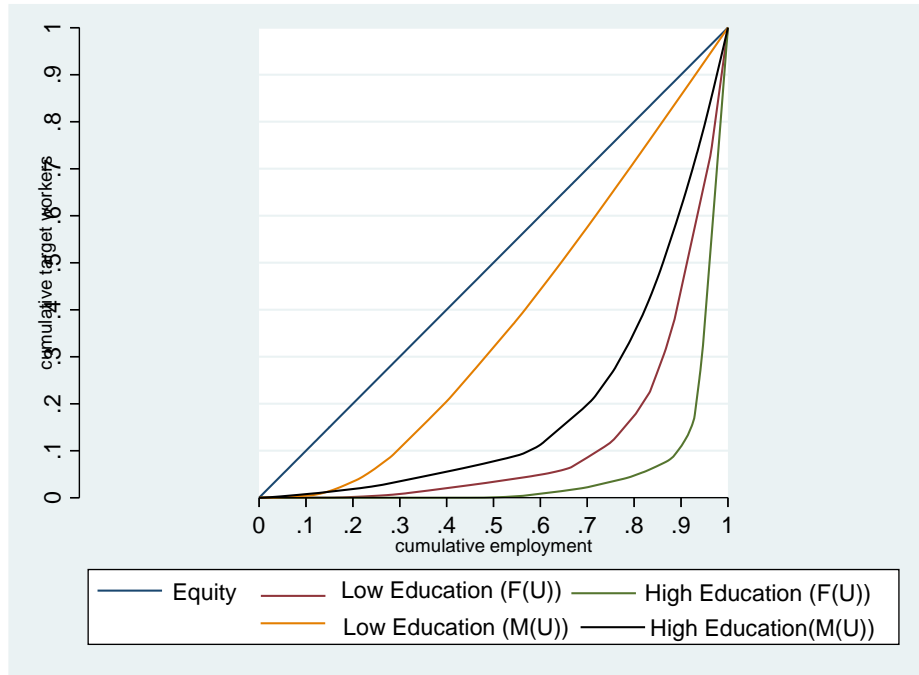
### Occupational Segregation Gender and Education Level

To study the occupational gender segregation by the level of education in rural and urban regions of the country, the female and male workers are classified into two groups: i.e., low educated (including those with no schooling to those with secondary school certificates); and high educated (those with an education level higher than the secondary school certificate). Figures 4 and 5 present the segregation curve of different sub-groups separately for urban and rural areas. The segregation curve of rural areas shows that the segregation is higher among the highly educated male and females compared to males and females with low education. Males with low education faced the least segregation since the distribution is close to equity, while females with higher education faced the highest segregation compared to all sub-groups in rural areas. A similar pattern of gender segregation can be observed in urban areas. Overall, the females, irrespective of the region and education level, suffer higher occupational segregation than their male counterparts.

**Figure 4: Occupational Segregation Curve by Gender and Education (Rural)**



**Figure 5: Occupational Segregation Curve by Gender and Education (Urban)**



The local segregation indices presented in Table 6 also corroborate the segregation curves. The results show that occupational segregation for female workers is higher for the highly educated, while all indices show that low-educated male workers suffer the lowest level of segregation. The estimates of rural and urban regions show that rural females suffer higher segregation than urban female workers, while male workers in rural areas suffer less segregation than urban males.

