ABSTRACT

Human capital theories suggest that with more education, women acquire better skills and their labour force participation rate rises leading to the rise in their savings. However, it has been observed that the female LFPR is reducing at an alarming rate for both developed and developing countries with the rise in education level. It has been observed that other factors such as fertility rate, household income growth in gross domestic product, and life expectancy rate. The governance indicators like regulatory control, voice and accountability, political instability, government effectiveness, rule of law and control of corruption, also play an important role in affecting the female LFPR. The study attempts a panel data regression on some selected countries and tries to analyse the factors determining the labour force participation rates of females. It shows that different non-educational factors have a strong influence over the declining female LFPR and validates the paradox where education is negatively related to female LFPR. Factors other than education such as regulatory quality, government efficiency, wage and salary, and life expectancy have a significant impact on the female LFPR. The study also gives recommendation to the aforementioned problems and brings up with policies which could be taken up to boost the female LFPR.

Keywords: Labour force participation rate; fertility rate; household income; governance indicators; paradox.

1. INTRODUCTION

The female labour force participation rate is gradually falling over the years which is an alarming sign for the global economy. According to the World Bank data, it can be observed that women’s education is rising at a greater pace. Researchers have worked on analysing such a
situation very closely. Higher education is acting as a driving force for which women with comparatively higher levels of education have a higher probability to exit from the labour force [1].

Despite the fact that many studies have only focused on education as the major driving force for which female LFPR is falling [2,1], it can be observed that various other factors like fertility rate, wage and salaried workers, secondary education, contributing family workers, primary education, life expectancy, regulatory quality, voice and accountability, political stability, no violence, government effectiveness, rule of law and control of corruption are also responsible for the change in the female LFPR [3,4]. Hence, the paper uses different development and governance indicators for 40 countries to evaluate the extent to which educational and non-educational factors affect the female LFPR over a span of 18 years, from 2000-2017.

The results of the study have also proven that female LFPR is not only falling due to primary or secondary education but for other factors that also play an important role. The fixed-effects model in regression analysis is used to interpret and evaluate the panel data and has further helped to analyse the negative impact of education on the female LFPR [5,6]. Factors other than education such as regulatory quality, government efficiency, wage and salary, and life expectancy have a significant impact on the female LFPR.

1.1 Research Objectives

- To explore the incidence of female LFPR in various continents.
- To determine the factors that affect the female LFPR in 40 selected countries of the world.

2. LITERATURE REVIEW

There is growing literature when it comes to the situation of falling female labour force participation. The female LFPR is a U-shaped curve when plotted against the economic growth of a country [7]. This suggests that the female LFPR falls in the early stages of economic growth and then eventually rises in the later stages of economic growth. Other studies have discussed and shown the U-shaped curve after calculating and analysing the NSSO reports [8,9].

2.1 Education

Male education is an important factor determining the low female LFPR. Education is assumed to be a proxy variable for household income. This explains why the rise in men's education led to a fall of women's employment [2]. Women having primary or at least tertiary education have a higher probability not to exit employment in comparison to the women having secondary education [10]. Studies have also discussed that women who remain unemployed, generally enhance their educational qualification. Women having secondary education possess higher levels of human capital and skills which should yield higher incomes [2]. But it was the opposite case for Indian women and these educated Indian women are placed in the lower end of the U-shaped curve which can be drawn out when education and female LFPR are plotted [1]. The reduction of the female LFPR is because of the transition of the Indian economy from an agrarian based to the service sector ignoring the creation of jobs in the manufacturing sector [11]. This caused a shortage of jobs for mid-level educated women in the economy. It has also been observed that the health and education sectors are not segregated by gender but in these sectors, secondary educational qualification does not suffice, which eventually leads to a lower female LFPR in these sectors [12-14]. Another study has examined that there is a J-shaped relationship between female LFPR and education in India, which states that as the secondary education increases, the female LFPR falls, which should not be the case [1]. Studies have illustrated that other factors such as higher enrolment of women for higher education, lack of jobs in the economy, crowding out effect and discriminatory wages have some sort of impact on female LFPR. It also highlights that education in its current form is not sufficient to increase the female LFPR [11]. Highly educated women, who gain higher returns from home production rather than labour market, tend to exit from the labour market and hence become unemployed. The working female population in the family farm can be a form of "disguised unemployment" [2].

