

Female Labour Force Participation and Economic Growth in Nigeria

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Abstract

This study examines the relationship between female labour force participation (FLFP) and economic growth in Nigeria from 1986 to 2024, focusing on how socio-cultural and institutional barriers may limit women's economic potential. Grounded in human capital and feminist economics frameworks, the study employs an Autoregressive Distributed Lag (ARDL) model to estimate both short- and long-run dynamics and applies Granger causality tests to assess the direction of influence. Results reveal a dual relationship: in the long run, FLFP positively and significantly drives economic growth, confirming the growth-enhancing role of women's participation. In the short run, however, FLFP exerts a negative effect, reflecting that new female entrants are often confined to low-productivity, informal activities. A unidirectional causality from FLFP to gross capital formation further indicates an indirect growth channel through investment. The study concludes that while female labour participation significantly enhances economic growth in the long run, short-run effects remain constrained by structural and institutional barriers that confine many women to low-productivity activities. Policy efforts should therefore focus on improving the quality and productivity of women's employment through investment in education, skills development, access to finance, and gender-responsive labour policies. Addressing these constraints will enable Nigeria to harness the untapped potential of its female workforce, promote inclusive growth, and advance sustainable economic transformation.

Keywords: Female labour force participation; economic growth; gender inequality; ARDL; Nigeria; human capital.

JEL Classification: J16, J21, O55, O15

1. Introduction

Over the past few decades, women's participation in the global labour force has increased substantially, particularly in advanced economies. According to the Organisation for Economic Co-operation and Development (OECD, 2020), female labour force participation in member countries rose from 55% in 1995 to 62% in 2019. This expansion has been associated with gains in productivity, innovation and overall economic performance. Beyond mere participation, women in advanced economies have increasingly emerged as entrepreneurs and innovators. Evidence from the Global Entrepreneurship Monitor (GEM, 2019) reveals that female entrepreneurs in developed countries are often more likely than men to introduce new products and services that stimulate market competitiveness and growth.

In contrast, the experience of developing nations, including Nigeria, presents a more complex picture. While men have historically dominated both formal and informal labour markets, recent decades have witnessed gradual improvements in women's labour market participation. Data from the World Development Indicators (2016) show that the share of women (aged 15 and above) active in Nigeria's labour market rose from about 35.8% in 1981 to 48.4% in 2016, with recent estimates placing it slightly above 52% in 2023 (Statista, 2023). This trend has intensified scholarly and policy interest in the role of female labour participation in promoting inclusive and sustainable development.

Despite this progress, women in Nigeria continue to face significant structural and institutional barriers that limit their full integration into the formal labour market. Limited access to education, vocational training, and credit facilities constrain their ability to participate in high-productivity sectors (World Bank, 2020). As a result, many Nigerian women remain concentrated in informal economic activities such as subsistence farming and petty trading, sectors often underrepresented in national accounts (ILO, 2018). Nevertheless, their contributions to entrepreneurship through microfinance and small-scale enterprises remain vital to household welfare and community resilience, even though access to formal financial systems remains uneven (Okafor, 2020).

Theoretically, gender and economic participation have long been shaped by cultural and ideological constructs. Traditional African Gender Theory has historically confined women to domestic responsibilities, treating their economic roles as supplementary (Sheldon, 2013). Neo-classical economic models, on the other hand, often overlook gendered social constraints by assuming market efficiency and rational behaviour as sufficient for optimal outcomes. In contrast, contemporary economic thought increasingly recognizes that inclusive growth requires the full utilization of both male and female human capital. As Danish (2001) argued, no nation can achieve sustainable development if it systematically limits the productive potential of half its population. Supporting this, the McKinsey Global Institute (2015) estimated that advancing gender equality could add as much as \$12 trillion to global GDP by 2025, while the World Bank (2021) emphasized that women's earnings enhance household welfare, reduce poverty, and promote intergenerational well-being.

However, challenges persist. Nigerian women continue to face a disproportionate burden of unpaid care work (United Nations, 2019) and a persistent gender wage gap (ILO, 2020), both of which reduce their effective participation in the labour market. These barriers limit economic efficiency and hinder the country's growth potential. Addressing gender disparities is thus not merely a social imperative but an economic necessity.

The persistence of gender bias within Nigeria's socio-economic structures has deep historical roots, stretching from pre-colonial systems of patriarchy to modern institutional practices that subtly or overtly disadvantage women. Formal barriers, such as unequal access to education and restrictive labour laws, combine with informal barriers, including cultural norms, religious beliefs, and discriminatory workplace practices, to constrain women's participation. According to UN Women (2020), Nigerian women remain underrepresented in technical and vocational fields, restricting their entry into high-productivity sectors like engineering, technology, and finance. The International Labour Organization (ILO, 2021) similarly reports that gender-based discrimination continues to affect women's career advancement opportunities.

This underutilization has measurable economic costs. The World Bank (2022) reported that female labour force participation in Nigeria stood at 48.8% in 2021, compared to 65.8% for men, a gap of nearly 17 percentage points. This disparity, rooted in socio-cultural, institutional, and economic factors (Nwosu & Orji, 2016), represents a substantial loss of productive potential. Empirical studies affirm that higher female labour force participation enhances economic growth, boosts productivity, and narrows income inequality (Cuberes, 2016).

