

## The Impact of Gender Inequality in Education on Females' Labor Force Participation: A Case of Some Cities of Pakistan

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### Abstract

The purpose of this study was to estimate the effect of gender inequality in education on females' labor force participation in 14 major cities (rapidly urbanizing areas) of Pakistan after taking into account the socio-economic indicators like the marital status of female, the gender of the head of household, physical facilities, the median income of the household, etc. Data were gathered from the Pakistan Social Standard of Living Measurement Survey from 2004-05 to 2011-12. Pseudo Panel technique was applied using cities and females in the age group 15-65 as cohorts. Graphical representation and fixed effect techniques were used for analyzing the issue. On the basis of the results, the study recommends some policies such as education facilities, especially, technical, vocational, and job-oriented education should be provided to the females on an equal basis. Females should be given equal opportunities as males, there should be laws to eliminate wage differential. Women's participation in the manufacturing and trade sectors should be encouraged. Moreover, facilities for married women such as day-care centers should be increased.

**Keywords:** Gender Inequality, Education, Socio-economic Profile, Pseudo Panel, Urbanizing Areas, Females' labor force participation.

**JEL Classification:** I32, I24, J16, Z130, J21

## 1. Introduction

Women may play a crucial part in the development of an economy but their participation in the labor market is often limited or remains undervalued. In recent decades, gender inequality has been significantly reduced in developing and developed countries but still, the salary of women is less than men for doing the same job. The inequality is high in South Asian countries, North African countries, and in the Middle East. Employment in South Asia is highly inequitable as far as women are concerned. No matter how poor, depressed and unemployed men are, the trouble of deprivation and humiliation, and the inhuman conditions that South Asian women tolerate in the field of work are even worse.

Evidence from the developed world shows the position of adult females in the labor market is highest. In spite of being largely responsible for the home, health, and children they struggle to navigate the demands of the labor market. The far-reaching kindergarten and day-care organizations created by most municipalities is a crucial supporter. In some of the developed countries, there exists equality in the labor market and there is no gender wage gap. An opportunity for augmentation of women outside the family has been accompanied by rapid economic development. Besides the remuneration of women, Labor Force Participation (LFP) rates of married ladies and mothers have raised persistently. However, women are still being slotted into gender-specific professions like nursing and teaching. In some of the developed countries, women are equal to men under the law, but the wage gap still exists. The allocation of women's employment is raised in the nonagricultural sector but professional segmentation on the basis of gender and wage inequality persists. Females' labor force participation (FLFP) has developed due to the expansion in the services sector and economic pressures on family income. Employees are given the statutory right for a flexible working pattern, which includes work from home, reduced working hours, or different hours for workers with children aged less than six years. During the maternity leave period, women are guaranteed an entitlement to return to their job on the same terms and conditions under which they left. Men are employed as full-time employees, whereas

women are employed as temporary or part-time employees because it is expected that their responsibility is to stay home and raise children.

In many developing nations, high percentages of employed women were actively engaged in the agrarian sector particularly in the Middle East, North Africa, and South Asia. Although the shares of women in this sector have declined in recent years as most of the women have obtained vocation in the services and manufacturing sector in a few countries. Among the poorly educated group, women are forced to work to survive and can combine farm work with domestic duties, and among the very highly educated group, high wages induce women to work and stigmas militating against female employment may be low. Between these two groups, women may face barriers to labor force participation related to both the absence of an urgent need for female employment and the presence of social stigmas associated with female employment. In South Asia, discrimination against women begins from the day of their birth and continues through the uneven availability of education, nutrition, and health care services, to the potential working age in terms of providing job opportunities to women in order to earn a living. Employment in South Asia is highly inequitable as far as women are concerned. No matter how poor, depressed, and unemployed men are, the trouble of deprivation and humiliation, and the inhuman conditions that South Asian women tolerate in the field of work are even worse. There is a huge difference in the labor market between urban and rural areas.

This paper is organized as follows: Section 2 shows trends of Pakistan Employment. Section 3 presents a brief review of relevant studies, Section 4 consists of the theoretical framework to estimate the determinants of females' labor force participation. Data sources and econometric methodology are discussed in Sections 5 and 6, respectively. The empirical results are presented in Section 7. Conclusions and policy implications are provided in Section 8.

## 2. Pakistan Employment Trends

Pakistan's labor market has remained dominated by fewer sophisticated and unqualified manpower due to the deprived

performance of the training sector. Pakistani women have a lack of work opportunities. However, the gender gap in the labor market has narrowed over time but still, women have a long way to get full acknowledgment and recognition for their overburdened routine with productive, reproductive, and other domestic activities. Gender inequality in the labor market partially proclaims the educational disparities between men and women in Pakistan. Low literacy, early marriage, and childbearing are the factors responsible for the victimization of

female's professions. Most of the families prohibit their women to work alongside men so females are not sanctioned to enter the formal job market.

According to the Labor force survey from 2012 to 2013 male and females' labor force participation rates are 81% and 24%, respectively. According to this data, the distribution of men and women in the manufacturing and mining sectors, the trade sector, and the services sector is shown in Table 1.