2.2 Social Norms and Cultural Factors

Household wealth has a negative impact on women's employment despite having a decent academic qualification [10]. It is observed that families having large plots of land have higher female LFPR because they are generally self-employed. In India, the social customs and the
 caste system does not focus on ‘empowering’ women. It is generally assumed that domestic work has to be done by them. Women, of disadvantaged social groups like the Schedule Tribe (STs), Schedule Caste (SCs) and Other Backward Classes (OBCs) are observed to have a higher rate of employment as compared to high caste women in the rural areas [10,15]. It also states that the women who belong to the higher castes have preferences of work whereas women of the marginalised section of the society do not have such preferences for which the LFPR is quite high among them. Social norms do restrain women’s mobility and reduces the female LFPR. Other studies have also discussed that the presence of in-laws reduces the probability of exiting from employment but at the same time if there are quite a few elderly family members, it leads to an increase in the probability of exiting employment, mostly in rural India. It also empirically states that women in the rural areas tend to have higher probabilities of exiting from employment and lower probabilities of entering into employment if they belong to a wealthier household [10]. It is also observed that women in the north-eastern states of the country have a higher LFPR because it is agrarian in nature but however it is also observed that women in the urban sector have a higher female LFPR than any other states. This is mainly because of the socio-economic background of the people living in the north-eastern states of India [10]. Keeping all other factors constant, it is also seen that unmarried women in rural areas have a low LFPR rather than married women whereas female LFPR is higher for unmarried women rather than separated or married women [15].

3. DATA, FINDINGS AND ANALYSIS

Over the last two decades, it is observed that there is a considerable fall in the Labour force participation rate, female (% of female population ages 15-64) (modelled ILO estimate) across the globe according to the World Bank Report 2017.

3.1 A Brief Idea about the Variables

- **Labour force participation rate**: Labour force participation rate, or LFPR is the measure of the proportion of a country’s working age population (who belong to the age group from 15 to 64 years) who are either working or actively looking for work. The formula for calculating LFPR is labour force, employed persons and unemployed persons who are actively looking for jobs, divided by the total working-age population.

- **Fertility rate**: Fertility rate refers to the total number of births per woman over a particular period of time.

- **Wage and salaried workers**: Wage and Salaried workers are those workers who have jobs which are referred to as “paid employment jobs”, where incumbents hold explicit or implicit employment contracts that gives them a basic remuneration which is not affected with the amount of work done by them.

- **Contributing family workers**: Workers who hold a status of ‘self-employed’ job in a market oriented establishment operated by a related person living in the same household, who cannot be regarded as partners, because their commitment to the operation of the establishment is not at a level comparable to that of the head of the establishment.

- **Primary education**: Primary education is defined as the first stage of formal education which is after preschool and before attainment of secondary education.

- **Secondary education**: It is the second phase of formal education which comes after primary education.

- **Life expectancy at birth, total (years)**: Life expectancy is the average number of years that a new born in a country is expected to live if the current mortality rate applies.

- **Regulatory Quality**: Regulatory quality captures the perceptions of the ability of the government to formulate and implement sound policies and regulation which provide permit and facilitate the promotion of private sector development. (WGI Data Source Summary, 2019).

- **Voice and Accountability**: Voice and accountability capture the perception of the extent to which the citizens of a country can exercise rights like voting, freedom of expression, freedom of association and free media. (WGI Data Source Summary, 2019).