Over the years, several policy initiatives have sought to redress gender imbalances, including the Better Life for Rural Women programme (1987), the Women Entrepreneurship Development Programme (WEDP) (2013), and the Women's Economic Empowerment Programme (WEEP). Despite these efforts, the precise magnitude and causal link between female labour force participation and economic growth in Nigeria remain underexplored empirically. This study, therefore, seeks to fill this critical gap by examining the role of female labour force participation in Nigeria's economic growth, providing evidence-based insights for gender-responsive policy formulation.

2. Literature Review and Theoretical Framework

2.1 Conceptual Review

2.1.1 Female Labour Force Participation (FLFP)

Female labour force participation (FLFP) refers to the involvement of women in the formal and informal sectors of the economy, measured by their entry into the labour market. Recent studies have underscored the barriers women face in achieving full labour market participation, such as cultural norms, gendered expectations, and limited access to education

and healthcare (Nwanne et al., 2023). Additionally, socio-economic conditions and institutional frameworks significantly affect women's labour force engagement, particularly in developing economies like Nigeria, where structural constraints limit their access to productive work (Oni et al., 2022). This engagement has been linked to various socio-economic benefits, such as increased household income and improved health outcomes, enhancing women's autonomy and economic independence (Sani & Mohammed, 2024). Policies aimed at increasing women's labour participation should, therefore, address these socio-cultural and institutional challenges to empower women economically.

2.1.2 Economic Growth

Economic growth refers to the sustained increase in a country's output of goods and services over time, often measured by the growth in Gross Domestic Product (GDP). The relationship between economic growth and labour force participation has been a subject of debate in economic literature. For instance, a growing body of research has suggested that female labour force participation can significantly boost economic growth by enhancing productivity and contributing to the diversification of the economy (Ali & Iqbal, 2023). In the context of developing nations like Nigeria, where economic growth remains sluggish, increasing FLFP is seen as a potential avenue for boosting national productivity and ensuring inclusive growth (Jamil & Tariq, 2024). This dynamic reflects the importance of gender-inclusive policies in fostering sustainable development and economic advancement.

2.1.3 The Feminization U-Shaped Hypothesis

The Feminization U-Shaped Hypothesis posits that women's labour force participation tends to decline during early stages of economic development and later increases as economies undergo industrialization and urbanization (Williams & Walker, 2023). This theory suggests that in the early stages of development, women are largely confined to unpaid domestic work, but as economies advance, more women are integrated into the formal labour market, particularly in urban areas (Akpan & Adeyemi, 2023). In the Nigerian context, the U-shaped relationship has been evident, with rising FLFP observed as the country undergoes modernization, although significant barriers remain in rural regions (Kanu & Okoro, 2023). This hypothesis highlights the need for policies that facilitate women's access to economic opportunities at different stages of development.

2.1.4 Determinants of FLFP in Nigeria

Several factors influence female labour force participation in Nigeria, including educational attainment, social norms, and family responsibilities. Research has shown that women with higher education levels are more likely to enter the labour force, although persistent societal norms, such as patriarchal attitudes, continue to restrict women's career choices (Ola & Adebayo, 2024). Additionally, women's involvement in the workforce is often limited by their domestic responsibilities, particularly in rural areas where traditional gender roles are

more entrenched (Abiola & Olamide, 2023). Other determinants include the availability of childcare facilities, access to credit, and government policies that promote gender equality in the workplace (Eze & Nwachukwu, 2024). These factors interplay to determine the extent to which women can contribute to the economy in Nigeria.

2.1.5 The "Gender Bonus" or "Gender Dividend"

The concept of the "gender bonus" or "gender dividend" refers to the potential economic benefits that countries can reap when women are fully integrated into the workforce (Williams & Green, 2023). Studies have indicated that gender equality in the labour market leads to higher national output, as women's economic contributions are increasingly recognized as integral to sustainable development (Sani & Uche, 2024). In Nigeria, where women make up a significant portion of the population, harnessing the gender dividend could result in a more robust economy, provided that gender barriers are addressed, and women are empowered with access to education, training, and employment opportunities (Adamu & Bello, 2024).

2.1.6 Labour Demand and Supply

Labour demand and supply in the context of female participation are influenced by a variety of factors, including wage differentials, skill development, and labour market conditions. In developing economies, the demand for female labour often reflects sectors that align with women's skill sets, such as agriculture, healthcare, and retail (Okoro & Obi, 2023). However, the supply of female labour is constrained by factors like limited access to education and gender-based discrimination, which prevent women from entering higher-paying and more skilled jobs (Okeke & Ude, 2024). Understanding the dynamics between labour demand and supply, particularly as they relate to women, is critical for formulating policies that enhance FLFP and reduce gender disparities in the workforce.

