Education and Economic Development in Nigeria

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Abstract

Education is a catalyst that accelerate the rate of economic development. This it does through developing the skills and capabilities of the people, making them to be more productive and environmentally conscious. This paper examined the role of education in economic development of Nigeria. Education is proxied by enrolment rate in primary, secondary and tertiary institutions, while economic development is proxied by misery index. The stationary test result showed that the variables were integrated of mix order i(1) and i(0), hence we adopted the autoregressive distributed lag technique. The finding showed that secondary school enrolment and tertiary education contributed to economic development in Nigeria because they have negative effect on misery index (as the level of misery of the people decreases, improvement in welfare is experience). Thus, the paper recommended that government should offer free compulsory education from primary through secondary, award scholarship to the less privilege and re-introduce bursary payment in all tertiary institutions.

Key Words: Education and Economic Development

Introduction

Education plays a significant role in the socio-economic development of a country. It is a lever that lifts the poor out of poverty by enhancing their psychomotor, affective and cognitive domain thereby improving their level of productivity. No country can progress without quality education, because the quality of her manpower depends on the quality of her education. The relationship between education and economic development has been captured by the endogenous growth theory (Dudzevicinte & Simelyte, 2018). From the theoretical perspective investment in education increases productivity (Lucas, 1988; Romer, 1990). Having a more skilled manpower (educated employees) enables companies to take advantage of new economic opportunities leading to improved performance. On the other hand, improved performance (economic development) can lead to greater wealth, which made resources available and increase opportunities for education (Lu, 2018; Earle, 2010).

Given, the theoretical underpinning of the relationship education and economic development, there is a question about the causal link or nexus between education and economic development. Scholars such as (Zivemgwa, 2012; Zivengwa et al, 2013 & Dudzevicinte & Simelyte, 2018), investigated the causal relationship between education and economic development. Their findings established that a bi-directional causality exist between education and economic development. That is education Granger cause economic development and economic

development Granger cause education. Yurkuran and Texzi (2015) in their paper does education affect economic development in Turkey: A causality analysis, established that a uni-directional causality flows from education to economic development. That is education granger causes economic development. Stern (2011) is paper education and economic development from correlation to granger causality, established that a uni-directional causality exists between economic development and education. The causality flows from economic development to education. That is economic development granger causes education. Given these divergent views, this study examines the effect of education on economic development in Nigeria. The rest of the paper is divided into five sections. Immediately after the introduction is the conceptual clarifications, and this is followed by theoretical literature. Section four centres on empirical literature, and section five on methodology. Sector six is discussion of findings and conclusion, while seven is recommendations.

Conceptual Clarifications

Education: This is the process of developing the personality and creativity of the individuals so that he/she can in turn help in promoting a healthy society (Sapru, 2021). Education is a process that help to develop a total man/woman, by developing his/her cognitive, affective and psychomotor domains to enable him/her function effectively in the society. However, in this paper education is define as the process of developing the capabilities of the people to enable them again mastery of their physical, social, economic and political environment as to improve their general wellbeing.

Economic development: This refers to the gamut of change that bring about improvement in the welfare of the people. Economic development is a process that generates economic, social and technical progress of nations.

Human Capital Theory

The theory of human capital (HC) was propounded by Becker in 1964. The theory assumed that education determines the marginal productivity of labour and this determines earnings. The basic premise behind HC theory is that people's learning capacities are of comparable value with other resources involved in the production of goods and services (Lucas 1990). Applied in the context of organizations', HC theory suggests that individuals who invest in education and training will increase their skill level and be more productive than those less skilled, and so can justify higher earnings as a result of their investment in HC. As Becker (1993) suggests, '*schooling raises earnings and productivity mainly by providing knowledge, skills and a way of analyzing problems*. Moreover, Becker's ideas play an important role in contemporary employee development and learning literature, as HC theory fuels the idea that employees' knowledge and skills can be developed through investment in education or training, that is, learning (Grant, 1996a, Hatch & Dyer, 2004).