**Table 6: Occupational Gender Segregation by Level of Education**

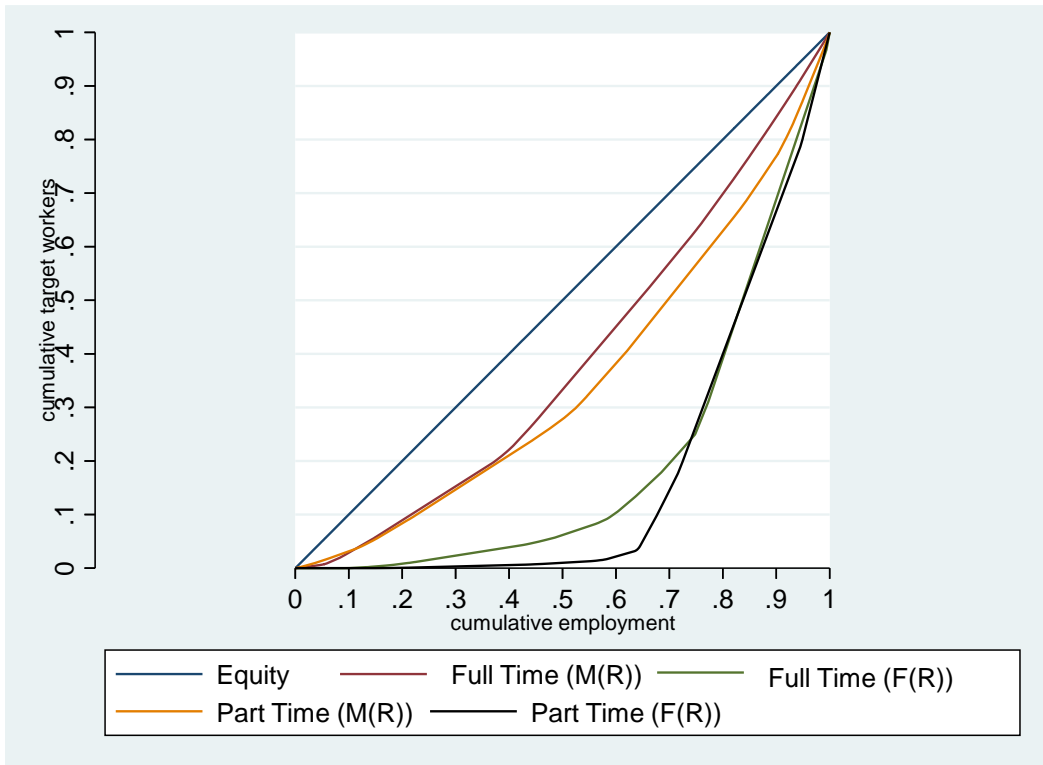
Local Segregation	$\Phi_{0.1}$	$\Phi_{0.5}$	$\Phi_1$	$\Phi_2$	$I_p^g$	$G^g$
<b>Rural</b>						
<b>Male workers</b>						
Low Education	0.10	0.09	0.07	0.06	0.16	0.18
High Education	1.27	1.16	1.22	2.16	0.66	0.75
<b>Female workers</b>						
Low Education	1.71	1.09	0.89	0.90	0.61	0.65
High Education	3.62	.38	2.49	7.11	0.87	0.92
<b>Urban</b>						
<b>Male workers</b>						
Low Education	0.35	0.21	0.15	0.11	0.19	0.25
High Education	0.80	0.70	0.66	0.77	0.50	0.61
<b>Female workers</b>						
Low Education	1.80	1.22	1.11	1.61	0.63	0.75
High Education	3.62	2.05	1.98	4.54	0.79	0.88