2.2 Theoretical Framework

The theoretical framework for this study is grounded in **Human Capital Theory**, as presented by **Becker (1964)**, which posits that investments in education, health, and skills enhance individual productivity and, by extension, economic growth. According to Becker, individuals who acquire more education and skills are better equipped to contribute effectively to the workforce, thereby boosting national economic performance. In the context of female labor force participation (FLFP), this theory suggests that the greater the investment in women's education and health, the higher their productivity will be, leading to more robust economic outcomes. However, this perspective assumes that the labor market is free from gender-based barriers and that women have equal access to the opportunities and resources available in the economy. In reality, this assumption may not hold, especially in

developing countries like Nigeria, where gender discrimination and socio-cultural norms continue to limit women's participation in the workforce.

Human Capital Theory has faced criticism for its narrow focus on individual-level investments in education and skills, overlooking the structural and social barriers that women often face in the labor market. These limitations are especially evident in patriarchal societies where women are expected to shoulder domestic and care duties, which restrict their ability to fully engage in paid employment. Critics argue that Human Capital Theory fails to account for the unequal distribution of resources and opportunities based on gender, which can hinder the realization of the productivity gains from women's education and skills. In such societies, even well-educated women may struggle to enter or remain in the labor market due to gender-based discrimination, lack of childcare support, and cultural expectations.

This critique is addressed by **Feminist Economics**, which emphasizes the importance of considering institutional and socio-cultural constraints when analyzing women's economic participation. Feminist Economics argues that gendered power dynamics and unpaid labor—often disproportionately shouldered by women—are critical factors that affect their economic outcomes. While Human Capital Theory highlights the potential for economic growth through increased female labor market participation, Feminist Economics underscores that without addressing these underlying social and institutional barriers, women's contributions to economic growth may remain limited. The theory further stresses that gendered structures within the economy must be reformed for women's human capital to be fully realized in the labor market.

By synthesizing these two perspectives, this study argues that increasing female labor force participation can indeed contribute to economic growth in Nigeria, but this outcome hinges on both enhancing women's human capital through education and health investments and addressing the institutional and socio-cultural barriers that restrict their economic agency. Without inclusive policies that reduce gender inequality and provide the necessary social support structures, such as access to childcare and family-friendly work environments, the full economic potential of women may never be realized. Therefore, this theoretical framework provides a comprehensive lens through which to understand the dynamics of FLFP and economic growth, specifically in the context of Nigeria.

2.3 Empirical Review

Baerlocher, Parente, and Rios-Neto (2021) examined the relationship between female labor force participation (FLFP) and economic growth, specifically testing for the existence of a "gender bonus"—a potential increase in the average living standard due to higher FLFP. Using a panel data set from multiple countries, the authors applied a neoclassical production function framework and employed a System Generalized Method of Moments (GMM) approach to estimate the effects. Their findings indicated a statistically significant positive impact of FLFP growth on economic growth. However, the results suggested that this effect

might merely reflect an "accounting effect," i.e., the increase in aggregate output due to a higher number of workers, rather than an actual boost from more productive female workers. The authors concluded that, while FLFP can drive economic growth by increasing the workforce, the anticipated productivity gains associated with higher female participation were not empirically supported. These findings are relevant for policy discussions on the role of women in driving national economic performance, especially in the context of countries where FLFP is relatively low.

Erdem, Yucel, and Koseoglu (2016) explored the theoretical and empirical connection between FLFP and economic growth through an augmented version of the Solow growth model, incorporating gender-specific employment shares. Their analysis applied the Autoregressive Distributed Lag (ARDL) approach to a panel dataset from 122 countries spanning 1990 to 2014. The empirical results supported the theoretical prediction that an increase in women's employment share positively affects economic growth and income per capita. The study found that gendered employment dynamics are crucial in fostering economic growth, particularly as countries strive for more inclusive economic policies. These findings are significant for developing countries, where increasing female labor participation is often seen as a potential catalyst for improving economic outcomes and overall welfare. The authors recommend that policymakers prioritize gender equality in labor market participation to achieve long-term economic growth.

Onisanwa, Shido-Ikwu, Emeka, and Ndangra (2024) conducted an empirical investigation into the impact of FLFP on economic growth in Nigeria from 1990 to 2022. Anchored in the Feminization U-shaped hypothesis, the study used the ARDL bound test approach to explore the short- and long-term relationships between FLFP and economic growth. The findings revealed that FLFP has a positive and statistically significant impact on economic growth during the review period. Additionally, the authors identified a unidirectional causality running from FLFP to economic growth, suggesting that increasing women's participation in the labor force can drive economic progress in Nigeria. This study supports the argument that enhancing FLFP in Nigeria can contribute to higher economic growth, particularly in the context of structural changes in labor markets and the broader economic landscape. The authors call for policies that encourage equal job opportunities for both genders, challenging traditional gender roles that limit women's economic potential.

Manu and Abdullahi (2021) empirically examined the impact of FLFP on Nigeria's economic growth from 1980 to 2018. Using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests to check for stationarity, the authors employed the Johansen cointegration test to establish long-run relationships between the variables. The study found that both male and female labor force participation have a significant positive impact on economic growth, both in the short and long runs. However, the primary focus was on the coefficient of female labor force participation, which showed a positive and substantial effect on economic growth. The authors recommended that policies aimed at improving education and job opportunities for women should be prioritized, as enhancing FLFP could contribute significantly to Nigeria's

economic development. Their findings highlight the importance of gender-inclusive growth policies in developing economies, where the underutilization of women in the labor force represents a missed opportunity for sustainable development.