- **Political Stability No Violence**: Political stability and no violence capture perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism. (WGI Data Source Summary, 2019).
Government Effectiveness: Government effectiveness indicators (GE) measure perceptions of the quality of public services, civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. (WGI Data Source Summary, 2019)

Rule of Law: Rule of law captures the perceptions of the extent to which agents have the confidence in and abide by the rules of the society, and in particular the quality of contract enforcement, property rights, the police and the courts. (WGI Data Source Summary, 2019)

Control of Corruption: Control of corruption captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as takes in to account the state by elites and private interests. (WGI Data Source Summary, 2019)

3.2 The World at a Glance

Asia is the largest continent with a population of about 4.5 billion people, which offers cheap labour in the market. It is the fastest-growing economic region of the world having a GDP growth of 5.7%. The developing Asian countries such as India, Bangladesh and Sri Lanka have female LFPR less than 45% of the total female population (aged 15-64 years). This shows that only a minor section of the female population is a part of the labour force and it is alarming for the economy at large. It is observed that steady growth in the female LFPR for Bangladesh for all the years, and especially a steep jump in 2017. This may be attributed to the burgeoning garment industry in that country. However, we notice a decrease in female LFPR in both Sri Lanka and India. It has been observed that the female LFPR is gradually rising in the case of Kazakhstan from 72.86% in 2000 to 73.60% in 2017. The female LFPR takes a U-shaped curve in the case of Nepal from 84.56% in 2000 to 81.81% in 2008 and finally to 84.47% in 2017. Cambodia, on the other hand, shows a steep rise from 2004 to 2010 but then it drastically falls from 84.295% in 2010 to 77.149% in 2017. In the case of China, a gradual but rapid fall in the female LFPR is observed, i.e., 76.823% in 2000 to 69.235% in 2017. Other Asian countries like Georgia, Indonesia, Korea Republic, Japan, Malaysia and Russia have a moderate level of female LFPR ranging from 45% to 70% of the total female population. In these countries, there is a rise in the female LFPR with the passage of time.

Europe is one of the major world regions to develop a modern economic system in the field of commercial agriculture, industrial development and the provision of specialised services. In countries like Austria, United Kingdom, Belgium and France, it is observed that the female LFPR falls in the early 2000s and then it rises gradually. The female LFPR ranges from 55% to 72.68% of the female population from 15-64 years. Other countries like Bulgaria, Cyprus, Italy, and Croatia also show an upward trend in the female LFPR.

Australia is considered to be one of the most developed countries in the world with the most developed markets. In this country, we see a rising female LFPR ranging from 65.337% in 2000 to 72.31% in 2017 of the female population aged from 15-64 years.

North America has a population of 579 million which is about 8% of the world population. It has a nominal GDP of 22.2 trillion USD and the GDP growth in 2017 remained at 2.3 Countries like United States of America, which is one of the most developed nations of the world, and Jamaica shows two different trends relating to female LFPR. It is observed that USA has a downward sloping curve when it comes to the female LFPR ranging from 69.92% in 2000 to 66.51% in 2017 of the total female population aged 15-64 years. Countries like Mexico and Cuba have a lower female LFPR in comparison to the other countries in North America but increases eventually.

South America is one of the continents which lags behind in economic development as it is highly dependent on its primary commodities as well as the education system. Countries like Peru and Brazil show an upward trend whereas Venezuela and Argentina are about at the same level. The female LFPR has risen significantly from 57.15% in 2000 to 72.93% in 2017. There is a rise in Venezuela from 50.06% in 2003 to 54.55% in 2011 and then it falls to 51.83% in 2017.

Africa has about 16% of the world population, that is, 1.307 billion people live in Africa. In countries like Burkina Faso, Burundi, Cameroon,
Ghana and Mozambique it is observed that the female LFPR is quite higher than other continents but it is falling. Mozambique had a female LFPR as high as 88.18% in 2000 which fell to 78.31% in 2017. On the other hand, it is observed that in countries like Kenya and South Africa, the female LFPR falls in the early 2000s and then rises eventually. South Africa has a very low female LFPR in comparison to the other countries of Africa which ranges from 52.41% in 2000 to 53.40% in 2017.