Source: Author's own calculation based on data used in the study

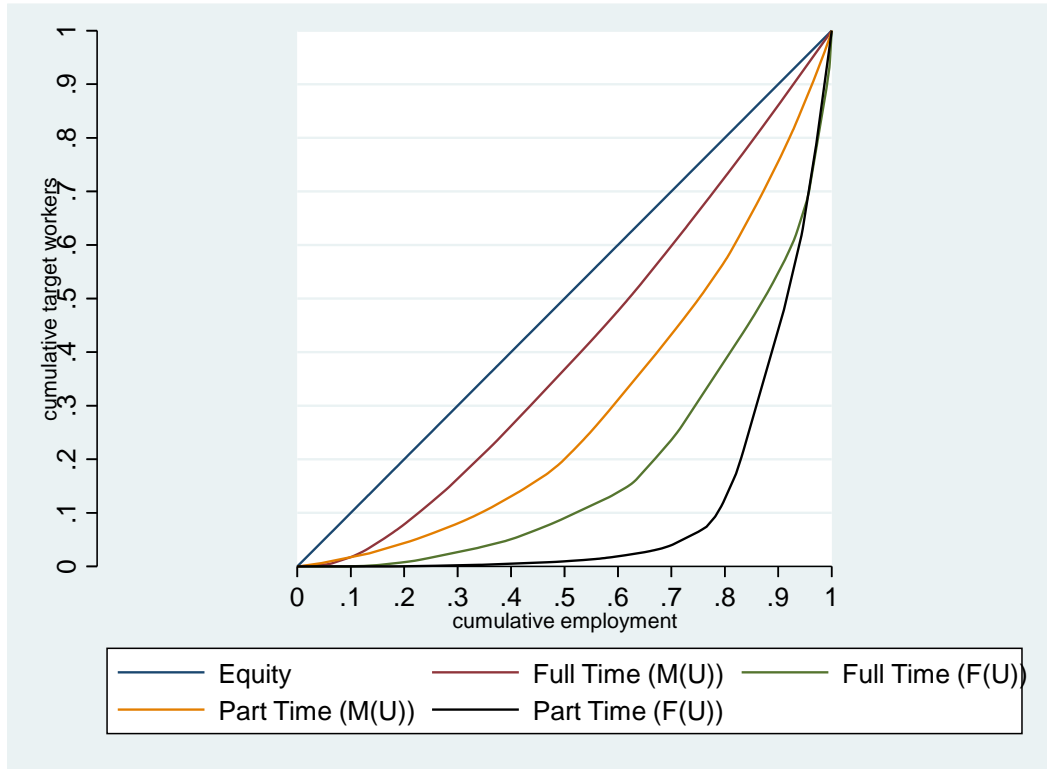
### Occupational Segregation by Gender and Hours of Work

Pakistani society is still subject to strict social norms and gender roles, where women are considered to be secondary earners, and the primary role assigned to them is to perform household activities and take care of children and the elderly. Most women, especially mothers, are less able to work long hours because their time is subject to family demands. Therefore, many females might choose a part-time job compared to male workers. Thus, studying how work hours contribute to occupational gender segregation in the country may be interesting. The local segregation curve for urban and rural areas concerning gender and hours of work is presented separately in Figures 6 and 7. For rural areas (Figure 6), it is very difficult to explain the pattern of occupational segregation with respect to gender and hours of work since the curves cross each other. Thus, more robust estimates can be obtained from the segregation indexes. Figure 7 indicates that in rural areas, male workers working full time face the least segregation compared to their male counterparts working less than 48 hours a week. However, it is difficult to reach any similar conclusion about the females since the curves appeared to be crossing each other. Thus, it is very important to refer to local segregation indices (Table 7). Local segregation indexes (Table 7) show that women working less than 48 hours a week suffer more segregation than males in both regions. It is also evident that even though the female workers suffer more segregation than their male counterparts, the direction of all indexes moves in a similar direction.

**Figure 6: Occupational Segregation Curve by Gender and Hours of Work (Rural)**



**Figure 7: Occupational Segregation Curve by Gender and Hours of Work (Urban)**



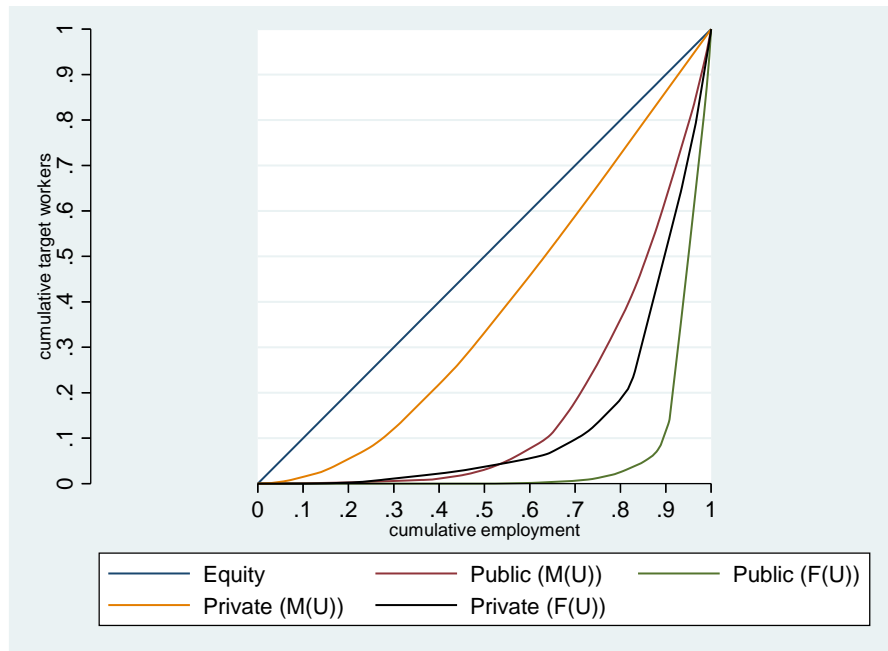
**Table 7: Occupational Gender Segregation by Hours of Work**