2.4 Research Gap

Despite a growing body of literature, the relationship between female labour force participation and economic growth in Nigeria remains inadequately understood. Existing studies are fragmented, frequently sector-specific or micro-focused, and often employ methodologies that do not adequately capture long-run dynamics and causality.

Moreover, divergent empirical findings highlight the need for renewed investigation using recent data and robust time-series techniques capable of distinguishing short- and long-run effects. This study addresses these gaps by employing an Autoregressive Distributed Lag (ARDL) framework over an extended time horizon to examine both the magnitude and direction of causality between FLFP and economic growth in Nigeria. In doing so, it provides clearer evidence to inform gender-responsive macroeconomic policy and inclusive growth strategies.

3. Methodology

3.1 Nature and Sources of Data

The data used for this study are secondary data sourced from the National Bureau of Statistics and the Central Bank of Nigeria (CBN) statistical bulletin. This research work is conducted following an econometric research methodology. The choice of this method is based on the fact that it helps in ascertaining quantitatively the impact of certain economic variables on a given phenomenon under study. This study used statistical and econometric tools to analyze and present data. In this research work, therefore, to ascertain the impact of female labour force participation on economic growth is to regress Economic growth (GDPGR) on Female labour force participation rate (FLFP) which is the main independent variable, while Male labour force participation rate (MLFP), Gross capital formation (GFCF), Female Education level (EDU) and Inflation (INF) are the used as control variables

Table 3.1: Description of Variables

Variable Code	Variable Name	Measurement/Proxy	Source	Expected Sign
GDPGR	Economic Growth	Annual growth rate of Gross Domestic Product (%)	World Bank (WDI, 2024)	Bank Dependent Variable
FLFP	Female Labour Force Participation	Female labour force participation rate (% of female population ages 15+ in labour force)	World Bank (WDI, 2024)	+
MLFP	Male Labour Force Participation	Male labour force participation rate (% of male population ages 15+ in labour force)	World Bank (WDI, 2024)	+
EDU_F	Female Education	Female secondary school enrolment rate (%) or female literacy rate (%)	UNESCO; World Bank (WDI, 2024)	+
INF	Inflation	Consumer Price Index (annual %)	CBN Statistical Bulletin	-
LGFCF	Gross Fixed Capital Formation	Gross fixed capital formation (% of GDP)	World Bank (WDI, 2024)	+

3.2 Model Specification

The study examined the impact of female labour force participation on Economic growth in Nigeria. This impact will be well established with the inclusion of other factors that affect both female labour force participation and GDP in the model. The specification of this model is based on the relevant information related to this study. To determine the relationship between female labour force and output, the study specifies the model in functional form as adapted from the study of Ugwu (2013) with some modifications as:

$$GDP_t = f(FLFP_t, MLFP_t, GCF_t, EDU_t, INF_t)$$

GDP_t = Economic growth (proxied by GDP growth rate)

$FLFP_t$ = Female labour force participation rate

MLFP_t = Male labour force participation rate

GCF_t = Gross capital formation

EDU_t = Education level (proxy by female secondary/tertiary school enrolment rate)

INF_t = Inflation (proxy for macroeconomic stability)

The econometric Model (Log-Linear Form) is written thus.

$$\ln GDP_t = \lambda_0 + \lambda_1 \ln FLFP_t + \lambda_2 \ln MLFP_t + \lambda_3 \ln GCF_t + \lambda_4 \ln EDU_t + \lambda_5 \ln INF_t + \mu_t$$

Where:

λ_1 measures the elasticity of economic growth with respect to female labour force participation.

μ_t is the error term.

The Autoregressive Distributed Lag (ARDL) form for the model:

$$\begin{aligned} \Delta \ln GDP_t = & \lambda_0 + \sum_{i=1}^p \lambda_1 \Delta \ln GDP_{t-i} + \sum_{j=1}^q \lambda_2 \Delta \ln FLFP_{t-j} + \sum_{k=1}^r \lambda_3 \Delta \ln MLFP_{t-k} \\ & + \sum_{l=1}^s \lambda_4 \Delta \ln GCF_{t-l} + \sum_{m=1}^v \lambda_5 \Delta \ln EDU_{t-m} + \sum_{n=1}^w \lambda_6 \Delta \ln INF_{t-n} + \phi ECT_{t-1} \\ & + \varepsilon_t \text{ --- (3.4)} \end{aligned}$$

Where:

Δ is the difference operator.

ECT_{t-1} = Error Correction Term (captures long-run equilibrium).

ϕ = speed of adjustment parameter.

In this case, the growth rate of the Gross Domestic Product is the dependent variable while the female and male labour forces are the independent variables.

3.3 Granger Causality Test

To address the second objective and determine the direction of causality between FLFP and economic growth, a Vector Error Correction Model (VECM) Granger causality test will be employed if cointegration is confirmed. This test will reveal whether the relationship is unidirectional, bidirectional, or neutral in the short run, while the ECT will indicate long-run causality.

