



## IMPACT OF SAVINGS ON ECONOMIC GROWTH IN AFRICA

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### ABSTRACT

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This paper investigates the impact of savings on economic growth in Africa. Annual data covering thirty African countries based on data availability for the period of thirty-five years starting from 1980 were used. The study was found to be imperative because extant studies in this line were of mixed results. Panel Estimated Generalised Least Squares (EGLS) with pooled, fixed and random effects estimations were carried out, but Pooled Panel EGLS with cross-section Seemingly Unrelated Regression (SUR) weight estimation was explained. The study revealed that savings contribute 3.96 per cent to economic outputs when increased by a percentage. Meanwhile, a per cent increment in each of the foreign direct investment (FDI) and current account balance will positively impact economic growth by 18.7 and 4.6 per cent respectively. Also, there is no causality between domestic saving and economic growth. But bidirectional causality exists between foreign direct investment and domestic saving. The study concluded that saving is relevant to economic growth in Africa, though, its contribution is very low when compared to FDI's impact but very important. The current account balance is very relevant to foreign direct investment and domestic saving. It is recommended that policies favouring savings should be encouraged such as universal coverage pension and grass-roots oriented saving schemes. Also, a surplus current account balance should be maintained in the continent to attract more foreign direct investment and improve domestic savings.

**Contribution/Originality:** This study reinforces the hypothesis of no causality between saving and economic growth especially in Africa refutes both Solow and Keynes precedence hypothesis as absence of causality nullifies the hypothesis. Although, saving is positively link to growth, but Current Account Balance is of essence in driving Savings and FDI.

## 1. INTRODUCTION

Savings play a crucial role in economic development (Mckinnon, 1973; Shaw, 1973; Sinha & Sinha, 1998). A lot of studies on these concepts backed their positive relationship (King & Levin, 1994; Maddison, 1992; Modigliani, 1970; Modigliani., 1990). Most countries in Africa are developing countries, relying on savings toward economic growth. Nigeria for instance in the 1980s established various financial institutions under the categorisation of development banks to encourage savings in the grassroots and reach the unbanked populace. This was made possible through the Post Office Savings (Federal Savings), defunct People's Bank and Community Bank (now Microfinance Bank). Generally, most countries in the continent reformed their pension scheme and became more structured for effectiveness and efficiency towards improved savings.

Saving is very key to the development of the countries in the continent. This is a well-known fact, however, the big shot countries in the continent rely even more on the savings from another continent. This overture is not in the deep interest of any leaders in the continent because of its possible neo-colonialism effect. African countries strengthened their savings capacities in the 1970s and 80s but unfortunately, savings in many African countries have been on a decline rate. On average, savings were 23.9 and 22.5 per cent of GDP in the 1970s and 1980s against 17.5 per cent in 1999 (United Nations, 2001). According to Loaya, Schmidt-Hebbel, and Servén (2000) on average, East Asia saves more than 30 per cent of gross national disposable income (GNDI), while Sub-Saharan Africa saves less than 15 per cent and the African continent only saves slightly above 15 per cent.

Considering the relevancy of savings to growth and development, which engenders political stability, capital stock and productivity, increased income to households and entrepreneur, timely pension payment, increased tax revenue to government and resources for the overlapped generations; it is imperative to consider how much has been saved in the continent and its contribution to the African economic growth, even in the presence of declining saving rate. More so, governments in the African continent hardly advocate savings deepening for the sake of expansion except when need arises. It is a conventional reasoning that saving impact economic growth positively through investment mechanism (Bankole & Fatai, 2013; Domar, 1946; Harrod, 1939; Solow, 1956) and more so, that causality exists between saving and economic growth. Though, the causality result between the two variables is mixed. Many studies found no causality between the two variables (Ijeoma, Paramaiah, & Moshoeshoe, 2011; Misztal, 2011; Mohan, 2006; Sothan, 2014) while some other studies found causality between the two variables (Anoruo, 2001; Aurangzeb & Haq, 2012; Bankole & Fatai, 2013) this is without consideration to which of the two precedes the other. Therefore, we found it reasonable to assess the impact and a possible causality between domestic saving and economic growth in Africa.