Local Segregation	$\Phi_{0.1}$	$\Phi_{0.5}$	$\Phi_1$	$\Phi_2$	$I_p^g$	$G^g$	%
	Distribution of labor force						
<b>Rural</b>							
<b>Male workers</b>							
Full Time	0.12	0.10	0.09	0.08	0.17	0.22	68.07
Part Time	0.15	0.14	0.67	0.72	0.22	0.29	31.93
<b>Female workers</b>							
Full Time	1.32	0.80	0.67	0.72	0.50	0.60	22.31
Part Time	2.21	1.19	0.90	0.86	0.60	0.65	77.69
<b>Urban</b>							
<b>Male workers</b>							
Full Time	0.14	0.10	0.08	0.06	0.13	0.19	71.60
Part Time	0.30	0.27	0.25	0.25	0.29	0.39	28.40
<b>Female workers</b>							
Full Time	1.23	0.78	0.74	1.29	0.47	0.62	23.69
Part Time	2.63	1.47	1.26	1.72	0.69	0.78	76.31

### Occupational Segregation by Gender and Type of Organization

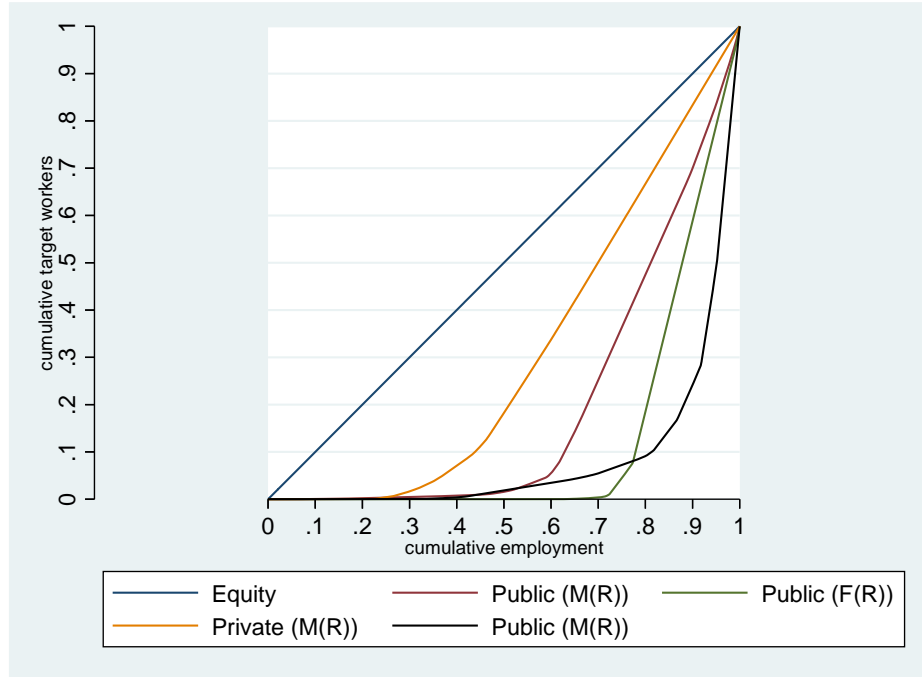
Figures 8 and 9 present the occupational segregation curve with respect to gender and type of organization (public/private), showing that the segregation curve of men working in the private sector dominates those of women in all groups and the males working in the public sector in both regions. Moreover, the segregation curve of males working in the public sector also seems to dominate females in both the public and private sectors. In urban areas, females in the public sector face the highest level of segregation (Figure 8). However, the curves of males and females working in private sectors appear to be crossing each other, thus making it difficult to conclude about their segregation pattern. A similar pattern of segregation can be observed in rural areas; however, since the segregation curves appear to be crossing each other, it is not possible to provide any conclusive remarks about the patterns of occupational segregation in rural areas, and thus looking at the local segregation index for more robust estimates is essential. Table 8 reports the values of the local segregation index. It is important to note that in rural areas, most female workers work in the public sector (68.86%) and most males in the private sector (67%). In urban regions, 76.45% of males work in the private sector, while 71.81% of females also work in the private sector.