4. Empirical Results and Discussion

4.1 Descriptive Statistics

The summary statistics of the variables used in the analysis are presented in Table II. The data span 39 annual observations.

Table II: Descriptive Statistics

	GDPGR	EDU_F	FLFP	GFCF	INF	MLFP
Mean	4.159097	45.59458	55.14436	6.01E+10	18.52487	63.99264
Median	4.099157	43.72920	56.51200	5.88E+10	12.15000	63.98200
Maximum	15.32916	64.25449	56.95200	8.02E+10	72.84000	68.07100
Minimum	-2.035119	36.40000	51.53700	3.97E+10	5.420000	58.90100
Std. Dev.	3.751299	6.059369	2.294729	1.07E+10	17.16406	1.631219
Skewness	0.531989	1.638621	-0.756145	0.056146	1.859717	-0.725239
Kurtosis	3.647974	5.433116	1.638182	2.018799	5.149442	5.509557
Jarque-Bera	2.521871	27.07310	6.730052	1.584968	29.98821	13.65286
Probability	0.283389	0.000001	0.034561	0.452719	0.000000	0.001085
Sum	162.2048	1778.188	2150.630	2.34E+12	722.4700	2495.713
Sum Sq. Dev.	534.7454	1395.206	200.0997	4.36E+21	11194.99	101.1132
Observations	39	39	39	39	39	39

Source: Author's computation 2025

The descriptive statistics of the variables used in the study are presented in Table II. Economic growth (GDPGR) is the dependent variable, while female labour force participation rate (FLFP), male labour force participation rate (MLFP), gross capital formation (GFCF), female education level (EDU_F), and inflation (INF) are the independent variables.

From the results, the mean value of GDPGR is 4.16%, with a maximum growth of 15.33% and a minimum of -2.04%, indicating periods of both expansion and contraction in the Nigerian economy. Female education (EDU_F) has an average of 45.59%, but with a relatively high positive skewness (1.64) and kurtosis (5.43), suggesting concentration at the lower end and long right-tail distribution. Female labour force participation (FLFP) averages 55.14%, while male labour force participation (MLFP) is higher at 63.99%, with both series showing mild skewness and moderate dispersion around the mean.

Gross capital formation (GFCF) has an average of ₦61 Billion, with a fairly small skewness (0.06), implying near-symmetry around the mean. Inflation (INF), however, has the highest volatility with a mean of 18.52%, ranging between 5.42% and 72.84%, and is positively skewed (1.86) with leptokurtic distribution (5.15), consistent with Nigeria's history of price instability.

The Jarque-Bera statistics reveal that GDPGR, GFCF, and MLFP are normally distributed (p-values > 0.05), while EDU_F, FLFP, and INF deviate from normality (p-values < 0.05). This suggests that while some series conform to the Gaussian distribution, others may require transformation or robustness checks during econometric analysis.

4.2 Unit Root Test

To further examine the behavior of each of the variables over time, the study carried out a unit root test to determine whether the variables are stationary. The Augmented Dickey Fuller (ADF) unit root test was carried out to ascertain the order of integration and test for the presence of unit roots. The results are presented in table III below.

Table III: Unit Root Test

Variables	Aug. Dickey-Fuller (ADF) at Level		Aug. Dickey-Fuller (ADF) at 1 st Diff		Order of integration (d).
	T-Stats	Critical value.	T-Stats	Critical value.	
GDPGR	-4.159013	-2.941145	-	-	I(0)
EDU_F	-3.381904	-2.941145	-	-	I(0)
FLFP	-1.003990	-2.941145	-4.312794	-2.957110	I(1)
LGFCF	-1.788077	-2.941145	-10.40449	-2.957110	I(1)
INF	-3.423658	-2.941145	-	-	I(0)
MLFP	-2.046938	-2.941145	-3.587236	-2.957110	I(1)

Source; Authors Computation 2025

Table III reveals the results of the unit root test for the variables used in this study. GDPGR, EDU_F, and INF are stationary at level while FLFP, GFCF, and MLFP were found to be stationary at first difference (i.e. I (1)) at 5% level of significance. The order of integration I (1) justifies the use of the ARDL Model as the most suitable method for analysis. The study thus, employs the autoregressive distributed lag (ARDL) bound co-integration test to determine whether co-integration exist among the variables in the long run.

4.3 Co-integration Test

To achieve objective one which is to assess the effect of population growth on agricultural output in Nigeria, the ARDL method of analysis was used. This is majorly due to the result from the unit root test which shows that the variables are of mixed order of integration.

Table IV: Co-integration Test

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	12.66419	10%	2.08	3
K	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15

Source: Authors Computation 2025.

Table IV shows the result of the ARDL Bounds co-integration test. From the table, the calculated F-statistics (12.66) is greater than the upper bounds at 5% level. Thus, there exist a long run relationship among the variables, therefore the study proceeds to estimate the ARDL model.

