THE ROLE OF PRIVATE INVESTMENT IN POVERTY REDUCTION IN SELECTED SUB-SAHARA AFRICAN COUNTRIES

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Abstract

The transformation of sub-Sahara African (SSA) countries from the poorest to the richest in the world is desirable. Therefore, this study examined the impact of private investment on poverty reduction in selected SSA economies (Ghana, Nigeria and South Africa) using annual time series data from the World Development Indicators (2020); covering 1981 to 2020. Based on the Marxian theory, correlation and autoregressive distributed lag techniques were employed. Domestic private investment (DPI) was positively and strongly associated with poverty reduction in the three countries. Foreign direct investment (FDI) was positively and strongly associated with poverty reduction in Ghana, though positively but weakly associated with poverty reduction in Nigeria and South Africa. In the short-run, DPI positively and significantly impacted poverty reduction in Ghana, Nigeria and South Africa, while FDI positively and significantly impacted poverty reduction in Nigeria and South Africa only. In the long-run, DPI positively and significantly impacted poverty reduction only in South Africa. FDI negatively impacted poverty reduction in the three countries. Therefore, it was recommended that Nigeria and Ghana should encourage DPI by maintaining conducive macroeconomic environment, which will also attract FDI.

Keywords: Foreign direct investment, Domestic private investment, Poverty reduction, Sub-Sahara Africa

1. Introduction

Sustainable development goal (SDG) one of the United Nations (2015) aims at eradicating poverty. Countries of the world are running with this goal in order to improve the welfare of their citizens. While advanced countries have recorded substantive progress by leading in the ranking of the world rich list, developing countries still lie at the bottom of the list (IMF, 2021). In addition, Ventura (2021) noted that countries identified as the poorest in the world belong to sub-Sahara Africa (SSA). Therefore, studies have advocated for increased private investment in the different sectors of the economy in order to transform SSA countries and enlist them among the top richest economies (Lee-Roy, 2012).

Empirical evidence points to the fact that in some developing countries, increase in private investment reduced poverty level (Anigbogu, Edoko & Okoli, 2016). However, despite

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policy initiatives to increase private investment in SSA countries, there has not been substantial improvement in some countries. In Ghana, private investment rose from $5.07billion in 2010 to $5.55 billion in 2020. In Nigeria, private investment rose from $4.29 billion in 1990 to $5.58 billion in 2000. In 2010, private investment further rose slightly to $5.87 billion and $6.66 billion in 2020. In South Africa, private investment rose slightly from $3.22billion in 1990 to $3.67 billion in 2000. Furthermore, in 2010, private investment more than doubled to $7.53 billion and $8.47 billion in 2020 (WDI, 2020).

On the other hand, poverty level [captured by Gross national income (GNI) per capita] has remained very high in some SSA countries. In Ghana, GNI per capita rose by $600 between 2010 and 2020. In Nigeria, GNI per capita fell from $1,346 in 1990 to $1,326 in 2020 signifying a decline in income per person. GNI per capita rose again to $2,069 in 2010 and $2,391 in 2020. In South Africa, GNI per capita has been improving. Income per person rose from $5,910 in 1990 to $5,566 in 2000. By 2010, GNI per capita had risen to $6,989 and $7,270 in 2020 (WDI, 2020). This implies that Ghana and Nigeria has been struggling with relatively high poverty level while South Africa has been faring better.

High level of poverty poses demeaning effects on a country as a whole and on the citizens of such countries. Poverty can be associated with a lot of societal vices including prostitution, epidemic, kidnapping, armed robbery, terrorism, smuggling, and other criminal activities. The outcome of the scourge of poverty is the loss of patriotism and increase in emotional ill-health like anger, bitterness, low self-esteem, hypertension, frustration, depression as well as suicide, even among the young ones. From the above statistics, it was observed that in Ghana, there was a fall in investment-income ratio from 4.12 in 2010 to 3.04 in 2020. In Nigeria, investment-income ratio improved from 31.85 in 1990 to 42.07 in 2000. However, the ratio has since fallen to 28.40 in 2010 and 27.86 in 2020. Conversely, in South Africa, improvement had been recorded in the investment-income ratio from 5.26 in 1990 to 5.45 in 2000. The ratio further improved drastically from 6.59 in 2010 to 10.77 in 2020 (WDI, 2020).

Private investment significantly influenced poverty level in some developing countries (Yohanna, 2013), while in other developing countries, there was no significant effect of private investment on poverty level (Tobondo, Nurdin & Jokolelono, 2021). Therefore, it is needful to establish the link between private investment and poverty level. Hence, this study will answer the following pertinent questions:

i. Is there any link between private investment and poverty reduction in selected SSA countries?
ii. To what extent does private investment influence poverty reduction in selected SSA countries?

With the current level of private investment and poverty in the selected SSA countries, it seems unlikely that the SDG of poverty eradication will be achieved by the year 2030. Against this backdrop, the current study seeks to:

i. Examine the relationship between private investment and poverty reduction in selected SSA countries;

ii. Determine the influence of private investment on poverty reduction in selected SSA economies.

This study is apt in addressing the issue of poverty in SSA countries. The uniqueness of the study lies in determining whether SSA countries should concentrate on attracting foreign investment or enabling domestic investment potentials.

The study covered a period of forty years; from 1981 to 2020 in order to provide a more recent result. Examination of the influence of private investment on poverty was limited to selected countries in sub-Sahara Africa, which include Ghana, Nigeria and South Africa. The selection of these countries is based on the fact that their national independence was gained around the same period and from the same colonial master, Great Britain. Ghana gained independence in 1957, Nigeria gained independence in 1960 and South Africa gained independence in 1961. The World Bank (2020) list of economies classified the countries based on income group thus: Ghana as a lower-middle-income country, Nigeria as a lower-middle-income country and South Africa as an upper-middle-income country. The study aimed at comparing the progress of these countries in terms of investment and their prosperity over the years. The comparative study is expected to enable the researcher to reach a conclusion on the performance of the economies viz-a-viz their counterparts. Therefore, after this introductory section, Section Two presents the review of literature and the theoretical framework. Section Three handles the methodology. Section Four reports and discusses the findings of the study, while Section Five concludes and proffers policy recommendations.