**Figure 8: Occupational Segregation Curve by Gender and Type of Organization (Urban)**





**Figure 9: Occupational Segregation Curve by Gender and Type of Organization (Rural)**



**Table 8: Occupational Gender Segregation by Type of Organization**

Local Segregation	$\Phi_{0.1}$	$\Phi_{0.5}$	$\Phi_1$	$\Phi_2$	$I_p^g$	$G^g$	%
							Distribution of labor force
<b>Rural</b>							
<b>Male workers</b>							
Public	1.56	0.09	0.74	0.66	0.54	0.60	31.14
Private	1.27	1.00	0.36	0.25	0.33	0.38	68.86
<b>Female workers</b>							
Public	4.65	1.09	1.29	1.43	0.71	0.75	66.75
Private	3.62	2.48	1.53	2.96	0.71	0.83	33.35
<b>Urban</b>							
<b>Male workers</b>							
Public	1.34	0.94	0.77	0.81	0.53	0.64	23.55
Private	0.80	0.70	0.66	0.77	0.80	0.22	76.45
<b>Female workers</b>							
Public	4.80	2.16	1.92	3.73	0.18	0.88	28.19
Private	1.81	1.14	1.03	1.37	0.61	0.72	71.81

### Conclusion

This paper has focused on investigating occupational gender segregation in Pakistan using the local segregation index (Del Río and Alonso-Villar, 2010). The patterns and trends of segregations are obtained using the 3-digit occupational classification. All the indices show that female segregation explains a substantially large proportion of the overall gender segregation. Even

though the female labor force's demographic weight is low compared to the male labor force. Furthermore, the gender segregation for a number of sub-groups by comparing the females of different age groups and the education female suffer higher segregation than their male counterparts in rural and urban areas of the country.

Several theoretical explanations can be provided to explain the prevailing situation of occupational segregation in the labor market. The compensating differentials theory suggests that if women prefer jobs with comfortable and less hazardous working conditions, such as a mother-friendly work environment, fewer working hours, or low physical danger, women will compromise earnings for other non-pecuniary compensation. However, many studies suggest that 'compensating differentials' do not entirely explain the pay gap between male and female jobs (England, 1992). On the other hand, the devaluation hypothesis asserts that gendered cultural beliefs influence occupation-level remunerations. Devaluation theorists posit that occupations traditionally held by women and those associated with femininity are systematically devalued because they are associated with women (Acker 1989; England 1992, 2010; Reskin and Maroto 2011).

It can be concluded that the integration of economic and sociological theories can be used to explain the extent and patterns of occupational gender segregation in Pakistan's urban and rural labor market. In Pakistan, the primary gendered social norms assigned to females are to take care of household activities and child and elderly care. Under the prevailing and pervasive gender norms in society, females are considered secondary earners, and therefore, women, in general, are forced into opting for occupations that offer a relatively comfortable work environment and low working hours. The descriptive analysis presented in this study confirms that even though none of the occupations in Pakistan is considered feminized, a large number of female workers are confined to occupations that receive low prestige and pay.

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