DOI: 10.52131/pjhss.2024.v12i1.1767

Pakistan Journal of Humanities and Social Sciences

Volume 12, Number 01, 2024, Pages 16–25

Journal Homepage:

https://journals.internationalrasd.org/index.php/pjhss

PAKISTAN JOURNAL OF HUMANITIES AND SOCIAL SCIENCES (PJHSS)

INTERNATIONAL RESEARCH ASSOCIATION FOR SUSTAINABLE DEVELOPMENT

# Determinants of Female Labour Force Participation in Pakistan

Sobia Naheed[1], Muhammad Waseem[2], Arshed Bashir[3], Rashed Saeed[4], Ather Mahmood[5]

[1] Senior Scientific Officer, Social Sciences Research Institute (PARC), Faisalabad, Pakistan.
Email: sobianarc@gmail.com
[2] College of Economics and Management, Huazhong Agriculture University Wuhan, China 4300070.
[3] Principal Scientific Officer, Social Sciences Research Institute (PARC), Faisalabad, Pakistan.
[4] Senior Scientific Officer, Social Sciences Research Institute (PARC), Faisalabad, Pakistan.
[5] Principal Scientific Officer, Social Sciences Research Institute (PARC), Faisalabad, Pakistan.

**ARTICLE INFO**

***Article History:***

Received: November 11, 2023
Revised: January 20, 2024
Accepted: January 21, 2024
Available Online: January 23, 2024

***Keywords:***

Female Labour Force
Female Literacy Rate
ARDL Model
Participation
Pakistan

***Funding:***

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

**ABSTRACT**

Women's labour force affects the household economy as well as economic growth. Women's labour force contribution rate is also increasing gradually in Pakistan. We attempted to determine the determinants and impact of women's labour force contribution on households. Time series data were taken from World Bank and WDI from 1981 to 2020. Based on the unit root test the ARDL model was finalized. Akaike Information Criterion (AIC) was used to verify the significance of the estimated ARDL-VECM model. There was a positive and negative association among selected variables. Variables such as female population, ratio of female workers, female headed households and female literacy rate positively and significantly impacted the female labour force participation whereas fertility rate and child mortality rate negatively but significantly determined the participation of females in labour force. Based on findings, government should focus on health and education sectors with special focus on females in order to provide reasonable educational and health facilities in order to support females participation in various economic activities of the country.



Corresponding Author's Email: sobianarc@gmail.com

## 1. Introduction

Globally, labour force participation in men was recorded at 94 percent, and women's involvement was recorded at 63 percent. In Pakistan, female contribution to the labour market is lesser than men. However total civilian labour force was 65.50 million consisting of 50.74 million males and 14.76 million females. The labour force increased from 65.5 million to 71.76 million in 2020-21 and the number of employed persons increased from 61.71 million to 67.25 million during the same period. The unemployment rate slightly decreased from 6.9 percent to 6.3 percent in 2020-21. This showed that 4.51 million people from labour force could not get job in FY2021 (GOP, 2022). In developing countries, women's living standard has changed due to more enormous job opportunities and sectoral swing. However, due to job availability, leisure time in women's lives has decreased, and they are more prone to domestic violence (Heintz, Mannila, Nordén, Parnes, & Regnell, 2017; Pfau-Effinger & Rostgaard, 2011). Women's workforce affects the household economy as well as economic growth. It depicts the aim of females to receive good possibilities of acquiring technology with professional instruction for jobs (Isran & Isran, 2012). By the aggregate stage, the women's participation rate is mainly concluded by uniform aspects or different indicators of the society's economic, demographic, and social circumstances. A rising trend of female involvement in labour has been driving the tendency of paid work, with femininity gaps gradually decreasing. The fertility rate has been turned down in developing countries or over-involved(Lim, 2002). In addition to the reasons mentioned above, Khan and Khan (2009)pointed out that the husband's education was the primary reason for lessening women's labour involvement. He accepted if husbands' schooling increases, women labour force participation decreases. Women's involvement in the labour market shows a significant impact by providing socio-economic growth second cause of earnings and helpful in lessening scarcity. Numerous previous research works have also examined factors for female involvement in the labour market. Most scholars and researchers are compassionate for the social speculation policy Kvist (2015), and EU organizations contributed a general perceptive that female involvement in the labour market will show the way to female fiscal individuality, liberation, and communal solidity (Lohmann, 2009).