One of Becker's most important contributions to employee development theory relates to training. Becker (1964) argues that, on the whole, investments in education and training will improve productivity; however, it is the *type* of training that determines *who will pay for* the training, that is, the employee or the firm. Earlier work by Becker (1964) came to the conclusion that firms would not have sufficient incentives to invest in their workers' skills because trained workers can quit to work for other employers who can use these skills However, Becker (1964) challenged this assumption and argued that organizations would be more willing to *share the costs* of firm-specific training as it is valuable to the incumbent firm only. This is due to the observation that employees and potential employers would not benefit from the same level of productivity if they change jobs.

Empirical Literature Review

Gogoi and Dutta (2022) examined the role of education in economic development. Their finding showed that education improves people understanding of themselves and the world, it improves the quality of life and productivity of the people and the causality flows from education to economic development. Ziberi et al (2022) examined the impact of education on economic growth in Macedonia. The instrumental variable two stage least square technique was adopted in analyzing the data. The empirical finding established that education impacted economic growth positively. Suweandaara et al, (2021) evaluates education sector expenditures and economic growth in Indonesia. The empirical result shows that secondary and tertiary education expenditure have positive effect on economic growth in Indonesia. Sun (2021) examined the relationship between education and economic development using panel vector autoregressive model (PVAR). The finding indicated that a strong positive relationship exists between education and economic development. Irughe and Edafe (2020) investigated the effect of education on economic growth: Empirical evidence from Nigeria. Education enrolment rates and completion rates were used as proxied for education and real gross domestic product growth rate as proxied for economic growth. The fully modified ordinary least square technique was employed and the finding showed that enrolment rates and school completion have positive effect on economic growth in Nigeria. However, completion rate has more growth effect than enrolment.

Marquez et al, (2019) analyzed the relationship between education and economic growth in Spain. The finding showed that an increase in education has a positive effect on economic growth in Spain. Lu (2018) examined the links between social status, compulsory education and economic growth. The finding established that education provided by government is less efficient than that provided by private sector, a longer period of compulsory education tends to decrease the time allocated to higher education. Thus, a decline in economic growth because of the greater amount of inefficient education produced by the government. Bouhajeh et al, (2108) examined the effect of higher education on economic growth. The paper adopted the Johansen cointegration technique. The empirical finding showed that higher education has positive effect on economic growth. Hanushek (2016) in his paper "will more education increase/improve

economic development"? Established that improvement in education is essential factor in economic development in both developed and developing countries. Barro and Sula-Martin (2004) examined the causality between education quality measured by education expenditure as a percentage of gross domestic product and economic growth. Their finding established that a positive relationship exists between education quality and economic growth. Dragoescu (2015) explored the relationship between education and economic growth in Romania, using the vector error correction model. The finding showed that a positive relationship exists between education and economic growth. Mariana (2015) examined the causality between higher education and economic growth in Romania. Economic growth was measured by gross domestic product per capita, student tertiary enrolment and public education expenditure were used as proxied for education. The finding showed that higher education enrolment has positive effect on economic growth. Pegkas (2014) investigated the relationship between educational levels and economic growth. The empirical result showed that a positive relationship exists between education levels and economic growth. Holland et al (2013) examined the relationship between graduates and economic growth across countries. Their findings established that tertiary education is a same innovation that drive productivity and thus economic development.

Methodology

This study adopted the quasi-experimental research and design, and the autoregressive distributed lag technique is adopted in analyzing the data.

Model Specification

This paper adopted the model of Hanushek (2021) with some modification. The Hanushek model is stated below:

RGDP = f(SE, TE, GE) (3.1)

Where:

RGDP = Real gross domestic product Proxy for economic growth

SE = Secondary school enrolment

TE = Tertiary education enrolment

GE = Government expenditure on education

However, the model specification for this paper is given as:

MRI = f(PSE, SSE, TSE) (3.2)

Equation 3.2 is transformed into econometric form as stated below:

MRI = $a_0 + a_1 PSE + a_2 SSE + a_3 TSE + e$ (3.3)

Where:

MRI = Misery index a proxy for economic development

PSE = Primary school enrolment

SSE = Secondary school enrolment

TSE = Tertiary education enrolment

e = error term

Apropri expectation $a_1, a_2, a_3 < 0$.