3.3 Descriptive Statistics

The summary of statistics tables for the different continents, namely, Asia, Europe, North America, South America and Africa has been computed. The mean, median, standard deviation, kurtosis, skewness, minimum and maximum values of the variables are taken into account.

All 40 Countries

It is observed that the female LFPR of all the 40 countries have a mean of 61.86 which shows that the women participating in the labour force is more than half the world population of all the 40 countries. It also shows a high standard deviation of about 12.95% which means the female LFPR is at different levels in different countries. On the other hand, it is seen that female education, that is, both primary and secondary education have been below 50% over the span of 18 years.

The correlation matrix shows the different relationships among the different variables. The correlation matrix indicates the dependence of female labor force participation rate with the other variables where it is seen that it has a negative correlation with all the other variables except fertility rate, contributing family members and regulatory control which means that when female LFPR rises, the other factors tend to fall. It is also observed that the fertility rate has a strong negative correlation with increasing salaried women.

3.4 Methodology and Conceptual Framework

- **Panel data specification:** Panel data is implemented to estimate the impact of fertility rate, wage and salaried workers, secondary education, contributing family workers, primary education, life expectancy, regulatory quality, voice and accountability, political stability no violence, government effectiveness, rule of law, and control of corruption on the female labour force participation rate.

The advantage of using panel data is that both time series and cross section data can be evaluated in order to achieve results which have the most minimised amount of errors. The evaluation becomes reliable and accurate inference of model parameters can be done. Another factor is that it can minimise the impact of the omitted variables along with uncovering dynamic relationships [16]. In a panel analysis, there are three methods which can be followed that is Ordinary Least Squares (OLS) method, fixed effect methods and random effect method.

In case of OLS estimation method, it pools all the observations and neglects both time series data and cross-sectional data. It assumes that the coefficients will remain the same across time and section. In this method, the concept of heterogeneity is not taken into consideration. This method is also known as the constant coefficient model.

When the panel is a balanced panel data where all cross-sectional data are constant and there are no missing values, fixed effect method is the appropriate measure. The fixed effects least squares dummy variables model permits each observation to have its individual intercept dummy and pooled all the given observations. The error term is assumed to vary over time and country. When the panel is unbalanced, the random effect model is more appropriate. Random effect takes into account random intercept values for each section.

Hence, to test which of the two methods are appropriate, the Hausman Test needs to be conducted.

**Code Year**

panel variable: Code (strongly balanced)

time variable: Year, 2000 to 2017

delta: 1 unit

b = consistent under Ho and Ha; obtained from xtre

B = inconsistent under Ha, efficient under Ho; obtained from xtre
Table 1. Summary of statistics