**Table 1. Gender Wise Labor Force Participation Rate**

	2004-05				2012-13			
	Total Share	Manufacturing Sector	Trade Sector	Services Sector	Total Share	Manufacturing Sector	Trade Sector	Services Sector
<b>Male</b>	65%	7%	19%	15%	81%	8%	23%	14%
<b>Female</b>	14%	1%	0.5%	3%	24%	1.3%	0.3%	6%

Source: Authors

Table 1 shows that the share of male and female employees has increased in recent years. The share of men and women has increased in the manufacturing sector. Whereas in the trade sector, the share of females has decreased whereas the share of men has increased in recent years. It can be analyzed that the share of male in the services sector has decreased rapidly whereas the share of the females has increased.

In Pakistan, after the attainment of higher and professional education, women's participation in the labor force is meager due to low wages and other socioeconomic problems. Most of the married women who join the workforce are strained to leave due to societal pressure, or if they continue, usually their health afflicts or their children suffer due to the non-cooperative behavior of spouses, in-laws, and tough working conditions.

In Pakistan, women in rustic as well as in metropolitan districts face worse working conditions with long working hours in informal and formal sectors; both in public and private sectors. Females given lower positions have low wages than men in all sectors and earn less credit for their major contribution to the family and in the economy. There has been a small change in the organization of working women in Pakistan in the past two decades though women are entering the formal job sector and their contribution is encouraged and honored as vital for the development of the economy.

The Unemployment rate by education level across time can be analyzed in Table 2. Table 2 shows that unemployment has increased as the level of education has increased. Unemployment increases more for females than males as fewer jobs are available for educated females in Pakistan. At the graduation level, the unemployment rate has declined because parents or spouses do not allow them to participate in the labor market.

**Table 2. Unemployment Rate by Educational Attainment**

Level of Education	2009-10	2010-11	2012-13
<b>Primary</b>			
Male	3.7	4.1	4.5
Female	9.5	10.3	10
<b>Middle</b>			
Male	4.5	5.2	7.6
Female	12.1	14.8	15.1
<b>Matric (SSc)</b>			
Male	5	6.4	6.7
Female	18	22.2	20.7
<b>Inter (HSc)</b>			
Male	5.8	8.3	7.5
Female	23.9	26.8	24.3
<b>Graduation</b>			
Male	5.8	6.3	7.6
Female	19.5	19.3	22.1

Source: Pakistan Employment Trends 2013

Table 3 depicts the situation of Population by literacy and employment in rural and urban areas.

**Table 3. Gender Wise Literate Employees in Rural and Urban Areas**

Province	Rural				Urban			
	Punjab	Sindh	KPK	Baluchistan	Punjab	Sindh	KPK	Baluchistan
Male	20	21	17	20	24	26	22	25
Female	4	1	2	1	3	2	2	1

Source: LFS 2012-13

It is evident from Table 3 that the literate and employed population is more in metropolitan regions in contrast to rural regions. There are 24% males and 4% females in urban Punjab, 20% males and 4% females in rural Punjab, 26% males and 2% females in urban Sindh, 21% males and 1% females in rural Sindh, 22% males and 2% females in urban KPK, 17% males and 2% females in rural KPK, 25% males and 1% female in urban Baluchistan, 20% males and 1% female in rural Baluchistan.

The present study explores the effect of gender equality at various levels of education on females' labor force participation in major cities of Pakistan. The study evaluates the consequence of gender equality at different levels of education (primary to post-graduation, secondary and higher education) on females' labor force participation in the major cities of Pakistan after taking into account the socio-economic indicators. The determinants of females' labor force participation were the marital status of females, the gender of the head of the household, physical facilities in the household, residential status of the household, household income, etc. Evidence suggests that as the level of education increases females' labor force participation decreases because there are fewer jobs available for educated women and if they acquire a suitable job they get lower wages or get lower positions or late promotions for doing the same work as their male counterparts do. All this reduces their participation rate further.

### 3. Literature Review

A number of studies are available at the national and international levels concerning the issue under discussion. Literature review of some related studies is presented below:

Psacharopoulos and Tzannatos (1991) have emphasized that increasing the occasions for females' vocation in the labor market and profits that produce vigor/hustle outside the dwelling was due to advanced level of education as the higher opportunity cost of

residing at home indulges in non-market hustles. Thomas (1997) found that as the income of females increased, their spending on education and the health of their children also increased. By increasing remuneration and revenues of women and the great power over reserves to spend on their children, it would increase their wellbeing which would be affected by human capital creation in society.

Psacharopoulos and Tzannatos (1993) examined females' labor force participation (FLFP) in 15 Latin American kingdoms. They found increased labor force participation despite of adverse economic conditions. A negative association was found between labor force participation and marriage as well as fertility in their study. Jaumotte (2003) studied 17 OECD states for the period 1985-1999 on the determinants of the cumulative females' labor force participation. For determining female labor market participation a major role was played by advanced female edification, the circumstances of the labor market, and civilizing attitudes. Females' labor force participation was encouraged by unbiased family excise, the accessibility of flexible time arrangements, families' encouragement in the form of childcare assistance, and remunerated parental leave, besides policies.

