Measuring Gender Disaggregated Human Capital Development as Determinants Of Economic Growth In Nigeria

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Abstract

This study is a gender disaggregated analysis to investigate impact of human capital development on economic growth in Nigeria. The ARDL approach was applied in order to examine the gender disaggregated education, health and gender gap index as determinants of economic growth in Nigeria. The study found that education had not adequately improved economic growth in Nigeria particularly in the short run where male secondary school enrolment had insignificant positive impact on economic growth due to the none engagement of the secondary school educated population into productive jobs, while female secondary school enrolment had positive impact on economic growth due to non-furtherance of the female counterparts who were employed at the early stage. Also, the life expectancy measuring the quality of health as an indicator of human capital development had not enhanced economic growth as expected. It was found that gender gaps had significant positive impact on economic growth in Nigeria. The study recommended that there should be equal gender right to education to avoid suppressing the female gender from not going to school and productive jobs be provided to accommodate secondary school level; there should be improved health facilities that can improve the life expectancy ratio for both males and female gender in Nigeria; and government should ensure gender equality.

Keywords: Educational attainments, Gender Gap, and Economic growth

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1. INTRODUCTION

Human capital is globally recognized as one of the key determinants of economic growth with accompanied economic issues that have received extensive attention in existing economic literatures. Prominent determinants that remain an empirical regularity include investment and accumulation of capital which includes existence and rise of real savings for investment in capital goods and the accumulation of human capital. This among others has become the main source of growth in several endogenous growth models. Other determinants include innovation, research and development, economic policy, openness to trade, Foreign Direct Investment (FDI), institutional framework and political factors. The endogenous growth theory maintains that economic growth is predominantly the result of internal forces; it argues that higher productivity can be tied directly to more innovation and increased investments in human capital.

In addition, the process of Human Capital Development (HCD) is relatively of more importance in labour surplus countries like Nigeria. Population can be a blessing if a large part of it constitutes a well-trained and informed human capital base. Despite numerous policies towards HCD, Nigeria has experienced weak and unstable economic growth. The various policies aimed at ensuring unimpeded access to education and the increase in the number of educational institutions (primary, secondary and tertiary) has not translated into improvement in the accessibility of children to quality education. This has impeded on the nation's ability to convert its vast human and natural resources into agents of economic growth. Therefore, the puzzling ineffectiveness of HCD to strengthen and sustain economic growth in Nigeria despite government efforts in developing the health and education sectors is a problem worth investigating.

International assessments such as the OECD's (Organisation for Economic Co-operation and Development) PISA (Programme for International Student Assessment) provide essential data for measuring skills across nations. Although Nigeria does not directly participate in PISA. Researchers often use other indicators to evaluate cognitive skills or assess the relevance of PISA-based findings for Nigerian educational contexts. Hanushek and Woessmann (2023) argue that cognitive skills—rather than years of schooling alone—are strongly linked to economic growth. This reiterates the need to improve educational quality in Nigeria to foster economic development. Goecke et al. (2022) finds that female students and students from well-situated (higher socioeconomic) backgrounds perform better on creative thinking tests which helps emphasize the importance of addressing gender disparities and socioeconomic inequalities in Nigerian education to fully leverage the potential of all students for economic growth. Becker, Coyle, and Rindermann (2024) explore the relationships between cultural factors, cognitive skills, and economic outcomes. By incorporating insights from PISA, the study underscores the significance of educational quality and cognitive skills in driving economic growth.

Any economy that desires to develop needs trained and skilled manpower to man its various sectors. This trained manpower includes men and women. The ability of the economy to perform lies in the quality of these men and women. This research thus sought to examine the extent to which gender disaggregated education, health and gender gap index impacted on economic growth in Nigeria.

