

## Impact of Gender Inequality in Education and Labour Force Participation on Economic Growth in Nigeria

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### Abstract

*This study investigated the impact of gender inequality in education and labour force participation on economic growth in Nigeria from 1991 to 2022 using the Autoregressive Distributed Lag (ARDL) model. Data on gross domestic product growth rate (GDPG) which is the dependent variable, gender parity index used to proxy gender inequality in education (GIE), ratio of female-to-male labour force participation used to proxy gender inequality in labour force participation (GLFP), population growth rate (POPG), dependency ratio (DRwp) were sourced from World Bank Development Indicators (2024) and data on capital formation (KF) was sourced from Central Bank Statistical Bulletin (2023). The estimated ARDL model indicated that gender inequality in education proxied had a negative significant impact on economic growth in the long run and a positive significant relationship with economic growth in the short run. On the other hand, gender disparity in labour force participation had no consequences on economic growth in the short and long run. Based on the findings the study recommends that more attention should be given to reducing the disproportionate female-to-male educational enrolment at all levels in Nigeria. Policies and programmes that promote equal access to rights, opportunities and privileges for males and females should be encouraged, thus, reducing gender inequality in all forms so that the nation can achieve economic growth that is inclusive and sustainable in the long run.*

### Introduction

Overcoming gender inequality has been a long-standing goal of the international community over the years. One of the major development targets of the Sustainable Development Goals (SDGs) set by the United Nations in 2015 is to achieve gender equality (UN, 2015). Gender equality has gained renewed attention in the international and local policy communities as it aims to ensure fairness between genders and has become an important priority for many countries worldwide.

Gender inequality is recognized as unequal access to resources, opportunities, and outcomes in a society based on sexuality (being male or female) causing one gender to be routinely privileged or prioritized over another. Gender discrimination happens frequently against both men and women in certain facets of life. However, women have been overwhelmingly disadvantaged and faced discrimination in most areas of economic life

than men (Indangasi et al., 2016). Gender inequality does not mean that all women are in a worse position than all men. Likewise, gender equality doesn't imply that men and women are now the same. Gender equality means that people's privileges, liberties, or prospects are not dependent on their sexuality (Igbuzor, 2012). It signifies that women and men are treated equally and have the same chances to achieve their complete human rights and potential. This includes opportunities to contribute to the progress of their country, participate in politics, engage in economic activities, and enjoy social and cultural development. Additionally, they can reap the advantages and outcomes of these efforts.

A report on global gender gap by the World Economic Forum (2022), states that there has been progress over the last decades in various countries on the issue of gender equality, however, there remains significant progress to be made in attaining complete parity in rights and opportunities for both genders. The desire to achieve gender equality in various domains such as education, labour force/employment, healthcare, politics, and economic involvement is not solely a cultural duty but has an indispensable impact on income per capita and quality of life (Amdadullah et al., 2016).

However, despite significant advancements and various measures implemented by the United Nations, governments, and private institutions around the globe to reduce gender inequality, the issues of gender discriminatory practices remain unabated not just in Nigeria, but around the world.

In Nigeria, gender inequality is a prominent challenge, evident from the country's low rankings in the World Economic Forum's Global Gender Gap indices. The Global Gender Gap Report 2023 revealed that Nigeria ranked 130th with a score of 0.637 out of a total of 146 countries. The ranking on the gender gap uses parameters like economic participation and opportunity, educational attainment, health and survival, and political appointment. Nigeria moved 7 places down in the 2023 ranking of the global gender gap index compared to 123rd out of 146 in 2022. Nigeria's gender gap index has stayed between 0.62 to 0.64 equivalent to 62% - 64% in the last decade. The development of gender equality in Nigeria has slower progress than some other African countries like Namibia, Rwanda, and South Africa which ranked 8th, 12th, and 20th respectively globally in the 2023 gender gap report, while Nigeria ranked 30th out of 36 countries in the Sub-Saharan Africa region (WEF Global Gender Report, 2023).

Nigeria has experienced prolonged periods of inadequate and irregular economic progress, which has hindered the country's growth and the overall welfare of its citizens. It is uncertain the extent to which the country's slow pace of growth is impacted by gender inequality. Gender inequality concerns thus hold significant importance for policymakers, particularly considering the government's emphasis on economic growth and development, while also recognizing the crucial need to address gender equality as a priority (Igboanugo & Iwegbu, 2020).