2. Review of Literature and Theoretical Framework

Poverty is relative as defined by the standard of the society in which an individual finds himself. When an individual lacks enough resources to get the basic necessities of life, poverty is absolute. Poverty reflects on the state of well-being of the citizens of a country through low per-capita income and high level of inequality in income distribution (Kahsu & Nagaraja, 2017). Poverty exists in both developed and developing countries of the world. In developed countries, poverty manifests in the form of homelessness. However, not all homelessness in developed economies is due to poverty. In developing economies, poverty reflects in the failure of the entire economic systems and as such experiences of high unemployment, inequality in income distribution, low per-capita income, high mortality rate, poor infrastructure, weak institutions and political instability to mention a few. Thus, poverty can simply be defined as the inability of the economic system to redistribute the resources of a country in a fair and equitable manner.

Literature reveals the pivotal role of private investment in reducing poverty and stimulating economic growth and development (Tan & Tang, 2011). The classical economists promoted capitalism and emphasised the importance of free market. According to the classical economists, private sector investment would lead to specialisation and trade promotion. Free market operation which means the pursuance of self-interest will eventually yield national benefits in terms of prosperity and poverty eradication. Marx (1971) agrees with the classical economists on the extension of market economies but noted that economic growth hinges on

the historical stage of a country. The Marxian view is that the different facets of societal life are conditioned by the mode of production, which was referred to as 'productive forces'. The productive forces include material inputs, technology, climatic conditions as well as geographical conditions. Of these productive forces, technology was singled out as the major factor influencing societal development in terms of social relations. It is on this social relationship that the super structures of political and legal institutions are built. Hence, the development of a country lies in the level of technological advancement as well as the level of social relations.

The neoclassical economists are of the view that private investment is positively related to the level of income of a country. Countries with high level of income are expected to save more and later direct such savings to finance investment. On the other hand, countries with low level of income are expected to consume more and thus save less; leading to lesser funds to finance investment. Hence, countries with high income level are supposed to do better in private investment compared to low-income countries.

The current study derived from the Marxian theory, which argues that the capitalist economic system is inherently exploitative and unjust. Profit making is the driving force in this economic system. Therefore, exploitation of labour (workers) and other inequitable and unjust practices, like wage cut are common in a capitalist economic system. Moreover, Marxian theory views profit as resulting from the labour hours input into production process. Also, due to the desire to make surplus profit, capitalism leads to technological change, which increases the productivity of labour. However, technological change suggests the replacement of labour with machines and the eventual fall in the rate of profit (the ratio of profit to the total capital invested). Thus, capitalism gives rise to the creation of an industrial reserve army of unemployed persons (Marx, 1971). Marxian theory further argued that a fall in the rate of profit leads to decline in the rate of capital accumulation (private investment). Hence, capitalism brings about recession in the economy instead of poverty reduction. This suggests an inverse relationship between capital accumulation and poverty reduction.

For an economy to be void of exploitation of labour, unemployment and injustice, the Marxian theory submits that capitalism must give way to socialism. In addition, the theory implies a precondition for economic recovery from recession. Since the cause of recession was a fall in the rate of profit, the precondition for economic recovery is therefore an increase in the rate of profit. Even though there are two ways by which the rate of profit can be restored; first, through increase in profit per worker (achievable via wage-cut or increase in labour hours), second, through reduction in the capital invested per worker (that is, the ratio of profit to total capital invested). The second option is preferable to the first by capitalists; however, it promotes the exploitation of workers. Reduction in the ratio of profit to capital leads to a combination of declining profit and increased indebtedness of private firms. Thus, in the short-run, the economy worsens and recession degenerates into depression. This significant decline in the rate of profit is what gives rise to the problems of unemployment and inflation as well as lower real wages.

Many governments have responded to these economic problems by adopting the Keynesian policies of increased government spending, reduced taxes and lower interest rates. Notwithstanding, the response of private firms to these policy stimulation of demand by increasing commodity prices; in order to restore the rate of profit may result in higher inflation rates. In recent literature, emphasis has been on exogenous shocks (for example, oil price volatility, unfavourable macroeconomic policies and debt service burden); shifting focus of researchers from the main cause of recession, which is fall in the rate of profit.

Another important factor in the Marxian theory is the distinction between productive and unproductive labour. Not all workers are productive in a capitalist system. Only productive labour produces profit in the capitalist system. Productive labour includes workers directly involved in production activities. Other workers like supervisors and accountants fall into the category of unproductive labour. Therefore, if unproductive labour is more than the productive labour in an economy, there will be a fall in the rate of profit, while cost will increase.

The fall in the rate of profit is due to an increase in the capital invested per worker and an increase in the ratio of unproductive labour to productive labour. Hence, the inherent dynamics of technological change forms the basis of the problem faced in capitalist economies. This study is however constrained by unavailability of data distinguishing between productive and unproductive labour; which also depends on the type of firm (Ricardo, 1996).

Empirical evidence shows that in Indonesia, a newly industrialised country, private investment has no effect on poverty level (Marsoit, *et al.* 2015, Tobondo, Nurdin & Jokolelono, 2021). The more recent finding further revealed that investment in Indonesia is majorly on capital-intensive economic activities. Therefore, industries absorb less labour; unemployment increases and poverty remains despite the level of private investment. Though Indonesia is categorized as upper-middle income country, private investment has failed to reduce poverty level. Similarly, in Siak, a negative effect of private investment on output was recorded (Wardani, Kornita & Taryono, 2014). Based on theory, this relationship between private investment and output will consequently lead to rise in poverty level. However in Nigeria, private investment has succeeded in stimulating per-capita income thereby reducing poverty (Yohanna, 2013). Due to the conflicting views in literature on the link between private investment and poverty, further study is required. Therefore, the current study seeks to establish the link and determine the extent of influence between private investment and poverty level in selected SSA countries.