2. EMPIRICAL REVIEW

Egbulonu and Eleonu (2018) investigated the relationship between gender inequality and economic growth in Nigeria from 1990 to 2016, the ARDL methodology was applied using secondary data and the study found that male and female secondary school enrolment had

positive relationship with economic growth but that of the female secondary school enrolment was not statistically significant. Olukemi and Dominic (2021) studied the nexus between life expectancy and economic growth in Nigeria using the technique of full modified OLS, the study discovered that life expectancy as a health improvement annual benchmark contributed positively to economic growth in Nigeria. Barro (2013) pointed out in an econometric panel study of 84 countries that an improvement in life expectancy could propel economic growth positively, and encouraged more investment in health.

Dalia, Mumtaz, Monique, Vimal, and Fan (2016) examined inequality, gender gaps and economic growth with comparative evidence from Sub-Saharan Africa, the study used dynamic panel regressions and new time series data where findings indicated that both income and gender inequalities, including from legal gender-based restrictions, are jointly negatively associated with economic growth. Orisadare, Olabisi, and Olanrewaju (2017) analysed the differential effects of male and female human capital development on economic growth in Nigeria between the periods of 1981 to 2014 using ARDL method, the study found that male secondary school enrolment rate and female tertiary enrolment rate have a significant positive effects on economic growth both in short-run and long-run while both female secondary school enrolment rate and male tertiary enrolment rate have a significant negative effects on economic growth both in short-run and long-run, the results for both male survival rate and female survival rate show positive but insignificant effects on economic growth both in short-run and long-run in Nigeria.

3. THEORETICAL FRAMEWORK

This study is anchored on the theoretical derivations of Solow model and the Mankiw, Romer and Weil (MRW) model. The idea behind the adoption of Solow and MRW model is that the Solow (1956) is the theoretical foundation of macroeconomic postulations on the

relationship between human capital and economic growth; while Solow model was emphatic about capital and labour as inputs to economic growth, the MRW augmented the Solow model by introducing human capital as major factor input in economic growth (Mankiw, Romer & Weil, 1992).

A simulation of the Solow's steady state model is depicted in figure 1. Scenario 1 gives the benchmark for the basic growth parameters physical capital (k) and human capital (h). Scenario 2 is the case of low population (n). This causes a rapid increase in physical capital (k), human capital and output (y). While scenario 3 is the case of high population growth (n) which rapidly decreases the physical capital (k), human capital and output (y) levels in Nigeria.

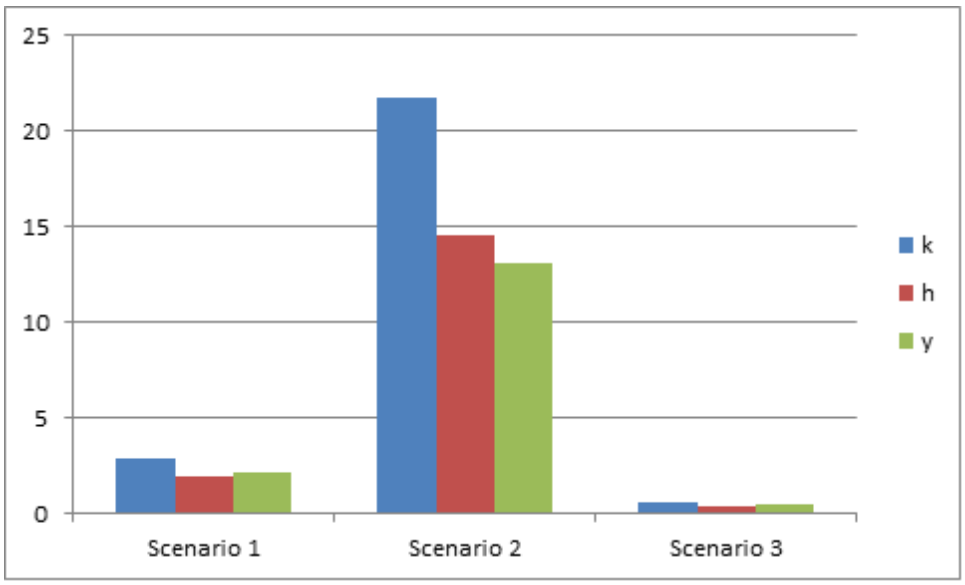

Figure 1: Scenario's on population growth

Therefore, educating women in Nigeria can contribute to controlling population growth and promoting higher output. Nigeria has experienced rapid population growth, and investing in women's education can significantly curtail this. Women's education is linked to lower fertility rates, as educated women gain knowledge about family planning and reproductive health,

leading to voluntary reductions in family size. This helps in managing population growth and allows for more efficient allocation of resources.