It is further argued that gender inequality particularly in the most important dimensions of well-being such as education and labour force/employment is of great concern in Nigeria because it poses a serious challenge to lowering the quality of life and well-being of the nation (Klasen & Lamanna, 2008). Amdadullah et al (2016), noted that better use of the potential of all citizens of a nation in the market without disparity and thus equally empowering them means more efficient use of a nation's human capital and restricting a certain member of the population based on gender from education, economic participation, health, earning potential as well as from political decision-making power is limiting the talent and thus disadvantageous to economic growth and progress. The knowledge of the linkage between economic advancement and gender disparities is not only noteworthy but also paramount in devising policies that reduce gender disparities and increase economic growth in Nigeria.

Even though previous attempts have improved the understanding of the empirical relationship between gender inequality and economic growth, there seem to be gaps in the literature as most studies done in this area are cross-country studies and used panel data with little interest in country-based investigations. This is especially the case in Nigeria where only a handful of studies are done to examine the relationship between gender inequality and economic growth (Igboanugo & Iwegbu, 2020; Egbulonu & Eleonu, 2018; Edeme et al., 2017). Against this background, this study investigates the impact of gender inequality in education and labour force participation on economic growth in Nigeria and provides an update to the results of previous studies using the most recent data and an extended period (1991 to 2022). The rest of this study is structured as follows; section two discusses the literature review, followed by the research methodology in section three, the

presentation of results and interpretation are presented in section four while the summary, conclusion and recommendations are presented in section five.

## **Literature Review**

### **Conceptual Review**

Gender refers to the roles that are socially and culturally created for both men and women in society (Egbulonu & Eleonu, 2018). The gender roles and responsibilities are determined not by biological differences but are socially, economically, and culturally defined and shaped by traditions and beliefs. Gender is not sex (being male or female) but rather it refers to the roles played as being male or female and this cuts across all socio-economic spheres of life.

Gender inequality refers to unequal access to resources, opportunities, and privileges in a society based on an individual's gender (Onogwu, 2021). Sen (2001) highlights that gender inequality can manifest as limited access to basic amenities, unequal educational and economic opportunities, disparities in asset ownership, and unequal division of labour within the society and households.

Gender inequality in education refers to the unequal access to education between males and females. Gender inequality in education manifests through enrolment in institutions of learning, education completion rates, and distribution of gender in different carriers among other indicators.

Gender inequality in labour participation is the unequal access to economic opportunities, employment and labour market between males and females. It can be analysed based on various indicators such as the labour participation rate of different genders, wage disparities between genders, and women's participation in unpaid household and agricultural work among others.

Economic growth is defined as the increase in the productive capacity of a country over time, resulting in higher levels of national output and income (Todaro & Smith, 2006). Various factors contribute to economic growth, including an increase in capital goods, educational attainment, size and structure of the labour force, advancements in technology, and improvements in human capital (Dursun & Damadoglu, 2020).

### **Empirical Review**

Koengkan et al (2022) examined the consequences of gender inequality on Latin America's economic growth from 1990 to 2016 using ordinary least squares (OLS) regression model with fixed effects and quantiles via moments model. The study reveals that gender inequality negatively affects gross domestic product (GDP) per capita.

Esen and Seren (2021) examined the impact of gender inequality in education and employment in Turkey for the period 1975–2018 using dynamic ordinary least squares and fully modified ordinary least squares estimation methods to determine the long-run coefficients. The findings revealed that improvements in gender equality in both education and employment have a strong and significant impact on real gross domestic product (GDP) per capita in the long term.

Sinha (2021) carried out a study on the impact of gender inequality in education on economic growth in India for the period 1971-2017 using vector error correction model (VECM) to evaluate the long-run and short-run properties of the cointegrated series. The study found that gender inequality in secondary and postsecondary enrolment has a negative relationship with the rate of economic growth while the primary enrolment ratio does not affect economic growth.

Igboanugo and Iwegbu (2020) assessed the effect of gender inequality on education and economic growth in Nigeria for the period 2005 to 2015 using Error Correction Mechanism (ECM). The major finding shows that urban region female exhibited predominant unemployment by educational level when compared to the rural region. More so, other findings from the study revealed that there is a high level of gender inequality in labour force participation in relation to Nigerian educational level.