Many factors have also been pointed out by Oladejo, Olawuyi, and Anjorin (2011), and both are primarily answerable for financially viable and non-economic for lessening women's involvement. Conventionally, females have been considered house creators, under whose supervision with the contribution of these activities & contacts at the house. He also presented his work regarding women working at home or outside the house with their husbands and child boy on the farm(Tatlow & Forsythe, 2015). The discussion related the involvement of women for labour considered worldwide for several years in many counties. A rising trend of female labour participation has driven the tendency of paid work, with femininity gaps gradually decreasing. It is mentioned reason in developed countries, rising the involvement of women in labour had been connected mainly for completion of the fertility changeover. The fertility rate has been turned down in developing countries or over-involved (Lim, 2002). (Lawanson, 2008)disagreed with the females' work represented by half of a country's population.Considering to domestic activities that females be expecting to reside at inside their house. In these circumstance, GDP in Pakistan are changeable in last year's, labour force for women had increased, only point out the susceptibility and financial pressure of female (Junaid, Hou, Hussain, & Kirmani, 2019). However, showed that the possible finance has been restricted by the apprehension of manage the credit by other male of the family. Verification proposed that conventional norms and civilizing practices considerably stress female employment preferences and outcomes Heintz et al. (2017); in fact, these have been the limiting factors in the expansion of women's participation decisions. There are numerous appearances of gender discrimination present in Pakistan due to the primary reason of the study to lower inequalities than the femininity space in FLFPR. Females' involvement in the labour force influences the household economy and overall presentation of the economy through enhancement in GDP. Female decision-making is a binding instrument for entering the labour market to improve decision-making power and increase women's income and well-being. So there is a dire need to acquire empirical data to evaluate the effects of women's contribution to the labour force on the household economy in Pakistan, considering different gender dimensions: female education and female labour force. By studying the aspects, present research will estimate the determinants of FLFP in Pakistan and recognize trends with labour force input, to plan and apply policy to the end users. The study is aimed at finding determinants of female labour force participation as well as proposing policy measures for the involvement of female labour force participation in economic activities.

## 2. Material and Methods

The pragmatic endeavor of the current study, to evaluate the determinants and consequences of women labour force participation; how the current rise in female employment will affect households. Data were collected as 'Time series' data from the Economic Survey of Pakistan and world data bank from 1981 to 2020 on different variables influencing the female labour force and determined factors that thoroughly influenced the contribution of female labour force. Female labour force participation= f (Female literacy, female unemployment, female Population, fertility rate, female head household, child mortality rate, Ratio of female worker to male, urbanization).Several studies have been done which sustain our dependent and independent variables used in our Model (Ahmad & Hafeez, 2007). Our essential variable is the female education/literacy rate, which mainly affects women's labour force partaking. Likewise, according to theory, unemployment and productivity rates consistently decrease as the women labour force partaking rate increases. It is a health sign that female participation is increasing and will eventually enhance household income (Ghafoor & Munir, 2015).

### 2.1. Models

$$FLFP = f\,(RFWM, UNF, LFP, FR, CMR, FL, URB, FP, FHH)$$

Its general form can be written as:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \mu_3$$

$$FLFP = \beta 0 + \beta 1RFW + \beta 2UNF + \beta 3logFP + \beta 4FR + \beta 5CMR + \beta 6FL + \beta 7logURB + \beta 8FHH + \mu I$$

RFW = Ratio of female worker
UNF = Unemployment for female
FR = Fertility rate
CMR= Child mortality rate
FLR = Female literacy rate
URB = Urbanization
FHH = Female household head
Log FP = Female population

### 2.2. Econometric Models

The econometric approach will be used for time-series datafrom1981-2020.

#### 2.2.1. Unit Root Test

To verify the stationarity rank presented in two categories of unit root test are:

1. Augmented Dicky Fuller test
2. Phillips Peron test

#### 2.2.2. Augmented Dickey-Fuller test statistics (Schwarz Criterion)

ADF (1981) is followed a functional form:

Subsequent hypotheses are created for ADF
Null hypothesis: there is a unit root
$H_0$: ǿ = 0
Alternative Hypothesis: there is no unit root
$H_1$: ǿ ≤ 0

If we reject the null hypothesis, the series is stationary simultaneously as if we accept the null hypothesis. The series is not static, and it concluded that this variable has no unit root problem.

