IMPACT OF FEMALE LABOUR FORCE PARTICIPATION ON ECONOMIC GROWTH IN NIGERIA

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ABSTRACT
This study looked at how women's engagement in the labor sector affects Nigeria's economic growth, within the period 1990-2022. The study is anchored on the feminization U-shaped hypothesis. To determine if the variables were stationary, the study used the augmented Dickey-Fuller test and the Phillips Perron test. Autoregressive Distributed Lag (ARDL) bound test approach was employed in testing for cointegration among the series. The ARDL technique explores the impact of female labor force participation on economic growth in the short- and long-term. The series are of mixed order of integration. The coefficient of the error correction mechanism was negative and statistically different from zero. The study showed a positive and statistically significant impact of female labour force participation on economic growth in Nigeria for the reviewed period. There exists a unidirectional causation from female labour force to economic growth. This study suggests that women should explore the Nigerian economic environment with their male counterparts in order to empower themselves and shed the notion that they are the "weaker sex" group.

Keywords: Labour force, female participation rate, Nigeria, ARDL
JEL Code: F16, F43, J08, J82

1. INTRODUCTION

Labour is a necessary input in the production process and increase in labour participation rate would result in an increase in output as well as tax revenues that could be invested back into relevant economic sectors to promote sustainable economic growth and development. (Omowumi, 2019; Anyanwu, et al., 2021). The importance of female and male labour force participation in the growth of the economy cannot be overemphasize, however, gender variations in the levels, modes, and methods of labor market involvement abounds. While there has been a growing awareness in the last few decades of the importance of female labor force

participation on economic growth (Anyanwu et al., 2021), there is a need to close the gender gap in terms of economic opportunity and participation. It is important to increase the level of female labour force participation in order to guarantee sustain economic growth and raise the status of women in the society (Beton, 2019).

Men tend to have more of an advantage over women among individuals who express interest in joining the labor force. Similar to this, socioeconomic considerations and the prevailing societal standards have an impact on women's engagement in paid work, particularly for women in less developed nations due to the domestic and agricultural duties they face (International Labour Organization [ILO], 2017). For instance, a study by Iweagu, et al. (2015) revealed that although women with advance degrees have desire and a larger likelihood of joining the labor force; factor such as religion has a substantial influence on how many women in rural Nigeria participate in the labor sector (Olowa & Adeoti, 2014).

Globally, women enter the workforce at a little higher rate in 2023 than the participation rate in 2022, leading to a minor recovery in gender equality. Specifically, the participation rate in the labor-force rose from 63% to 64%. However, when compared to male participation rate, this represents a 3.4% declined as against 2.4% reduction in labour participation rate (Global Gender Gap Report, 2023). Male participation is nearly the same (around 80%) across all regions and considerably higher than that of females since women are less likely to find jobs in formal positions and have fewer prospects for business expansion or career promotion (World Bank, 2022).

Meanwhile, many women are self-employed, and the industry they are engaged is typically related to their level of education (ILO, 2014), many tend to engaged in the primary sector of the economy especially in the agricultural sector. Several studies have also been carried out to assess the Women-In-Agriculture and Youth Empowerment (WAYE) programme. Their main focus, however, was on women and men and only few Local Government Areas were covered, thus limiting the scope on WAYE programme objectives (Mutuah et al, 2021). Female labor force participation is constrained by some customary or social beliefs and norms, such as gender-related obstacles to starting and growing businesses, matrimonial, and succession regulations and/or cultural practices. Other are lack of access to formal finance mechanisms, restricted mobility, and restricted access to information and networks (Pimkina & Flor, 2020).

The prevalence of gender biasness across the world's socioeconomic strata is a well-known occurrence among various economies, and Nigeria is no exception. From the ancient Nigerian society that existed before colonialism to the present, women have frequently faced discrimination in situations that have reduced their contribution to economic growth. Such bias is frequently justified on the basis that they are the weaker sex (Makuochukwu, 2013).