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Median</th>
<th>Standard deviation</th>
<th>Kurtosis</th>
<th>Skewness</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor force participation rate, female (% of female population ages 15-64) (modeled ILO estimate)</td>
<td>61.86</td>
<td>62.66</td>
<td>12.95</td>
<td>0.33</td>
<td>-0.56</td>
<td>24.25</td>
<td>88.27</td>
</tr>
<tr>
<td>Fertility rate, total (births per woman)</td>
<td>2.47</td>
<td>2.05</td>
<td>1.31</td>
<td>1.88</td>
<td>1.66</td>
<td>1.05</td>
<td>6.92</td>
</tr>
<tr>
<td>Wage and salaried workers, female (% of female employment) (modeled ILO estimate)</td>
<td>57.20</td>
<td>66.16</td>
<td>31.64</td>
<td>-1.35</td>
<td>-0.42</td>
<td>2.78</td>
<td>96.65</td>
</tr>
<tr>
<td>Wage and salaried workers, male (% of male employment) (modeled ILO estimate)</td>
<td>60.30</td>
<td>66.26</td>
<td>24.21</td>
<td>-0.80</td>
<td>-0.59</td>
<td>7.77</td>
<td>92.92</td>
</tr>
<tr>
<td>Secondary education, general pupils (% female)</td>
<td>48.03</td>
<td>49.86</td>
<td>7.65</td>
<td>22.32</td>
<td>-4.59</td>
<td>3.33</td>
<td>53.71</td>
</tr>
<tr>
<td>Contributing family workers, female (% of female employment) (modeled ILO estimate)</td>
<td>17.07</td>
<td>6.98</td>
<td>19.96</td>
<td>0.11</td>
<td>1.10</td>
<td>0.06</td>
<td>72.56</td>
</tr>
<tr>
<td>Primary education, pupils (% female)</td>
<td>48.27</td>
<td>48.62</td>
<td>1.25</td>
<td>7.56</td>
<td>-2.19</td>
<td>40.82</td>
<td>51.11</td>
</tr>
<tr>
<td>Life expectancy at birth, total (years)</td>
<td>71.48</td>
<td>73.54</td>
<td>8.58</td>
<td>-0.11</td>
<td>-0.85</td>
<td>48.95</td>
<td>84.10</td>
</tr>
<tr>
<td>Regulatory Quality</td>
<td>0.19</td>
<td>0.13</td>
<td>0.88</td>
<td>-0.78</td>
<td>0.13</td>
<td>-2.00</td>
<td>1.93</td>
</tr>
<tr>
<td>Voice and Accountability</td>
<td>0.12</td>
<td>0.17</td>
<td>0.88</td>
<td>-0.88</td>
<td>-0.22</td>
<td>-1.89</td>
<td>1.67</td>
</tr>
<tr>
<td>Political Stability No Violence</td>
<td>-0.18</td>
<td>-0.06</td>
<td>0.82</td>
<td>-0.68</td>
<td>-0.30</td>
<td>-2.52</td>
<td>1.36</td>
</tr>
<tr>
<td>Government Effectiveness</td>
<td>0.22</td>
<td>0.02</td>
<td>0.91</td>
<td>-0.99</td>
<td>0.42</td>
<td>-1.44</td>
<td>2.01</td>
</tr>
<tr>
<td>Rule of Law</td>
<td>0.02</td>
<td>-0.20</td>
<td>0.97</td>
<td>-0.80</td>
<td>0.54</td>
<td>-2.26</td>
<td>1.96</td>
</tr>
<tr>
<td>Control of Corruption</td>
<td>0.02</td>
<td>-0.23</td>
<td>0.97</td>
<td>-0.64</td>
<td>0.69</td>
<td>-1.50</td>
<td>2.14</td>
</tr>
<tr>
<td>Variables</td>
<td>(1) lfpr</td>
<td>(2) fert</td>
<td>(3) salwomen</td>
<td>(4) salmen</td>
<td>(5) secedu</td>
<td>(6) contrife</td>
<td>(7) priedu</td>
</tr>
<tr>
<td>------------</td>
<td>---------</td>
<td>---------</td>
<td>-------------</td>
<td>-----------</td>
<td>-----------</td>
<td>-------------</td>
<td>-----------</td>
</tr>
<tr>
<td>(1) lfpr</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2) fert</td>
<td></td>
<td>0.354</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3) salwomen</td>
<td>-0.288</td>
<td>-0.735</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4) salmen</td>
<td>-0.283</td>
<td>-0.787</td>
<td>0.908</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(5) secedu</td>
<td>-0.010</td>
<td>-0.381</td>
<td>0.476</td>
<td>0.454</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(6) contrife</td>
<td>0.239</td>
<td>0.634</td>
<td>-0.824</td>
<td>-0.836</td>
<td>-0.555</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>(7) priedu</td>
<td>-0.243</td>
<td>-0.387</td>
<td>0.288</td>
<td>0.357</td>
<td>0.183</td>
<td>-0.315</td>
<td>1.000</td>
</tr>
<tr>
<td>(8) expec</td>
<td>-0.284</td>
<td>-0.842</td>
<td>0.765</td>
<td>0.710</td>
<td>0.359</td>
<td>-0.617</td>
<td>0.373</td>
</tr>
<tr>
<td>(9) rq</td>
<td>0.029</td>
<td>-0.447</td>
<td>0.560</td>
<td>0.484</td>
<td>0.234</td>
<td>-0.404</td>
<td>0.157</td>
</tr>
<tr>
<td>(10) va</td>
<td>-0.110</td>
<td>-0.359</td>
<td>0.474</td>
<td>0.412</td>
<td>0.188</td>
<td>-0.400</td>
<td>0.238</td>
</tr>
<tr>
<td>(11) ps</td>
<td>-0.002</td>
<td>-0.402</td>
<td>0.644</td>
<td>0.582</td>
<td>0.291</td>
<td>-0.572</td>
<td>0.023</td>
</tr>
<tr>
<td>(12) ge</td>
<td>-0.110</td>
<td>-0.542</td>
<td>0.696</td>
<td>0.610</td>
<td>0.277</td>
<td>-0.524</td>
<td>0.167</td>
</tr>
<tr>
<td>(13) rol</td>
<td>-0.046</td>
<td>-0.445</td>
<td>0.587</td>
<td>0.503</td>
<td>0.198</td>
<td>-0.423</td>
<td>0.151</td>
</tr>
<tr>
<td>(14) coc</td>
<td>-0.036</td>
<td>-0.433</td>
<td>0.639</td>
<td>0.537</td>
<td>0.244</td>
<td>-0.457</td>
<td>0.097</td>
</tr>
</tbody>
</table>