## 2. LITERATURE REVIEW

### 2.1. Theoretical Review

Harrod (1939) and Domar (1946) model supported the relevancy of the savings in the economic growth model. The model put forward increment in the savings rate as one of the two means of increasing economic growth. While the second point is efficient use of capital. Solow's neoclassical model (exogenous growth model): The neoclassical theory, which considered endogeneity of some variables in the AK model, is taken as the theoretical basis for this paper. Solow (1956) asserts that saving is imperative in increasing economic growth, which is mostly due to the weight attached to the effects of economic growth. Economic growth accounts for differences in the standard of living among countries of the world. Meanwhile, the implications of this differences in standards of living for human welfare are enormous. Conclusively, from Solow model, the accumulation of physical capital cannot account for either the vast growth over time in output per person or the vast geographic differences in output per person (Romer, 1996). Specifically, the mechanism through which capital accumulation affects output is through the conventional channel that capital makes a direct contribution to production (Romer, 1996). Solow production function:  $Y(t) = F(K(t), A(t)L(t))$  where t denotes time.

According to Romer (1996) time does not enter the production function directly, but only through K, L, and A; that is, the output changes over time only if the inputs into production change. Where K is capital and AL is in the multiplicative term, and it implies effective labour. Derivatives of L, A, and K to time are:

$$\dot{L}(t) = nL(t)$$

$$\dot{A}(t) = gA(t)$$

$$\dot{K}(t) = sY(t) - \delta K(t)$$

The model is set in continuous time; that is, the variables of the model are defined at every point in time.

$Y/AL$  (Output per unit of effective labour) is given by  $f(K)$ , thus;

$$\dot{K}(t) = sf(K(t)) - (n + g + \delta)K(t)$$

From the immediate equation above, which is the key equation of the Solow model. It implies that the rate of change of the capital stock per unit of effective labour is the difference between two terms (Romer, 1996). The first,  $Sf(K)$ , is actual investment per unit of effective labour; output per unit of effective labour is  $f(K)$ , and the fraction of that output that is invested is  $s$  (saving) (Romer, 1996). Also, both the major school of thoughts after the Great Depression of the 1930s subscribed to the relevancy of savings in achieving economic growth. The Monetarists emphasizes fiscal saving because of its ability in instilling confidence in the private sector and this helps in checking any possibility of the downward trend in economic activities as a result of a contraction in fiscal spending. While, the Keynesians considers saving as essential in maintaining economic growth especially during a period of overheating and price bubble bursting (Fabris & Galić, 2015).

## 2.2. Conceptual Review

### 2.2.1. Savings Concept

As earlier stated, the gross domestic saving is the point of consideration for this paper. According to the national accounting system in the United Nations. (2009) gross domestic saving is the total national disposable income after final consumption expenditure (total consumption); algebraically,  $S = Yd - C$ . National disposable income is GDP plus net factor income and net transfers from abroad whereas national consumption can be disaggregated into household consumption, business consumption and government consumption (Barro, 2009). Thus, national savings equate to disposable national income excluding national consumption. This study made use of gross domestic saving, which constitutes household, business and government saving.

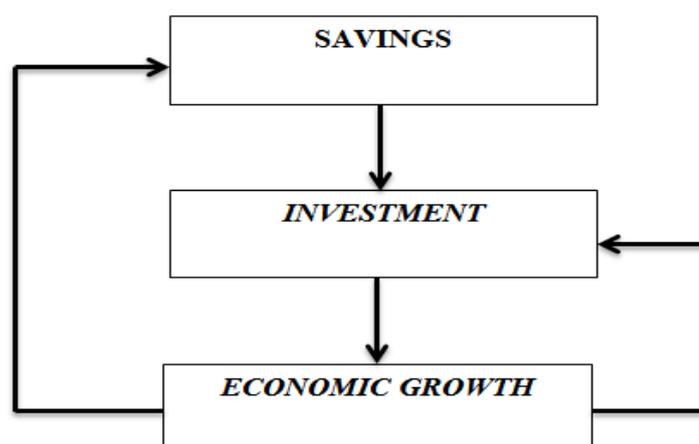


Figure-1. Simple Schematic relationship flow between savings, investment and economic growth.