Ruiters and Charteris (2020) assessed gender equality in labour force participation, economic growth and development in South Africa from 2008 to 2018 using Autoregressive Distributive Lag models (ARDL). Economic development was found to have a positive effect on gender equality in the long run while greater female participation in the labour market was found to not affect economic growth in South Africa.

Usman and Lestari (2018) carried out a study on the effect of gender equality both in education and employment on economic development in Indonesia. Findings showed that the net enrolment ratio of girls to boys in junior high school harms the per capita income. Meanwhile, the net enrolment ratio of girls to boys in senior high school has a positive relationship with no significant effect on per capita income.

Indangasi et al (2016) using autoregressive distributed lag (ARDL) model carried out a study on economic growth and gender inequalities in labour force participation and education in Kenya for the period 1990 to 2012. The study found that gender disparities in education had a negative consequence on GDP growth in both the short and long run. While gender disparities in labour force involvement had no consequence on GDP growth.

Al Rakhis (2015) examined the impact of gender inequality on Economic Growth in the Arab Region. The study investigated the impact of gender inequality in education and labour force participation on the economic growth of Arab countries using a data set that covers 19 countries from 1990 to 2014. Ordinary least squares (OLS) and fixed effect regressions are used to estimate the model. The result found no significant relationship between gender inequality in education and the labour force on economic growth and revealed that the main factors driving the economies of the Arab Region are capital accumulation and population growth.

Yumusak et al (2013) studied the impacts of gender inequality in education on economic growth in Turkey using a cointegration approach for the period 1968-2005. The result found that women's low levels of education have a detrimental impact on economic growth and that reducing the gender gap in education has a favourable long-term association with economic development.

Klasen & Lamanna (2009) studied the impact of gender inequality in education and employment on economic growth across 139 countries. Using panel data analysis, the study observed that apart from countries in Sub-Saharan Africa and Latin America, countries that have witnessed growth in female labour participation also were able to achieve positive and significant economic growth. The study found that gender gaps in education and employment reduce economic growth in most countries of Sub-Saharan Africa, Latin America and the Caribbean.

### Theoretical Framework

To examine the link between gender inequality in education and labour force participation and economic growth, this study is anchored on Mankiw, Romer & Weil, (1992) augmented Solow growth model and its modification by Indangasi et al (2016). This model theorized a version of the Solow-Swan model and augmented it to include human capital. The model assumes that real output (Y) is determined by physical capital (K), human capital (H), technological level (A), and labour (L). The model function is given as:

$$Y_t = K_t^\alpha H_t^\beta (A_t L_t)^{1-\alpha-\beta} \quad (1)$$

Where:

Y = Total output, K = Physical capital, H = Stock of human capital, L = Labour, A = Level of technology, thus AL is effective labour

L and A are assumed to grow exogenously at rates n and g

$$L_t = L(0)e^{nt}, A = A(0)e^{gt}$$

The number of effective units of labour,  $A_t L_t$ , grows at rate  $n+g$

The model assumes that a fraction of the outcome  $sY_t$  is saved each period, but it is split up and invested partly in physical and partly in human capital such that:  $S = S_k + S_h$ , where  $S_k$  is the fraction of income invested in physical capital and  $S_h$  is the fraction of income invested in human capital such as education and health.

Equation 1 can be transformed into effective unit of labour hence accumulation of physical capital, human capital can be derived as:

$$\dot{k} = S_k y_t - (n+g+\delta)k_t \quad (2a)$$

$$\dot{h} = S_h y_t - (n+g+\delta)h_t \quad (2b)$$

Where n, g and  $\delta$  denote labour growth rate, growth rate of technology and depreciation rate respectively.

$y = Y/AL$ ,  $k = K/AL$ , and  $h = H/AL$  are quantities per effective unit of labour.

$S_k y_t$  and  $S_h y_t$  are fractions of output spent on physical capital and human capital.

