

Does Education Affect Women’s Employment in Society? Cross Sectional Study in Pakistan

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Abstract:

This study analyzes the impression of factors that sway working hours of females in Pakistan. For the purpose of analytical observations, primary data was collected from 300 educated women. The results highlight that; age, level of education, husband’s years of schooling, number of children, and working days have positive and significantly effect on the working hours of women, contrary to father’s year of schooling. The distance and location of job, monthly income, family setup and mother’s year of schooling are insignificant. The study advocates for the provision of better education for women to heighten their participation rate in labour market.

Keywords: Female Education, Labour Supply, Ordinary Least Square, Working Hours

I. Introduction

In bifurcation of the labour market on gender bases, it is elucidated that the role of female education is of utmost importance in order to envisage the spillovers of years of schooling on the supply of labour. Education is treated as source to trigger the human capital that embraces the human skills and competencies which latter is to be transformed into the alleviation of chronic socio-economics issues of poverty and self-deprivation. The labour market is transposal of goods and services market. The labour market is the place where an individual i.e. a firm or an industry enters to purchase the labour with the decision about amount of work desired and thus decides for the content of labour services and its supply. While at the same time, another individual enters in the market to supply the labour to manufacture the goods and for that purpose, decides for the payment that is to be paid in return of the extracted services. So, the combination of both demand and supply of labour by such individuals determine the behavior of labour market.

Meanwhile, a large portion of population in Asia still continues to live in the state of poverty despite relatively higher growth rate achieved in major parts of the particular area(s). To overcome this problem, many anti-poverty programs have been introduced.

There are number of evidences which explain that women have no benefit from these anti-poverty programs in this region. It is important to understand that how concerning women's work can be changed and how a proper policy implements to solve this problem. The present study has an aim to identify the influence of numerous socioeconomic variables on the working hours decision of females in Multan city of the Province Punjab, Pakistan while it is captured the rural and urban areas into focus for the gather of data. To add on, the working hour decision is a continuous variable along with other socioeconomic demographics. This study analyzes the working hours of women by the side of four varied models next to the estimates of women's earning function. The study rests on 5 Sections i.e. Section I explains briefly about the labour force participation in Pakistan. Section II is the Literature Review. Section III refers to Methodology wherein, data source, sampling and estimation techniques are discussed. Subsequently, Section IV and V elaborate on Results and Discussion and Conclusion and Recommendations of the study.

A. Participation Trends and Patterns in Pakistan

The women are persuaded towards the literal participation into the labour force by the mean of education, skills, experience and trainings which the women get (Killingworth & Heckman, 1986; Mincer & Polacheck, 1974). On the global front, Pakistan is ranked as world's 6th most populated country with population of over 200 Million and a population growth rate of 1.93% (World Bank, 2018). According to Labour Force Survey (2014-2015), the civilian labour force is 61.04 Million from which employed females are 13.35 Million. The demographic indicators of population show that 67.7 percent of population is concentrated into females. For this reason it is indispensable to estimate the role of females in labour market to see its sights on the economic development of Pakistan. In this respect, the researchers are also seen capturing the role of women in working activities and economic development. (Hamid, 1991; Author A, Chaudhry, & Anwar, 2009; Author A & Rashid, 2014; Shaheen, Shabir, Author A & Yasmin, 2015).

The high growth rate of population in Pakistan is primarily due to low level of education, lack of information towards family planning programs – particularly in rural areas, and for instance the religious aphorism on family planning. Due to high fertility rate, population is increasing day by day but resources are so limited thereby cause socioeconomic imbalance in the country. This issue can be solved as Pakistan is one of the country in which youth population is high as there is 104 Million population of Pakistan under the age of 30. This young population of the country can be persuaded to part in development of the country by upraising their level of education, enhancement of the skills, and by the provisioning of sound and advanced technical skills.

B. Total Population and Labour Force Participation Rate

The labour force is defined as the total number of people out of total population who are willing and able to work. The labour force of a nation includes employed and unemployed individuals. According to the currents statistics, given in Figure 1, the total labour force in Pakistan is evidently rising next to the population. Pakistan is ranked to be the 9th largest country in the world in term of labour force. By the fiscal year of 2017, the total labour force in the country is 64 Million. A rising trend in labour force is depicted along with the increase of total population for the last 18 years. Labour Force Participation (LFP) rate is raised from 38 percent to 54.44 percent since from the year

2000 to 2017. Particularly, Figure 2 clarifies a significant rise in labour force participation rate during 2005 to 2009. Furthermore, the ratio of female to male LFP is also evident to have a gradual and consistent rise from the year 2000 and onwards. This trend confirms of the fact that female labour force is active in contributing towards the workable labour force.

C. Demographics of Gender wise and of Civilian Employed and Unemployed Labour Force

Labour Force is defined as the total number of people out of total population who are willing and able to work. The labour force of a nation includes employed and unemployed individuals. According to the Labour Force Survey 2014-2015, the population of Pakistan can be bifurcated for the gender wise labour force. The Table 1 communicates that the concentration of female labour force is rising for the last 5 years i.e. from 13.76 to 14.66 Million, akin to the male labour force. The employed civilian labour force has increased during 2012-2013 to 2014-2015. The ratio of increase in context of males and females is almost of the same intensity. It is important to note that from the side of rural population, the female civilian labour force has an undisrupted increase. On the opposite note, share of male labour force is significantly higher than that of female and secondly, the civilian male labour force is intensifying at a consistent pace. The nature of unemployed labour force at rural front, in contrary to urban area records, explicates that on part of both genders, the show up of rising unemployment level is evident.