Genre, Salvador, and Lamo (2005) estimated female involvement regression for three age-groups: juvenile, prime-age, and senior women by manipulating a yearly panel of 12 European Union nations over the period 1980-2000. Their results showed that strict labor market institutions had a negative impact on female labor market activity at any age, although less so at younger ages. There was a positive effect for the availability of part-time work and a negative effect on the unemployment rate on young women's participation rates respectively. Prime-aged women's participation decisions were stimulated by maternity leave rules (up to 10 months) and the accessibility of impermanent toil. Education was not integrated as an explanatory variable in the regression for elderly women. Women's previous

performance was basically authorized by their participation function. Those women who were not engaged during their prime-age were barely involved when they grow up elder.

Killingsworth and Heckman (1986) found that women's entrance to the labor market was influenced by gender discrimination, societal and ethnic restraints, job location, and family engagements. Females can be pushed to employment due to the monetary stress of poverty or looking after a huge family but factors that can pull them out of the labor force were education, training, and experience.

Akor and Babalola (2013) for Adamawa state, Nigeria, analyzed the features which distress the labor market participation decision of married women for the age range of 18–60. The study found that positive relations existed between women's level of edification and female employment while the better half's employment status and household size have pessimistic effects. This implies that administrative strategies should target female edification, which clearly elevates female human capital expansion and prolific employment.

Azid, Aslam, and Chaudhary (2001) examined the aspects that influence of FLFP in Pakistan's small indigenous manufacturing business. Based on data gathered through a field analysis in Multan, they found that FLFP had a beneficial association with the number of offspring in a household, ladies age and edification, and poverty status, but a negative relationship with the number of toddlers. The coefficient of purdah was statistically insignificant because the cottage industry-level (embroidery work) in which the sampled women engage was different from other fields of work.

Naqvi and Shahnaz (2002) found that ladies' financial contribution was negatively linked to the number of descendants in a household and the presence of a female household head. Although women's age and education level had a significant impact on females' labor force participation, married women were less likely to participate. Older women, well-educated women, women who were household heads, and women from smaller, financially stronger metropolitan families choose to contribute, while younger women, poorly-educated women, and women from larger families were

more liable to be constrained to take part in the labor market.

Afzal and Bibi (2012) investigated the determinants of nuptial women's contribution to the labor force in Wah Cantt. Their pragmatic study concluded that women's level of development, the number of kids and dependents, family size, the spouse's income, monthly payments, the positive manner of the spouse and family toward working women, and job satisfaction were precisely associated with wedded women's FLFP. FLFP was negatively related to women's age, living with a spouse, the level of satisfaction with their role as a homemaker, family-imposed job restrictions, and the presence of other household earners. In addition, the inflation rate had a considerable influence on the FLFP of married ladies.

Faridi and Rashid (2014) determined the issues that involve edified women's decisions to contribute to the workforce in the district of Multan. When both husband and wife were edified and the husband's revenue was prestigious along with their own assets, then the FLFP reduced. The results showed that variables such as women who reside in a metropolitan and their level of edification and experience were associated with an extensive enhancement in earnings with each bonus year. The number of juveniles had an inverse and vital influence on women's reaping. The employment model showed that working hours, age, and years of civilization had constructive outcomes on vocation hours, while the children and time spent on domestic chores had a negative effect on working hours.

Faridi, Chaudhry, and Anwar (2009) found in the study of Bahawalpur district that female's contribution in the labor force was noteworthy in the socioeconomic development as it was an alternate source of revenue to reduce distress.

About 50% of Pakistan's population comprises women, therefore their participation in the labor market and economic progress be investigated. Over the past few years, many investigations in this area have not scored a positive correlation between FLFP and economic expansion. Kozel and Alderman (1990) have analyzed the features influencing professional contribution and labor supply rules/regulations for the metropolitan regions of Pakistan. The article inferred that the labor force participation of women will rise when

expected earnings, income, and level of education increased. Malik, Sultana, and Nazli (1994) investigated the issues, which control FLFP in economic activities for selected rural districts of Pakistan. They have explored that market time is not significantly regulated by ladies' age, education and the number of dependents. The labor supply of women had a significant and positive effect on anticipated men's and women's remuneration rate. A sample of 164 female workers was selected by Chaudhry and Nosheen (2009) for the age cohorts of 15-64 years. Urban and rural areas of Bahawalpur district were preferred arbitrarily. Secondary School Certificate was a minimum criterion for female labor market participation. The labor market participation of females increased when higher education levels raised. The FLFP was diminished due to the presence of children in early age groups. It was accomplished from the consequences of this study that for improved employment possibilities female education is essential.

#### 4. Model Specification

The section begins by presenting the relationship among females' labor force participation, education equality index, socio-economic and labor market factors. The specific form of the model, which has been used to estimate the effect of gender equality in education on females' labor force participation rate, is as follows:

$$FLFP = \alpha_1 + \alpha_2 EEI_l + \alpha_3 HSIZE + \alpha_4 MW + \alpha_5 SW + \alpha_6 MH + \alpha_7 CDR + \alpha_8 GAS + \alpha_9 ELEC + \alpha_{10} REN + \alpha_{11} FWAGES + \alpha_{12} \sum_{i=1}^3 SSECTOR + \mu \quad (1)$$

Where:

**FLFP** is the females' labor force participation rate in a city.

$\alpha_1$  is the intercept term

**EEI<sub>l</sub>** is the equally distributed education index, where *l* represents the level of education. (Education Equality Index methodology and city wise estimates are presented in Appendix A and Table A1 respectively) The education levels are Primary to Post Graduation, Secondary and Higher Education which are described in Pakistan Social Living Standard Measurement Survey.