#### 2.2.3. Phillips-Perron unit root test (Schwarz Criterion)

Moon and Perron (2004)directly check the survival of unit root in the sequence $y_{i,t}$.Moon and Perron (2004)consider an autoregressive process (with a fixed effect) in which the residual follows the factor model.
The model specification is as follows

$$y_{i,t} = \alpha_i + y_{i,t}^0$$
$$y_{i,t}^0 = \phi_i y_{i,t-1}^0 + \mu_{i,t}$$
$$\mu_{i,t} = \lambda_i' F_t + e_{i,t}$$

#### 2.2.4. Autoregressive Distributed Lag (ARDL) Model

The quantitative output by analyzing empirical study can be found using an econometric method for example the Autoregressive Distributed Lag Model (ARDL). A few tests for data stationery, depicted with the aim of our chosen variables, are stationary at the level and first difference. Therefore, stationery results found and a suitable econometric technique such as ARDL will be used as proposed by (Mushtaq et al.,2013). As a result, ARDL and VECM tests will detail the short-run and long-run association within variable. If data was found stationary, it will be integrated at a different level of differences then other econometric techniques will be used rather than ARDL (Nkoro & Uko, 2016).

$$FLFP = \beta 0 + \beta 1 \sum_{i=0}^{n} lnFP + \beta 2 \sum_{i=0}^{n} FL + \beta 3 \sum_{i=0}^{n} FUN + \beta 4 \sum_{i=0}^{n} FR + \beta 5 \sum_{i=0}^{n} FH + \beta 6 \sum_{i=0}^{n} CMR + \beta 7 \sum_{i=0}^{n} RFWM + \beta 8 \sum_{i=0}^{n} URB + \varepsilon t \quad (1)$$

The ARDL (p,q1,q2......qk) model specification is given as follows;

$$\Phi(L,p)yt = (\,)\,1\,,i\;ii\;k\;i\;\beta\;Lq\;x\;t = \sum + \delta wt + ut \quad (2)$$

Where

$$\Phi(L,p) = 1 - \Phi 1L - \Phi 2L2 - \cdots . -\Phi pLp$$
$$\beta(L,q) = 1 - \beta 1L - \beta 2L2 - \cdots . -\beta qLq$$

for $i = 1,2,3 \ldots \ldots . k, ut \sim iid(0; \delta 2$

L is a lag operator such that L0 yt =Xt, L1 yt=yt-1, and it is a sx1 vector of deterministic variables such as the intercept term, time trends, seasonal dummies, or exogenous variables with the fixed lags. P=0,1,2…,m, q=0,1,2….,m, i=1,2….,k: namely a total of (m+1)k+1 different ARDL models. The maximum lag order, m, is chosen by the user. Sample period, t = m+1, m+2….,n. or The ADRL(p,q) model specification:

$$\Phi(L)yt = \varphi + \theta(L)xt + ut \quad (3)$$

With $\Phi(L) = 1 - \Phi 1L - \ldots - \Phi pLp , \theta(L) = \beta 0 - \beta 1L - \ldots - \beta qLq$
Hence, the general ARDL (p,q1,q2......qk) model;

$$\Phi(L)yt = \varphi + \theta\, 1(L)x1t + \theta\, 2(L)x2t + \theta\, k(L)xkt + \mu t \quad (4)$$

### 2.2.5. Bounds Test

Suppose the study variables are stationary at 1(0), or 1(1) are equally joint after that. In that case, we applied F-bounds test for the association of long-run. Augmented Dicky Fuller test indicated that no variable has the integrated order 1(2), so F- the bounds test could be employed to scrutinize the long-run association and whether variables are co-integrated with each other or not.

$H_0 = \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = \beta_8 = 0$ (there is no long run relationship exist)
$H_1 = \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = \beta_8 \neq 0$ (there is long run relationship exist)

## 3. Results and Discussions

Descriptive statistics are presented below in table

**Table1: Descriptive statistics of selected variables**

| | Mean | Median | Maximum | Minimum | Std. Dev. |
|---|---|---|---|---|---|
| LGDP | 0.883 | 0.884 | 0.897 | 0.865 | 0.009 |
| CMR | 92.602 | 91.700 | 124.000 | 61.200 | 19.365 |
| FHH | 8.211 | 8.450 | 11.280 | 3.960 | 2.263 |
| FL | 30.315 | 29.043 | 48.900 | 15.715 | 9.273 |
| FLFP | 16.121 | 15.530 | 26.224 | 1.500 | 5.610 |
| FR | 4.963 | 4.812 | 6.535 | 3.412 | 1.103 |
| LFP | 7.801 | 7.814 | 7.995 | 7.555 | 0.134 |
| RFWM | 20.713 | 18.248 | 29.470 | 15.029 | 4.640 |
| UNF | 7.826 | 8.410 | 22.310 | 0.245 | 6.654 |

Results for the current study are presented as under

### 3.1. Results of the unit root test

Unit root test is affianced to check reliability of elements which we have chosen for our study. This step is required to check out integrated data, whether data has unit root or not. By applying this step, we can stay away from false results. We can know appropriate test estimation by using integrated data. Labour force participation for female was found stationary at the level (trend and Intercept) and first difference (Intercept)(Politis & Romano, 1994). ADF test (Augmented Dickey-Fuller) explained the unit root under this hypothesis.