D. Distribution of Labour Force Participation with respect to Location

The women LFP rate in Pakistan varies according to the location of labour market. Due to better opportunities to attain professional and technical knowledge, women of urban areas and upper band of the society are better than women of rural areas. Table 2 illustrates that the LFP rate of women is at escalation at almost all of the years at rural and urban front. The active women population is raising high in rural areas than in urban areas because in rural areas women can take part in many agricultural activities like sowing, livestock care, collection of fodder, threshing and etc. In rural areas, women also can take part in informal sectors of labour market such as knitting, sewing and carpet making and etc.

E. Labour Force Participation Rate by Gender and Age

The LFP is influenced by the age of labour force. In Pakistan, significant difference exist between male and female at LFP at various age groups as lightened in Table 3. According to the Labour Force Survey 2014-2015, the rate of gender wise LFP has raised from 9.6 percent at the age group 10-14 to 65.9 percent for the age group of 45-49. At the age group of 35-39 people are more energetic and most experienced so participation rate is also high at this slab.

II. Literature Review

The relevant literature is explored to review the findings of the past studies on the area of woman education and supply of hours towards the labour force of Pakistan. However, rarely come up with evidence(s) on the region that this study ignites to step-up at. Mincer (1962) focused on mutual relationship between the productive and reproductive roles of working mothers and different factors that significantly affected that tendency to combine the roles as mothers with their paid jobs in Riyadh (Saudi Arabia).

Hamid (1991) attempted to explore the factors besides education that influence the participation of married women compared to unmarried women in the labour force. Hamid (1991) estimated that household size, qualification and adult females are positively related to labour participation. While household's income and occupational status and adult male earners reduce the female labour force participation in labour market.

Al-Qudsi, Assad and Shaban (1995) discussed the fertility-labour link and factors which influenced the working of women. The study went with the application of two-step econometric model that consisted of Poisson Maximum Likelihood Count Equation and Dichotomous Probit Equation. The findings showed that as the resources of household increase, participation of women at work decrease. The suggestions came up were that education plays a necessary role in women's labour force participation. Uwakawe (2004) investigated the factors that impact the women's joining rate in work force. To do so, different correlates were used to measure their impact on women's working activities. The suggestions given in the study were that women should be provided of facilities of professional and technical education and there should be care center for their children at very low cost.

Ntuli (2007) assessed the determinants that effect the women's labour force participation in labour activities in South Africa. He investigated the human capital, economic, geographical and demographic determinants influenced Africans women's participation in labour market during the period 1995-2004. Chaudhry, Author A, and Anjum (2010) looked for the effects of various constructs of education and health on females labour force supply in labour activities. For analysis, descriptive analysis and Ordinary Least Square (OLS) methods were employed to conclude the results. The systematic random sampling technique was used. The study concluded urban residence, years of schooling, and health as major correlates of women's labour supply in labour market.

Bhalotra and Aponte (2010) viewed cyclically into whether women's labour supply is influenced by the hypothesis that it contributes to smooth household consumption, explained by income volatility. They concluded that relationship of women's employment and income is on average with in the country, negative in Asia and Latin America but it is positive in Africa. Bblee (2011) examined the relationship between education and female LFP on one hand and fertility rate on other hand in Uganda. The Probit Model was estimated to achieve the results of the study. The observation showed that if other factors are kept constant, education (chiefly secondary and above) plays significant role to reduce the fertility rate.

Yasmin et al. (2013) analyzed the earning effect on female work force participation in labour market. Logit and OLS Model were applied to examine the impacts. They concluded that working experience and high qualification have direct and significant relation with participation and earning. Author A and Rashid (2014) endeavored study to investigate the effects of factors that have positive and significant effect on women decision to take part in working activities. Study was persuaded with two non-linear models; Logistic Probability and Normal probability model and a Linear Probability model for the analysis. The findings of the study suggested that various socioeconomic factors explain women's labour force participation in labour market.

Awan et al. (2015) stated the factors which manipulate women labour force contribution in agriculture sector. Both qualitative and quantitative data were collected through questionnaire. The Multiple Regressions was applied in the study. Study suggested that there should be interest free micro finance for women. Additionally, training programs should be conducted to enhance women's income and participation level. Furthermore, there are bulk of studies those contributed to extend their findings in exploring different variables that influence the women labour force participation and women working hours in labour market. For example Chaykowski and Powell (1999), Cipollone, Patacchini, and Vallanti (2013), Grantham (2012), and Fakhri and Ghazalian (2013).