3. Methodology

Following Osinubi and Amaghionyediwe (2010). The functional relationship between poverty and private investment can be specified thus:

$$pov = f(pvi) \quad 3.1$$

Where *pov* represents poverty reduction (measured by GNI per capita in constant 2010 US$), *pvi* represents private investment and *f* shows functional relationship. Private investment can be further broken into foreign direct investment (FDI) and domestic private investment (DPI). FDI is expected to complement DPI by stimulating export and increasing the market competitiveness of the local economy (Blomstrom & Kokko, 2000). Also, FDI enhances technological transfer from advanced countries and eases pressure from balance of payment distortion (Ullah, *et al.* 2014). Therefore, the function can be expressed as:

$$pov = f(fdi, dpi) \quad 3.2$$

Other control variables introduced into the model include exports, real exchange rate and external debt. Exports from the local economy were included in the model in order to ascertain the influence of the domestically produced goods, which are sold to other countries, on poverty level. The real exchange rate was included in the model to capture the effect of foreign transactions on the well-being of citizens of a country. External debt was included in order to capture the effect of foreign capital on poverty level. Thus, the model was further presented as:

$$pov = f(fdi, dpi, xpt, rer, exd) \quad 3.3$$

The model can be specified in econometric form thus:

$$pov_t = \beta_0 + \beta_1 fdi_t + \beta_2 dpi_t + \beta_3 xpt_t - \beta_4 rer_t + \beta_5 exd_t + \eta_t \quad 3.4$$

Where *fdi* represents foreign direct investment, net inflows (percent of GDP), *dpi* represents domestic private investment (proxy by gross fixed capital formation in constant 2010 US$), *xpt* represents exports of goods and services in constant 2010 US$, *rer* represents real effective exchange rate index (2010=100), *exd* represents external debt stocks, long-term (DOD, current US$) and η represents other factors influencing poverty which are not captured in the model. Data for the study was sourced from World Bank, World Development Indicators (2020).

It was expected a priori that foreign direct investment, domestic private investment, exports and external debt will exert positive influence on poverty reduction, while real exchange rate was expected to be inversely related to poverty reduction.

4. Results and Discussion of Findings

The study started by examining the properties of the variables. Augmented Dickey-Fuller (ADF) unit root test was used to examine the level of stationarity of the variables. The null hypothesis is that all the data in the series have unit roo t. The result of unit root test is presented in Table 4.1.

Table 4.1: Result of Unit Root Test

Variables	Nigeria			South Africa			Ghana		
	Level	1st Difference	Order of Integration	Level	1st Difference	Order of Integration	Level	1st Difference	Order of Integration
Pov	29.80	156.11	I(0)	0.44	4.14	I(1)	0.60	6.17	I(1)
fdi	3.70	8.75	I(0)	4.35	7.36	I(0)	1.31	5.27	I(1)
dpi	2.61	5.96	I(1)	0.50	3.54	I(1)	0.70	6.12	I(1)
xpt	0.57	126.18	I(1)	0.38	5.95	I(1)	0.61	6.14	I(1)
rer	2.75	4.73	I(1)	1.46	5.67	I(1)	1.66	6.37	I(1)
exd	2.52	4.83	I(1)	1.27	6.17	I(1)	0.45	5.37	I(1)

Note: ADF value at 5% level of significance is 2.94

Source: Author's computation, 2021 (Data from World Development Indicators, 2020)

Table 4.1 shows that the series in Nigeria and South Africa were integrated of order zero and one. In Ghana, the series were integrated of order one. Therefore, the null hypothesis that all the data in the series have unit root could not be rejected at five per cent significance level (lsf). Then the study proceeded to determine the relationship between private investment and poverty reduction in the selected SSA countries using pairwise correlation analysis. The result is presented in Table 4.2.

Table 4.2: Result of Correlation Analysis

	Nigeria	South Africa	Ghana
Variables	pov	Pov	Pov
pov	1.00	1.00	1.00
fdi	0.29	0.16	0.88
dpi	0.98	0.95	0.99
xpt	0.99	0.70	0.99
rer	-0.26	-0.61	-0.49
exd	0.42	0.48	0.58

Source: Author's computation, 2021 (Data from World Development Indicators, 2020)

Table 4.2 shows that domestic private investment and exports had positive and strong association with poverty reduction in the three countries. Foreign direct investment and external debt were positively but weakly associated with poverty reduction in Nigeria and South Africa. However, in Ghana, foreign direct investment showed positive and strong association with poverty reduction, while external debt was positively but moderately associated with poverty reduction. Real exchange rate showed negative association with poverty reduction in the three countries. In Nigeria, real exchange rate was weakly associated with poverty reduction, while in South Africa and Ghana, real exchange rate was moderately associated with poverty reduction. Therefore, the null hypothesis of no correlation between poverty reduction and the explanatory variables was rejected in the three countries. Thereafter the study proceeded to test for the existence of long-run relationship among the variables. Since the series were integrated of a combination of order zero and one, Autoregressive distributed lag (ARDL) Bounds test was used to check the possibility of convergence of the variables in the long-run. The result of the Bounds test is presented in Table 4.3.

Table 4.3: Result of ARDL Bounds Test for Nigeria

Test Statistic	Nigeria	South Africa	Ghana	K
F-statistic	9.37	8.03	5.79	3
Critical Value Bounds				
Significance	10 Bound	11 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, 2021 (Data from World Development Indicators, 2020)

In the three selected SSA countries, F-statistic was greater than the k-value as well as the lower and upper bounds; even at one percent lsf. Thus, the result provides evidence to the existence of long-run relationship among the variables. Also, the Akaike information criteria graphs (Appendices 1, 6, and 11) for the three countries show that the models were well-fitted. Therefore, the study proceeded to examine the effect of the explanatory variables on poverty reduction using the ARDL technique since the series were stationary on the combination of level [I(0)] and first difference [I(1)]. The ARDL result is presented in Table 4.4.