Saving is always better off, than sourcing finances abroad as a means of curbing the shortage of capital accumulation, as borrowing abroad is not a costless way out (Lewis, 1982). “Developing countries by definition are countries almost short of capital. Most can attract some private capital inflow on internationally competitive terms. Meanwhile, the poorer ones depend largely on official development assistance on concessional or grant terms. But

all capital inflow involve some costs, financial or political” (Arndt, 1991). The East Asian countries which are recognised as the newly industrialised economies (Hong Kong, Korea, Singapore and Taiwan) are countries which stand out with some of the highest domestic savings rates in the world. Also, in recent years they are the countries with large current account surpluses signifying export of domestic savings (*Ibid*).

### 2.2.2. Savings and Economic Growth

Over three decades ago, reform policies such as the (World Bank) Structural Adjustment Programmes (SAPs) initiated in the 1980s and 1990s in the continent aimed at stimulating growth. The policies were founded on the premise that raising domestic savings would ignite growth. “Thus, financial market liberalization, especially the removal of interest rate repression, was expected to raise real interest rates and in turn raise domestic savings and therefore growth” (Ndikumana, 2014). It has been observed over time that higher savings rates tend to go *pari passu* with higher income growth. In the words of Loaya et al. (2000) it is captured as proof of the existence of both virtuous cycles of savings and prosperity, and poverty traps of insufficient savings and stagnation.

Meanwhile, saving is identified as one of the factors that facilitate economic growth, though, through the mechanism of investment (Elias & Worku, 2015; Saltz, 1999; Stern, 1991). Besides, saving is a potent indicator of an improved standard of living in an economy. Domestic savings were found to be positively related to the per capita GDP in Africa but there has been a decline in the correlation coefficient from 0.74 in 1990-1995 to 0.58 in 2011-2016. Even recently, the saving rate in the continent is yet to match that of counterpart countries in Asia and the Pacific (African Development Bank, 2018).

### 2.2.3. Savings as a Hedge Against Shocks

Romer (1996) in analysing Solow (1956) points out that if at all saving is not necessary for anything, it is needed for replacing factor cost of production, that is, depreciation of machinery used in production. This implies that saving is a buffer against shocks. Further to this, when national savings rate broadly in line with the economy’s investment rate; it tends to reduce vulnerability to sudden shifts in international capital flow, which is affected by the factors beyond the control of the recipient country (Loaya et al., 2000).

### 2.3. Empirical Review

According to Sothan (2014), domestic saving and economic growth are independent of each other in the case of Cambodia, because no direction of causality could be established with country’s data within 1989 to 2012. This conclusion was reached when Sothan (2014) investigated the prevailing relationship between saving and economic growth in Cambodia. Similarly, a study by Ijeoma et al. (2011) found no direction of causality between saving and economic growth in Lesotho, that is, saving and economic growth are independent of each other. Also, Misztal (2011) found a similar result in studies on developed and developing countries. Interestingly, Mohan (2006) found intrigue results in the study of the countries with different income levels. The study found mixed results, with no causality between the saving and economic growth in Low-Income Countries and found economic growth to be causing saving in both the Upper-Middle Income Countries and High-Income Countries except for Singapore. Furthermore, bidirectional causality mostly prevails in the High-Income Countries. A finding of no causality could signal low savings and as well unfavourable or deficit current account balance, instances of which most African countries are well exposed to, due to their indebtedness.