**HSIZE** is the household size.

**MW** is the number of married women.

**SW** is the number of single women.

**CDR** is the child dependency ratio. (Children below 15)

**MHH** is the number of the household which have male head..

**SCK** is the source used for cooking (gas).

**SLT** is the source of lighting (electricity).

**RSD** is the residential status of an individual on rent.

**FWG** is the females median wages of a household. It could be the main factor to encourage female to take part in the labor force.

**SZS** is the size of the sector. (Manufacturing, Trade, and Services Sector)

$\mu$  is the stochastic error term.

The education equality index is calculated for different levels of education as discussed earlier. As the level of education increases, females' labor force participation rate will decrease because the labor market is male-dominated and fewer opportunities are available for educated women. If females get appropriate jobs they are discriminated by wage differences, lower positions, late promotions, and are strained by their bosses and male counterparts. Further educated female participation is restricted due to socio-economic and cultural norms. The study hypothesizes that as the family size increases females' participation in the labor market also increases so the basic necessities of life can be fulfilled.

The relationship of single women with FLFP can be either positive or negative. It is positively related to females' labor force participation rate because a single woman will participate in the labor market either to pursue her carrier, to support her family, or just too spent time instead of sitting idle. It will be negatively related to the females' labor force participation rate because some families do not allow females to work alongside man so females are not sanctioned to enter the formal job market. Married women have a negative relation with females' labor force participation rate because married women are not allowed by their spouses to enter the labor market because of the male-dominated society or due to home responsibilities

MHH is the gender of the household head. Relation of the gender of the household head

with females' participation rate is negative as the household head make most of the decisions in Pakistan so the head of the family will discourage females to enter the labor market. Contrary to this now the trends of urban areas are changing, therefore, females of the family will be encouraged to participate in the labor force especially educated females as the financial burden of the family could be shared and their education is utilized.

CDR is the child dependency ratio. It is the average number of children under the age of 15 living in a city. The study hypothesizes that as the number of children in a household increases, females' labor force participation rate also increases due to economic reasons.

SCK and SLT are the sources of cooking (gas) and lightning (electricity) in a household. If the physical facilities increase then females' labor force participation will be discouraged and vice versa since these facilities are used for household well being. RSD is the occupancy status on rent of the household living in a city. The study hypothesizes that as the residential status of families on rent will increase females' labor force participation rate will also increase to make both ends meet.

FWG is the average wages of females. It could be the main factor to encourage females to participate in the labor force. It will have a positive relationship with females' labor force participation rate as wages will increase more women will be attracted to participate in the labor market. SZS is the size of the manufacturing, trade, and services sectors. As the size of these sectors increases, opportunities for females will be produced to enter the labor market. Therefore the study hypothesizes that by increasing the sector size, the participation rate of females will be encouraged.

## 5. Data Sources

To scrutinize the influence of gender equality on females' labor force participation for major cities of Pakistan, the present research pooled cross-sectional data of Pakistan Social Living Standard Measurement Survey for the time span of 2004-2005 to 2012-2013. The Sampling technique and questionnaire of the Pakistan Social Living Standard Measurement Survey had gone through many changes since its inception for example after 2004-05 Pakistan Social Living Standard Measurement Survey is

reporting district-wise data. However, for the periods 2005-06 and 2007-08 the district level data were not available. For these two periods, the sampling covered 14 large cities, urban divisions, and rural districts. As the assessment was based on major urbanizing areas of Pakistan (large cities) the estimation remained unaffected by the changes. Another limitation that this study faced using the Pakistan Social Living Standard Measurement Survey data was that the data sets consisted of repeated cross-sections since each year different households were surveyed. To overcome the limitations, Pseudo Panel technique is was here.

## 6. Econometric Methodology

The estimation of pseudo panel was performed using the fixed effect technique.

### i. Pseudo Panel Technique:

As stated before, cross-section data of Pakistan Social Living Standard Measurement Survey for the years 2004-05, 2005-06, 2006-07, 2007-08, 2008-09, 2010-11, 2011-12, and 2012-13 are pooled for the estimation. The Pseudo panel is used since it has the capacity to explain the past characteristics while simultaneously predicting future behavior as compared to the simple cross-section data. Further to this in a pseudo panel number of individual or household covered and the time period spanned are large over the repeated cross-sections. Panel data requires the assessment of the influence of gender equality on females' labor force participation. Individuals or households that can be traced back over time in order to explore the changes in average wages of households, facilities available in the house would be useful in getting the historical perspective about the females' labor force participation. This is the only restriction this study faced.