Table 4.4: Result of ARDL Short-Run and Long-Run Estimates

Short-Run Estimates

	Nigeria		**South Africa**		**Ghana**	
Variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
D(POV(-2))	0.94	0.01***				
D(POV(-3))	1.78	0.02**	0.36	0.04**		
D(FDI)			0.34	0.01***		
D(FDI(-1))	0.03	0.07*				
D(FDI(-3))	0.07	0.02**				
D(FDI(-4))			-0.01	0.03**		
D(DPI)	0.44	0.06*	0.60	0.00***		
D(DPI(-1))	0.35	0.09*			0.08	0.01***
D(XPT)			-0.24	0.06*	0.31	0.00***
D(XPT(-3))	-0.32	0.03**	-0.30	0.01***		
D(XPT(-4))			0.15	0.05***		
D(RER)	0.24	0.02**	-0.22	0.01***		
CointEq(-1)	-1.68	0.03**	-1.24	0.02**	-0.52	0.00***

Long-Run Estimates

	Nigeria		South Africa		Ghana	
Variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
FDI	**-0.10**	**0.00*** **	**-0.01**	**0.17**	**-0.01**	**0.06***
DPI	**-0.17**	**0.14**	**0.38**	**0.00*** **	**0.04**	**0.47**
XPT	**0.41**	**0.00*** **	**-0.27**	**0.00*** **	**0.28**	**0.00*** **
RER	**0.15**	**0.01*** **	**-0.18**	**0.00*** **	**0.00**	**0.75**
EXD	**-0.03**	**0.38**	**-0.00**	**0.47**	**0.03**	**0.24**
C	**1.69**	**0.39**	**7.13**	**0.00*** **	**-0.56**	**0.28**

Source: Author's computation, 2021 (Data from World Development Indicators, 2020)

Table 4.4 shows the short-run and long-run ARDL results. The short-run result shows that the speed of adjustment of poverty reduction to changes in the explanatory variables is negative and significant at the five percent lsf for Nigeria and South Africa, and at one percent lsf for Ghana. This implies that the explanatory variables have joint statistical significance in explaining changes in poverty reduction in Nigeria. The result further shows that lagged poverty reduction is statistically significant in explaining changes in current poverty reduction in Nigeria and South Africa at one percent lsf. The coefficients of lagged poverty were positive both in Nigeria and South Africa. This implies that previous poverty reduction efforts positively impacts current poverty reduction effort. Foreign direct investment was statistically significant in explaining changes in poverty reduction only in South Africa at one percent lsf. The result further shows that a unit increase in foreign direct investment will lead to an approximately 0.3 unit increase in poverty reduction. This result agrees with Yohanna (2013) and Anigbogu, Edoko and Okoli (2016), who noted that foreign direct investment positively impacts per-capita income. Also, lagged foreign direct investment was statistically significant in explaining changes in poverty reduction in Nigeria and South Africa. In the short-run, previous foreign direct investment in the Nigerian economy will be beneficial to poverty reduction, while previous foreign direct investment will be harmful to poverty reduction in South Africa.

Domestic private investment was statistically significant in explaining changes in poverty reduction both in Nigeria and South Africa at the 10 percent and one percent lsf. The result further shows that in Nigeria, a unit increase in domestic private investment will lead to an approximately 0.4 unit increase in poverty reduction. Similarly, a unit increase in domestic private investment will lead to an approximately 0.6 unit increase in poverty reduction in

South Africa. The above findings contradict the finding of Tobondo, Nurdin & Jokolelono (2021), who concluded that private investment has no effect on poverty level. Furthermore, lagged domestic private investment was statistically significant in explaining changes in poverty reduction in Nigeria and Ghana at the 10 percent and one percent lsf. Lagged domestic private investment was positively signed. This implies that in both countries, increase in previous domestic private investment will lead to increase in poverty reduction. Hence, domestic private investment will contribute positively to poverty reduction in Nigeria and Ghana in the short-run.

Exports in South Africa and Ghana were statistically significant in explaining changes in poverty reduction at 10 percent and one percent lsf. In the short-run, a unit increase in exports will lead to an approximately 0.2 unit decrease in poverty reduction in South Africa. This implies that exports of domestically produced goods will be detrimental to poverty reduction. This might be due to the fact that South Africa majorly exports agricultural goods produced by small-holder farmers. On the other hand, a unit increase in exports in Ghana will lead to an approximately 0.3 unit increase in poverty reduction. This implies that exports will aid poverty reduction in Ghana. The result further shows that lagged exports was statistically significant in explaining changes in poverty reduction in Nigeria and South Africa at the five percent and one percent lsf. Lagged exports in both countries were negatively signed. This implies that increase in previous exports will lead to decrease in poverty reduction in Nigeria and Ghana. This result might be due to the fact that Nigeria is a major exporter of primary products and are dependent on foreign countries for other commodities. Hence, the impact of net exports on gross national income will be negative. Also, Ghana exports minerals like gold and diamond in small quantities, which might not significantly increase the gross national income per capita.

Real exchange rate was statistically significant in explaining changes in poverty reduction in Nigeria and South Africa at the five percent and one percent lsf. In the short-run, a unit increase in the real exchange rate will lead to an approximately 0.2 unit increase in poverty reduction. Contrariwise, a unit increase in the real exchange rate in South Africa will lead to an approximately 0.2 unit decrease in poverty reduction in the short-run.

In the long-run, the constant term was only statistically significant in explaining changes in poverty reduction in South Africa at the one percent lsf. The long-run result shows that a unit increase in the intercept will lead to an approximately 7.1 unit increase in poverty reduction. In Nigeria and Ghana, the intercept was insignificant in explaining changes in poverty reduction. The long-run result further shows that all explanatory variables were statistically significant in explaining changes in poverty reduction at the one percent lsf. Foreign direct investment was negatively significant in explaining changes in poverty reduction. A unit increase in foreign direct investment will lead to an approximately 0.1 unit and 0.01 unit decrease in poverty reduction in Nigeria and Ghana respectively. This implies that in the long-run, foreign direct investment will be detrimental to poverty reduction. This result is in line with the finding of Wardani, Kornita and Taryono (2014).

Furthermore, in the long-run, domestic private investment was positively significant in explaining changes in poverty reduction only in South Africa. The result shows that a unit increase in domestic private investment will lead to an approximately 0.4 unit increase in poverty reduction. This implies that increase in domestic private investment will be beneficial in poverty reduction in South Africa. This result contradicts Marsoit, *et al*. (2015), who found that private investment has no effect on poverty level. Similarly, the long-run result provides evidence to the fact that domestic private investment will positively impact poverty reduction in Ghana, while domestic private investment will negatively impact poverty reduction in Nigeria. This result implies that the current level of domestic private investment in Nigeria is unsustainable to positively impact poverty reduction. The current findings about the impact of domestic private investment on poverty contradicts Tobondo, Nurdin & Jokolelono (2021), who found that domestic private investment has no effect on poverty level.