Bankole and Fatai (2013) investigated the relationship between savings and economic growth in Nigeria during 1980-2010. The study employed Granger-causality and Engle-Granger co-integration techniques to investigate the existence of a relationship if any (Bankole & Fatai, 2013). From the analysis, it found that causality runs from savings to economic growth in the country. Thus, the study favoured Solow’s Hypothesis -that saving precedes economic growth- to Keynesian theory. The study recommended that the government and policymaker should

employ policies that would accelerate domestic saving, so, as to increase economic growth in the country (Bankole & Fatai, 2013). Naraliyeva and Katircioglu (2006) investigated the long-run equilibrium relationship and the direction of causality between economic growth, domestic savings and foreign direct investment in Kazakhstan. The study employed Johansen's multivariate cointegration techniques and quarterly data for the period of 1993 and 2002. The study found that there is an existence of a long-run relationship between GDP and GDS, and between GDP and FDI, but it could not establish the same relationship between GDS and FDI. More so, it found that there is unidirectional causation running from GDS to GDP, as well as, unidirectional causation running from FDI to GDP (Naraliyeva & Katircioglu, 2006). It thereby suggested that the government of the country should pay more attention to make the environment better for foreign investors as well as to encourage increase domestic savings.

### 3. METHOD

#### 3.1. Sources of Data

We used secondary data derived from the World Bank's World Development Indicators covering a period of 1980 to 2014 and thirty (30) countries<sup>1</sup> in Africa.

#### 3.2. Method of Data Analysis

We examined the relationship that exists between savings and economic growth. Panel regression was deployed in investigating the impact of savings and economic growth in Africa, and preferably, Seemingly Unrelated Regression (SUR) was used, thereby, the effect was silenced since the fixed effect was the appropriate effect envisaged.

Equation 1: economic growth and savings model

$$LGDP_{it} = \delta_0 + \delta_1 LGDS_{it} + \delta_2 LFDI_{it} + \delta_3 LCAB_{it} + \mu_{it} \quad (1)$$

Where:

*LGDP = Logarithms of Gross Domestic Product*

*LGDS = Logarithms of Gross Domestic Savings*

*LFDI = Logarithms of Foreign Direct Investments*

*LCAB = Logarithms of Current Account Balance*

$\mu$  = Error term

*t = time trend identifier (= 1980, 1981, ..., 2014).*

*i = cross sectional dimension identifier (= 1, 2, ..., 30).*

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<sup>1</sup> Algeria, Benin, Botswana, Burkina Faso, Cameroon, Cape Verde, Congo Rep., Cote d'Ivoire, Ethiopia, Gabon, Gambia, Ghana, Guinea-Bissau, Guinea, Kenya, Liberia, Madagascar, Malawi, Mali, Mauritius, Morocco, Mozambique, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Sudan, Togo.

3.3. Theoretical or a Priori Expectations for Equation 1

$\delta_1, \delta_2$  and  $\delta_3 > 0$ . This implied that gross domestic savings (GDS), foreign direct investment (FDI) and current account balance (CAB) were expected to have a positive relationship with the gross domestic products (GDP) in the equation. Table 1 exhibits the variables used and their respective proxies.

Table-1. Variable Definition.

S/N	Variable	Proxy	Definition
i.	GDS	Gross Domestic Savings	Gross national income in addition to net transfers and minus total consumption.
ii.	GDP	Gross Domestic Products	PPP GDP is the gross domestic product.
iii.	FDI	Foreign Direct Investment	Foreign direct investment.
iv.	CAB	Current Account Balance	Aggregation of net exports of goods and services, net primary income, and net secondary income.

Note:

NB: All variables in monetary value are in US\$.

Source: World Bank (2015).

4. RESULTS AND DISCUSSION

The preliminary analyses such as descriptive statistics, unit-root tests, cointegration test as necessary and effect selection tests were carried out before model estimation. Panel regression with Seemingly Unrelated Regression (SUR) was adopted in clarifying the objective of the paper, even though, there was estimation from fixed and random effects separately.