By analyzing data, according to output, it is depicted in tables that the variables precise above are stationary (Philip Perron). Some variables, namely, female labour force partaking, female joblessness, female literacy, Ratio of the female worker to males, fertility rate, female household head, and child mortality rate, are stationary at first difference (Intercept &Intercept and trend) by applying Philip Perron. While remaining variable similar to labour force participation, female population, fertility ratio, child mortality, and urbanization are stationary at level (Intercept and Intercept & trend).

**Table 2: Unit Root test using Augmented Dickey-Fuller (Schwarz criterion)**

| Variables | At level | | At first difference | |
|---|---|---|---|---|
| | Intercept | Trend and Intercept | Intercept | Trend and Intercept |
| FLFP | 0.159 | 0.868*** | 1.348*** | 2.805*** |
| UNF | 0.252 | 0.240 | 0.998*** | 1.01*** |
| FL | 0.0186 | 0.167 | 0.984*** | 1.021*** |
| FP | 0.018*** | 0.025 | 0.043 | 1.00 |
| RFWM | 0.032 | 0.080 | 0.781*** | 0.941*** |
| FR | 0.000 | 0.021*** | 0.042 | 0.050 |
| FHH | 0.025* | 0.065 | 0.905*** | 1.021*** |
| CMR | 0.004** | 0.025 | 0.858*** | 0.841*** |
| URB | 0.003 | 0.009** | 0.024 | 0.103 |

***, **, and * symbolize significance levels at alpha 1, 5, and 10%, respectively

**Table 3: Unit Root results of Philip Peron test Statistic (Schwarz Criterion)**

| Variables | At level | | At First difference | |
|---|---|---|---|---|
| | Intercept | Intercept and trend | Intercept | Intercept and trend |
| FLFP | 0.159 | 0.868*** | 1.348*** | 2.805 |
| FUN | 0.252* | 0.240 | 0.998 | 1.014*** |
| FL | 0.018 | 0.167 | 0.984*** | 1.021*** |
| FP | 0.018*** | 0.025 | 0.143 | 1.102 |
| RFWM | 0.032 | 0.080 | 0.781)*** | 0.941*** |
| FR | 0.000 | 0.021*** | 0.042** | 0.050** |
| FHH | 0.025* | 0.065 | 0.905*** | 1.021*** |
| CMR | 0.004** | 0.025 | 0.858*** | 0.841** |
| URB | 0.003 | 0.009** | 0.024 | 0.103 |

***, ** and * indicates significance level at alpha 1%, 5% and 10%, respectively

In addition, findings of the Augmented Dicky Fuller test depicted all variables are stationary, but some at the first difference (Intercept & Intercept and trend), some at level (Intercept &Intercept and trend). It was observed from obtained results that a mixture of 1(1) and 1(0) give possible justification for applying the bounds test and ARDL model, suggested by (Zhang, Wang, & Wang, 2017). Similarly, several studies used the ARDL technique, but some of them are mentioned here, such as (Adom, Bekoe, & Akoena, 2012; Bildirici & Kayıkçı, 2013; Bölük & Mert, 2015; farahani Yazdan & Hossein, 2012; Nathan, Liew, & Wong, 2016; Shahbaz & Islam, 2011).

### 3.2. Long Run and Short Run Coefficients

We use the F-bounds test to measure long-run relation and cointegration among variables.

### 3.3. Results of Bounds F-test

When we employed the F-bound test, subsequent results were attained. In the Model, the reliance of the labour force for female on the female worker ratio, female unemployment, female population, and fertility rate was estimated using ARDL Model. End result of the bounds test was presented in Table 3. The result depicted at 10%, lower bound was 2.45, and the upper bound was 3.52. But at 5% lower bound was 2.86 and the upper bound was 4.01. At 1%, the lower bond was 3.74, and the upper bound was 4.59. The calculated F-test value was 5.067, which proved that the F-value was more significant than the upper bound at 1%, 5%, and 10%, which pointed out the subsistence of long-run relationship amongst dependent and independent variables. So, we refuse our null hypothesis (no long-run association exists) and agree to the alternative hypothesis (a long-run association exists). So far, the long-run effects of independent variables on dependent variables were explained by long-run coefficient-ARDL and short-run association amongst variables by VECM.