III. Methodology

A. Data Source and Sample Size

In the present study, the data is collected through the field survey that is conducted in District Multan of the Province Punjab, Pakistan. To collect the data, the Simple Random Technique is applied. The sample of the data consists of randomly selected 300 educated women from urban and rural areas. Urban people are those who live in Tehsil Headquarter and rural people are those who live in Sub Tehsil or Village(s). Through the questionnaire, information about the women and their household characteristics is collected. The questionnaires consisted of both qualitative and quantitative questions. To collect the information about the female's participation in labour market, the females are directly interviewed one by one. These interviews are held in central areas of the selected city. The data is collected from the women who are participating in job (employed). The women who work outside or inside the houses and in both government sector or in nongovernment sector for cash income are called employed or participating women. The women are educated, married and unmarried whereas, minimum educational criteria opted is 12 years of schooling.

B. Method of Result Estimation

As per the objectives of the study, the technique of OLS is used. The general form of multiple regression is expressed in Eq. [1]

$$Y = f(X_1, X_2, \dots, X_N) \quad [1]$$

Where Y is the regressand (Woman working hours (WWHR)) and regressors are represented by X_1, X_2, \dots, X_N . The expression of multiple regression is given in Eq. [2].

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k + \varepsilon_t \quad [2]$$

Where partial regression coefficients are $\beta_1, \beta_2, \dots, \beta_k$ and ε_t is the error term.

C. Models Specifications

In order to analyze the influence of various independent socioeconomic variables on women's working hours (labour supply) in labour market, four empirical models are estimated. The dependent variable is Woman Working Hours. The Model I for dependent variable i.e. WWHR are given in Eq. [3] to Eq. [6]

$$\begin{aligned}
 WWHR = & \alpha + \beta_1 AGE1 + \beta_2 AGE2 + \beta_3 AGE3 + \beta_4 AGE4 + \beta_5 FA + \beta_6 BA + \beta_7 MAST + \beta_8 HEDU + \\
 & \beta_9 MART + \beta_{10} DSTN + \beta_{11} LCTN + \beta_{12} MINF + \beta_{13} HMIN + \beta_{14} HEMP + \beta_{15} FYIN + \beta_{16} FYEX + \\
 & \beta_{17} NODT + \beta_{18} FFAST + \beta_{19} NOCH + \beta_{20} CHAGE_a + \beta_{21} CHAGE_b + \beta_{22} CHAGE_c + \beta_{23} FYRS + \\
 & \beta_{24} HYRS + \beta_{25} MYRS + \mu_i
 \end{aligned}$$

[3]

In Model II, the study takes woman age in completed years while all other variables remain same as given in Eq. [4]

$$\begin{aligned}
 WWHR = & \alpha + \beta_1 AGEY + \beta_2 FA + \beta_3 BA + \beta_4 MAST + \beta_5 HEDU + \beta_6 MART + \beta_7 DSTN + \beta_8 LCTN + \\
 & \beta_9 MINF + \beta_{10} HMIN + \beta_{11} HEMP + \beta_{12} FYIN + \beta_{13} FYEX + \beta_{14} NODT + \beta_{15} FFAST + \beta_{16} NOCH + \\
 & \beta_{17} CHAGE_a + \beta_{18} CHAGE_b + \beta_{19} CHAGE_c + \beta_{20} FYRS + \beta_{21} HYRS + \beta_{22} MYRS + \beta_{23} FSTP + \\
 & \beta_{24} FYSZ + \mu_i
 \end{aligned}$$

[4]

The Model III includes completed years of education of female while other variable remain same as shown in Eq. [5]

$$\begin{aligned}
 WWHR = & \alpha + \beta_1 AGE1 + \beta_2 AGE2 + \beta_3 AGE3 + \beta_4 AGE4 + \beta_5 YEDU + \beta_6 MART + \beta_7 DSTN + \beta_8 LCTN + \\
 & \beta_9 MINF + \beta_{10} HMIN + \beta_{11} HEMP + \beta_{12} FYIN + \beta_{13} FYEX + \beta_{14} NODT + \beta_{15} FFAST + \beta_{16} NOCH + \\
 & \beta_{17} CHAGE_a + \beta_{18} CHAGE_b + \beta_{19} CHAGE_c + \beta_{20} FYRS + \beta_{21} HYRS + \beta_{22} MYRS + \beta_{23} FSTP + \\
 & \beta_{24} FYSZ + \mu_i
 \end{aligned}$$

[5]

The Model IV takes years of education of female and age in completed years as written in Eq. [6]

$$\begin{aligned}
 WWHR = & \alpha + \beta_1 AGEY + \beta_2 YEDU + \beta_3 MART + \beta_4 DSTN + \beta_5 LCTN + \beta_6 MINF + \beta_7 HMIN + \beta_8 HEMP \\
 & \beta_9 FYIN + \beta_{10} FYEX + \beta_{11} NODT + \beta_{12} FFAST + \beta_{13} NOCH + \beta_{14} CHAGE_a + \beta_{15} CHAGE_b + \beta_{16} CHAGE_c + \\
 & \beta_{17} FYRS + \beta_{18} HYRS + \beta_{19} MYRS + \beta_{20} FSTP + \beta_{21} FYSZ + \mu_i
 \end{aligned}$$

[6]

The variables of the study are elaborated, in brief, for their respective constructs and descriptions in Table 4