Moreover, educating women in Nigeria enhances their economic participation and productivity. When women are educated, they are more likely to engage in income-generating activities, contributing to higher household incomes and overall economic output. Educated women can also pursue higher-skilled jobs and entrepreneurial opportunities, fostering economic growth and development. By investing in women's education in Nigeria, both population control and economic progress can be achieved, leading to improved well-being and sustainable development in the country.

Another simulation of Solow's steady state growth model is depicted in figure 2. Scenario 1 again gives the benchmark for the basic growth parameters k and h. This time scenario 2 is the case of high technology progress (g). This causes a rapid increase in physical capital (k), human capital and output (y). While scenario 3 is the case of low technological progress (g) which rapidly decreases the physical capital (k), human capital and output (y) levels in the region.

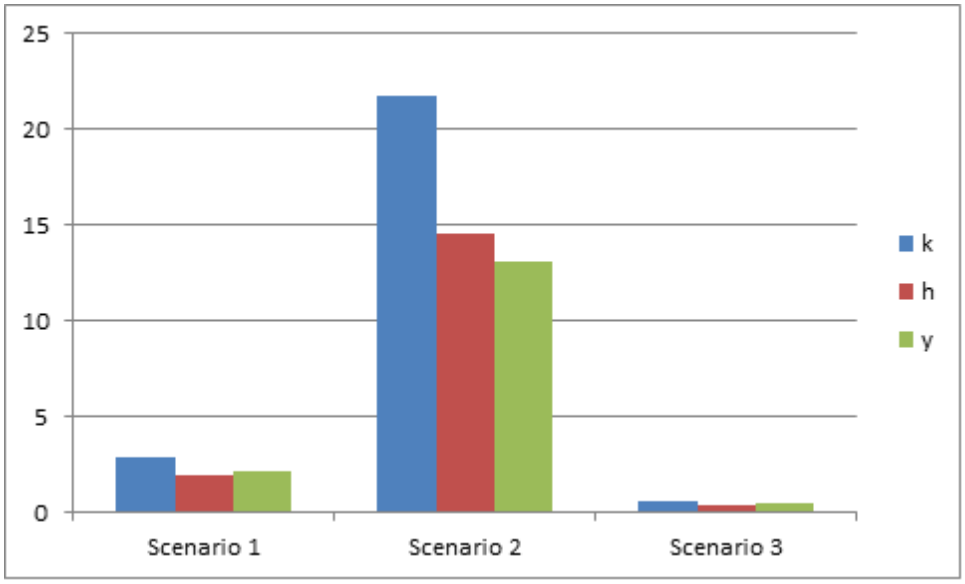

Figure 2: Scenario's on technological progress

Again, educating women in Nigeria can contribute to technological progress and higher output. Goldin (2014) defined human capital as the stock of habits, knowledge, social and personality attributes (including creativity) embodied in the ability to perform labour so as to produce economic value. Women's education a crucial role in promoting innovation and technological progress. When women have access to education, they acquire skills and knowledge that can be applied to various sectors, including science, technology, engineering, and mathematics (STEM). By increasing the number of educated women in these fields, Nigeria can benefit from a larger talent pool, fostering technological advancements and innovation that drive higher economic output.

Furthermore, educating women leads to increased female labour force participation and entrepreneurship, which are essential drivers of technological development. When educated women enter the workforce, they bring new perspectives, ideas, and expertise, contributing to the growth of technology-based industries. Educated women are more likely to engage in research and development activities, start their own businesses, and contribute to the development and adoption of new technologies. This, in turn, boosts productivity, efficiency, and overall output of Nigeria, leading to sustained economic growth and progress.

