

Linkage between Female Labor Force Participation, Fertility Rate and Marriage Score in India

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ABSTRACT- This study investigates the complex dynamics of female labor force participation (FLF) in India, with a focus on trends and relevant factors from 2000 to 2022 collected from World Development Indicator provided by World Bank. Annual changes and compound annual growth rates of FLF has assessed using the year-on-year growth rate and compound annual growth rate (CAGR). The study uses Ordinary Least Squares regression analysis to evaluate the link between FLF and its major drivers like fertility rate and marriage score. The result shows, India's female labour force participation rose in 2001 to 2005 before declining in 2006. This decrease has anticipated owing to the COVID-19 pandemic's economic impact in 2020. CAGR (-0.960) shows a decline in female labour force participation in India for the entire period, which may be due to cultural norms, access to education and employment, and socioeconomic inequalities. FLF is positively affected by Fertility rate, and marriage score.

KEYWORDS: Female Labor Force Participation, Fertility Rate, Marriage Score, Sustainable Development Goals, India

I. INTRODUCTION

The inclusion of women may enhance economic efficiency and equality. The participation of women in the workforce is crucial for a nation's socioeconomic advancement. Labour force participation rates significantly influence economic development and growth. It substantially aids in alleviating poverty. In India, 52% of the population is female, mostly employed in the informal sector and non-market activities, while a small fraction participates in market and productive endeavors. In developing nations, the significance of women is assessed by their income, access to healthcare, education, creative pursuits, and unpaid domestic duties. Economic theory posits that human capital has a significant influence in production, shown by a positive coefficient. The presence of women in the labour force indicates a nation's economic engagement. Female Labour Force Participation (FLF) rates serve as an essential metric for assessing advancements in gender equality. The participation of women in non-agricultural sectors serves as a critical metric of economic

advancement and was included into the United Nations' Sustainable Development Goals in 2000. Women are inadequately represented in non-agricultural industries within developing countries, while earning higher and more stable wages (United Nations 2012). Enhancing women's participation in the non-agricultural economy is essential for several reasons. Flexible labour markets enhance economic efficiency (United Nations 2012). Gender discrepancies in the non-agricultural labour sector, especially in agriculture, result in a wage gap for women. Mitigating the gender wage disparity enhances women's autonomy and decision-making power inside the home (United Nations 2012). The inclusion of women in the labour force results in an augmented labour supply and stimulates economic development. Employment increases in non-agricultural sectors while declining in agricultural regions. Likewise, female employment rates are similar. In underdeveloped countries, the female labour force is mostly engaged in agricultural industries, while in affluent nations, it is primarily found in service sectors. The switch to the service sector has augmented employment options for women. Women often favour careers in finance and teaching. women's engagement in the labour market is favourably connected with family size, composition, and education, but men's elevated occupational status and wage rates have a negative influence. The involvement of women in the labour force is affected by several variables. Multitudes of Women join the workforce owing to economic pressures inside their households. Determinants influencing women's economic involvement including age, education, and marital status. Determinants affecting women's participation in the labour market include the employment status of the male family head, the quantity of male adult earners, and the presence of children under five years of age. Increase in female labour force participation may increase women empowerment, which may reduce the problem migration, reduce the gender violence, reduction the crime against women, reduce the literacy gap, increase quality education [1], [2], [3], [4], [5], [6], [7].

II. OBJECTIVES

The objectives are as follows: Firstly, to assess and analyze the trends and variations in the female labor force

participation rates in India for the period 2000 to 2022. Secondly, to identify the determinants of female labor force participation in India.

III. DATA SOURCE AND METHODOLOGY

A. Variables

Female Labour Force Participation (FLF) is the proportion of women in the labor force compared to the female population of working age. It is measured as a percentage. GDP Growth Rate (GDP), tracks the annual percentage change in Gross Domestic Product (GDP) over time. It acts as a predictor of economic growth and development. Fertility Rate (FLR) is the average number of children born to women of reproductive age in a particular population. It is commonly expressed as the number of births per woman. Marriage Score (MS), this indicator evaluates the prevalence and durability of marital relationships in a population. It can be measured using multiple indices or composite scores depending on parameters such as marriage rates, divorce rates, and average marital length.