Where,
Fert = Fertility rate, total (births per woman)
salwomen = Wage and salaried workers, female (% of female employment) (modeled ILO estimate)
salmen = Wage and salaried workers, male (% of male employment) (modeled ILO estimate)
secedu = Secondary education, general pupils (% female)
contrife = Contributing family workers, female (% of female employment) (modeled ILO estimate)
priedu = Primary education, pupils (% female)
Expec = Life expectancy at birth, total (years)
rq = Regulatory Quality
va = Voice and Accountability
ps = Political stability no violence
ge = Government effectiveness
rol = Rule of law
coc = Control of corruption
3.5 Analysis and Findings

The analysis has been done for 40 countries over 6 continents which gives pooled regression results. Further analysing the objective of the paper that whether the female labour force participation rate has been dependent on factors like fertility rate, wage and salaried workers, secondary education, contributing family workers, primary education, life expectancy, regulatory quality, voice and accountability, political stability no violence, government effectiveness, rule of law, control of corruption.

Test: Ho: difference in coefficients not systematic

\[ \text{chi}^2(13) = (b-B)'[(V_b-V_B)^{-1}](b-B) \]
\[ = 61.58 \]
\[ \text{Prob} > \text{chi}^2 = 0.0000 \]

As it is observed that the panel is “strongly balanced” and Prob>chi2 = 0.0000 which is less than 0.05 for which it validates the use of fixed effect on the panel data. If the value would have been greater than 0.05 then the random effect had to be taken for further calculation.

- **Methodology:** From the above calculation, it is seen that fixed effect model has to be used for the panel discussed.

The equation for the fixed effects model is:

\[ Y_{it} = \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \ldots + \beta_n X_{nit} + a_i + u_{it} \]

Where,

- \( a_i \) (i=1 to n) is the unknown intercept for each entity (n country-specific intercepts).
- \( Y_{it} \) is the dependent variable where \( i = \) country and \( t = \) time which here is the female labour force participation rate.
- \( X_{1it}, \ldots, X_{nit} \) represents independent variables, which are fertility rate, wage and salaried workers, secondary education, contributing family workers, primary education, life expectancy, regulatory quality, voice and accountability, political stability no violence, government effectiveness, rule of law, control of corruption respectively.
- \( \beta_1, \beta_2, \ldots, \beta_n \) are the coefficient for independent variables which can be defined for a given country, as \( X_{1it}, \ldots, X_{nit} \) varies across time by one unit, \( Y_{it} \) i.e. the female labour force participation rate, increases or decreased by \( \beta_1, \beta_2, \ldots, \beta_n \) units respectively.
- \( u_{it} \) is the error term

#### Pooled Regression Results

In the above table, it is observed that there are two methods that are used to find out the regression result that is the pooled OLS and the fixed effects model.