D. Equation of Earning Function of Females

For the estimation of earning function of females, Mincer (1974) statistical earning function is applied in which other factors which influenced the earning function of females are added to it. The equation of earning function of females can be written as in Eq. [7]

$$LNEFF = \alpha_0 + \sum_{j=1}^K X_{ki} + \mu_i \quad [7]$$

Where ($LNEFF = \ln W_i$) it is the natural log of the earning of i^{th} worker X_{ki} is denoting the independent variable(s) and random disturbance term is denoted by μ_i . The Linear Form of the earning function equation that is to be estimated is given in eq. [8].

$$\begin{aligned}
 LNEFF = & \alpha + \beta_1 FA + \beta_2 BA + \beta_3 MAST + \beta_4 HEDU + \beta_5 LCTN + \beta_6 MART + \beta_7 FFAST + \\
 & \beta_8 EXPR + \beta_9 EXPR^2 + \beta_{10} DSTN + \beta_{10} WWDW + \mu_i
 \end{aligned}$$

[8]

IV. Discussion of Results

This section elaborates the results of the study.

A. Descriptive Analyses

At initial, the descriptive analyses is given in Table 5. Findings shows the mean and standard deviation of variables that are selected as a sample of women's LFP in labour market. The value of mean age of working women is 32.23 with standard deviation of 7.88. Mean for the education level is 14.24 and it is 0.08, 0.18, 0.38, 0.30 and 0.07 of different level of education i.e. MAT, FA, BA, MAST and HEDU, respectively. The mean of family setup, marital status, number of children and number of dependent is 0.42, 0.61, 1.14 and 3.18, respectively. The values of the coefficients of Kurtosis and Skewness are also given to express the shape of distribution of different selected variables of the sample.

B. Econometric Analysis

To examine the Women Working Hours Equation to explore the socio-economic factors that influence the women working hours and earning, the OLS model is estimated along with the earning function equation which is specified by the Mincer and Polacheck (1974).

Estimation of Equation of Women Working Hours

The estimates of OLS Model 1 are interpreted in Table 6. The levels of significance of 1 percent, 5 percent and 10 percent are used in this study. The value of R Squared is 0.48 which highlights that the variables express 48 percent variation in WWHR. All causal variables are significant such as AGE1, AGE2, AGE4, BA, MAST, HEDU, MINF, NOCH, CHAGE, FYRS and HYRS. Findings confirm that working hours of woman vary by various age groups. The working women of age group AGE1 work less hours in the productive working activities in labour market than women of the age group AGE3. This is because of lack of skill, training, and low experience. Thus, it is concluded that with one unit rise in AGE2 and AGE3 there is 0.30 and 0.29 units of variations in women working hours. The women from the age group AGE4 also take lesser part in working activities because of their old age, low productivity, and low energy level. The efficiency and the preference of time effect are important in labour participation (Killingworth, 1983). Our age of working women concerning results match to the Author A and Rashid (2014) and Olivetti (2001).

Education of participating women is very important determinant to decide for the working hours in labour market. There is significant and direct relation among various level of education and women working hours in productive working activities. The probability of women working hours is raised by 1.84 by 1 unit increase in HEDU. The reason is that women with higher educational level generate higher opportunity of good jobs in different income generating works. Our analysis goes similar to that of Author A, Malik, and Basit (2009), and Bbaale (2011). Additionally, there is inverse and significant relation between women working hours and number of children because the responsibilities for women intensify with more children of earlier ages and therefore, there used to be lack of time to be spent in work outside of home. The results of study are similar to Shaheen, Shabir, Author A and Yasmin (2015).

Furthermore, the analysis shows that the relationship between location and distance is negative to the women hours of work. The working hours of the women decrease by 0.07 due to increase in urban residence of women from rural area. The years of schooling of close relatives (father, husband and mother) is an important determinant of women working hour. The years of schooling of father of women is significant and have negative effect on working hours. While husband's level education has minute positive impact on to the women working hours. Monthly income of husband has negative and insignificant impact on women working hours. If expenditure of the family is higher than the income of family, the working hour productivity of female increases. The family income is a correlate that plays an immense character in women working hours. The family income is negative to the women working hours and insignificant. Our estimates match to the earlier findings of Hamid (1991) and Kazi and Raza (1991).

The presences of household assets such as land, livestock, house any type of machinery, head of household employed and other persons in the family have negative effect on women working hours. Moreover, presence of household assets is insignificant. Our results match to the conclusions of Naqvi and Shahnaz (2002). The coefficient of monthly income of family and number of dependent are varied in their impacts on the women working hours. Monthly income of family is significant at 5 percent. It is likely to happen that women working hours meekly reduce with one unit increase in monthly income of family. Furthermore, completed years of age is taken rather than the age in various age groups with other casual variables the same in Table 7. The age of women in completed years is significant at 10 percent and positive to the women working hours. When there is one unit increase in women's coefficient of age, the working hours of woman increase by 0.02 units. However, rest of the variables bear almost same state of associations with WWHR.

Afterwards, the completed years of education is taken instead of various education level with the rest of variable. The results summarized in Table 8 enable so see that YEDU is significant at 1 percent and has positive influence on women working hours in labour market. The coefficient of probability of women working hours rose by 0.25 with one unit increase in years of schooling. While, all other variables bear almost same results as in Model-I and Model-II. Lastly, the completed years of education and completed years of age are taken up for consideration in Table 9. There is significant and direct relation between women working hours and YEDU and AGEY. The probability of women working hours increased by 0.02 and 0.27 on account of one unit increase in AGEY and YEDU, respectively. The impact of all remaining variables is nonetheless similar to as in case of Model-I to Model-III.