**Table 4: F-Bound Test**

| F value | Probability | Critical value at 1% | | Critical value at 5% | | Critical value at 10% | |
|---|---|---|---|---|---|---|---|
| | | I(0) | I(1) | I(0) | I(1) | I(0) | I(1) |
| 5.0672 | 0.000 | 3.74 | 4.59 | 2.86 | 4.01 | 2.45 | 3.52 |

### 3.4. ARDL Model Short-run Error Correction Model (ECM-ARDL)

The subsequent was utilized to assess the short-run association between variables as dependent independent. The Vector Error Correction Model was used for changing from short run to a long run or explained the rapidity of variable modification from short to long run. The short-run outcomes demonstrate that the coefficient of ECM (-1) was -2.3952, which was signed based on probability value. The ECM (Error Correction Term) was -2.395, which showed 23.395% convergence in the short run to the long run with a modification of the Ratio of females working to males, female Unemployment, female Population, and fertility rate. The value of $R^2$ showed an 86.4% variation in labour force participation rate for female due to child mortality rate, female literacy, urbanization, female household head, and female population. The value of F-statistics depicts the considerable general effect of the Model. DW-statistics is 2.302072, which shows that in attendance, there is no auto correlation difficulty in the Model.

**Table 5: Short-run Error Correction Model (ECM-ARDL)**

| Variable | Coefficient | T-Statistic | Prob. |
|---|---|---|---|
| FLFP | 0.007* | 1.867 | 0.094 |
| FLFP(-1) | 0.000 | 0.209 | 0.838 |
| FHH(-1) | 0.426** | 2.820 | 0.020 |
| FHH(-2) | 0.300* | 1.947 | 0.083 |
| FP | 0.000 | -0.739 | 0.478 |
| FP(-1) | 0.000*** | 4.567 | 0.001 |
| UNF | -0.013** | -2.910 | 0.017 |
| UNF(-1) | -0.017** | -3.657 | 0.005 |
| RFWM | 0.032* | 2.094 | 0.065 |
| RFWM(-1) | -0.011 | -0.656 | 0.527 |
| D(CMR) | 0.739* | 1.917 | 0.066 |
| D(FL) | 0.580** | 2.137 | 0.042 |
| D(FL(-1)) | -0.728** | -1.400 | 0.037 |
| D(LURB) | -0.515** | -2.714 | 0.011 |
| D(FHH) | -0.120** | -2.597 | 0.015 |
| D(FP) | 0.233* | 2.582 | 0.065 |
| D(FP(-1)) | -0.670** | -2.107 | 0.045 |
| ECM(-1) | -2.395** | -6.836 | 0.012 |
| $R^2$ | (0.864917) | R-Bar squared | (0.805481) |
| F-statistic | 232.67 [0.0000] | DW-Statistic | (2.302072) |

***, **, and * symbolize significance levels at alpha 1, 5, and 10%, respectively

### 3.5. The Long-run Results of the Model

The results regarding long-run demonstrated and estimated coefficient was significant in model-1; it was shown that a long-run association be present between labour force contribution ratio of female workers, female Unemployment, female population, and fertility rate. According to the results, there was a positive association among variables if there were a 1% increase in the Ratio of female workers to males and Unemployment for the female and population, so the female labour force participation rate had increased by 43%, 23% & 25%, respectively (Ehrlich & Lui, 1991). The long-run results depicted that the projected results were significant in model-1; also, these results illustrate that long-run association subsists among female labour force partaking and child mortality ratio, female literacy, urbanization, female household head, and female population.

According to the results, there was a 1% increase in female literacy rate, urbanization, female population, and female household heads, which caused 0.748%, 0.071%, 0.212% & 0.608% increase in female labour force contribution proportion. While other factors had an inverse affiliation regarding the contribution of female labour force, so results explained that a 1% rise in child mortality fraction was caused by to decline of 0.680% in female labour force contribution. This factor had a inverse association with dependent variable. According to the outcome presented in table 4.6, there were positive and highly significant effects on female literacy rate and household heads. Previous studies' results were similar (Cruces & Galiani, 2007; Narayan & Smyth, 2006; Rindfuss, Benjamin, & Morgan, 2000). In contrast, child mortality had a negative consequence on female labour force partaking, as results explained by these studies (Blau, Guilkey, & Popkin, 1996).Similarly, another core variable was the fertility rate, which negatively impacted labour force for female participation rate. So, according to the results which indicated 1% increase in the fertility rate was caused by to decrease of 18 % in the female labour force participation rate. This long-run result is also dependable with Soares (2005)argument that reduces mortality tendency to lessen productiveness (Boldrin & Levine, 2005; Kalemli-Ozcan, Ryder, & Weil, 2000).