4.4 Estimated Long and Short run ARDL Model

Table V: ARDL long and short run Results

Dependent Variable: GDPGR				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Long-Run Estimates				
EDU_F	0.008123	0.166079	0.048912	0.9626
FLFP	1.772422	0.491597	3.605435	0.0113
INF	-0.191671	0.046827	-4.093182	0.0064
LGFCF	-14.37030	4.592735	-3.128920	0.0204
MLFP	1.425524	1.246077	1.144010	0.2962
C	174.2812	138.7563	1.256024	0.2558
Short-Run Estimates				
D(EDU_F)	-0.028469	0.041773	-0.681517	0.5210
D(EDU_F(-1))	0.158930	0.042063	3.778391	0.0092
D(FLFP)	-2.789557	0.560365	-4.978104	0.0025
D(FLFP(-1))	-7.112920	0.714463	-9.955615	0.0001
D(INF)	-0.160201	0.015569	-10.28963	0.0000
D(LGFCF)	-19.11544	2.432715	-7.857656	0.0002
D(MLFP)	4.719902	0.510454	9.246472	0.0001
CointEq(-1)*	-1.531746	0.115036	-13.31536	0.0000
R-squared	0.983949	Mean dependent var		0.062184
Adjusted R-squared	0.954522	S.D. dependent var		4.212395
S.E. of regression	0.898318	Akaike info criterion		2.867258
Sum squared resid	9.683697	Schwarz criterion		3.889344
Log likelihood	-27.17702	Hannan-Quinn criterion		3.220082
Durbin-Watson Stat	2.184171			

Source; Authors Computation 2025

The ARDL long- and short-run estimates presented in Table V provide critical insights into the determinants of economic growth in Nigeria. In the long run, female education (EDU_F) has a positive coefficient of 0.0081 with a t-statistic of 0.0489 and probability of 0.9626, indicating a positive but insignificant effect on growth. Female labour force participation (FLFP) is positive and statistically significant, with a coefficient of 1.7724 ($t = 3.6054$, $p = 0.0113$), implying that greater involvement of women in the labour market stimulates long-term growth. Inflation (INF) is found to exert a negative and highly significant influence, with a coefficient of -0.1917 ($t = -4.0932$, $p = 0.0064$), confirming that price instability hampers Nigeria's economic performance. Surprisingly, gross capital formation (LGFCF) has a negative and significant coefficient of -14.3703 ($t = -3.1289$, $p = 0.0204$), suggesting that investment inflows have not been efficiently utilized in driving long-run growth. Male labour force participation (MLFP) has a positive coefficient of 1.4255 but remains statistically insignificant ($t = 1.1440$, $p = 0.2962$), showing limited long-run impact.

In the short run, the dynamics differ considerably. Current changes in female education ($D(EDU_F)$) show a negative but insignificant effect on growth with a coefficient of -0.0285 ($t = -0.6815$, $p = 0.5210$). However, the lagged value of female education ($D(EDU_F(-1))$) has a positive and significant coefficient of 0.1589 ($t = 3.7784$, $p = 0.0092$), suggesting that improvements in female education influence growth with a time lag. Female labour force participation in the short run exerts a strong negative effect, as both the current ($D(FLFP) = -2.7896$, $t = -4.9781$, $p = 0.0025$) and lagged ($D(FLFP(-1)) = -7.1129$, $t = -9.9556$, $p = 0.0001$) terms are negative and significant. This indicates that short-run increases in female labour participation may be concentrated in low-productivity or informal sectors. Inflation ($D(INF)$) also exerts a highly significant negative effect, with a coefficient of -0.1602 ($t = -10.2896$, $p = 0.0000$), further underscoring the destabilizing effect of rising prices. Gross capital formation ($D(LGFCF)$) remains negative and significant in the short run, with a coefficient of -19.1154 ($t = -7.8577$, $p = 0.0002$), suggesting that investments are not efficiently allocated to productive uses. Conversely, male labour force participation ($D(MLFP)$) has a strong positive and significant impact on short-run growth, with a coefficient of 4.7199 ($t = 9.2465$, $p = 0.0001$).

The error correction term (CointEq(-1)) is negative (-1.5317), highly significant ($t = -13.3154$, $p = 0.0000$), and greater than unity in absolute terms, confirming a very strong speed of adjustment towards equilibrium. This means that deviations from long-run equilibrium are corrected by more than 150% within one period, ensuring stability in the system. The model diagnostics further demonstrate robustness, with an R-squared of 0.9839 and an adjusted R-squared of 0.9545, showing that the model explains about 95.5% of the variations in economic growth. The Durbin-Watson statistic of 2.18 suggests the absence of serial correlation, while the relatively low Akaike Information Criterion (2.8673) and Schwarz Criterion (3.8893) support model efficiency.

Overall, the findings reveal that female labour participation strongly promotes growth in the long run but depresses it in the short run, while male labour participation drives growth only in the short run. Inflation consistently exerts a negative effect across both horizons, while

capital formation reduces growth, reflecting structural inefficiencies in Nigeria's investment environment. Female education proves beneficial with a lag, underscoring the delayed but important contribution of human capital to economic development.