The long-run result further shows that exports was positively significant in explaining poverty reduction both in Nigeria and Ghana, while exports was negatively significant in explaining poverty reduction in South Africa. The result shows that a unit increase in exports will lead to an approximately 0.4 unit and 0.3 unit increase in poverty reduction in Nigeria and Ghana respectively. This implies that increase in exports of domestically produced goods in Nigeria and Ghana will aid poverty reduction. However, in South Africa, a unit increase in exports will lead to an approximately 0.3 unit decrease in poverty reduction in the long-run. This result implies that increase in exports of domestically produced goods will be harmful to poverty reduction in South Africa. This result corroborates the shot-run result; showing that the current level of exports in South Africa will not benefit citizens in the long-run, in terms of poverty reduction.

Moreover, in the long-run, real exchange rate was positively significant in explaining changes in poverty reduction in Nigeria. The result shows that a unit appreciation in the real exchange rate will lead to an approximately 0.2 unit increase in poverty reduction in Nigeria. In Ghana, real exchange rate was statistically insignificant but positively impacts poverty reduction. However, in South Africa, real exchange rate was negatively significant in explaining changes in poverty reduction. The long-run result shows that a unit appreciation in the real exchange rate will lead to an approximately 0.2 unit decrease in poverty reduction in South Africa. This unfavourable impact of the real exchange rate on poverty reduction might be due to the exports of the few domestically produced consumer goods, which are insufficient for the South African citizens.

The long-run result further shows that in the three countries, external debt was statistically insignificant in explaining changes in poverty reduction. Also, the coefficient of external debt in Nigeria and South Africa were positively signed, while external debt was negatively signed in Ghana. The result implies that accumulation of external debt in Nigeria and South Africa might be sustainable in the long-run if channelled into productive sectors, while the accumulation of external debt in Ghana might be unsustainable.

Post-estimation tests carried out include Ramsey-reset test for stability, Jarque-Bera normality test, Breusch-Godfrey test for serial correlation and Breusch-Pagan-Godfrey test

for heteroskedasticity. The results of the tests are presented in Appendices 2,3,4,5,7,8,9,10,12,13,14,15 for series on Nigeria, South Africa and Ghana respectively. The non-significance of the F-statistic in the results of the post-estimation tests provide evidence to the fact that the series are stable, normally distributed, non-serially correlated and void of heteroskedasticity.

Discussion on Findings

This study found that there is a co-movement between private investment and poverty reduction. The link between domestic private investment and poverty reduction in Nigeria, South Africa and Ghana is very strong. In Ghana, the link between foreign direct investment and poverty reduction is very strong, while the link between foreign direct investment and poverty in Nigeria and South Africa is weak.

Furthermore, the study found that in the short-run, domestic private investment was beneficial in Ghana, Nigeria and South Africa. In the long-run, domestic private investment was beneficial only in South Africa. In the long-run domestic private investment turned out to be harmful in Nigeria. Also, in the long-run, a positive but insignificant impact of domestic private investment on poverty reduction was noticed. This implies that the current level of domestic private investment in Nigeria and Ghana are unsustainable. Besides, the impact of foreign direct investment on poverty reduction was only beneficial in Nigeria and South Africa in the short-run. The long-run negatively significant impact of foreign direct investment on poverty reduction in Nigeria and Ghana shows that foreign direct investment in both countries is equally unsustainable. This might be due to unfavourable business environment, which discourages foreign investors in these countries. The unfavourable environmental factors include infrastructure deficiency and high level of corruption in institutions among others (Anwana & Affia, 2018).

The significance of the real exchange rate in Nigeria and South Africa, both in the short-run and long-run shows its relevance in reducing poverty level. In the short-run, exports in Nigeria and South Africa were harmful, while in Ghana, exports were beneficial. This might be attributed to the composition of exports in these countries. Huge exports of consumer goods may be detrimental to the local economy. In the long-run, exports in Nigeria and Ghana were beneficial in poverty reduction, while export was harmful in poverty reduction in South Africa. This might be due to the negative impact of an appreciation in the real exchange rate on exports in South Africa. An appreciation in the real exchange rate will shift demand in favour of foreign goods.

5. Conclusion and Recommendations

The study examined the impact of private investment on poverty reduction in selected sub-Sahara African countries – Ghana, Nigeria and South Africa. The study covered a period of forty years; spanning 1981 to 2020 and data was sourced from the World Bank, World Development Indicators (2020). Private investment was decomposed into foreign direct investment and domestic private investment. Other control variables influencing private

investment like exports, real exchange rate and external debt were included in the model. Based on the Marxian theoretical framework, correlation analysis and the autoregressive distributed lag technique were used to estimate the short-run and long-run impacts of the explanatory variables on poverty reduction. The study concluded that both domestic private investment and foreign direct investment have positive association with poverty reduction. However, FDI was weakly associated with poverty reduction in Nigeria and South Africa.

In addition, the regression result shows that in the short-run, DPI positively and significantly impacted on poverty reduction in Ghana, Nigeria and South Africa. Also, in the long-run, DPI positively impacted on poverty reduction in Ghana and South Africa; though the impact on Ghana was insignificant. In the long-run, the impact of DPI on poverty reduction in Nigeria was negative but insignificant. On the other hand, FDI positively and significantly impacted on only Nigeria and South Africa in the short-run. In the long-run, FDI negatively impacted on the three countries; but the impact on South Africa was insignificant.

Based on the findings of the study, it was recommended that in order to reduce poverty, Nigeria and Ghana should look inwards. Efforts should be made to improve domestic private investment in Nigeria and Ghana rather that concentrating on attracting foreign investment. Nigeria and Ghana should channel their domestic resources into productive sectors. Policy makers in Nigeria and Ghana should create conducive business environment to attract foreign direct investment in the economies. In addition, it has become imperative that SSA countries boost their exports because of the high level of significance (one percent) in poverty reduction in the long-run. Furthermore, monetary authorities should note the significant impact of the real exchange rate in influencing poverty reduction in Nigeria and South Africa and work hard to maintain a favourable exchange rate position. According to extant literature, a negative real exchange rate will lead to depreciation of the dollar. Consequently, there will be decrease in the prices of domestic goods and increase in exports. Finally, the significance of the constant term and positive coefficient in South Africa shows the importance of maintaining conducive macroeconomic environment for investment.