Estimates of Equation of Earning Function for Participating Women

The estimates of the equation of woman's earning are given in Table 10 which enables to explore that most of the variables, including the intercept, are significant at 1 percent. Additionally, there is found 73 percent of the variation in women earning by casual variables. The education of women is a crucial element to influence the earning of women at large scale and plays a significant role in creation of human capital. The coefficients of MAST and HEDU are significant at 1 percent and positive to the women earning function. As level of education improvises, the ability of doing work and better job opportunity are found to be transpired in labour market and thus the working labour

force can enjoy the benefits of employment. The results of study match are akin to Sarwar and Sial (2012).

The association of experience and employment indemnifies that when one grows aged, the experience gets to be enriched and thus spells-out to have a direct relationship. However, a wide lead of experience after a specific age period causes to reduce the lust towards of the working hours and can lower the earning with rise in age – as expressed in Life Cycle Theory. The results of study match to the Olivetti (2001), Yasmin, Amjad and Ahmad (2013). The household assets have inverse and significant relation to women earning functions. The presence of FFAST decrease working activities of women and also earning of women. The marital status has positive influence on women earning and significant. The women's working days have also direct and significant relation with females earnings function.

V. Conclusions and Policy Implications

In present study, it is examined the effects of different socio-economic variables on the working hours of the women in labour market as well as on the earning function of women at District Multan of the Province Punjab. It is observed that various variables have expected signs in the empirical analysis that rested on OLS. The correlates that have been affecting positively and significantly to the women working hours are, woman level of education, husbands years of schooling, children of age 7 to 11 years, and days of work. Whereas, income of head of household, number of children of preschool, family setup and etc. have insignificant effect on the women working hours in labour market.

Age of working women is an important correlate which has mixed impact on women working hours. In this study, the results show that females that belong to the AGE1 and AGE4 have less working hours since grow aged and bear contended feelings towards the extent of more of the earning, thus concluding them to be less productive. While women of age group AGE2 and AGE3 have positive impact on women's working hours. There is positive and significant sign with work experience. With the earlier increasing age, women's experience also upsurges wage income and undoubtedly the other way round at experience-squared. It is because of old age. In old age, experience is high but worker cannot perform well.

Based on the empirical analysis, the recommendation herewith are that:

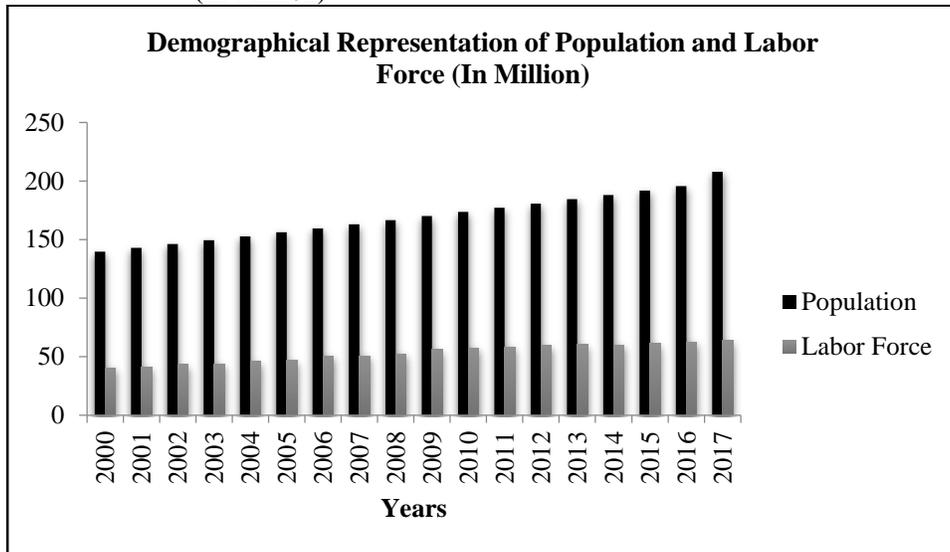
- i. There should be an establishment of educational institutes in rural and urban areas embedded with provision of technical education to the women.
- ii. The Government must arrange the training and skill development programs to enhance the working skills of women in labour market so that women should be transformed into productive human capital of the country.
- iii. To encourage the women to spend more time in working activities i.e. in public/private sector to ensure gathering of sufficient resources for their heir particularly education and hospitality. Moreover, at for the administrative bodies, there is a need to establish child care facilities to preschool children of the working women for their satisfaction at place of work.