These accumulation equations can be used to derive a steady state. The steady-state equilibrium growth is determined by  $\dot{k} = \dot{h} = 0$ , which means

$$S_k y_t - (n+g+\delta)k = 0, S_h y_t - (n+g+\delta)h = 0$$

the steady-state level of  $k$  and  $h$  is

$$k^* = (S_k^{1-\beta} S_h^\beta / n + g + \delta)^{1/1-\alpha-\beta} \tag{3a}$$

$$h^* = (S_k^{1-\alpha} S_h^\alpha / n + g + \delta)^{1/1-\alpha-\beta} \tag{3b}$$

Substituting equation 3 into the production function and taking logs give an equation for income per capita.

$$\ln(Y_t/L_t) = \ln A_t(0) + g_t - \alpha + \beta / (1 - \alpha - \beta) \ln(n + g + \delta) + \alpha / (1 - \alpha - \beta) \ln(s_k) + \beta / (1 - \alpha) \ln(s_h) \tag{4}$$

The model assumes  $g$  and  $n$  to be constant across countries.  $g$  reflects primarily the advancement of knowledge, which is not country-specific. Depreciation is expected not to vary greatly across countries, and there is no data to estimate country-specific depreciation rates.  $A(0)$  reflects not just technology but resource endowments, climate, institution, etc.; it may differ across countries. It is assumed that  $\ln A(0) = a + \varepsilon$

Where  $a$  = constant and  $\varepsilon$  is a country-specific shock. Thus, log income per capita at a given time – time 0 is

$$\ln(Y_t/L_t) = a + g_t - \alpha + \beta / (1 - \alpha - \beta) \ln(n + g + \delta) + \alpha / (1 - \alpha - \beta) \ln(s_k) + \beta / (1 - \alpha) \ln(s_h) + \varepsilon \tag{5}$$

**Method**

**Model Specification**

Based on the theoretical framework, this study modifies equation 5 to include gender inequality in education and labour force participation. The growth model is estimated using time series data and autoregressive distributed lag model which follows the work of Indangasi et al. (2016).

This study modifies the Indangasi et al (2016) model to suit the peculiarities of this research. Hence, the functional form model of this study is given in equation 6.

$$GDPG = f(GIE, GLFP, KF, POPG, DRwp) \tag{6}$$

Where:

GDPG = Gross Domestic Product growth rate, used as a proxy for economic growth which is the dependent variable being examined in this study.

GIE = Gender inequality in education, proxied by gender parity index. GPI is a socioeconomic indicator used to assess the comparative educational opportunities for males and females. This helps to measure the gender difference in terms of education.

GLFP = Gender inequality in labour force participation rate, proxied by the ratio of female-to-male labour force participation. The female-to-male labour force participation helps to measure the gender difference in terms of labour force participation for males and females.

KF = Capital formation, used to represent capital accumulation

POPG = Population growth rate, proxied by the estimated annual population growth rate

DRwp = Dependency ratio, proxied by percentage working age dependency ratio.

Equation 6 is parameterized in an econometric version in equation 7

$$GDPG = \beta_0 + \beta_1 GIE_t + \beta_2 GLFP_t + \beta_3 KF_t + \beta_4 POPG_t + \beta_5 DRwp_t + \varepsilon_t \text{ ----- (7)}$$

Where:  $\beta_0$  is the intercept,  $\beta_1... \beta_5$  are parameters of the regressors and  $\varepsilon_t$  is the error term

**Types and Sources of Data**

This study used time series data sourced from World Bank Development Indicators (2024) and the Central Bank of Nigeria Statistical Bulletin (2023). Data from the period between 1991 and 2022 on capital formation was sourced from CBN Statistical Bulletin, and data on ratio of female-to-male labour force participation, GDP growth rate, gender parity index, population growth and dependency ratio were sourced from World Development Indicators. The scope of this study is justified by the fact that in addition to data availability, it marked early periods of vigorous activities and policies in the pursuit of gender equality. This commitment was seen in 1995 when the Beijing Conference marked a significant turning point for the global agenda for gender equality. Sources and expected behaviours of variables are further explained in Table 1.

**Table 1:** Summary of Data, Measurement, Source and Expected Sign

Variable	Measurement	Source	Expected Sign
GDPG	% of annual GDP growth rate	WDI	+
GIE	ratio of girls to boys enrolled at primary	WDI	-

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	school level		
GLFP	ratio of female to male labour force participation	WDI	-
KF	Naira value of total capital stock	CBN	+
POPG	% of annual average change of population size	WDI	+/-
DRwp	% of dependent people (not of working age) /number of working-age population	WDI	-

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**Source:** *Authors' Tabulation*

### 3.3 Preliminary and post-estimation tests

This study carried out a series of diagnostic tests before running the regression model to avoid the violation of time series assumptions. Both pre-estimation and post-estimation tests were conducted.