3.1 Solow Model

The originating equation of Solow model is stated as:

$$Y = F(K, L) \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad 1$$

Equation 1 explained that economic growth (Y) is a function (F) of capital (K) and labour (L). By extension, the Solow model considered economic growth as the product of aggregate production function technology, and most of the key outcomes from the Solow framework are obtainable given the standard production functions in microeconomic

production theory. To buttress in specific terms, the Solow model takes the form of Cobb-Douglas (Acemoglu, 2008) to replace equation 1 specified as:

$$Y_t = A_t K_t^{\alpha} L_t^{1-\alpha} \qquad 0 < \alpha < 1 \qquad - \quad - \quad - \quad - \quad - \quad - \quad 2$$

Where capital and labour inputs are K_t and L_t respectively, and A_t is a measure of productive efficiency where the macroeconomic arguments portend increases in A_t as technological progress; since increases in A_t increases the productivity of both capital and labour, the A_t can be termed as total factor productivity which serves as an increasing scale factor.

Given the concept of technological progress and total factor productivity as captured in the Solow model where the productivity of capital and labour inputs are dependent on the quality of the technological progress informed the need to improve on the Solow model by introducing human capital input, hence the need for this study to explore the derivations of the MRW model that specifically explain the relationships of human capital and economic growth.

3.2 Mankiw, Romer and Weil (MRW) Model

Arising from the neoclassical Solow model, the MRW augmented the Solow model by adding human capital as the third production input and maintained the assumption for a Cobb-Douglas aggregate production function. The MRW as an expansion from the Solow model is specified to include human capital as:

$$Y_t = A_t K_t^{\alpha} H_t^{\beta} L_t^{1-\alpha} \qquad - \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad 3$$

Where H_t is the stock of human capital while α and β measure the output elasticity with respect to physical and human capital. From equation 3, given that capital depreciates, the existence of diminishing returns to capital implies that:

$$\alpha + \beta < 1 \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad 4$$

Since the sum elasticities of physical capital (k) and human capital (h) in equation 4 is less than 1, the convergence path of capital to the steady state is specified as:

$$k = \left(\frac{s_k^{1-\beta} s_h^{\beta}}{n+g+\delta} \right)^{\frac{1}{1-\alpha-\beta}} \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad 5$$

$$h = \left(\frac{s_k^{\alpha} s_h^{1-\alpha}}{n+g+\delta} \right)^{\frac{1}{1-\alpha-\beta}} \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad 6$$

Where s_k and s_h are the physical capital and human capital saving rate respectively n, g, and δ are the parameters to determine the convergence speed. Thus, substituting equation 5 and 6 into the Solow model as specified in equation 2 and taking logs, the resulting equation expressing equilibrium level of income per capita becomes:

$$\ln y_t = \ln A_0 + gt - \frac{\alpha+\beta}{1-\alpha-\beta} \ln(n+g+\delta) + \frac{\alpha}{1-\alpha-\beta} \ln s_k + \frac{\beta}{1-\alpha-\beta} \ln s_h \quad - \quad 7$$

$$\ln y_t = \ln A_0 + gt - \frac{\alpha}{1-\alpha} \ln(n+g+\delta) + \frac{\alpha}{1-\alpha} \ln s_k + \frac{\beta}{1-\alpha} \ln h \quad - \quad - \quad 8$$

Equation 7 and 8 are the structural model of MRW which express the theoretical relationship between economic growth and human capital. Equation 7 is recommendable; otherwise, if a measure of the human capital stock is preferable, the regression model should resemble equation 8 (Neycheva, 2017).

4. METHODOLOGY

This study is a quantitative study where econometric tools were applied to estimate and analyse results. The data used is annual time series data from 1981 to 2023 on the disaggregated

components of human capital as determinants of economic growth. The study profoundly made use of ARDL methodology in estimating the impact of the components of human capital development on economic growth.