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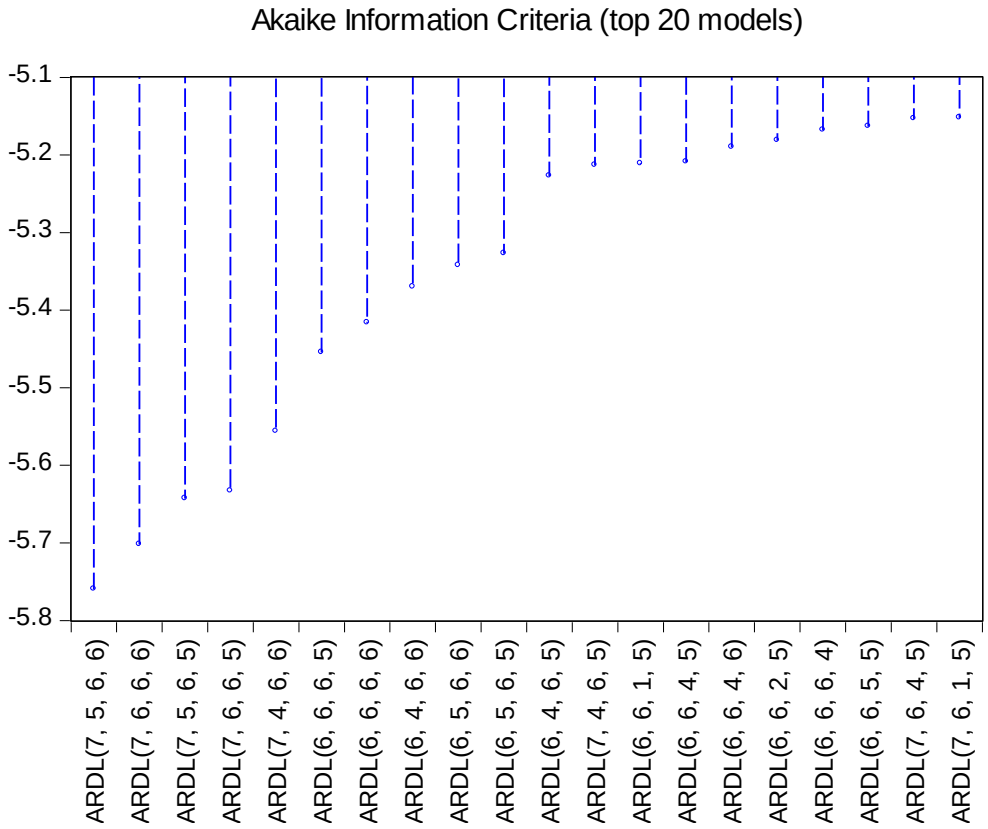
Appendices

Appendix 1: Fitness of model specification for Nigeria



Source: Author's computation, 2021 (Data from World Development Indicators, 2020)

Appendix 2: Stability Test for series on Nigeria

Ramsey RESET Test

Specification: POV POV(-1) POV(-2) POV(-3) POV(-4) POV(-5) POV(-6) POV (-7) FDI FDI(-1) FDI(-2) FDI(-3) FDI(-4) FDI(-5) DPI DPI(-1) DPI(-2) DPI(-3) DPI(-4) DPI(-5) DPI(-6) XPT XPT(-1) XPT(-2) XPT(-3) XPT(-4) XPT(-5) XPT(-6) EXD RER C

Omitted Variables: Squares of fitted values

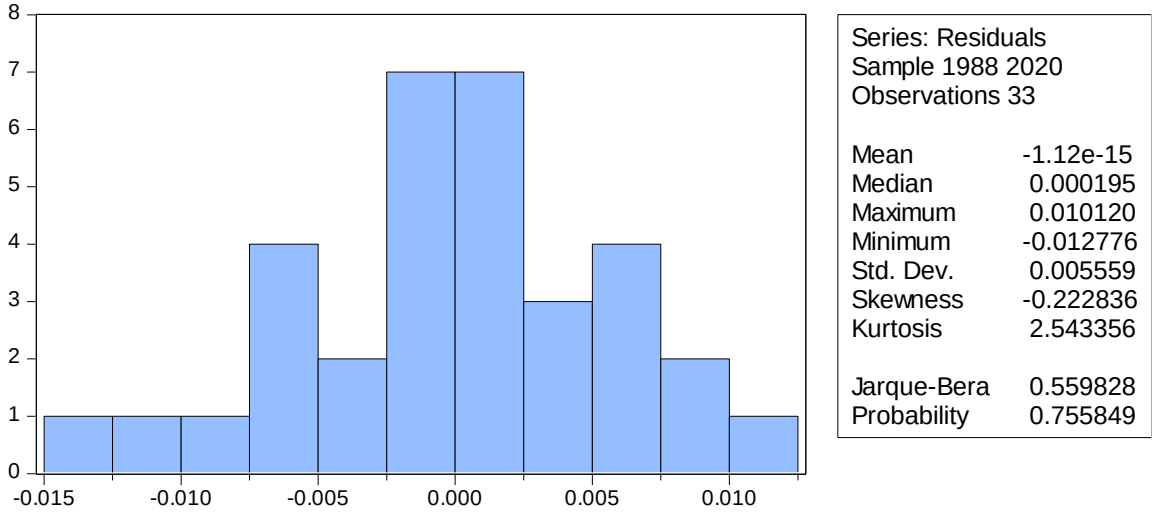
	Value	df	Probability
t-statistic	0.66614	2	0.5739
F-statistic	0.443752	(1, 2)	0.5739

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.000180	1	0.000180
Restricted SSR	0.000989	3	0.000330
Unrestricted SSR	0.000809	2	0.000405

Source: Author's computation, 2021 (Data from World Development Indicators, 2020)

Appendix 3: Normality Test for series on Nigeria



Source: Author's computation, 2021 (Data from World Development Indicators, 2020)

Appendix 4: Test for Serial Correlation (Nigeria)

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	69.32468	Prob. F(2,1)	0.1846
Obs*R-squared	32.76369	Prob. Chi-Square(2)	0.0000

Source: World Development Indicators (2020)