#### Test for Stationarity

This study uses the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) test for the stationarity of the variables. The choice of KPSS was informed by the fact that it yields more robust results than the Augmented Dickey-Fuller (ADF) and Philips-Perron (PP) tests. KPSS unit root test eliminates the possible low power against stationary unit root that occurs in the ADF and PP. The null hypothesis of the test is that the series has no unit root ( $I(0)$ ) against the alternative hypothesis that the series has a unit root/is stationary ( $I(1)$ ).

#### Autocorrelation test

A model run in the presence of autocorrelation means the estimates are unbiased, consistent and asymptotically normally distributed but they are not effective. This study used Breusch- Godfrey test because it overcomes the constraints of the tests such as Durbin Watson test (Gujarati 2008). The Breusch-Godfrey (BG) test performs higher-order serial correlation and also supports a broader class of regressors, unlike the Durbin-Watson test which is restricted to detecting first-order autoregression.

#### Heteroscedasticity Test

Heteroskedasticity arises when the variability of the residual errors in a regression model, also known as the differences between observed and predicted values, is not constant.

Heteroscedasticity primarily arises from the existence of atypical data points, commonly known as outliers, and it can also result from excluding relevant variables from the statistical model. The Breusch-pagan test was adopted in this study.

### Normality Test

This study used the Jarque-Bera test to test for normality of the residuals, to ensure that the residuals are normally distributed. The fulfilment of the normality assumption is crucial for obtaining the optimal linear unbiased estimator. Running a model with residuals that are not normally distributed will result in an invalid inference of t and F statistics.

### Result

**Table 2: Result of summary statistics**

Statistic	GDPG	GIE	GLFP	KF	POPG	DRwp
Mean	4.053702	0.849709	0.874438	12190.12	2.593390	5.822644
Median	4.212993	0.843455	0.886786	7266.445	2.568515	5.820130
Maximum	15.32916	0.985390	0.922649	65227.13	2.764062	6.134485
Minimum	-2.035119	0.639000	0.794661	285.5900	2.380007	5.510259
Std. Dev.	3.782560	0.089378	0.031239	16231.00	0.108273	0.143465
Skewness	0.484801	-0.571440	-1.004432	2.073635	-0.140514	0.117760
Kurtosis	3.786430	3.021621	3.209917	6.551323	1.925502	3.246968
Jarque-Bera	2.078133	1.742188	5.439471	39.74899	1.644697	0.155283
Probability	0.353785	0.418494	0.065892	0.000000	0.439399	0.925296
Observations	32	32	32	32	32	32

*Source: Computed by the author using Eviews 9*

Table 2 shows the result of descriptive statistics for all the variables of the study. From the result, the average of Gross Domestic Product Growth rate (GDPG), Gender Inequality in Education (GIE), Gender inequality in Labour Force Participation (GLFP), Capital Formation (KF), Population Growth Rate (POPG) and Dependency Ratio (DRwp) between 1991 and 2022 is 4.05, 0.85, 0.87, 12190, 2.59 and 5.82 respectively. The mean value of all the variables over the period is positive with their values as small as possible, except for capital formation. Also, the standard deviations for all the variables are small, except for capital

formation (7266), suggesting that the estimated values for all the variables, except capital formation are not widely deviated from their mean values. The probability values of Jarque-Bera for all the variables, except KF, were greater than 5 per cent significance level. This suggests that all the variables of the study, except KF, are normally distributed.