4.1 Model Specification

The model for this study is rooted in the theoretical underpinnings of both Solow and MRW model, but more emphasis are placed on the extended derivations of the MRW models given that the MRW are considered more suitable and popular structural model for evaluation of long-term growth which is the case for this current study.

Since Mankiw, Romer and Weil (1992) suggest that the form of the structural model built upon equation 7 and 8 should depend on the available data. Thus, using education and health indicators of human capital, this study modify the MRW structural equation based on the availability of data by introducing the disaggregated components of human capital as MSSE and FSSE measuring education; MLER and FLER measuring health; GGGI as global gender gap index for Nigeria. RGDP as a proxy for economic growth, hence the functional form of model for this study is specified as:

$$RGDP = f\left(\overbrace{\text{MSSE},\ \text{FSSE}}^{Education},\ \overbrace{\text{MLER},\ \text{FLER}}^{Health},\ \text{GGGI}\right) \quad - \quad - \quad - \quad 9$$

Where RGDP is real gross domestic product, a proxy for economic growth; f is functional notation; MSSE is male secondary school enrolment; FSSE is female secondary school enrolment. MLER is male life expectancy rate; FLER is female life expectancy rate; and GGGI is global gender gap index for Nigeria.

In order to better understand equation 9, the disaggregated variables of education and health are substituted in equation 3 to broaden the definition of human capital, thus we have:

$$Y_t = K_t^{\alpha} MSSE_t^{\beta_m} FSSE_t^{\beta_f} MLER_t^{\psi_m} FLER_t^{\psi_f} GGGI_t^{\varphi} \left(A_t L_t\right)^{1-\alpha-\beta_m-\beta_f-\psi_m-\psi_f-\varphi} \quad - \quad 10$$

From equation 10, the quantities per effective unit of labour (as in the case of $y = {}^{Y}\!/_{AL}$) is specified as:

$$y_t = k_t^{\alpha} msse_t^{\beta_m} fsse_t^{\beta_f} mler_t^{\psi_m} fler_t^{\psi_f} gggi_t^{\varphi} \quad - \quad - \quad - \quad - \quad - \quad 11$$

From equation 11, the lower case letters denote quantities per effective unit of labour, and that male and female education, male and female health capital, and global gender gap index are entered as separate factors in the production function.

Thus, in line with equation 9, the stochastic form of equation 11 is specified as:

$$RGDP = \beta_0 + \beta_1 MSSE + \beta_2 FSSE + \beta_3 MLER + \beta_4 FLER + \beta_5 GGGI + \varepsilon \; - \quad - \quad 12$$

Where β_0 is intercept, β_{1-5} are the parameters to be estimated, and ε is the disturbance or error term.

Also, in line with the specifications in equation 7 and 8 where logs of both y_t (economic growth) and h (human capital) were taken; and also in order to harmonize unit of measurement of variables in this study, the logs of variables in equation 12 were taken and specified as:

$$\ln RGDP = \beta_0 + \beta_1 \ln MSSE + \beta_2 \ln FSSE + \beta_3 \ln MLER + \beta_4 \ln FLER +$$

$$\beta_5 \ln GGGI + \varepsilon \; - \quad - \quad - \quad - \quad - \quad - \quad 13$$

Where ln is natural log of the variables.

In order to obtain the long-run and short-run estimates of the stochastic model specified in equation 13, the study re-specify the equations 13 to a dynamic Autoregressive Distributed Lag (ARDL) model of Pesaran, Shin and Smith (2001) as shown in equations 14:

$$\Delta \ln RGDP_t = \beta_0 + \beta_1 \ln RGDP_{t-1} + \beta_2 \ln MSSE_{t-1} + \beta_3 \ln FSSE_{t-1} + \beta_4 \ln MLER_{t-1} +$$
$$\beta_5 \ln FLER_{t-1} + \beta_6 \ln GGGI_{t-1} + \sum \beta_7 \Delta \ln RGDP_{t-1} + \sum_{i-0}^{q} \beta_8 \Delta \ln MSSE_{t-1} +$$
$$\sum_{i-0}^{q} \Delta\beta_{11} \ln FSSE_{t-1} + \sum_{i-0}^{q} \Delta\beta_{12} \ln MLER_{t-1} + \sum_{i-0}^{q} \Delta\beta_{11} \ln FLER_{t-1} +$$
$$\sum_{i-1}^{q} \Delta\beta_{12} \ln GGGI_{t-1} + \lambda ECT_{t-1} + \varepsilon_t \quad - \quad - \quad - \quad - \quad - \quad 14$$