The inclusion of women in the labor force will lower poverty and raises living standards by increasing household income. Women who are able to work and earn a living are better equipped to handle their finances independently and greater female participation fosters diversity of thought and expertise, which boosts productivity and innovation in the workplace, leading to enhanced economic growth. From the foregoing, this study examined the impact of female labour force participation on economic growth in Nigeria.

2. LITERATURE REVIEW

There are ideas that look at how the labor force and economic growth are related. Some of the theories are neoclassical theory and the feminization theory.

Becker (1957) suggests that a clear increase in female involvement in all stages of the economy would lead to economic advancement. According to him, discrimination should only be used temporarily because it goes against people's ideal conduct, which maximizes their utility and income. As a result, injustice in the labor market is impossible in a competitive economy. For companies or holders of capital assets who prioritize profit over fairness, every employee gets absorbed and paid equally (Luci, 2009). According to this strategy, discrimination against women in the workplace results from their lower educational attainment and less work experience, or from the different choices of the organizations or holders of capital assets. Gender inequality in employment, therefore, declines with growth, to boost the competitiveness of economies or sectors, suggesting that female involvement in the labor force is necessary for the growth of the economy.

Another theory that explains the participation of women in labour force is the Feminization hypothesis. The theory asserts that an industrialised economy emerges from an agrarian society, the proportion of women in the labour force declined, however, with improvement in education attainment and advancement in technical know-how, female labour force participation rate rises (Klasen, 2017).

Luci (2009) used three stages of growth to highlight the link between economic growth and female participation rate.

Stage one is distinguished by agrarian nature of the economy and low living standard and is associated with an increase in the number of women participating in the labor force. Since there is still a high fertility rate and most women work in agriculture or local production, they may both work in production as well as raise children. The rise in female labor market involvement in sub-Saharan Africa is a prime example (Klasen, 2017).

In the second stage, the economy experienced an initial state of growth. The stage is associated with rising industrialization and urbanization that tend to polarize labor force participation of male and female, resulting in a rise in gender disparity in the workplace. The stage is further characterized by increasing labor mobility, mostly in the form of rural-urban migration. The women rarely able to balance household responsibilities with participation in the labour force (Idowu & Owoeye, 2019; Jayachandran, 2020).

In comparison to low-skilled workers, the process of technological advancement and industrialization increases the demand for highly and technically skilled personnel who can operate equipment. Men have an advantage over women when it comes to seeking employment in the industrialized sector since they can more easily access training opportunities and, as a result, quickly become accustomed to the most recent sophisticated equipment (Hanushek et al., 2015), as a result, male workers tend to earn more returns. Due to economic impacts and technological advancement, industrialization doesn't seem to promote women's engagement in the labor force (Gaddis & Klasen, 2014). Additionally, since women's ability to work is limited by having children, their labour expenses increase, which causes businesses or employers to favor hiring men (Jayachandran, 2020; Kruse et al., 2021). Cultural beliefs and traditions, along with a legal restriction against women working in industries, could make this situation worse (Goldin 1995, in Klasen 2017).

The third stage is characterized by advanced economic development and an increase in the participation of women in the labor force. The size of the labor force declines as a result of discrimination against women in the workplace, therefore, the demand for female workers rises. This can be attributed to the fact that women get more knowledge and experience, which opens up more opportunities for them as opposed to domestic work, also there is reduction in the fertility rate. As such, there is the substitution effect from women's earnings and the

dominance of income effect, intuitively, women's labor market involvement is directly associated with income (Klasen, 2017).

Empirical evidence of the relationship between female participation rate and economic growth abounds in literature. Anyanwu et al. (2021) examines the impact of female labor force participation on Nigeria's economic growth. The long-term elasticity coefficients were calculated using the Ordinary Least Square (OLS) method in the study. The key discovery is a negative correlation between female labor force participation and economic growth. In order to enhance women's engagement in the labor market and advance Nigeria's overall economic growth and development, the study advises that active labor market regulations be implemented, particularly in Nigeria.