**Table 3: Result of Kwiatkowski-Phillips-Schmidt-Shin (KPSS) Unit Root Test**

Variable	KPSS at Level	KPSS at 1 <sup>st</sup> difference	Order of Integration
GDPG	0.1659	-----	I(0)
GIE	0.1308	-----	I(0)
GLFP	0.3768	-----	I(0)
KF	0.6017	0.4614	I(1)
POPG	0.1927	-----	I(0)
DRwp	0.6439	0.1705	I(1)

KPSS Critical value at 5% = 0.4630

*Source: Computed by the author using Eviews 9*

Table 3 presents the results of KPSS unit root test for stationarity. The result shows that KF and DRwp were not stationary at level (that is, they contained unit roots at level) and thus accepted the alternative hypothesis that the series have unit root. However, KF and DRwp became stationary at first difference. Hence, KF and DRwp are said to be integrated of order one I(1). However, GDPG, GIE, GLFP and POPG were stationary at level. In other words, GDPG, GIE, GLFP and POPG are stationary or integrated at order zero I(0). The different orders of integration of the variables satisfy the condition necessary for using the ARDL model in this study.

**Table 4: Result of ARDL Bound Test of Cointegration**

<b>Bound Cointegration Test</b>			
<b>F-Statistic</b>	I(0)	I(1)	<b>Significance</b>
10.4309***	2.26	3.35	10%
	2.62	3.79	5%

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3.41	4.68	1%
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*Source: Computed by the author using Eviews 9*

NB: \*\*\*, \*\* and \* indicate significance at 1%, 5% and 10% respectively.

From the result in table 4, it is established that the F-statistic derived from the bound test is 10.43. Comparing this to the critical value, it is seen that the F-statistic is greater than the critical values at the upper bound (3.79) at 5% level of significance. This informs the rejection of the null hypothesis that there is not cointegration among the variables and the conclusion that the variables are cointegrated. In other words, there is a long-run cointegrating relationship among the variables employed.

**Table 5: ARDL Long Run Results**

Variable	Coefficient	t-statistic	Prob.
C	13.2611***	4.3557	0.0008
GIE	-27.5295***	-6.0290	0.0000
GLFP	-22.0126	-1.4970	0.1583
KF	-0.0001***	-4.9309	0.0003
POPG	35.0221***	4.7846	0.0004
DRwp	-30.3747***	-6.7788	0.0000

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*Source: Computed by the author using Eviews 9*

NB: \*\*\*, \*\* and \* indicate significance at 1%, 5% and 10% respectively.

The long-run results as seen in table 5 show that holding other explanatory variables constant, there is a negative long-run significant relationship between gender inequality in education and economic growth in Nigeria. This implies that a unit increase in gender inequality in education will bring 27.5295 or 27% negative change in GDP growth in the long run. A plausible explanation for this is the human capital loss due to the high rate of out-of-school female children. According to the UNICEF 2023 report, Nigeria is one of the top three countries with the highest out-of-school children with about 7.6 million out-of-school female children, hence, accounting for 15% of total out-of-school female children (Ogunyale, 2023). Education remains a key measure of human capital development, (Todaro & Smith, 2006) and human capital is a major vector of productivity and economic

growth (Klasen & Lamanna, 2009). Such a loss in human capital development should naturally translate into lower levels of economic growth as shown in the empirical results of this study. This finding supports earlier findings Indangasi et al. (2016), Yumusak et al (2013) and Klasen and Lamanna (2009), but disagrees with Al Rakhis (2015).

Similarly, the study found that gender inequality in labour force participation does not have a long-run significant relationship with economic growth in Nigeria even though it meets the a-prior expectation of a negative effect on economic growth. There seems to be a loss of impact because, unlike the gender parity index which measures gender inequality in education, the ratio of the estimate of labour force participation fails to capture the full impact of gender discrimination as it measures disparities only in the formal labour force while leaving disparities in the informal sector unaccounted for. Moreover, like many other developing economies, the informal labour sector contributes about 65% to economic growth in Nigeria (Bank of Industry (BOI) 2022), accounting for the informal labour sector will reveal more pathways to which gender inequality in labour supply affects economic growth in Nigeria. This finding supports that of Indangasi et al. (2016). Furthermore, the study found a negative long-run relationship between KF and GDPG. This implies that a unit increase in capital formation leads to a decrease in the rate of economic growth by 0.0001, in the long run, on average, holding other things constant, at 1% level of statistical significance. In addition to proximate causes of poor capital accumulation in Nigeria such as capital flight, economic and political instability, gender disparities in the form of disproportionate education enrolment and inequality in labour force participation further limit the contribution of capital accumulation to economic growth in Nigeria. A mere increase in capital formation is not sufficient for economic growth as labour supply and productivity are important in translating accumulated physical capital into productive use (Onyekwere, 2016), thus, poor labour growth and supply due to gender inequality weakens the impact of capital formation on economic growth in Nigeria as revealed from empirical finding of this study. This finding however contradicts that of Al Rakhis (2015) who in a similar study found capital formation to have a significant positive impact on economic growth. Moreover, POPG is seen to exhibit a positive impact on GDPG and a negative long-run relationship exists between DRwp and GDPG.