4.5 Granger Causality Test

Table VI: Granger Causality Test Results (FLFP Related)

Null Hypothesis	Obs	F-Statistic	Prob.	Decision
FLFP does not Granger Cause GDPGR	37	1.60562	0.2165	Not Significant
GDPGR does not Granger Cause FLFP	37	0.52596	0.5960	Not Significant
FLFP does not Granger Cause EDU_F	37	1.25691	0.2982	Not Significant
EDU_F does not Granger Cause FLFP	37	0.05699	0.9447	Not Significant
GFCF does not Granger Cause FLFP	37	1.37223	0.2681	Not Significant
FLFP does not Granger Cause GFCF	37	4.69793	0.0163	Significant
INF does not Granger Cause FLFP	37	0.27599	0.7606	Not Significant
FLFP does not Granger Cause INF	37	0.68494	0.5114	Not Significant
MLFP does not Granger Cause FLFP	37	0.80983	0.4538	Not Significant
FLFP does not Granger Cause MLFP	37	5.72981	0.0075	Significant

Source: Author's Computation (2025)

The Granger causality results relating to female labour force participation (FLFP) show important dynamics between women's economic activity and other variables in the Nigerian economy. The bidirectional tests between FLFP and economic growth (GDPGR) reveal no significant causal relationship in either direction (FLFP $\rightarrow$ GDPGR: $F = 1.6056$, $p = 0.2165$; GDPGR $\rightarrow$ FLFP: $F = 0.5260$, $p = 0.5960$). This suggests that, within the sample period, changes in female labour force participation do not predict changes in economic growth, nor does growth predict women's participation in the labour market. Similarly, there is no causal relationship between FLFP and female education (EDU_F), as both directions are statistically insignificant ($p > 0.29$), implying that variations in women's educational attainment and labour participation are not strongly linked in the short run.

However, two important significant causal relationships emerge. First, female labour force participation is found to Granger cause gross capital formation ($F = 4.6979$, $p = 0.0163$), suggesting that increases in women's participation in the labour market contribute to stimulating investment activities in the economy. This implies that women's economic involvement may play a catalytic role in driving savings, investments, and capital

accumulation in Nigeria. Second, FLFP also Granger causes male labour force participation ($F = 5.7298$, $p = 0.0075$), which indicates that changes in female participation influence male participation rates. This may reflect complementarities between men and women in the labour market, where rising female engagement can alter household labour supply decisions, competition, or collaboration between genders. On the other hand, no significant causality is observed between FLFP and inflation (INF), as well as between FLFP and GDPGR in the short run, indicating that female participation does not directly influence macroeconomic stability or short-term growth fluctuations.

Overall, the results highlight that female labour participation in Nigeria, while not directly causing short-run changes in economic growth, has meaningful linkages with investment dynamics and male labour market behaviour. This underscores the indirect but important role of women in shaping broader economic outcomes through their influence on capital formation and household labour supply.

4.6 Diagnostic and Stability Tests

The model passed key diagnostic checks. The Breusch-Pagan-Godfrey test confirmed the absence of heteroscedasticity (F-stat. Prob. = 0.1638). The Jarque-Bera test and residual graph confirmed the normality of residuals. However, the Breusch-Godfrey LM test indicated the presence of serial correlation (F-stat. Prob. = 0.0446). This was addressed by re-estimating the model with robust standard errors. Furthermore, the plots of the CUSUM and CUSUM of squares statistics (available upon request) confirmed that the parameters of the model are stable over the sample period.

4.7 Discussion of Findings

The findings of this study reveal a dualistic and context-dependent relationship between female labour force participation (FLFP) and economic growth in Nigeria, reflecting both the opportunities and structural limitations inherent in the country's labour market. The long-run estimation results indicate that FLFP exerts a positive and statistically significant effect on economic growth. This outcome aligns with the propositions of Human Capital Theory, which emphasize that investments in female education and participation enhance aggregate productivity and stimulate economic expansion (Psacharopoulos & Patrinos, 2004). The result corroborates earlier cross-country evidence by Klasen and Lamanna (2009) and Seguino (2000), who found that reducing gender disparities in labour participation and education substantially increases growth, particularly in developing regions. Similarly, Mujahid and Zafar (2012) reported a long-run positive association between FLFP and economic growth in Pakistan, while Yakubu et al. (2020) observed comparable effects for Nigeria, highlighting the growth dividends of female inclusion in productive employment.

This finding also supports the perspective of Dejene (2005) and Ferrant and Kolev (2016) that empowering women economically yields long-term benefits for poverty reduction and inclusive development in Sub-Saharan Africa. It further resonates with Onyejekwe (2001) and Okoroafor (2019), who emphasized that increasing women's participation in formal and

high-productivity sectors enhances macroeconomic performance. Thus, the long-run positive coefficient on FLFP reaffirms the idea that women represent a vital but underutilized component of Nigeria's human capital base. Fully integrating them into the workforce not only broadens the labour supply but also stimulates innovation, entrepreneurship, and productivity, consistent with global evidence from the McKinsey Global Institute (2015) that gender parity could add trillions to global GDP. Consequently, the study rejects the first null hypothesis (H_{01}), affirming that FLFP significantly contributes to economic growth in Nigeria in the long run.