In a research of developed and emerging nations, Jayachandran (2020) discovered a poor association between women's labor force and social norms associated with gender. The study also found a positive correlation between women's labor force engagement and educational attainment and their fertility rates.

Using survey data, Klasen (2017) conducted research on female participation in the labor force in some selected low-income countries, particularly in Sub-Saharan Africa SSA countries. The study revealed that the number of women in the labour force is a function of household's standard of living, an increase in the number of jobs that are assumed best for educated women relative to the supply of educated women.

Forgha and Mbella (2016) revealed that level of men's labor force participation, the degree of dependency, per capita income, and fertility rate were the key determinants of labor force participation in Cameroon.

Efobi et al. (2016) studied the effects of technological development and the shifting gender identities in SSA and found that advances in technology have a major effect on women's economic activities.

In Sub-Saharan Africa, Novignon et al. (2015) examined the connection between population health status and labor force participation. The results demonstrate that the level of engagement of women in the labor force in most of the selected African countries is significantly influenced by the overall health of the population (as measured by life expectancy at birth). This suggests that, if everything else is equal, more women will enter the workforce irrespective of how healthy the population is.

Mirzaie (2015) found that the growth of per capita income increases women's labor force participation (LFP) in Egypt while it reduces the participation of female in Iran and Turkey. The study further found that when there is increase in dependency ratio, the labour force participation rate in Iran decreases, while in Turkey rising female labour force participation increases with rising age dependency ratio. The study also shows that as government expenditure on development projects rises in Iran, the rate of unemployment among the female population decreases.

3. METHODOLOGY

In order to establish the impact of female labour force participation on economic growth in Nigeria, the study include other elements in the model that have an impact on both female labor force participation and economic growth. Annual time series data spanning 1990 to 2022 on the variables: Real Gross Domestic Product, Female Labour Force Participation and Male Labour Force Participation were all sourced from World Bank database. Therefore, the functional relationship is stated below:

$$RGDP = f(FLF, MLF) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (1)$$

Where;

RGDP is Real Gross Domestic Product, that is, the sum of the gross value created by all resident producers in the economy, plus any applicable product taxes, minus any unaccounted-for subsidies., FLF = Female labour force participation is the percentage of people aged 15 to 64 who are economically active, or all those who provide labor for the production of goods and services over a given time period. MLF = Male labour force participation, the percentage of the population aged 15 to 64 who are economically active; it includes all individuals who provide work for the production of goods and services within a given time period. Equation 1 is represented in its linear function as follows:

$$RGDPt = \beta_0 + \beta_1 FLF + \beta_2 MLF + U_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\quad (2)$$

β_1 and β_2 are the regression coefficients, while U_t is the error term.

The long run equilibrium link between the female labor force and economic growth as proposed by Pesaran, et al. (2001) was tested in the study using the Autoregressive Distributive Lag (ARDL) limits testing approach. Compared to other traditional cointegration techniques (such those developed by Engle and Granger in 1987, Johansen in 1988, and Julius and Johansen in 1990), the ARDL provides a number of advantages. First, as long as none of the underlying variables are of order 2 (I(2)), it can be used regardless of whether they are I(0), I(1), or a combination of both. Second, the model uses an adequate amount of delays to represent the data generation process from a broad perspective to a variety of modeling frameworks. Third, the error correction model (ECM) can be developed from ARDL using a sample linear transformation that integrates short-run correction with long-run equilibrium while preserving long-run data. Fourth, the small sample qualities of the ARDL approach are much better than those of the Johensen and Juselius cointegration technique, making this methodology effective for determining cointegration for tiny samples. Fifth, the ARDL framework has less of an issue with endogeneity.