B. Data Source

The study is based on time-series data from the period 2000 to 2022 collected from World Development Indicators (WDI) published by the World Bank.

C. Methods Employed

- Year-on Year Growth Rate (YoY): This metric measures the percentage change in a variable from one year to the next, revealing annual fluctuations and patterns [8].
- Compound Annual Growth Rate (CAGR): The CAGR calculates the average annual growth rate of available over a given time period, taking into account compounding effects (Maiti and Gupta, 2023).
- Regression analysis has used to investigate the link between the dependent variable (FLF) and the independent variables like FLR and MS. Regression model for India:

$$FLF = \beta_1 + \beta_2 FLR + \beta_3 FLR^2 + \beta_4 MS + \varepsilon_i$$

IV. ANALYSIS OF THE RESULT

This section presents the analysis of the result.

Table 1: Year-on-Year Growth Rate of Female Labour force participation in India (FLF)

YOY	India	YOY	India
2000	-----	2012	-1.825
2001	0.605	2013	-2.525
2002	0.648	2014	-2.574
2003	0.684	2015	-2.631
2004	0.735	2016	-2.671
2005	0.773	2017	-2.708
2006	-0.914	2018	-2.747
2007	-0.925	2019	11.302
2008	-0.929	2020	-2.038
2009	-0.939	2021	0.602
2010	-0.949	2022	2.272
2011	-1.791		
		CAGR	-0.960

Female labor force participation in India varies significantly, with considerable gains in 2001, 2002, and 2003, followed by a decline in 2006. There is a significant reduction in 2020, most likely due to the economic upheaval caused by the COVID-19 outbreak. The negative CAGR (-0.960) indicates an overall reduction in female labor force participation in India, which could be driven by a variety of reasons including cultural norms, access to education and employment, and socioeconomic gaps affecting women's workforce involvement.

Table 2: Determinants of Female Labour force participation in India (FLF)

Explanatory variable	Coefficient	t-statistic	P-value	Marginal effect
C	-10.81**	-1.24	0.02	
FR	22.60***	2.75	0.01	4.456
FR²	-3.51**	-2.15	0.05	
MS	0.01*	0.21	0.08	
Adjusted R-squared	0.78			
F-statistic	25.92			
Prob (F-statistic)	0			

***, **, * represents statistical significance of 1%, 5% and 10% respectively

Source: Author's calculation

In the above table 1 and table 2 presents the results of a regression analysis aimed at explaining the relationship between the FLF and FR and MS. The variable FR has a positive and highly significant coefficient of 22.600, suggesting that FR positively affects the FLF. Bur FR² has a negative significant coefficient of -3.507, showing that as FR increases further, its effect diminishes, implying a non-linear relationship. Its marginal effect is 4.455, indicating a substantial direct positive influence. This is happening may be due to increase in FR, increasing the total number of working population, which may leads to the FLF. MS has a small positive significant coefficient of 0.010, indicating a positive relationship between MS and FLF. It may be due to, female are getting more than before marriage, which is increasing the FLF.

V. CONCLUSION AND POLICY SUGGESTIONS

India's female labour force participation rose in 2001, 2002, and 2003 before declining in 2006. This decrease is anticipated owing to the COVID-19 pandemic's economic impact in 2020. CAGR (-0.960) shows a decline in female labour force participation in India, which may be due to cultural norms, access to education and employment, and socioeconomic inequalities. A regression analysis of FLF, FR, and MS is shown in the table 2. The positive and significant coefficient of 22.600 for FR suggests it favourably influences FLF. As FR grows, its impact reduces FLF, indicating a non-linear connection. The marginal impact is 4.455, showing a significant direct beneficial effect. Increase in FLF may be caused by rising FR, which increases the working population. MS's positive significant coefficient

indicates a favourable link with FLF. The FLF may be rising because women are earning more than before marriage. Therefore, to increase the FLF in India, government should implement some policies, which may increase the marriage score and control the fertility rate.

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CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

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