**Table 6: Long Run Coefficient using ARDL Model when Dependent Variable is FLFP**

| Variable | Coefficient | T-ratio | p-value |
|---|---|---|---|
| FLFP | 0.212 | 2.456 | 0.021 |
| CMR | -0.680** | -2.123 | 0.043 |
| FLR | 0.748*** | 3.878 | 0.000 |
| LURB | 0.071 | 2.430 | 0.022 |
| FHH | 0.608*** | 3.087 | 0.004 |
| RFW | 0.438** | 2.966 | 0.007 |
| UNF | 0.235 | 4.671 | 0.050 |
| FP | 0.253** | 2.454 | 0.002 |
| FR | -0.183*** | 3.091 | 0.005 |
| C | -17.378 | -2.334 | 0.028 |

***, **, and * symbolize significance levels at alpha 1, 5, and 10%, respectively

### 3.6. Estimating Long Run Coefficient Using ARDL Model

ARDL-model was performed excellently, and ARDL-VECM found significant results of the parameters, the criteria used in this study, namely as Akaike Information Criterion. For the Model, the optimal number of lags were ARDL(1, 0, 2, 1, 0, 2),respectively. The long-run results, as presented in table 4.9, depicted that the projected results were significant in model-4; also, these results elucidated that long run association exists between woman's labour force contribution and female family unit head, female population, unemployment for females, ratio of the female worker to male and female literacy. For this purpose, we selected variables like the Ratio of female workers to males, female labour force contribution rate, urbanization, child mortality proportion, literacy proportion, and population as independent variables. In contrast, our dependent variable is domestic product growth per capita. According to the results, there was a 1% increase in female household heads, female population, and female literacy rate, which caused 0.52%, 0.023%& 0.45% amplify in the female labour force contribution rate. While other variables had an inverse connection with the participation rate of female labour force, so results explained that a 1% increase in Unemployment for females was caused to decrease of 0.680% in female labour force contribution.

The variable mentioned above had a negative association with dependent variable. The results showed positive and significant effects on female literacy rates and household heads. Previous studies' results were similar(Bernstein & Madlener, 2011). While child mortality had a negative and significant result on the female labour force partaking, as results explaining by these studies (Sultan, 2010). Unemployment for females and child mortality rate had a significant impact but were negative as Unemployment for females increases households' income decreases. The child mortality rate also had a negative effect because when female participation increased, child mortality also increased, but it had a negative and significant impact on households. If child mortality increases1 percent point, then household income decreases by 0.13 percent point. Results presented in table 15 pointed out that if female labour force participation increases by 1 percent point, household income also increases by 0.17 % point. Likewise, the Ratio of female workers to male’s increases by 1 percent point had a positive impact on households and a 0.12% increase in household incomes.

Similarly, the literacy rate had an imperative collision on the decision about households' situation, employment for the young in Pakistan. If the literacy rate increases by 1 percent, households' income increases by 0.40%. As the literacy rate increases, the people of households get good jobs and participate well in the labour market for earning, which could play a essential role in improving households' situation. The probability derivative of the total population also points out that a one-year increase in persons of a household decreases the probability of household income by 0.56% points. Similarly, the reason might be the amplification in the expenditure and opportunity cost of residing at home, which gets higher with people. Various researchers in Pakistan give similar sort of results. For example, a study report by Naqvi, Shahnaz, and Arif (2002) established that contribution in financial activities increases for both young males and females in Pakistan. The results regarding prospects of women demonstrate that female is 0.2 % less possible to be full-time workers. The results depicted a usual prejudice of female who are mostly regarded to perform household work. Furthermore, the probability of an individual being full-time worker lessens while the young human being status is marital. This might be due to high idleness amongst females in the early stages, which are not predictable to work otherwise getting education after getting marriage. The presented results also verified previous results studies by Akhter (2006); Sathar, Jain, Rao, ul Haque, and Kim (2005), which explain that frequently females are not inexpensively energetic and that their work is mainly unpaid and hidden.