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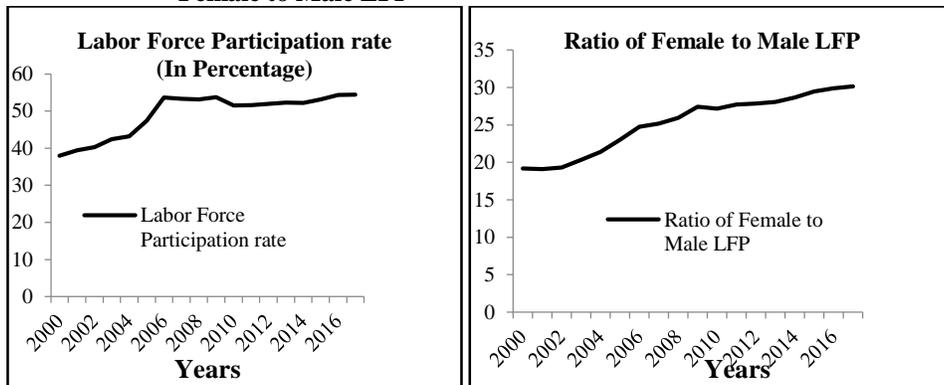
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Figure 1: Demographical Representation of Population and Labour Force (In Million)



Source: Ministry of Finance, Government of Pakistan

Figure 2: Labour Force Participation (LFP) Rate (In Percentage) & Ratio of Female to Male LFP



Source: Ministry of Finance, Government of Pakistan & Index Mundi

Table 1: Demographics of Gender wise and of Civilian Employed and Unemployed Labour Force

Demographics of Labour Force (Gender wise in Million)			
Years	Labour Force	Male	Female
2012-2013	59.74	45.98	13.76
2013-2014	60.10	45.65	14.45
2014-2015	61.04	46.38	14.66

Civilian Labour Force (Employed and Unemployed in Million)									
Employed									
Year	2012-2013			2013-2014			2014-2015		
Area	Total	Male	Female	Total	Male	Female	Total	Male	Female
Pakistan	56.01	43.49	12.52	56.52	43.33	13.19	57.42	44.07	13.35
Rural	39.14	28.57	10.57	39.08	27.83	11.25	39.85	28.42	11.43
Urban	16.87	14.92	1.95	17.44	15.50	1.94	17.57	15.65	1.92
Unemployed									
Year	2012-2013			2013-2014			2014-2015		
Area	Total	Male	Female	Total	Male	Female	Total	Male	Female
Pakistan	3.73	2.49	1.24	3.58	2.32	1.26	3.62	2.31	1.31
Rural	2.09	1.32	0.77	2.06	1.27	0.79	2.10	1.28	0.82
Urban	1.64	1.17	0.47	1.52	1.05	0.47	1.52	1.03	0.49

Source: Labour Force Survey, Pakistan (2014-2015)

Table 2: Distribution of Labour Force Participation Rate (%) by Gender and Area

Year	Pakistan	Rural	Urban
2012-2013	Total	32.9	30.2
	Male	49.3	50.7
	Female	15.6	8.20
2013-2014	Total	32.3	29.4
	Male	48.0	49.7
	Female	15.8	9.7
2014-2015	Total	32.3	29.0
	Male	48.1	49.4
	Female	15.8	7.5

Source: Labour Force survey 2013-2014, 2014-2015

Table 3: Distribution of Labour Force Participation Rate by Gender and Age

Age Group	2012-2013			2013-2014			2014-2015		
	Both	Male	Female	Both	Male	Female	Both	Male	Female
10-14	44.4	44.5	9.0	40.6	43.6	9.4	0.6	44.9	7.7
15-19	26.8	54.9	49.9	26.2	40.7	40.2	25.6	47.6	48.0
20-24	53.1	82.4	74.4	52.3	81.7	75.1	52.6	82.3	75.7
25-29	57.8	95.7	25.1	58.1	95.9	26.1	58.6	96.7	26.6
30-34	60.2	98.0	27.1	60.4	98.1	27.2	60.1	98.1	27.8
35-39	62.5	98.7	28.5	62.4	98.1	28.5	62.6	98.2	29.0
40-44	63.5	98.2	29.0	63.8	98.0	30.8	64.4	98.4	29.9
45-49	64.7	97.5	29.3	64.9	97.8	29.0	65.9	97.8	31.9
50-54	64.0	96.4	28.9	64.9	96.2	29.9	65.3	96.6	29.2
55-59	62.5	92.6	26.8	62.5	92.8	27.5	63.8	93.8	27.3
60 above	56.7	89.4	14.8	55.9	89.4	15.9	56.2	91.9	17.0

Source: PBS, various years, Pakistan Labour Force Survey 2013-2014, 2014-2015

Table 4: Description of the Variables

Variable	Description
Dependent variable	
WWHR	Women working hours is taken as continuous variable
Different age groups	
AGEY	Age of worker in completed years
AGE1	= 1 if worker prevails among the age group of (15-24) years or otherwise, 0
AGE2	= 1 if worker prevails among the age group of (25-34) years or otherwise, 0
AGE3	= 1 if worker prevails among the age group of (35-44) years or otherwise, 0
AGE4	= 1 if worker prevails among the age group of (45-54) years or otherwise, 0
Different levels of education	
YEDU	Years of education of a worker in completed years
FA	= 1 if level of education is up to Intermediate or otherwise, 0
BA	= 1 if level of education is up to Bachelor or otherwise, 0
MAST	= 1 if level of education is up to Masters or otherwise, 0
HEDU	= 1 if level of education is up to Higher Level or otherwise, 0
Level of education of close relatives	
FYRS	Father's years of schooling