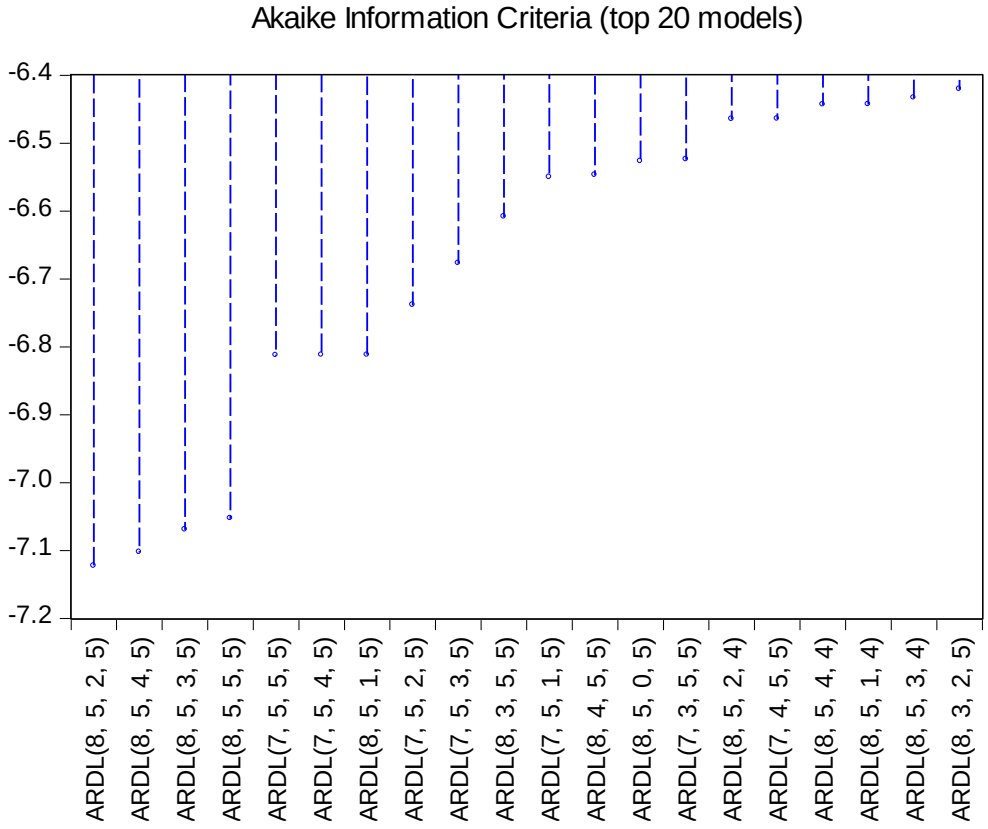
Appendix 5: Test for Heteroskedasticity (Nigeria)

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.111946	Prob. F(29,3)	0.5466
Obs*R-squared	30.19120	Prob. Chi-Square(29)	0.4045
Scaled explained SS	0.192545	Prob. Chi-Square(29)	1.0000

Source: Author's computation, 2021 (Data from World Development Indicators, 2020)

Appendix 6: Fitness of model specification for South Africa



Source: Author's computation, 2021 (Data from World Development Indicators, 2020)

Appendix 7: Stability Test for series on South Africa

Ramsey RESET Test

Specification: POV POV(-1) POV(-2) POV(-3) POV(-4) POV(-5) POV(-6) POV(-7) POV(-8)

FDI FDI(-1) FDI(-2) FDI(-3) FDI(-4) FDI(-5)
DPI DPI(-1) DPI(-2)

XPT XPT(-1) XPT(-2) XPT(-3) XPT(-4) XPT(-5)
EXD RER C

Omitted Variables: Squares of fitted values

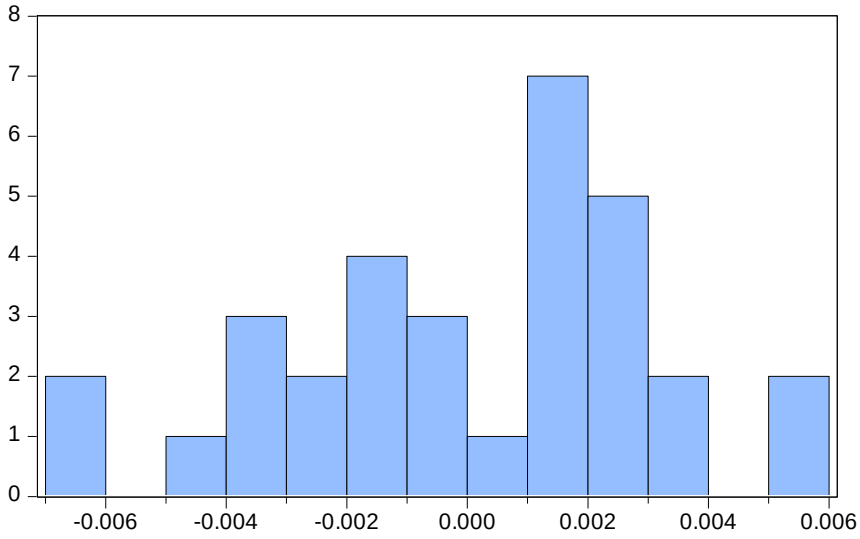
	Value	Df	Probability
t-statistic	4.503392	5	0.2064
F-statistic	20.28054	(1, 5)	0.2064

F-test summary:

	Sum of Sq.	Df	Mean Squares
Test SSR	0.000239	1	0.000239
Restricted SSR	0.000298	6	4.96E-05
Unrestricted SSR	5.88E-05	5	1.18E-05

Source: Author's computation, 2021 (Data from World Development Indicators, 2020

Appendix 8: Normality Test for series on South Africa



Series: Residuals	
Sample 1989 2020	
Observations 32	
Mean	6.22e-15
Median	0.001027
Maximum	0.005523
Minimum	-0.006984
Std. Dev.	0.003098
Skewness	-0.374788
Kurtosis	2.531966
Jarque-Bera	1.041226
Probability	0.594156

Source: Author's computation, 2021 (Data from World Development Indicators, 2020)

Appendix 9: Test for Serial Correlation (South Africa)

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.257616	Prob. F(2,4)	0.2207
Obs*R-squared	16.96811	Prob. Chi-Square(2)	0.0002

Source: Author's computation, 2021 (Data from World Development Indicators, 2020)