However, Deaton (1985) found that pseudo panels do not suffer from the attrition problem that genuine panels have, and are usually available over longer time periods as compared to genuine panels. Deaton (1985) introduced the use of cohorts (i.e. estimating the empirical relationships by using some common characteristics like sex, date of birth, region, etc shared by the group of individuals). This technique also helps in reducing the problem of heterogeneity that usually arises in cross-sectional data. Following Deaton, the present

study used cities and females in the age group 15-65 as cohorts by applying Pseudo Panel technique.

In order to test the hypothesis, the study starts by considering the following simple model:

$$Y_{it} = \alpha_i + \beta X_{it} + \varepsilon_{it} \quad t = 1 \dots T \quad (2)$$

Where  $X_{it}$  is a  $(K \times 1)$  vector of explanatory variables which is assumed to be exogenous,  $i$  is an index of individuals and  $t$  is the time periods. By using Deaton's (1985) technique, cohorts  $C$  based on the city are identified, such that each individual  $i$  is a member of one and only one cohort for each  $t$ . Averaging over the cohorts gives

$$\bar{y}_{ct} = \bar{\alpha}_{ct} + \beta \bar{x}_{ct} + \varepsilon_{ct} \quad C = 1 \dots C \quad (3)$$

It is supposed that if the size of the group  $c$  at time  $t$  is  $n_{ct}$  then the mean value of all analyzed  $X_{it}$ 's in the cohort  $c$  at time  $t$  can be given as

$$\bar{x}_{ct} = n_{ct}^{-1} \sum_{i \in c}^{s=t} x_{is} \quad (4)$$

Over  $T$  periods and  $C$  cohorts this data is now a pseudo panel of iterated observations.

Overall, 112 observations of 14 urban cities were obtained from the eight cross-section data periods of time. The pseudo panel was constructed by computing cohorts/cells average for each available cross-section, where the cells were defined as city codes for the females with the age range of 15-65. After making the pseudo panel, the fixed effect regression model was applied to analyze the determinant of gender equality and females' labor force participation.

## ii Fixed Effect Technique<sup>1</sup>:

Deaton (1985) recommended the use of the fixed-effect model to estimate the pseudo panel. The sample average presented a reliable estimator of the time-invariant inhabitants mean when the sizes of cohorts are large. The larger  $n_c$ , means the errors-in-variables dilemma caused by probable time discrepancy in  $\bar{\alpha}_{ct}$  is

ignorable and standard estimators like the fixed effect (within) estimators can be used.

Our research falls into this category as well because the standard cohort size is reasonably substantial. Therefore, the standard fixed effect estimator on the cohort means that eliminates any unobserved differences between individual cohorts estimates the determinants of females' labor force participation.

The objective of most empirical studies in economics is to explain the relationship between a dependent variable,  $Y$ , and one or more explanatory variables ( $X_1, X_2, \dots, X_k$ ). If  $X_i$  has an effect on  $Y$ , then the direction and size of the effect should be known. If  $X_i$  influences  $Y$ , then the direction and size of the effect should be known. To attain an unbiased reckon, observable and unobservable confounding variables are required to be restricted.

A multiple classical linear regression model is used to organize for recognizable confounding variables. A fixed-effect regression model is used to organize unobservable confounding variables that vary across units but are time-invariant. The fixed effect regression model is an annex of the multiple classical linear regression models. However, for using a fixed effect regression model, panel (longitudinal) data is required.

The equation given below is the fixed-effect model (FEM) and is represented as

$$Y_{it} = \beta_{1i} + \beta_2 X_{it} + \beta_3 X_{3it} + u_{it} \quad (5)$$

Where the subscript  $i$  refers to different individuals and  $t$  refers to different gauges within individuals (i.e. the same variable evaluated at different points in time).

The fixed effect model is time-invariant because intercepts may differ across individuals and each individual's intercept does not vary over time. By applying the fixed effect techniques, it is possible to organize for all probable features of the entities even without calculating approximately them so long as those features do not modify over time. By applying ordinary least squares linear regression, the fixed effect techniques can easily be implemented if the dependent variable is quantitative. To control for the fixed effect model, all time-invariant dissimilarities between the characters evaluate the coefficients of the fixed effect models which are not

<sup>1</sup> The data have no endogeneity problem as they were checked through Hausman test.



inclined because of excluded time-invariant characteristics (like customs, religion, gender, race, etc.)

The affiliation between analyst and consequence variables is investigated by the fixed-effect technique within an entity. Individual characteristics of each entity might or might not manipulate the predictor variables. It is implicated that something within the entity may influence or discriminate the forecasted variables and it is needed to be controlled by using the fixed-effect method. The conjecture behind this validation is the correspondence between an individual's inaccuracy and forecast variables. The method eradicates the consequence of those times invariant

characteristics that can be appraised by the net consequence of the predictors on the outcome variable. By using the Panel Data Regression Model, the fixed-effect technique is used to estimate the effect of gender equality in education on females' labor force participation rate for 14 major urban areas of Pakistan.

## 7. Results and Discussion

The results are discussed in Tables 4 and 5.

### a. Females' labor force participation by Time and City

Changes in females' labor force participation across time and city are discussed in Table 4.