**Table 7: Long Run Coefficient using ARDL when Dependent Variable is GDP**

| Variable | Coefficient | T-Statistic | Prob. |
|---|---|---|---|
| GDP | 0.212** | 2.156 | 0.0313 |
| FHH | 0.608*** | 3.087 | 0.0049 |
| RFW | 0.438*** | 2.966 | 0.007 |
| UNF | 0.235** | 4.671 | 0.050 |
| FP | 0.253*** | 2.454 | 0.002 |
| FR | -0.183*** | -3.091 | 0.005 |
| CMR | -0.680** | -2.123 | 0.0438 |
| FLR | 0.748*** | 3.878 | 0.0007 |
| URB | 0.071 | 2.430 | 0.0226 |
| FP | 0.212** | 2.456 | 0.0213 |
| C | 31.200 | 2.528 | 0.0182 |

***, **, and * symbolize significance levels at alpha 1, 5, and 10%, respectively

## 4. Conclusion and Recommendation

The present study was conducted to determine various elements that affect Pakistan's women's contribution to the contribution of the labor force. We selected eight factors/influencers to determine the female labour force participation in Pakistan. Among these five factors namely female population, ratio of female workers, female household head, and female literacy rate positively and significantly impacted the female labour force participation whereas fertility rate and child mortality rate negatively but significantly determined the participation of females in labour force as per ARDL model. The results of ARDL-model are verified through F-Bounds test. In the light of findings, it is suggested that government should increase literacy rate particularly for the females in order to harness endeavors of our female labour force for the economy. Similarly, government should provide health care facilities on large scale to the married women in order to reduce child mortality rate. Government should arrange more job openings for the females in job market of the country because ratio of female workers than males is also highly impacting the labour force participation in economic activities within Pakistan. However, further research exploring economic benefits going to households based on participation of females in various economic sectors of the country is suggested based on original and cross sectional data.

## References


Adom, P. K., Bekoe, W., & Akoena, S. K. K. (2012). Modelling aggregate domestic electricity demand in Ghana: An autoregressive distributed lag bounds cointegration approach. *Energy policy, 42*, 530-537. doi:https://doi.org/10.1016/j.enpol.2011.12.019

Ahmad, E., & Hafeez, A. (2007). Labour supply and earning functions of educated married women: A case study of Northern Punjab. *The Pakistan Development Review*, 45-62.

Akhter, R. (2006). *Global economy, gender equality, and domestic violence: a cross-national study*: Southern Illinois University at Carbondale.

Bernstein, R., & Madlener, R. (2011). Residential natural gas demand elasticities in OECD countries: an ARDL bounds testing approach.

Bildirici, M. E., & Kayıkçı, F. (2013). Effects of oil production on economic growth in Eurasian countries: Panel ARDL approach. *Energy, 49*, 156-161. doi:https://doi.org/10.1016/j.energy.2012.10.047

Blau, D. M., Guilkey, D. K., & Popkin, B. M. (1996). Infant health and the labor supply of mothers. *Journal of Human Resources*, 90-139. doi:https://doi.org/10.2307/146044

Boldrin, M., & Levine, D. K. (2005). The economics of ideas and intellectual property. *Proceedings of the National Academy of Sciences, 102*(4), 1252-1256. doi:https://doi.org/10.1073/pnas.0407730102

Bölük, G., & Mert, M. (2015). The renewable energy, growth and environmental Kuznets curve in Turkey: an ARDL approach. *Renewable and Sustainable Energy Reviews, 52*, 587-595. doi:https://doi.org/10.1016/j.rser.2015.07.138