Equation 14 is used to estimate the long run and short run effects of the components of the human capital on economic growth and provide answers to the research questions of this study. The *ECT* is the error correction term that measures the speed of adjustment towards the long run equilibrium.

Before the estimation of equation 14, the study first applied unit root test using Zivot-Andrews (1992) to establish the stationarity properties of the series in order to avoid spurious result, the application of the Zivot-Andrews (ZA) unit root test is because ZA has the capability of testing for the presence or otherwise of structural breaks in the variables of the model (Usman, Iorember & Olanipekun, 2019; Goshit & Iorember, 2020). After the estimation of equation 12; normality test, serial correlation test, and heteroscedasticity test were undertaken to check the robustness and sufficiency of the model for this study.

5. RESULTS AND ANALYSIS

This section focused on the presentation of results and interpretations, it begins with the unit root test using Zivot-Andrews to establish the stationairity properties of the series, the ARDL bound test to confirm long run relationships among the variables of interest, and the ARDL long run estimates to evaluate the impact of gender disaggregated components of human capital on economic growth in Nigeria.

5.1 Unit Root Test

The unit root test using Zivot-Andrews was applied as a precursor for the choice and appropriateness of the model and techniques used for this study. The estimated result of the Zivot-Andrews unit root test is presented in Table 1.

Table 1: Zivot-Andrews Unit Root Test Result

	Level form		First difference form	
	Test-Statistic	Break Date	Test-Statistic	Break Date
lnRGDP	-2.330452	1991	-5.513797*	2002
lnMSSE	-5.145352*	1997	-7.604398*	1997
lnFSSE	-3.652339	2004	-9.638920*	1989
lnMLER	-4.143856	1994	-6.458763*	2013
lnFLER	-4.762824	1997	-5.092025*	2001
lnGGGI	-4.093538	2013	-9.476919*	2012
Sig. Level	Critical Values			
1%	-5.57			
5%	-5.08			
10%	-4.82			

*Note: * imply stationarity at 5% level of significance.*
Author's Computation using Eviews 10.0

Under Zivot-Andrews unit root test, the null hypothesis of unit root is rejected if the test statistics is less than the critical values at 1% and 5% level of significance and the probability values are not considered because of the inherent structural breaks. Thus, the results in Table 1 indicated that the variables could not perform well at levels where all the variables were not stationary at level except variable lnMSSE that was stationary at level. The result in Table 1 further showed that the variables performed better at first difference where all the variables became stationary. This order of integration where one variable is integrated of order I(0) while others were integrated of order I(1) suggest the suitability of the ARDL technique to estimate the long run impact of the explanatory variables on the dependent variable. Also, the structural break dates suggest that the gender disaggregated components of human capital were inherent with structural break series, which require a dynamic methodology such as ARDL approach to examine the impacts.

5.2 The ARDL Bound Test

In order to confirm the existence of long run relationship between male secondary school enrolment, female secondary school enrolment, male life expectancy rate, female life expectancy rate, global gender gaps index that formed the explanatory variables, and real gross domestic product in Nigeria which is the dependent variable, the study applied the ARDL bound test and the estimated result presented in Table 2.