Stationarity Test

The Augumented Deckey Fuller (ADF) test is adopted in testing for stationarity of the variables in the model

Table 1: Stationarity Test

Variables	Level	1st Diff.	Order of Integration
MRI	-0.439644	-29.76760	1(1)
PSE	-0.850489	-10.20510	1(1)
SSE	-1.385302	-6.024070	1(1)
TSE	-7.269685		1(0)

Source: *Author's computation 2023 using Eviews 10.1*

The result of the stationarity test shows that all the variables are stationary at first difference except tertiary education enrolment that is stationary at level. Hence, we adopt the autoregressive distributed lag technique in analyzing the data.

The first step is to present the ARDL bounds test.

Table 2: ARDL Bounds Cointegration Result

Sample: 1982 2020
Included observations: 39
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	K
F-statistic	10.79347	3

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.72	3.77
5%	3.23	4.35
2.5%	3.69	4.89
1%	4.29	5.61

Source: *Author's computation 2023 using Eviews 10.1*

The result in the table 2 shows that long-run relationship exist among the variables because the f-statistic value of 10.79347 is higher that the upper bounds critical value of 4.35 at 5 percent level

of significance. Having established the existence of long-run relationship (cointegration) among the variables we proceed to present the long-run ARDL result.

Table 3: Long-Run ARDL Result

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PSE	0.308380	4.119506	0.074859	0.9410
SSE	-0.619455	0.156330	-3.962479	0.0004
TSE	-0.867138	0.318562	-2.722040	0.0110
C	-7.125608	65.590813	-0.108637	0.9141

Adjusted R^2 = 0.535113

Source: *Author's computation 2023 using Eviews 10.1*

The adjusted R^2 value is 0.0535113, this implies that education explain about 54 percent variation in economic development proxied by misery index. The remaining 46 percent are explained by variables outside education. The f-statistic of 9.748044 with a probability of 0.000009 indicated that the model is well specified. From the table above, primary school enrolment has a positive coefficient 0.308380 with a probability value of 0.9410. This shows that a direct but insignificant relationship exist between education and misery index a proxy for economic development. The reason may be that at the primary education level no tangible skill is acquired that can contribute significantly to improve productivity. Secondary school enrolment one of the proxies for education has a negative coefficient -0.61945 with a probability value of 0.0004. This implies a significant inverse relationship exists between education and misery index a proxy for economic development. A unit increase in secondary education enrolment will reduce the misery level by 0.62. This indicated that secondary school enrolment promotes economic development in Nigeria as it helps to reduce the level of misery. This finding is in tandem with theoretical expectation.

Tertiary education enrolment has a negative coefficient -0.867 and a probability value of 0.0110. This indicates that an inverse and significant relationship exists between education and misery index a proxy for economic development. A unit increase in tertiary education enrolment will lead to 0.87 decline in misery level in Nigeria all things being equal. A reduction in the level of misery implies improvement in the welfare of the people. Thus, tertiary education enrolment all things being leads to economic development.

Table 4: Short-Run ARDL Result

Sample: 1981 2021
Included observations: 39

Cointegrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(PSE)	7.486616	108.316225	0.069118	0.9453
D(SSE)	-0.422486	0.157388	2.684357	0.0132
D(TSE)	-0.379149	0.153848	-2.464445	0.0201
CointEq(-1)	-0.600458	0.147372	-4.074433	0.0002

Source: *Author's computation 2023 using Eviews 10.1*

The error correction term has the right sign (negative), which implies in the long-run there will be convergence. The ECM shows the speed of adjustment and it is 60%. This implies that the speed of adjustment is moderate.