Cruces, G., & Galiani, S. (2007). Fertility and female labor supply in Latin America: New causal evidence. *Labour Economics, 14*(3), 565-573. doi:https://doi.org/10.1016/j.labeco.2005.10.006
Ehrlich, I., & Lui, F. T. (1991). Intergenerational trade, longevity, and economic growth. *Journal of political Economy, 99*(5), 1029-1059.
farahani Yazdan, G., & Hossein, S. S. M. (2012). Causality between oil consumption and economic growth in Iran: An ARDL testing approach. *Asian Economic and Financial Review, 2*(6), 678.
Ghafoor, A., & Munir, A. (2015). Design and economics analysis of an off-grid PV system for household electrification. *Renewable and Sustainable Energy Reviews, 42*, 496-502. doi:https://doi.org/10.1016/j.rser.2014.10.012
GOP. (2022). Pakistan Economic Survey 2021-22.
Heintz, F., Mannila, L., Nordén, L.-Å., Parnes, P., & Regnell, B. (2017). *Introducing programming and digital competence in Swedish K-9 education.* Paper presented at the Informatics in Schools: Focus on Learning Programming: 10th International Conference on Informatics in Schools: Situation, Evolution, and Perspectives, ISSEP 2017, Helsinki, Finland, November 13-15, 2017, Proceedings 10.
Isran, S., & Isran, M. A. (2012). Status of Women in Pakistan: A Critical Analysis. *JISR management and social sciences & economics, 10*(2), 85-99.
Junaid, M., Hou, F., Hussain, K., & Kirmani, A. A. (2019). Brand love: the emotional bridge between experience and engagement, generation-M perspective. *Journal of Product & Brand Management, 28*(2), 200-215. doi:https://doi.org/10.1108/JPBM-04-2018-1852
Kalemli-Ozcan, S., Ryder, H. E., & Weil, D. N. (2000). Mortality decline, human capital investment, and economic growth. *Journal of development economics, 62*(1), 1-23. doi:https://doi.org/10.1016/S0304-3878(00)00073-0
Khan, R. E. A., & Khan, T. (2009). Labor force participation of married women in Punjab (Pakistan). *Journal of Economic and Social research, 11*(2), 77.
Kvist, J. (2015). A framework for social investment strategies: Integrating generational, life course and gender perspectives in the EU social investment strategy. *Comparative European Politics, 13*, 131-149. doi:https://doi.org/10.1057/cep.2014.45
Lawanson, O. I. (2008). Female labour force participation in Nigeria:'Determinants and Trends'. *Department of Economics, University of Lagos, Nigeria*.
Lim, L. L. (2002). Female labour-force participation. *Geneva, Switzerland: International Labour Organization, Gender Promotion Programme (GENPROM). Available at: http://www. un. org/esa/population/publications/completingfertility/RevisedLIMpaper. PDF*.
Lohmann, L. (2009). Toward a different debate in environmental accounting: The cases of carbon and cost–benefit. *Accounting, organizations and society, 34*(3-4), 499-534. doi:https://doi.org/10.1016/j.aos.2008.03.002
Moon, H. R., & Perron, B. (2004). Testing for a unit root in panels with dynamic factors. *Journal of econometrics, 122*(1), 81-126. doi:https://doi.org/10.1016/j.jeconom.2003.10.020
Naqvi, Z. F., Shahnaz, L., & Arif, G. (2002). How do women decide to work in Pakistan?[with comments]. *The Pakistan Development Review*, 495-513.
Narayan, P. K., & Smyth, R. (2006). Female labour force participation, fertility and infant mortality in Australia: some empirical evidence from Granger causality tests. *Applied Economics, 38*(5), 563-572. doi:https://doi.org/10.1080/00036840500118838
Nathan, T. M., Liew, V., & Wong, W.-K. (2016). Disaggregated energy consumption and sectoral outputs in Thailand: ARDL bound testing approach. *Journal of Management Sciences, 3*(1), 34-46.
Nkoro, E., & Uko, A. K. (2016). Autoregressive Distributed Lag (ARDL) cointegration technique: application and interpretation. *Journal of Statistical and Econometric methods, 5*(4), 63-91.
Oladejo, J., Olawuyi, S., & Anjorin, T. (2011). Analysis of women participation in agricultural production in Egbedore local government area of Osun State, Nigeria. *International journal of agricultural economics and rural development, 4*(1), 1-11.
Pfau-Effinger, B., & Rostgaard, T. (2011). Welfare-state change, the strengthening of economic principles, and new tensions in relation to care. In (Vol. 2, pp. 1-6): Universitetsforlaget.

Politis, D. N., & Romano, J. P. (1994). Limit theorems for weakly dependent Hilbert space valued random variables with application to the stationary bootstrap. *Statistica Sinica*, 461-476.

Rindfuss, R. R., Benjamin, K., & Morgan, S. P. (2000). *How do marriage and female labor force participation affect fertility in low–fertility countries.* Paper presented at the annual meeting population association of America, Los Angeles.

Sathar, Z., Jain, A., Rao, S. R., ul Haque, M., & Kim, J. (2005). Introducing client-centered reproductive health services in a Pakistani setting. *Studies in Family Planning, 36*(3), 221-234.

Shahbaz, M., & Islam, F. (2011). Financial development and income inequality in Pakistan: An application of ARDL approach.

Soares, R. R. (2005). Mortality reductions, educational attainment, and fertility choice. *American Economic Review, 95*(3), 580-601.

Sultan, N. (2010). Cloud computing for education: A new dawn? *International Journal of Information Management, 30*(2), 109-116. doi:https://doi.org/10.1016/j.ijinfomgt.2009.09.004

Tatlow, D. K., & Forsythe, M. (2015). In China's modern economy, a retro push against women. *New York Times, 20*, A1.

Zhang, B., Wang, B., & Wang, Z. (2017). Role of renewable energy and non-renewable energy consumption on EKC: evidence from Pakistan. *Journal of cleaner production, 156*, 855-864. doi:https://doi.org/10.1016/j.jclepro.2017.03.203