**Table 4. Females' Labor Force Participation by Time and City**

City	2004	2005	2006	2007	2008	2010	2011	2012
Islamabad	14.00	18.161	10.4	16.089	14.689	17.012	8.75	11.283
Rawalpindi	8.333	12.044	6.866	7.220	5.043	8.745	6.557	9.742
Sargodha	5.149	8.481	7.302	10.662	3.478	7.563	8.481	5.143
Faisalabad	8.847	14.61	5.860	19.256	7.483	6.439	12.935	6.218
Gujranwala	6.728	7.447	2.687	8.242	3.172	3.874	5.848	6.274
Sialkot	5.714	8.947	5.911	7.447	3.875	5.449	11.358	7.789
Lahore	7.958	6.667	7.492	5.263	8.836	8.758	20.789	9.787
Multan	18.594	23.889	10.873	15.205	10.349	15.317	17.441	11.351
Bahawalpur	17.822	11.806	16.109	16.552	16.667	8.3070	7.173	14.765
Sukkur	8.192	7.043	10.027	6.776	5.808	5.371	4.032	7.692
Hyderabad	6.984	15.094	10.628	12.914	7.166	6.022	12.636	16.901
Karachi	7.799	7.017	6.716	11.428	7.159	5.996	6.632	7.106
Peshawar	6.856	9.669	6.175	7.692	5.972	5.143	6.452	5.676
Quetta	5.326	5.369	4.382	4.558	5.64	3.689	8.709	4.938

Source: Authors

The above table indicates that females' labor force participation has increased in all the cities but the change is more prominent in Bahawalpur, Multan, and Hyderabad.

### b. Determinants of Females' labor force participation at Different Levels of Education:

The pseudo panel was constructed by computing cohorts/cells average for each available cross-section, where the cells are defined as the city for the female age 15-65. After making the pseudo panel, the fixed-effect regression model was applied to scrutinize the determinants of females' labor force

participation FLFP as discussed earlier. This section is based on the estimation of Equation 1. Table 5 presents the results. Gender equality up to 16 years of education has an unfavorable and significant impact on females' labor force participation.

Klasen and Pieters (2015) and Verick (2014) showed that in poorer kingdoms, the majority of unqualified women contributed to survival activities and informal service. However, if they had additional qualification than secondary school education, higher remuneration urged them to enter the workforce, particularly if suitable professions were accessible while women who were highly qualified might bear to

stay out of the workforce. The strong conditional U-shape pattern of the effect of education on labor force participation suggested that, particularly in the middle of the education distribution, other factors depressed females' labor force participation. This was partly driven by the preferences of educated women for white-collar service employment and stigmas for these women to be working in other sectors. Second, the positive effect of secondary and graduate education on females' labor force participation has fallen considerably. The evidence shows that this is partly related to a

declining effect of selection into higher education. As more women promoted their education, positive selection effects have been diluted, contributing to falling labor force participation rates among the highly-educated individuals. It is also evident from Table 2 as the level of education increases, the unemployment rate of females increases rapidly than males. The result of this study shows that a 1% increase in gender equality up to 16 years of education decreases females' labor force participation rate by 31%.

**Table 5. Determinants of Females' labor force participation at Different Educational Levels**

Variables	Coefficients for 16 years of Education	Coefficients for Secondary Education	Coefficients for Higher Education
Education Equality Index (EEI)	-30.503* (-5.01)	-38.214* (-5.10)	-20.307*** (-2.56)
Household Size (HSIZE)	0.799 (1.55)	0.239 (0.46)	0.700 (1.22)
Married Female (MW)	-85.680* (-3.21)	-83.853* (-3.16)	-74.972*** (-2.54)
Single Female (SW)	-42.170 (-1.45)	-37.657 (-1.30)	-36.657 (-1.13)
Male head of household (MH)	0.014** (2.13)	0.010 (1.57)	0.016** (2.31)
Child Dependency Ratio (CDR)	0.108*** (1.92)	0.066 (1.12)	0.091 (1.31)
Gas as source of cooking (GAS)	8.96E-04 (0.53)	1.13E-04 (0.007)	-8.45E-04 (-0.47)
Electricity as source of Lighting (ELEC)	-0.004* (-3.80)	-0.003* (-2.78)	-0.004* (-2.92)
Residential Status on Rent (REN)	0.005*** (2.07)	0.005*** (1.96)	0.007* (2.69)
Size of Manufacturing Sector (SSECTOR)	0.075 (1.42)	0.076 (1.45)	0.078 (1.32)
Size of Trade Sector (STRADE)	0.013 (0.43)	0.003 (0.12)	0.021 (0.65)
Size of Services Sector (SSERV)	0.1109** (2.00)	0.098*** (1.79)	0.109*** (1.73)
Female Median Wages (FWAGES)	1.364* (2.83)	1.339* (2.79)	1.541* (2.83)
Constant	61.923** (2.06)	67.525** (2.24)	40.857 (1.24)
Number of observations	112	112	112
R <sup>2</sup> within	0.568	0.571	0.464
R <sup>2</sup> between	0.002	0.014	0.008
R <sup>2</sup> overall	0.119	0.155	0.126
F- statistics (13,71)	7.17 (0.000)*	7.28(0.000)*	4.73(0.000)*

Note: \*, \*\*, \*\*\* Significant at 1%, 5%, and 10%, respectively. The values in the parentheses represent the t statistics.