4.1. Descriptive Statistics

The statistics show the average of LGDP, LGDS, LFDI and LCAB with statistics' value of 9.6362, 9.1452, 7.2767 and 0.3936 respectively, to be very close to each of their middle value, which is 9.6485, 10.6292, 7.7185 and 0, but with their middle value greater than their average value. Except for LCAB where the middle value, which is zero (0) is lesser than the average value of 0.3936. LCAB's middle value points at the fact that the data value has a negative value as well as the positive value. The minimum value of zero for LGDP, LGDS and LFDI does not necessarily implies that the variables have negative value but there are one or more periods without value other than zero (0). The standard deviation statistic showed that LGDP exhibited less variability (see Table 2 for the reference descriptive statistics).

4.2. Unit-Root Tests

The specified model provides evidence on the contribution of savings to economic growth. The stationary test was carried out on all the variables in the model. Table 3 shows the results of the unit-root tests as concerns the model's variables. The test involved two processes; one assumed common unit root test while the three other tests assumed individual unit root tests. The Levin, Lin & Chu  $t^*$  revealed that  $LGDP_{i,t}$  is stationary at first difference [that is I (1)] at 1 per cent statistical significance level with -16.5227 statistical value. The other statistics such as Im, Pesaran and Shin W-stat; ADF-Fisher Chi-square, and PP-Fisher Chi-square confirmed the individual stationary of the variable at the first difference (see Table 3, table for unit root test for economic growth and savings model). Also,  $LGDS_{i,t}$ ,  $LFDI_{i,t}$  and  $LCAB_{i,t}$  is stationary at first difference as indicated by the Levin, Lin & Chu  $t^*$  statistical values of -15.6875, -17.2090 and -4.60164, which was statistically significant at 1 per cent significance level respectively. Other statistic confirmed the individual stationary at first difference as well.

Table-2. Descriptive statistics for economic growth and savings model.

Variable	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Prob.	Sum	Sum Sq. Dev.	Obs.
LGDP	9.636296	9.648529	11.75474	0	1.049506	-5.00394	48.08852	93324.52	0	10118.11	10118.11	1050
LGDS	9.145261	10.62926	13.18662	0	4.035785	-1.72904	4.246204	559.596	0	9090.389	9090.389	994
LFDI	7.276703	7.718516	9.994977	0	2.088201	-2.45237	9.155273	2472.591	0	6971.082	6971.082	958
LCAB	0.393653	0	10.56264	0	1.882693	4.630271	22.71866	16768.61	0	333.8182	333.8182	848

Table-3. Unit-root tests for economic growth and savings model

Variable	Common unit root process		Individual unit root process						Decision-based on common unit root process	Level of Integration
	Levin, Lin & Chu t*		Im, Pesaran and Shin W-stat		ADF-Fisher Chi-square		PP-Fisher Chi-square			
	Statistic	Prob.	Statistic	Prob.	Statistic	Prob.	Statistic	Prob.		
LGDP <sub>it</sub>	-185.370	0.0000	-54.6064	0.0000	513.977	0.0000	548.624	0.0000	Stationary	I(1)
LGDS <sub>it</sub>	-15.6875	0.0000	-15.6107	0.0000	399.425	0.0000	450.481	0.0000	Stationary	I(1)
LFDI <sub>it</sub>	-17.2090	0.0000	-	-	324.793	0.0000	326.567	0.0000	Stationary	I(1)
LCAB <sub>it</sub>	-4.60164	0.0000	-5.15548	0.0000	30.2367	0.0000	30.2367	0.0000	Stationary	I(1)

4.3. Cointegration Test

Testing for the long-run relationship between the variables became feasible since all variables in the model were integrated at the same level which is the first difference.  $LGDP_{i,t}$ ,  $LGDS_{i,t}$ ,  $LFDI_{i,t}$ , and  $LCAB_{i,t}$ , exhibited a long-run relationship, which implies that the variables can be put together in a regression model. Table 4 shows the outputs of Kao Residual Cointegration Test. The results in the table under Kao Residual Cointegration Test confirmed the existence of long-run relationship among all the variables as indicated by the t-Statistic value of -8.3718 with probability value, statistically significant at 1 per cent significance level.