Pesaran *et al.,* (2001) model of Autoregressive Distributed Lag (ARDL) is as follows for equation (2):

$$\Delta \ln RGDP_t = \alpha_0 + \sum_{i=1}^{\rho} \alpha_1 \Delta \ln RGDP + \sum_{i=1}^{\rho} \alpha_2 \Delta \ln FLF_{t-1} + \sum_{i=1}^{\rho} \alpha_3 \Delta \ln MLF_{t-1} +$$
$$\lambda_1 \ln RGDP_{t-1} + \lambda_2 \ln FLF_{t-1} + \lambda_3 \ln MLF_{t-1} + \varepsilon_t \qquad\qquad (3)$$

The alternative hypothesis supports the presence of this link among the variables, whereas the null hypothesis suggests that there is no cointegration between female labor force participation and economic growth. Accordingly, the null hypothesis in this equation is H0: 1 = 2 = 3 = 0. This indicates the absence of long run relationship and the alternative hypothesis H1: $\alpha_1 \neq \alpha_2 \neq \alpha_3 \neq 0$. In equation 3, the left-hand side has optimum lagged differences of the variables, while the right had side is expressed in the first differences in addition to the one period lagged error term of ARDL equation. According to Pesaran et al. (2001), the estimated F-statistics is compared with two sets of critical values. Both sets make the assumption that all variables are either I(0) or I(1). Regardless of whether the variables are I(0) or I(1), the null hypothesis of no cointegration will not be rejected if calculated F-statistics surpass the upper critical threshold. The null hypothesis that there is no cointegration cannot be ruled out if it is below the lower levels. The test is inconclusive if it is inside the critical bound. The error correction model and short-run dynamics are modelled below.

$$\Delta \ln RGDP_i = \beta_0 + \sum_{i=1}^{\rho} \delta_i \Delta \ln RGDP_{t-1} + \sum_{i=1}^{\rho} \emptyset_i \Delta \ln FLF_{t-1} + \sum_{i=1}^{\rho} \omega_i \Delta \ln MLF_{t-1} +$$
$$+ \alpha ECM_{t-1} + U_t \qquad\qquad (4)$$

Following the model's short-run aberration, the ECM assesses how quickly equilibrium returns in the long run (Onisanwa, Shido-Ikwu & Mercy, 2018). In the long term, the system can only reach equilibrium, according to Narayan (2005), if the error correction model's coefficient is negative and smaller than zero.

4. RESULTS AND DISCUSSION

It is crucial to confirm that the data series being used in the analysis are stationary, especially when working with time series data. The Augmented Dickey Fuller unit root model is used to conduct the test. This test is mostly used for confirmatory testing, and the results are displayed in table 1 below.

Table 1: Result of ADF Unit Root Test

Variable	@level	@difference	Status
LRGDP	-2.278636	-10.79311*	I(1)
LGFLF	-1.185656	-3.936370*	I(1)
LGMLF	-2.743485**	-4.002292*	I(0)

Source; Authors' computation using Eviews 10
Note: level of significance are indicated as * at 1%, ** at 5%, *** at 10%.

The results of unit root test on the variables at their level and first difference values was verified through ADF. Real gross domestic product was found to be non-stationary at level and at all level of significance, however at first difference real gross domestic product was found to be significant at 1% therefore the null hypothesis was rejected and concluded that the variable is stationary.

Female Labour force, was found to be non-stationary at its level and at all level of significance, however at first difference female labour force was found to be significant at 1% therefore the null hypothesis was rejected and concluded that the variable is also stationary.

Finally, male Labour force was found to be stationary at level and was significant at 5% therefore the null hypothesis was rejected and concluded that the variable is also stationary.

Cointegration Analysis of female labour force and Economic growth

By comparing asymptotic lower critical limit I(0) and upper critical bound I(1) values using ARDL approach presented by Pesaran et al. (2001), this study analyzes further using automated inbuilt asymptotic critical values of F-statistics test, 10%, 5%, 2.5%, and 1%. This study is based on the time series characteristics of the variables.