#### **Table 6: ARDL Short Run Results**

Variable	Coefficient	t-statistic	Prob.
D(GDPG(-1))	0.1834***	3.6106	0.0032
D(GIE)	8.1921	-1.3863	0.1890
D(GIE(-1))	8.7499**	2.5555	0.0239
D(GIE(-2))	11.1488**	2.3107	0.0379
D(GLFP)	30.4296	-1.4740	0.1643
D(KF)	0.0084***	-4.3998	0.0007
D(POPG)	22.4381	0.6305	0.5393
D(POPG(-1))	18.2069	-1.2361	0.2383
D(DRWP)	60.7883**	-2.4954	0.0268
D(DRWP(-1))	59.3134	1.1830	0.2580
ECT(-1)	-0.2704***	-7.5336	0.0000

**Source:** Computed by the author using Eviews 9

NB: \*\*\*, \*\* and \* indicate significance at 1%, 5% and 10% respectively.

The ARDL short-run results presented in table 6 reveal that all explanatory variables except for GIL and POPG have a significant positive impact on economic growth which suggests that lag dependency is important for the short-run relationship between economic growth and gender inequality and other demographic variables employed as regressors for this study.

The result shows that there is a significant error correction term coefficient (ECT). This lends credence to the hypothesis that the variables have a long-term, stable relationship. This means that a 0.27% deviation from long-run disequilibrium is corrected in the short run.

### Table 7: Results of Post-Estimation Tests

#### Post Estimation Diagnostics

Diagnostic Test	F-statistic	Prob.
Linearity (RESET)	0.8584	0.4075
Breusch-Godfrey	Serial 1.9286	0.1914
Correlation LM Test		

Heteroskedasticity	Test: 0.873619	0.6029
Breusch-Pagan-Godfrey		
JB-Normality	2.1497	0.3413

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**Source:** *Computed by the author using Eviews 9*

The results of serial correlation and heteroskedasticity were obtained and examined to assess the reliability of the model. The null hypothesis of the absence of serial correlation and the absence of heteroskedasticity in the model were accepted with probability values higher than 0.05 using the Breusch-Godfrey serial correlation, and Breusch-Pagan-Godfrey tests. As a result, the functional form of the model is reliable. Further estimation tests of reliability of the regression model revealed that specification error is absent, with normally distributed residuals

### **Conclusion**

This study investigated the impact of gender inequality in education and labour force participation on economic growth in Nigeria during the period 1991-2022. According to the results, gender inequality in education negatively influenced economic growth in the long run. An increase in gender inequality in education affected economic growth negatively in Nigeria in the short run, while gender inequality in education was found to have a positive significant effect on economic growth in the long run. Gender inequality in labour force participation was found to have no major impact on GDP growth in the short and long run.

This study concludes that gender inequality has a depressing influence on economic growth in Nigeria. This conclusion has major policy implications as policy attention needs to be geared towards reducing the disproportionate female-to-male educational enrolment in Nigeria. This could help narrow the current productivity gaps in the growth sector of the Nigerian economy. The educational disparity could be reduced by encouraging programmes that will increase awareness about the importance and gains of equal access to education for both male and female.

Also, there is a need to strengthen labour market regulatory frameworks that promote non-segregation and non-discrimination in labour demand and supply practices in Nigeria. Equality in labour force participation and incentives could be better achieved if labour

market regulatory frameworks take into consideration the simultaneous burden of caregiving and workplace requirements on the female worker through a redefinition of labour supply along the market-caregiving continuum.

Based on the findings the study recommends that more attention should be given to reducing the disproportionate female-to-male educational enrolment at all levels in Nigeria. Policies and programmes that promote equal access to rights, opportunities and privileges for males and females should be encouraged. Thus, reducing gender inequality in all forms so that the nation can achieve economic growth that is inclusive and sustainable in the long run.

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