In Column (1), the pooled OLS regression coefficient states that the female labour force participation rate has a positive coefficient when it is regressed with fertility rate, secondary education, regulatory control, and control of corruption, where all these mentioned factors are statistically significant. On the other hand, the percentage of salaried women, voice and accountability, government efficiency have a negative coefficient where these factors are statistically significant. In column (2), the country is taken with fixed effect and in column (3), both country and year are taken using fixed effects.

**Wage and salaried workers**, female (% of female employment) is significant and positive which means that for a given country, as the female wage and salaried workers rise by 1 unit, the female LFPR will also rise by 0.103 units. This is because if women get more wage and salary under formal or informal contracts, they would have the motivation and incentive to work or be employed.

**Secondary education**, general pupils (% female) and **primary education**, pupils (% female) is also significant but is negative which states that for a given country, as the number of female students pursuing secondary education and primary education rises by 1 unit, the female LFPR will fall by 0.185 units and 0.862 units respectively. This was also stated in Chatterjee et al. [1], where secondary education rises but female LFPR falls. According to Sarkar et al. [10], women having primary education have less probability of exiting the labour force. But in the above table, it is observed that even women having primary education are exiting from the labour force. It might be so because they do not possess adequate skills to carry out the job efficiently and effectively.
Table 3. Results of pooled regression for 40 countries during 2000-2017

<table>
<thead>
<tr>
<th>Variables</th>
<th>(1) Ols</th>
<th>(2) Fixed Effects</th>
<th>(3) Fixed Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>fert</td>
<td>2.794***</td>
<td>0.352</td>
<td>0.352</td>
</tr>
<tr>
<td>salwomen</td>
<td>-0.169***</td>
<td>0.103*</td>
<td>0.103*</td>
</tr>
<tr>
<td>salmen</td>
<td>0.0803</td>
<td>0.0400</td>
<td>0.0400</td>
</tr>
<tr>
<td>secedu</td>
<td>0.380***</td>
<td>-0.185*</td>
<td>-0.185*</td>
</tr>
<tr>
<td>contrife</td>
<td>-0.0202</td>
<td>0.0722</td>
<td>0.0722</td>
</tr>
<tr>
<td>priedu</td>
<td>-0.402</td>
<td>-0.862***</td>
<td>-0.862***</td>
</tr>
<tr>
<td>expec</td>
<td>0.0365</td>
<td>0.224***</td>
<td>0.224***</td>
</tr>
<tr>
<td>rq</td>
<td>13.84***</td>
<td>1.516**</td>
<td>1.516**</td>
</tr>
<tr>
<td>va</td>
<td>-7.203***</td>
<td>0.597</td>
<td>0.597</td>
</tr>
<tr>
<td>ps</td>
<td>3.140***</td>
<td>0.493</td>
<td>0.493</td>
</tr>
<tr>
<td>ge</td>
<td>-11.85***</td>
<td>-2.112***</td>
<td>-2.112***</td>
</tr>
<tr>
<td>rol</td>
<td>-0.111</td>
<td>0.972</td>
<td>0.972</td>
</tr>
<tr>
<td>coc</td>
<td>5.660***</td>
<td>-0.841</td>
<td>-0.841</td>
</tr>
<tr>
<td>Constant</td>
<td>60.13***</td>
<td>86.73***</td>
<td>86.73***</td>
</tr>
</tbody>
</table>

Observations 602 602 602
R-squared 0.345 0.186 0.186
Number of Code 40 40
Country FE Yes YES
Year FE YES