Table 2: ARDL Bound Test for Cointegration
Dependent Variable: lnRGDP

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Significance	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	10.33945	10%	2.2	3.09
k	4	5%	2.56	3.49
		2.5%	2.88	3.87
		1%	3.29	4.37
Actual Sample Size	34		Finite Sample: n=35	
		10%	2.46	3.46
		5%	2.947	4.088
		1%	4.093	5.532

Source: Author's computation using Eviews 10.0

Table 2 presented the bound test result, the decision is to reject the null hypothesis of no levels relationship if the F-statistic is greater than the critical values of I(0) and I(1) at either 1% or 5% significance levels. The F-statistic value of 10.33945 is greater than critical values of I(0) and I(1) at both 5% level of significance, the outcome implied that the variables of interest in this study were cointegrated, which means that there exist a long run relationship between economic growth and the explanatory variables of male secondary school enrolment, female secondary school enrolment, male life expectancy rate, female life expectancy rate, and global gender gaps index.

5.3 ARDL Short and Long Run Analysis

In order to analyse the impact of the gender disaggregated human capital on economic growth given the existence of the long run relationship as established using the ARDL bound

test approach, the study examine the ARDL long run and short run estimates on male secondary school enrolment, female secondary school enrolment, male life expectancy rate, female life expectancy rate, and global gender gaps index as it affect real gross domestic product. The result was estimated in line with equation 12 and presented in Table 3.

Table 3: ARDL Long Run and Short Run Estimates
Dependent Variable: lnRGDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
Short run Estimate				
D(LNMSSE)	0.230038	0.115629	1.989451	0.0779
D(LNFSSE)	0.358345	0.129725	2.762343	0.0220
D(LNMLER)	-9.131312	4.183290	-2.182806	0.0669
D(LNFLER)	13.86932	7.903708	1.754787	0.1132
D(LNGGGI)	1.662364	0.485022	3.427401	0.0075
ECT	-2.225107	0.468075	-4.753739	0.0010
Long run Estimate				
LNMSSE	0.388293	0.097566	3.979803	0.0032
LNFSSE	1.178279	0.243107	4.846758	0.0009
LNMLER	11.02706	4.315767	2.555063	0.0309
LNFLER	9.058553	5.010735	1.807829	0.0041
LNGGGI	1.592636	0.428453	3.717178	0.0418
R-squared	0.789762			
F-statistic	1575.864	Prob(F-statistic)		
0.000000			Durbin-Watson stat	2.188647

Source: Author's computation using Eviews 10.0

The result in Table 3 indicated that the short run estimated coefficients of lnMSSE and lnFSSE as components of gender disaggregated education were positive (0.230038 and 0.358345 respectively), where lnFSSE was statistically significant at 5% level of significance given the probability value of 0.0220 while lnMSSE was not statistically significant (0.0779) in the short run. The short run positive values of the estimated coefficients of lnMSSE and lnFSSE implied that education as an indicator of human capital development had positive effect on economic growth in Nigeria in the short run; however, the non-statistical significance of the lnMSSE implied that the male education had not adequately affected economic growth in Nigeria in the short run because, most male gender further their education beyond secondary level of education than their female counterparts, as a result, the males are not engaged into

productive jobs with secondary education in the short run while most of the females engaged in jobs at this level of secondary education since most of them are not given opportunity to go beyond secondary education.

From the long run estimates in Table 3, the result showed that lnMSSE was positive (0.388293) and statistically significant (0.0032) at 5% level of significance, the lnFSSE was similarly positive (1.178279) and statistically significant (0.0009) at 5% level of significance; this result agree with the findings of Egbulonu and Eleonu (2018) and Orisadare, Olabisi, and Olanrewaju (2017). The significant positive impact of both male and female secondary school enrolment on economic growth in Nigeria in the long run can be attributed to increase in educated population for enhanced skilled workforce, and the significant positive impact of female secondary school enrolment reduced gender inequality for a more inclusive economy. The increased educated population and skilled workforce drive innovations and raise productivity that positively and significantly contributed to economic growth.