Table 2: Bound F-Test for Cointegration

Dependent variable	Function	F-Statistics
LRGDP	LRGDP (LRGDP|LFLF,LMLF)	4.6633

Critical Value Bounds

Significance	I(0) Bound	I(1) Bound
10%	2.63	3.35
5%	3.1	3.87
2.5%	3.55	4.38
1%	4.13	5

Source: Authors' computation using Eviews 10

Table 2 reports the outcomes of the cointegration bounds test along with critical values. The calculated F-statistics is 4.6633, which is more than the upper bound and lower bound critical values at the 5% significance level, indicating that the null hypothesis should only be rejected in order to accept the alternative hypothesis. This result confirmed that, there is long run relationship among the variables.

Long Run Impact of female labour force on Economic Growth
Table 3 presents the long run coefficients/multipliers of female labour force and male labour force on real gross domestic product (proxy for economic growth).

Table 3 Estimated Long Run Result Coefficients Using ARDL Approach.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LMLF	5.504963	10.94802	0.502827	0.6195
LFLF	10.92683	3.552069	3.076188	0.0050
C	-65.34011	49.38505	-1.323075	0.1978

Source: Authors' computation using Eviews 10

Knowing that long-term equilibrium exists when RGDP acts as the explained variable table 3 revealed that the long run impact of male labour force and female labour force on economic growth. Therefore, 1% increase in male labour force participation in the long run will lead to about 5.5 percentage point increase in economic growth while on the other hand 1% increase in female labour force participation in the long run will lead to about 10.9 percentage point increase in economic growth. Although the findings revealed that male labour force is not statistically significant, but female labour force is significant. Therefore, in absolute terms a 1 unit increase in male labour force will increase real gross domestic product of Nigeria by 5.504963. Similarly, a 1 unit increase in female labour force participation in the long run will increase real gross domestic product of Nigeria by 10.92683 and this is statistically significant, this implies that female labour force has a positive and significant impact in the long run-on economic growth of Nigeria.

The implication of this result is that female labour participation is an important factor to be considered when explaining the level of changes in economic activities in Nigeria. The inclusion of women in the labor force will lower poverty and raises living standards by increasing household income. Therefore, increase in female labour participation would directly enhance Nigeria economic growth. Thus, this finding is in divergence with the findings of Anyanwu, *et al,* (2021).

Short Run Impact of female labour force on Economic Growth
The table below presents the short run coefficients of female labour force and male labour force on RGDP.

Table 4: ARDL Error Correction Model (Short Run Model).

| Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LFLF) (-1))	2.941355	8.114223	0.362494	0.7200
D(LFLF(-1))	-23.75032	9.082168	-2.615050	0.0149
ECT(-1)	-0.680747	0.148936	-4.570725	0.0001

Source: Authors' computation using Eviews 10

The results of the short run dynamic coefficients are almost similar to what was obtained in the long run. The most importance component of the short run model is the computation of the error correction term (ECT). The highly significant, negatively skewed error correction coefficient value of -0.680747 (0.0001) indicates a rather quick return to equilibrium following a shock. About 68% of the disequilibria caused by the shock of the previous year converge to the long-term equilibrium in the current year.

Table 5 ARDL diagnostic result

LM Test Statistics	Type	Prob. (F. Statistic).	Prob. Chi-Square
Serial Correlation	Breusch-Godfrey	0.9275	0.9038
Heteroscedasticity	ARCH	0.2693	0.2539
Heteroscedasticity	ARCH	0.1133	0.1147
Normality	Jarque-Bera	0.312675	0.1202