Where,

- fert = Fertility rate, total (births per woman)
- salwomen = Wage and salaried workers, female (% of female employment) (modeled ILO estimate)
- salmen = Wage and salaried workers, male (% of male employment) (modelled ILO estimate)
- secedu = Secondary education, general pupils (% female)
- contrife = Contributing family workers, female (% of female employment) (modelled ILO estimate)
- priedu = Primary education, pupils (% female)
- expec = Life expectancy at birth, total (years)
- rq = Regulatory Quality
- va = Voice and Accountability
- ps = Political stability no violence
- ge = Government effectiveness
- rol = Rule of law
- coc = Control of corruption

It is observed that Life expectancy at birth, total (years) is significant and positive which means that for a given country, as the life expectancy rises by 1 unit, the female LFPR will also rise by 0.224 units. This implies that the health sector also plays a major role in determining the rise or fall of female LFPR.

Regulatory quality also has a significant and positive relationship which means that for a given country, as the quality of regulatory bodies rises.
by 1 unit, the female LFPR will also rise by 1.516 units. This indicates that if the government can formulate proper policies, it tends to facilitate women to be a part of the labour force. Policies and legislations which benefit women in their workplace also play a great role in the security and their safety for which they have very little probabilities of exiting from the labour force.

Government effectiveness measures the quality of public and civil services, policy formulation and implementation by the government and the credibility of the government. It has also been observed that Government effectiveness is also significant but is negative which states that for a given country, as the effectiveness of public services rises by 1 unit, the female LFPR falls by 2.112 units. This might be because women feel that the government might be more successful in providing for social protection measures and hence diminish their necessity to enter the labour force to fend for themselves.

4. CONCLUSION AND RECOMMENDATIONS

From the panel data analysis, it is observed that the female LFPR is falling at a considerable rate around the world while education is on the rise. This situation creates a paradox that deviates from the human capital theory where a rise in education expects to facilitate the women to get better skills which would eventually help in participation in the labour force. In this study, it is also observed that other factors such as regulatory quality, government efficiency, wage and salary and life expectancy also play a significant role in determining the extent to which women participate in the labour force.

Studies have also suggested and recommended some policies which would help to narrow such wage gaps and promote higher LFPR. The different measures that should be taken at the government level, organisational level, academic level, societal level and individual level to reduce such gaps should be effectively carried on [17]. Another study suggests that transportation should be taken care of which would in turn increase the mobility of women and they would be involved in non-farm work [18].

To boost the female LFPR, the following measures can be adopted.

- **Rigid labour regulations would lead to a lower LFPR:** It is important to make the regulations flexible at certain points which benefit the economy and enhances the female LFPR. The employment of women is restricted to only a few industries. Therefore, policies should be drafted in such a way which helps in increasing access for women in different sectors. This can be done by investing in diversified sectors and upgrading to high-end activities. Security and flexible work hours for pregnant women should be available.

- **Implement to develop infrastructural facilities:** Policies should also be implemented to develop infrastructural facilities like transport, housing, sanitisation facilities and so on.

- **Establishing the Self-Help Groups:** The Self-Help Groups or SHGs should formulate policies that benefit the members by having access to finance, market and enhancing employment. Such SHGs have the ability to influence laws at the state and district levels. These groups need to be organised vertically and horizontally according to their organisation structure to strengthen the rural population.

- **Investment in Agricultural Sector:** Agriculture, which is still the largest employer of female labour, can be utilized as a source of economic growth and job creation if women are ensured ownership rights and control over lands, shift to high value-added crops, supported by other policy measures.

- **Mentoring Wage Level System:** The government should implement a robust and continuously mentoring wage level system in both the urban and rural areas. It should also strengthen the compliance towards equality and make gender pay gaps or GPG a punishable offence. At the organisational level, the recruiters and selectors should make sure that the compensation and incentives, both financial and non-financial, are properly allocated towards both male and female employees without discrimination. Mechanisms should be transparent and robust in implementing and maintaining a threshold in order to minimise the GPG as much as possible.

**COMPETING INTERESTS**

Authors have declared that no competing interests exist.
REFERENCES

14. Kannan KP. Wage Inequalities in India (No. id: 12990); 2019.