HYRS	Husband's years of schooling
MYRS	Mother's years of schooling
Varied socioeconomic and demographic variables	
NOCH	Number of children of a worker
NODT	Number of dependents in family
CHAGE _a	= 1 if children belong to age group of (0-2) years and otherwise 0
CHAGE _b	= 1 if children belong to age group of (3-6) years and otherwise 0
CHAGE _c	= 1 if children belong to age group of (7-11) years and otherwise 0
FSTP	Family setup
FYEX	Family expenditure
FYIN	Family income
HMIN	Husband's monthly income
MINF	Monthly income of a family
LCTN	Location of the place of work
DSTN	Distance towards the place of work
MART	= 1 if worker is married or otherwise, 0
HEMP	= 1 if husband is employed and otherwise 0
FHAST	Family household assets
LNEFF	Earning of woman (ln Logarithmic version)
WWDW	Woman working days a week
FYSZ	Family size
EXPR	Working experience in years
EXPR ²	Squared experience in years

Table 5: Descriptive Analyses

Variable	Mean	S.D	Skewness	Kurtosis
Different Age Groups				
AGEY	32.23	7.88	0.58	2.33
AGE1	0.18	0.38	1.70	3.87
AGE2	0.50	0.50	0.00	1.00
AGE3	0.25	0.43	1.15	2.33
AGE4	0.06	0.24	3.59	13.86
AGE5	0.01	0.10	9.85	98.01
Different Level of Education				
YEDU	14.24	2.06	-0.28	2.60
Different Level of Education				
MAT	0.08	0.27	3.18	11.13
FA	0.18	0.38	1.70	3.87
BA	0.38	0.49	0.51	1.26
MAST	0.30	0.46	0.86	1.73
HEDU	0.07	0.26	3.27	11.72
Level of Education of close Relatives				
FYRS	5.97	5.49	0.00	1.32
HYRS	4.51	5.80	0.69	1.82
MYRS	4.05	4.63	0.61	2.00
Level of Education of close Relatives				
FYRS	5.97	5.49	0.00	1.32
HYRS	4.51	5.80	0.69	1.82
MYRS	4.05	4.63	0.61	2.00
Different Socioeconomic and Demographic Variables				
NOCH	1.14	1.37	0.85	2.74
NODT	3.18	1.91	-0.09	2.30
CHAGE _a	0.05	0.21	4.30	19.48
CHAGE _b	0.23	0.45	1.59	4.38
CHAGE _c	0.27	0.50	1.66	4.85
FSTP	0.42	0.48	-0.63	1.40
FYEX	26613.30	11948.29	2.02	6.28
FYIN	27730.60	13154.93	1.66	8.57
HMIN	7805.00	12033.38	1.88	7.19
MINF	14178.00	11682.58	1.67	6.07
LCTN	0.68	0.47	-0.79	1.62
DSTN	0.42	0.73	2.53	11.90
MART	0.61	0.49	-0.45	1.20
HEMP	1.91	0.49	0.47	1.22
FHAST	0.26	0.44	1.09	2.20

Table 6: Estimates of Women Working Hours Equation Model I

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.25	1.06	6.83	0.00
AGE1	-0.24	0.17	-1.43	0.05
AGE2	0.30	0.15	1.96	0.05
AGE3	0.29	0.27	1.05	0.30
AGE4	-1.03	0.60	-1.70	0.09

FA	0.23	0.22	1.04	0.30
BA	1.07	0.21	5.13	0.00
MAST	1.27	0.23	5.44	0.00
HEDU	1.84	0.32	5.68	0.00
MART	0.20	0.17	1.14	0.25
DSTN	-0.07	0.08	-0.95	0.35
LCTN	-0.08	0.12	-0.63	0.53
MINF	-2.19E-05	1.01E-05	2.16	0.03
HMIN	-1.37E-06	1.06E-05	-0.13	0.90
HEMP	-0.07	0.24	-0.31	0.75
FYIN	-1.19E-06	1.90E-05	-0.62	0.53
FYEX	0.00	0.00	0.56	0.58
NODT	0.03	0.05	0.63	0.53
FHAST	-0.04	0.13	-0.27	0.79
NOCH	-0.19	0.07	-2.61	0.01
CHAGEa	-0.05	0.27	-0.20	0.84
CHAGEb	0.07	0.15	0.45	0.65
CHAGEc	0.33	0.14	2.36	0.02
FYRS	-0.02	0.01	-2.00	0.05
HYRS	0.00	0.01	0.34	0.03
MYRS	0.00	0.01	0.28	0.78
R-Squared	0.48	Mean dependent variable	7.90	
Adjusted R-Squared	0.42	F-Statistic	8.28	
Log likelihood	-380.19	Prob. (F-Statistic)	0.00	