Primary school enrolment has direct relationship with misery index but not significant given its probability value of 0.9453.

Secondary enrolment and tertiary education enrolment both have negative coefficients -0.422 and -0.379 respective and probability values of 0.0132 and 0.0201 respectively. This implies that both secondary school enrolment and tertiary education enrolment have negative and significant effect on the level of misery in Nigeria. Thus, an increase in the level of secondary school enrolment and tertiary education enrolment will reduce misery level by 0.422 and 0.379 respectively. This shows consistency in theory; hence we conclude that secondary school enrolment and tertiary education enrolment are major determinants of economic development in Nigeria.

Post Diagnostic Test

The post diagnostic test is presented in table 5

Serial correlation Lm test	F(2,31)	0.752294	0.4797
Heteroskedasticity	F(5,33)	1.011799	0.4264
Normality		1.073584	0.5846

Source: Author's computation using E-view 10.

The above empirical estimations for autocorrelation, heteroskedasticity and normality are used to test for the following hypotheses.

No serial correlation

No Heteroskedasticity

No non-normal error

The result of the serial correlation has a probability value of 0.4797, which is greater than the 0.05 at 5 per cent level of significance. This showed that there is no serial correlation among the

variables in the model specification above. That is the independent variables in the model are not correlated. The heteroskedasticity test result has a probability value of 0.4264, which is greater than the 0.05 threshold at 5 per cent level of significance, showing that there is no heteroskedasticity. This implies that the variance of the residual is equal over a range of measured value (homoscedastic). The normality test result has a probability value of 0.5846, which is greater than the 0.05 threshold at 5 per cent level of significance. This shows that the variables probability distribution is symmetric about the mean. Hence, they are normally distributed, indicating that the short-run test passed the post diagnostic test.

Pairwise Granger Causality test

The result of the pairwise causality test is captured in table six below>

Table 6: Pairwise Granger Causality Test Result

Sample: 1981 2021
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
PSE does not Granger Cause MRI	38	1.64067	0.0893
MRI does not Granger Cause PSE		0.58811	0.5611
SSE does not Granger Cause MRI	38	0.08445	0.9192
MRI does not Granger Cause SSE		0.14167	0.8684
TSE does not Granger Cause MRI	38	1.28127	0.8250
MRI does not Granger Cause TSE		0.37899	0.3275
SSE does not Granger Cause PSE	38	0.94121	0.4004
PSE does not Granger Cause SSE		6.28214	0.0049
TSE does not Granger Cause PSE	38	1.36877	0.2685
PSE does not Granger Cause TSE		3.56428	0.0397
TSE does not Granger Cause SSE	38	2.40348	0.1061
SSE does not Granger Cause TSE		0.58692	0.5617

Source: Author's computation using E-view 10.

The result from table 6 above showed that tertiary education enrolment granger causes economic development and economic development also granger cause tertiary education enrolment. Secondary school enrolment granger causes economic development and economic development granger causes secondary school enrolment. This finding is in line with that of Zivengwa et al (2013) and Dudzevicinte and Simelyte (2018). Thus, a bi-directional causality exists between education and economic development in Nigeria.

Conclusion

Given the result of data analyzed using the autoregressive distributed lag technique the paper concludes that secondary school enrolment and tertiary education are sources of economic development in Nigeria. This is because increase in secondary school enrolment and tertiary

education enrolment lead to decline in misery level in the country. The decline in the level of misery of the citizenry implies improvement in their welfare which is at the core of economic development. Education proxied by secondary school enrolment and tertiary education enrolment leads to economic development in Nigeria all things being equal.

Recommendations

The following recommendations are put forward:

(i) Government should increase enrolment rate by giving compulsory free education from primary to secondary level.

(ii) Government should give scholarship to the less privilege as to increase enrolment rate.

(iii) Bursary should be re-introduced both at the federal and state levels to increase enrolment rate in tertiary education.

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