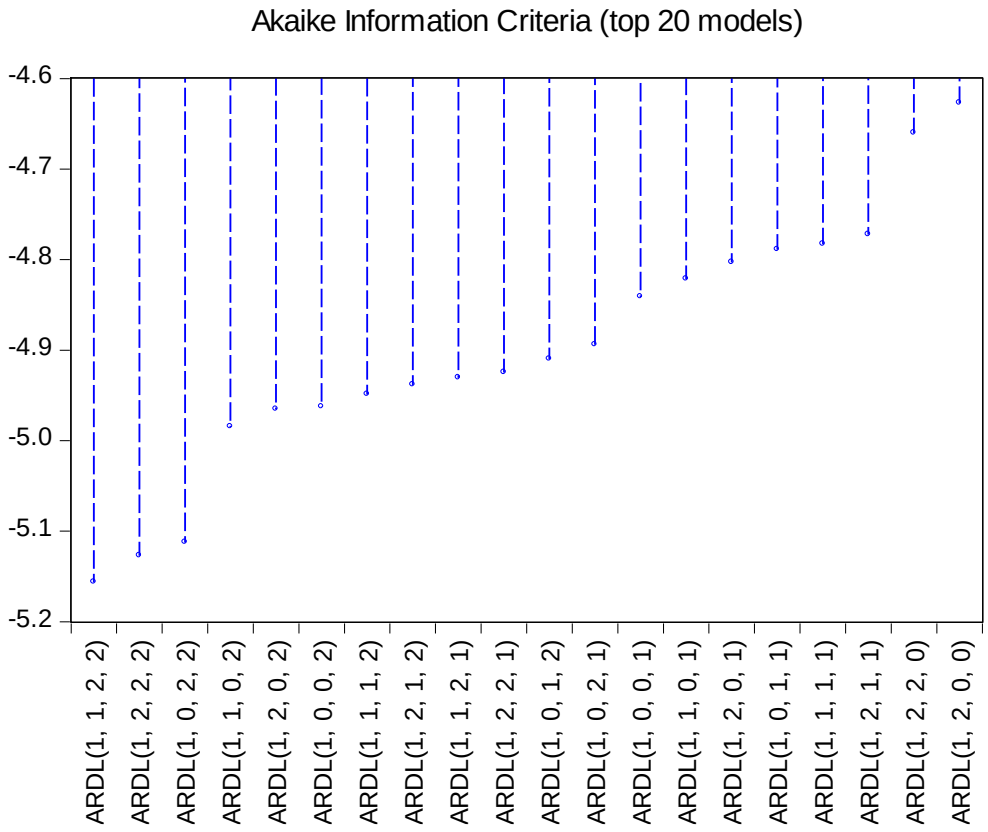
Appendix 10: Test for Heteroskedasticity (South Africa)

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.124862	Prob. F(25,6)	0.9999
Obs*R-squared	10.95093	Prob. Chi-Square(25)	0.9932
Scaled explained SS	0.294899	Prob. Chi-Square(25)	1.0000

Source: Author's computation, 2021 (Data from World Development Indicators, 2020)

Appendix 11: Fitness of model specification for Ghana



Source: Author's computation, 2021 (Data from World Development Indicators, 2020)

Appendix 12: Stability Test for series on Ghana

Ramsey RESET Test

Specification: POV POV(-1) FDI FDI(-1) DPI DPI(-1) DPI(-2) XPT XPT(-1)

XPT(-2) EXD RER C

Omitted Variables: Squares of fitted values

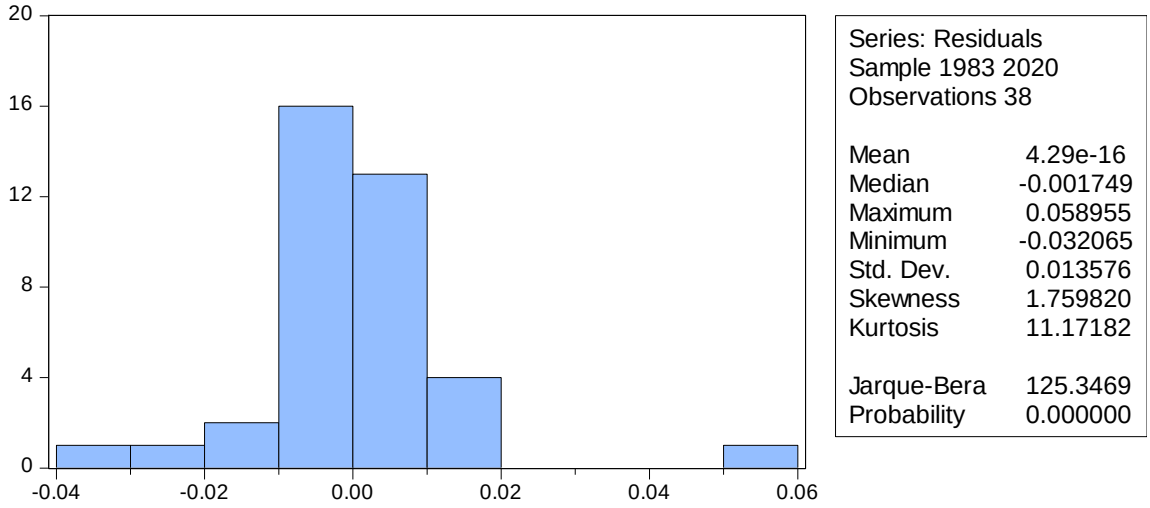
	Value	df	Probability
t-statistic	1.739597	25	0.1942
F-statistic	3.026197	(1, 25)	0.1942

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.000736	1	0.000736
Restricted SSR	0.006820	26	0.000262
Unrestricted SSR	0.006083	25	0.000243

Source: Author's computation, 2021 (Data from World Development Indicators, 2020)

Appendix 13: Normality Test for series on Ghana



Source: Author's computation, 2021 (Data from World Development Indicators, 2020)

Appendix 14: Test for Serial Correlation (Ghana)

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	15.05496	Prob. F(2,24)	0.5431
Obs*R-squared	21.14542	Prob. Chi-Square(2)	0.0000

Source: Author's computation, 2021 (Data from World Development Indicators, 2020)

Appendix 15: Test for Heteroskedasticity (Ghana)

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.429518	Prob. F(11,26)	0.2186
Obs*R-squared	14.32098	Prob. Chi-Square(11)	0.2157
Scaled explained SS	34.09736	Prob. Chi-Square(11)	0.0003

Source: Author's computation, 2021 (Data from World Development Indicators, 2020)