The short run estimates of lnMLER and lnFLER were both not statistically significant at 5% level of significance given their probability values of 0.0669 and 0.1132 respectively; this implied that the gender disaggregated life expectancy rates as components of health had not influenced economic growth in Nigeria in the short run; this is because, in the short run, the effects of the investments in health as determinants of life expectancy in both male and female gender is yet to manifest in terms of driving economic growth. The long run estimated coefficient of lnMLER was positive (11.02706) and statistically significant (0.0309) at 5% level of significance, which implied that increase in the life expectancy rate of males had significant positive impact on economic growth in Nigeria. Similarly, the estimated coefficient of the lnFLER was positive and statistically significant at 5% significance level, which means that the female life expectancy had adequately improved economic growth in Nigeria in the long run. The finding was in line with Olukemi and Dominic (2021).

Both short run and long run estimated coefficients of lnGGGI were positive and statistically significant at 5% significance level, which implied that gender gaps in Nigeria had significantly and positively impacted on economic growth in Nigeria; this finding is at variance with the finding of Dalia, Mumtaz, Monique, Vimal, and Fan (2016) . The finding of gender gaps positively contributing to economic could be explained that the differentials of males and females in terms of economic, political, education, and access to health had positive impact on economic growth in Nigeria; this outcome could be attributed to the 35% affirmative participation of women in politics, economy, and other engagements in the society in Nigeria, which had significantly contributed positively to economic growth in Nigeria unlike other Sub-Saharan African countries.

The estimated coefficient of -2.225107 for ECT in Table 3 was correctly signed and statistically significant at 5% significance level as required with the probability value of 0.0010, which implied that the short-run speed of adjustment is 22.2% of the deviations of economic growth from its long run equilibrium values. The estimated value of R-squared was 0.789762 revealing that about 78.9% variations in the dependent variable were explained by the explanatory variables. The F-statistic value of 1575.864with the probability value of 0.000000 showed that the overall test is statistically significant. The Durbin-Watson statistics value was 2.188647, which revealed that there was no autocorrelation in the specifications.

5.4 The Post Diagnostic Test

The post diagnostic tests were done to check the sufficiency and reliability of the estimated results for the study. The results of both Breusch-Godfrey serial correlation LM test and Breusch-Pagan-Godfrey Heteroskedasticity test were summarised in Table 4.

Table 4: Diagnostic Test Statistic

Test	F-statistic	P-value
Serial Correlation LM test	7.323076	0.0912

Heteroskedasticity test:	0.458963	0.9382

Source: Author's computation using Eviews 10.0

Table 4 revealed that the null hypothesis of no serial correlation could not be rejected given the estimated F-statistic of 7.323076 with the corresponding probability value of 0.0912, which was not statistically significant at 5% significance level, which implied that there was no problem of serial correlation associated with the model for this study hence the estimated results were reliable. Also, the estimated F-statistic for Heteroskedasticity test was 0.458963 with the probability value of 0.9382 that was not statistically significant at 5% level, which implied the study could not reject the null hypothesis of homoscedasticity, which further means that the estimated results were free of heteroskedasticity issues.

6. CONCLUSION

This study concluded that education as indicator of human capital development had not adequately improved economic growth in Nigeria particularly in the short run; this conclusion is based on the finding that male secondary school enrolment had insignificant positive impact on economic growth in Nigeria due to the male educated population not engaging in productive jobs at the level of secondary schools but rather prefer to further their levels of education, also, the positive impact of the female secondary school enrolment on economic growth is due to the none furtherance of the female counterparts who were employed at the early stage and some denied. The study also concluded that life expectancy measuring the quality of health as an indicator of human capital development had not enhanced economic growth as expected. The study further concluded that the gender gaps had significant positive impact on economic growth in Nigeria.

7. RECOMMENDATIONS

The study made the following recommendations in line with its findings:

i. Skill acquisition subjects should be prioritized in Nigeria's curriculum to equip students with practical abilities. Emphasizing these subjects will prepare boys and girls alike for the demands of the modern workforce, drive economic growth, and address skill gaps in various industries.

ii. There should be improved health facilities that can improve the life expectancy ratio for both males and female gender in Nigeria.

iii. Government should ensure gender equality by raising the bar for affirmative action in Nigeria to ensure equal rights to economic participation and opportunity, political empowerment, health and survival, and educational attainment.

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