Source: Authors

Married females in a city have a crucial and unfavorable influence on females' labor force participation. As the number of married females increases in a city, females' labor force participation will decline due to household responsibilities. More precisely, a 1% increase in the proportion of married females in the city will decrease the females' labor force participation by 86%

Male heads of the household in a city have an affirmative and momentous effect on females' labor force participation because the head of the household in Pakistan take nearly all of the resolutions. This is because trends of our society are changing now; therefore, a male encourages his female household members to take part in the labor force mainly due to economic reasons and also to make the most of their education. The result showed that a 1% rise in the male head of the household would raise the females' labor force participation by 1.4%.

Child Dependency Ratio has an affirmative and an imperative influence on females' labor force participation as the number of kids will increase then females will be encouraged to distribute the monetary burden of their male households. The results of the present study regarding the number of dependent kids in a family are similar to the study of Chaudhry and Nosheen (2009). The result shows that a 1% increase in the child dependency ratio will increase the females' labor force participation by 11%.

Electricity here was used as an indicator of household well-being. If households have facilities then females' labor force participation will be discouraged. A 1% increase in the source of the lighting of a household will decrease females' labor force participation rate by 0.44%. If the household's occupancy status is on rent then females' labor force participation will be encouraged. A 1% increase in the occupancy status of a household will increase females' labor force participation rate by 0.51%. These two variables illustrate that females are participating in the labor market only to support their families financially.

Favorable and noteworthy impacts of the size of the services sector have been observed on females' labor force participation which shows that if the size of services sector

increases then females' labor force participation will be encouraged. More precisely, a 1% expansion in the services sector will encourage the females' labor force participation rate by 13% showing that females in urban areas prefer the services sector for employment.

A positive and significant impact of females remuneration has been observed on females' labor force participation which shows that if the ladies remuneration in a city improves then females' labor force participation will be encouraged. One percent rise in female wages enhances females' labor force participation by 14%.

Negative and significant effects of gender equality in secondary education have been observed from Table 4 regarding FLFP. If gender equality in secondary education increases then females' labor force participation will decrease. The outcomes of this research illustrate that a 1% increase in SEEI will decrease females' labor force participation rate by 44%.

Secondary education equality index, married female, and electricity have a negative and considerable influence on females' labor force participation, whereas residential status on rent, size of the services sector, and female wages have a favorable and considerable effect on females' labor force participation. A 1% increase in the gender equality of secondary education will diminish females' labor force participation by 38%.

with respect to gender equality in higher education, married females and electricity have negative and significant effects on females' labor force participation, whereas male heads of the household, residential status on rent, and female wages have positive and noteworthy effects on females' labor force participation. A 1% increase in the higher education equality index will minimize females' labor force participation by 20%.

## 8. Conclusion and Policy Recommendations

The present paper investigated the effects of gender equality at various levels of education on females' labor force participation in major cities of Pakistan. In addition, the study estimated the simultaneous effects of socioeconomic and labor market factors on females' labor force participation.

In a male-dominated society, the participation of married females in cities is discouraged by their spouses because they are financially stable or due to home responsibilities and to raise children thus decreasing females' labor force participation by 86%. Most of the married females leave their profession due to the non-cooperative behavior of spouses or in-laws or due to tough working conditions. Usually, they have to leave their profession after having children, because, in most of the institutes, there is no or lower facility of day-care centers. If they are encouraged by their spouses or in-laws or are financially deprived, they usually join the services sector especially teaching. Therefore, married females should be given statutory rights for a flexible working pattern, which includes work from home, reduced working hours, or different hours for workers with children aged less than six years in their respective institutes. Moreover, day-care facilities should also be increased in the institutions having women's contributions.

Male heads of the household increase the economic participation of women by 1.4%. According to our hypothesis, we expected a negative relationship between male heads of the household and females' labor force participation but now the trends of urban areas are changing. Therefore, females of the family will be encouraged to participate in the labor force especially educated females as the financial burden of the family could be shared and their education is utilized. As the male heads of the household increase in a city contribution of female, employees will boost. As an educated male knows the importance of female contribution in the labor market, therefore, he will encourage females to enter the labor market to make most of their education.

The study showed that as the number of dependents increases in a house, females will be encouraged to participate in the labor market as they could share the financial burden of their male counterparts. Households' well-being also plays an imperative role in the assistance of female employment. As the families living on rent in a city will enhance the participation of women employees. Since inflation has increased over the years, so to make both ends meet females' involvement in the labor market is encouraged. The size of the services sector

and the wage had an affirmative and momentous effect on the participation of female workers. By increasing the opportunities and wages of females in these sectors, the labor market participation rate of females will be increased. Norms and traditions of our society especially urban areas have changed over the years and females are encouraged to enter the labor market but, still, discrimination exists. Therefore females should be given equal opportunities as males are given.