Table 7: Estimates of Women Working Hours Equation Model II

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.55	1.12	5.82	0.00
AGEY	0.02	0.01	1.88	0.06
FA	0.17	0.22	0.74	0.46
BA	1.10	0.21	5.20	0.00
MAST	1.32	0.23	5.69	0.00
HEDU	1.97	0.32	6.15	0.00
MART	0.24	0.18	1.32	0.19
DSTN	-0.05	0.08	-0.70	0.48
LCTN	-0.09	0.12	-0.71	0.48
MINF	1.69E-05	1.01E-05	1.68	0.09
HMIN	-4.78E-07	1.06E-05	-0.04	0.96
HEMP	-0.05856	0.24	-0.24	0.81
FYIN	-1.60E-05	1.92E-05	-0.83	0.41
FYEX	1.53E-05	2.07E-05	0.74	0.46
NODT	0.03	0.05	0.58	0.56
FHAST	-0.04	0.13	-0.31	0.76
NOCH	-0.20	0.07	-2.68	0.01
CHAGEa	-0.05	0.27	-0.18	0.86
CHAGEb	0.07	0.15	0.45	0.66
CHAGEc	0.28	0.14	2.01	0.05
FYRS	-0.02	0.01	-1.83	0.07
HYRS	0.00	0.01	0.18	0.86
MYRS	0.00	0.01	0.30	0.76
FSTP	0.12	0.14	0.89	0.37
FYSZ	0.30	0.31	0.95	0.34
R-squared	0.46	Mean dependent variable	7.90	
Adjusted R-squared	0.41	F-statistic	8.68	
Log likelihood	-385.13	Prob. (F-Statistic)	0.00	

Table 8: Estimates of Women Working Hours Equation Model III

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.59	1.20	3.81	0.00
AGE1	-0.27	0.16	-1.66	0.10
AGE2	0.29	0.15	1.86	0.06
AGE3	0.37	0.28	1.34	0.18
AGE4	-1.10	0.60	-1.81	0.07
YEDU	0.25	0.04	6.60	0.00
MART	0.18	0.17	1.05	0.29
DSTN	-0.07	0.08	-0.95	0.34
LCTN	0.00	0.12	0.00	1.00
MINF	1.86E-05	9.62E-06	1.94	0.05
HMIN	-7.56E-07	6.29E-06	-0.12	0.90
HEMP	-0.07	0.24	-0.31	0.75
FYIN	-1.52E-05	1.88E-05	-0.81	0.42
FYEX	1.55E-05	2.03E-05	0.76	0.45
NODT	0.02	0.05	0.35	0.72
FHAST	-0.04	0.13	-0.32	0.75
NOCH	-0.20	0.07	-2.66	0.01
CHAGEa	-0.04	0.27	-0.14	0.89
CHAGEb	0.08	0.15	0.52	0.60

CHAGEc	0.34	0.14	2.38	0.02
FYRS	-0.02	0.01	-1.99	0.05
HYRS	0.00	0.01	0.33	0.74
MYRS	0.00	0.01	0.26	0.79
FSTP	0.12	0.14	0.88	0.38
FYSZ	0.29	0.31	0.92	0.36
R-squared	0.46	Mean dependent variable		7.90
Adjusted R-squared	0.41	F-statistic		9.41
Log likelihood	-385.13	Prob. (F-Statistic)		0.00

Table 9: Estimates of Women Working Hours Equation Model IV

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.54	1.27	2.79	0.01
AGEY	0.02	0.01	1.98	0.05
YEDU	0.27	0.04	7.42	0.00
MART	0.22	0.18	1.21	0.23
DSTN	-0.06	0.08	-0.76	0.45
LCTN	0.00	0.12	-0.03	0.97
MINF	1.29E-05	9.51E-06	1.36	0.17
HMIN	-8.70E-07	6.37E-06	-0.14	0.89
HEMP	-0.07	0.24	-0.31	0.75
FYIN	-1.93E-05	1.90E-05	-1.01	0.31
FYEX	2.04E-05	2.05E-05	1.00	0.32
NODT	0.01	0.05	0.23	0.82
FHAST	-0.04	0.13	-0.34	0.73
NOCH	-0.20	0.08	-2.72	0.01
CHAGEa	-0.02	0.27	-0.08	0.94
CHAGEb	0.08	0.15	0.54	0.59
CHAGEc	0.28	0.14	2.00	0.05
FYRS	-0.02	0.01	-1.78	0.08
HYRS	0.00	0.01	0.13	0.90
MYRS	0.00	0.01	0.27	0.78
FSTP	0.12	0.14	0.86	0.39
FYSZ	0.34	0.31	1.08	0.28
R-squared	0.44	Mean dependent variable		7.90
Adjusted R-squared	0.40	F-statistic		9.97
Log likelihood	-390.86	Prob. (F-Statistic)		0.00

Table 10: Estimation of Log Linear of Women Earning Equation

Variable	Coefficient	Std. Error	T-Statistic	Prob.
C	6.60	0.42	15.75	0.00
FA	0.09	0.10	0.86	0.39
BA	0.77	0.10	7.96	0.00
MAST	1.39	0.10	14.23	0.00
HEDU	1.83	0.13	14.21	0.00
LCTN	0.05	0.06	0.87	0.38
MART	0.11	0.06	1.73	0.08
FHAST	-0.12	0.06	-2.04	0.04
EXPR	0.09	0.02	5.08	0.00
EXPR ²	-0.01	0.00	-1.59	0.10
DSTN	0.02	0.03	0.71	0.48
WDDW	0.19	0.07	2.81	0.01
R-Squared	0.72	Mean dependent variable		9.23
Adjusted R-Squared	0.73	Log likelihood		-168.78
Prob. (F-statistic)	0.00	F-statistic		68.87