Source: Authors' computation using Eviews 10

Table 5 shows that the model and analysis is free from any form of serial correlation among the variables included in the model due to the insignificant of Breusch-Godfrey Serial Correlation Probability F. statistic and Probability Chi-Square with value of 0.9275 and 0.9038 respectively. The estimated model passes the test of Breusch-Pagan-Godfrey and ARCH heteroscedasticity test based on the Probability F. statistic and Probability Chi-Square with value at 5% level of significant as shown in table 5. It was also revealed that the series are normally distributed given the probability of 0.312675.
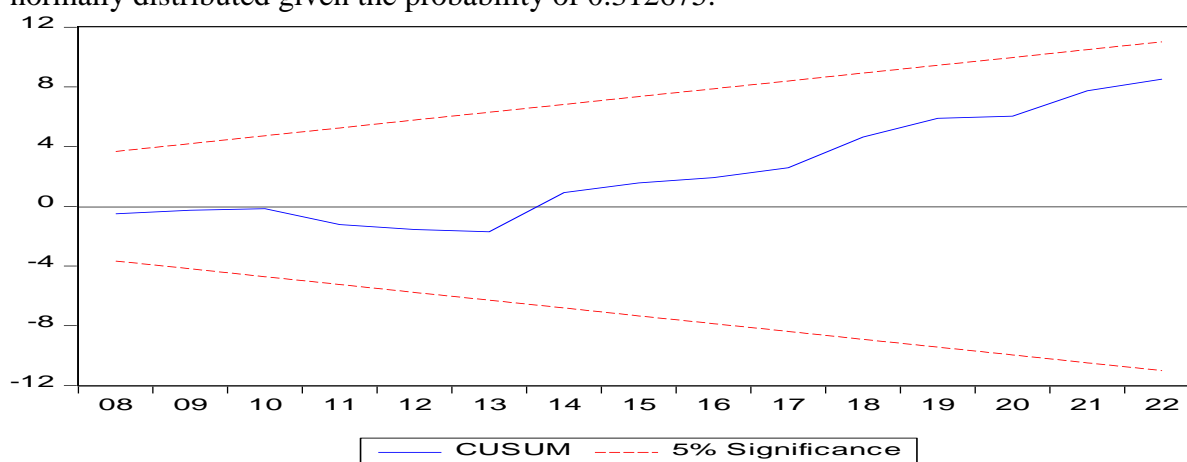
Source: Authors' computation using Eviews 10
Figure 1

From figure 1 the CUSUM statistics was plotted against the critical bound of 5 percent significance level. If the plot of these statistics remains within the critical bound of the 5 percent significance level, the null hypothesis that all coefficients are stable cannot be rejected. This implies that the model is statistically stable.

Granger Causality between female and male labour force and economic growth
Table 6: Pairwise Granger Causality Result.

Null Hypothesis:	Obs	F-Statistic	Prob.
LMLF does not Granger Cause LRGDP	31	2.82911	0.0773
LRGDP does not Granger Cause LMLF		1.15846	0.3297
LFLF does not Granger Cause LRGDP	31	4.07772	0.0288

LRGDP does not Granger Cause LFLF		0.37463	0.6912
LFLF does not Granger Cause LMLF	31	5.34164	0.0114
LMLF does not Granger Cause LFLF		5.22334	0.0124

Source: Authors' computation using Eviews 10

The result in table 6 shows that male labour force granger causes economic growth, thus, the null hypothesis is rejected. Economic growth does not granger cause male labour force, thus it fails to reject the null hypothesis. Female labour force granger causes economic growth; thus, the null hypothesis is rejected. While economic growth does not granger cause female labour force, thus it fails to reject the null hypothesis. However, it was found that there is unidirectional causality between male labour force and economic growth, likewise between female labour force and economic growth. Furthermore, it was also revealed that there is bidirectional causality between female labour force and male labour force in Nigeria.

5. CONCLUSION

This study examined the impact of female labour force participation on economic growth in Nigeria with data spanning 1990-2022 using different econometric models. There is a long-term advantageous relationship between female labor force participation and economic growth in Nigeria. The result showed that female labor force has a major impact on economic growth in Nigeria with further empirical result showing a unidirectional causality. As a result, discrimination against women working in Nigeria has been a problem for both men and women. This study suggests that women should explore the Nigerian economic environment with their male counterparts in order to empower themselves and shed the notion that they are the "weaker sex" group. The development of more blueprints that will educate women on how to empower themselves should be encouraged among more non-governmental organizations (NGOs). These NGOs should keep up the pressure on the government, communities, and of course the organized commercial sector to abandon some offensive cultural customs that unnecessarily prevent women from contributing their labor to family and communal development.

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