Through the present study, it is recommended that there should be strategies to promote women's participation and secure their civil liberties which would be an essential step to work in a healthier environment. There should be appropriate laws and legislations imposed to recover the laboring environment and stipulation of sustainable amenities for women who are already employees. Additionally, the firm implementation of laws should abolish discrimination in the labor market through earnings and occupation segregation. From this study, it is suggested that as the level of education enhances, females' share in economic and business activities also enhances. More education facilities should be offered to females, especially, hi-tech, professional, and occupation-oriented education. The costs of discrimination toward women in education and employment not only harm the women concerned but impose a cost for the entire society. There is a need to plan such strategies that assist in the most favorable employment of proficient human resources of the nation. This analysis suggests that highly educated, hardworking, and capable women should be encouraged to reach the top level. This will be an incentive for other women to work.

It is also recommended that the median wages of females should be equal to that of males. Efforts should be made for increasing the share of females in the manufacturing, trade, and services sectors to meet the labor demand of the industry. Moreover, because of the high inflation rate, women's participation in the labor market should be encouraged so they could share the financial burden of their household. For the invention and execution of assorted comprehensive plans for the development of women's occupation the department of Women's Development should

play its role properly. Female Employees should be given the statutory right for a flexible working pattern, which includes work from home, reduced working hours or different hours, for women workers with children aged less than six years. The stipulation of support amenities like toddler care institutions, employed women's boarding houses should be offered to the women who are part of the labor market. Strict decrees and regulations should be imposed to develop situations for job oriented women. The favors to which women are permitted should also be offered to them. Females' labor force participation can be enhanced through an extended strategy which can be promoted through preferred modifications in the culture and attitudes through print and electronic media.

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## Appendix A

According to Human Development Report education index measures a country's relative achievement in both adult literacy and combined primary, secondary and tertiary education. First, an index for adult literacy and an index of combined education attainment are calculated. These two indices are then combined to create the overall education index.

The education attainment<sup>1</sup> is defined here as:

Female education attainment (FEA) = 1 if education attained by any individual female is > 0

Male education attainment (MEA) = 1 if education attained by any individual male is > 0

While Adult Literacy is defined here as:

Female Adult Literacy Index (FALI) = 1 if any individual female can read or write

Male Adult Literacy Index (MALI) = 1 if any individual male can read or write

Female and Male indices are then calculated as:

$Female\ education\ index\ (FEI) = 2/3 * (FALI) + 1/3 * (FEA)$

$Male\ education\ index\ (MEI) = 2/3 * (MALI) + 1/3 * (MEA)$

Where:

1) FALI and MALI is Adult Literacy Index of female and male respectively. It is defined as the population aged 15 – 65 that can read and write in any language divided by the total population aged 15 – 65 years multiplied by 100.

2) FEA and MEA is Education attainment index of female and male respectively. The primary, secondary and higher education is defined as

≠ The persons who have completed their primary divided by the population who should have complete their primary education.

≠ The persons who have completed their secondary divided by the population who should have complete their secondary education.

≠ The persons who have completed their tertiary divided by the population who should have complete their tertiary education.

The male and female indices in each dimension are combined to create Equally Distributed Education Index.

*Equally Distributed Education Index (EEI)*  
 $= \{ [FPS] (FEI)^{-1} + [MPS] (MEI)^{-1} \}^{-1}$

Where:

≠ FPS and MPS is the population share of female and male respectively.

≠ FEI and MEI is the education index of female and male respectively.

*If EEI is = 1 then education is equally distributed*

*If EEI is < 1 then education is not equally distributed*

*If female education index is more than male education index then education is in the favor of females.*

*If male education index is more than female education index then education is in the favor of males*

<sup>1</sup> Education attainment index has been estimated instead of enrollment because further in this study effect of education attainment index on female labor force has to be estimated for the age group 15-65. In this cohort most of the females would have acquired their education or have been illiterate

**Table A1. Gender Equality up to 16 Years of Education by Time and City**

City	2004	2005	2006	2007	2008	2010	2011	2012
Islamabad	0.886	0.7490	0.905	0.744	0.900	0.887	0.698	0.905
Rawalpindi	0.825	0.752	0.834	0.748	0.856	0.852	0.713	0.850
Sargodha	0.766	0.763	0.776	0.752	0.772	0.808	0.710	0.820
Faisalabad	0.775	0.715	0.815	0.662	0.824	0.830	0.743	0.859
Gujranwala	0.787	0.780	0.792	0.798	0.829	0.862	0.753	0.853
Sialkot	0.838	0.745	0.834	0.789	0.831	0.832	0.689	0.883
Lahore	0.798	0.841	0.805	0.771	0.8445	0.816	0.679	0.828
Multan	0.625	0.635	0.745	0.749	0.750	0.749	0.640	0.785
Bahawalpur	0.727	0.825	0.710	0.822	0.805	0.787	0.749	0.818
Sukkur	0.736	0.769	0.771	0.783	0.653	0.657	0.633	0.762
Hyderabad	0.683	0.751	0.689	0.706	0.789	0.779	0.654	0.798
Karachi	0.833	0.682	0.841	0.838	0.851	0.852	0.741	0.875
Peshawar	0.634	0.605	0.567	0.568	0.603	0.533	0.526	0.641
Quetta	0.697	0.607	0.629	0.673	0.675	0.553	0.559	0.703

Source: Authors