Conversely, the short-run estimates reveal a negative and statistically significant relationship between FLFP and economic growth. This outcome reflects the structural realities of the Nigerian labour market, where many women entering the workforce are absorbed into informal and low-productivity sectors such as petty trading, subsistence agriculture, and small-scale services. As noted by the ILO (2018) and World Bank (2020), women in Nigeria face systemic barriers limited access to education and finance, cultural constraints, and disproportionate domestic responsibilities that hinder their transition into higher-paying formal employment. These factors contribute to a temporary drag on economic performance, as labour participation increases without a corresponding rise in productivity. The result is consistent with the feminist economic perspective, which argues that mere quantitative increases in women's participation, without addressing qualitative dimensions such as job quality, wage equity, and care burdens, may not yield immediate growth benefits (Winker, 2016). It also mirrors the findings of Adofu and Okwanya (2018), who observed a negative short-run relationship between FLFP and growth in Nigeria, suggesting that gender inequality and labour market segmentation continue to suppress potential economic gains.

The Granger causality test further provides important insights into the direction of influence among the variables. The absence of short-run causality between FLFP and GDP growth implies that changes in female participation do not instantaneously translate into growth outcomes. However, the significant unidirectional causality from FLFP to gross capital formation (LGFCF) uncovers a crucial indirect mechanism: greater female participation appears to stimulate investment through higher household savings, entrepreneurial activity, and consumption-driven demand for goods and services. This aligns with Cuberes and Teignier (2016), who demonstrated that female inclusion not only enhances output directly but also indirectly strengthens capital accumulation and financial deepening. The finding thus supports a broader interpretation of the growth process, where the impact of FLFP operates both through direct productivity channels and indirect investment linkages over time.

The negative relationship between gross capital formation and economic growth observed in the model presents a paradox, suggesting that Nigeria's aggregate investment has not been efficiently converted into productive capacity. This inefficiency may reflect structural bottlenecks such as corruption, poor infrastructure, weak institutions, and policy inconsistencies that limit the return on investment, an outcome consistent with the institutional deficiencies noted in Okoye et al. (2012) and Obinna and Charles (2015). The negative effect of inflation further reinforces the vulnerability of the Nigerian economy to

macroeconomic instability, which disproportionately affects women and the informal sector by eroding purchasing power and increasing business costs.

Overall, the findings collectively indicate that while female labour force participation is a long-term driver of economic growth, its short-term effects are constrained by the quality of employment and the broader structural environment. The evidence underscores the need for policy interventions that go beyond increasing participation rates to improving the productivity and quality of women's work. Enhancing access to education, vocational training, finance, childcare, and equal employment opportunities would not only empower women but also enable Nigeria to harness the full growth potential embedded in its female workforce.

5. Conclusion and Policy Implications

This study examined the relationship between female labour force participation (FLFP) and economic growth in Nigeria from 1986 to 2024 using the Autoregressive Distributed Lag (ARDL) framework. The results revealed a dual relationship: in the long run, FLFP exerts a positive and statistically significant effect on economic growth, confirming that integrating women into productive employment enhances national output. However, in the short run, increased participation exerts a negative effect, reflecting women's concentration in low-productivity and informal sector activities. The causality analysis further revealed a unidirectional relationship from FLFP to gross capital formation, highlighting an indirect mechanism through which women's participation contributes to investment and long-term economic expansion.

Overall, the findings affirm that female inclusion in the labour market is not only a matter of social equity but also a strategic lever for sustainable economic growth. Yet, Nigeria's economy continues to underutilize its female workforce due to persistent barriers such as unequal access to education, finance, and formal employment, as well as socio-cultural constraints that limit women's productivity. The evidence suggests that participation alone is insufficient unless accompanied by improvements in job quality and productivity.

Policy implications from this study point to four interrelated priorities. First, investment in women's human capital must extend beyond basic education to include skills development in STEM, technical training, and digital innovation, enabling women to access higher-productivity sectors. Second, improved access to finance, land, and technology is essential, particularly through gender-responsive financial instruments that support female-owned enterprises and productive investments. Third, strengthening the care economy, through affordable childcare services and flexible work arrangements, is critical for reducing the disproportionate unpaid care burden that constrains women's labour market engagement. Fourth, legal and institutional reforms are required to enforce equal pay, maternity protection, and non-discriminatory labour practices, alongside sustained public advocacy to challenge restrictive social norms.

In sum, the study provides robust empirical evidence that enhancing the quality and productivity of female labour participation, rather than merely increasing participation rates, is crucial for inclusive and sustained economic growth. Future research could build on these findings by employing sector- or region-specific data to further illuminate the channels through which women's economic participation affects growth in developing economies.

6. Data Availability Statement

The data that support the findings of this study are derived from publicly available sources. Specifically, annual data were obtained from the World Bank's World Development Indicators (WDI), the Central Bank of Nigeria Statistical Bulletin, and the National Bureau of Statistics (NBS). All data are open and accessible through the official websites of these institutions. Additional data or processing details can be provided by the corresponding author upon reasonable request.

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