Table-4. Cointegration Test.

Kao residual cointegration test			
	t-Statistic	Prob.	Decision
ADF	-8.371889	0.0000	There is cointegration

4.4. Effects Selection

The outputs of the Redundant Fixed Effects Tests carried out vividly rejected the null hypothesis of no effects. The tests outputs buttressed the use of fixed effects in estimating the model. The test outputs exhibited in Table 5 shows that The Redundant Fixed Effects Tests indicated that the cross-section effects are not redundant as evidenced by both the Cross-section F and Cross-section Chi-square statistic and probability values, both statistically significant at 1 per cent significance level. Also, the next two statistic tests showed that period effect is not redundant as evidenced by both the Period F and Period Chi-square test statistics. The probability of both statistics upholds the null hypothesis of redundant period effects. The last two tests in the table revealed that the joint effects in the model are not redundant, and both tests, which are Cross-Section/Period F and Cross-Section/Period Chi-square were statistically significant at 1 per cent significance level. Fixed effects are the appropriate effect to be adopted going by the outputs of the Redundant Fixed Effects Tests.

Also, the Correlated Random Effects-Hausman Test was carried out individually for random cross-sectional and random period effects. However, Chi-Sq. Statistics of 22.0046 and 127.8163, both statistically significant at 1 per cent significance level could not accept the null hypothesis of no difference between the Fixed and Random Effects. Thereby, it was concluded that fixed effects are still appropriate if the model estimation would permit effects selection.

Table-5. Effects selection.

Redundant Fixed Effects Tests			
Test cross-section and period fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	12.586535	(29,655)	0.0000
Cross-section Chi-square	319.796898	29	0.0000
Period F	7.554857	(34,655)	0.0000
Period Chi-square	238.878657	34	0.0000
Cross-Section/Period F	11.625971	(63,655)	0.0000
Cross-Section/Period Chi-square	541.917026	63	0.0000
Correlated Random Effects - Hausman Test			
Test cross-section and period random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	22.004688	3	0.0001
Period random	127.816398	3	0.0000

4.5. Regression Estimation

Having affirmed that the variables in the model are stationary and that there is the existence of long-run relationship among them, then it was estimated. Effects selection tests carried out showed that fixed effects are the appropriate effects to use. Considering the descriptive statistics in Table 2, it shows that all the variables are not

normally distributed as proved by the Jarque-Bera statistic and this may imply possible heteroskedasticity. Even though, it is an expected development in panel data because of its cross-sectional feature, notwithstanding, there is still a need to control heteroskedasticity and possible autocorrelation in the data to have consistent and efficient estimators. Considering the three different outputs in the table, pooled estimation with cross-section SUR was considered to be efficient estimation.

Seemingly Unrelated Regression (SUR) is used because is the appropriate weight when time-series data are stacked to make the cross-sectional feature and covariance across the period and cross-sections are not constant. Generalized Least Squares (GLS) method with cross-section SUR was adopted to estimate the model. Fixed Effects on both period and cross-section was overruled by the use of cross-section SUR weight in correcting the problem of heteroskedasticity and autocorrelation.

As reported in Table 6, the estimation has 35 years period and 30 countries cross-sections, amounted to 722 pooled data in an unbalanced instance. The constant is statistically relevant at 1 per cent significance level. The probability value for each of the regressors in the model implies that the regressors are statistically significant at the 1 per cent significance level. LGDS has a coefficient of 0.0393 with a standard error of 0.0023. This implies that a percentage increase in gross domestic savings would lead to 3.93 per cent increment in gross domestic products. LFDI with a coefficient of 0.1876 and standard error of 0.0055 implies that a percentage change in foreign direct investment would lead to 18.76 per cent rise in the gross domestic products. Also, LCAB with 0.0463 coefficient and 0.0042 standard error implies that a percentage increment in current account balances would lead to 4.63 per cent rise in the gross domestic products. As a point of emphasis, all the coefficients are statistically relevant at 1 per cent statistical significance level.

Table-6. Panel regression output

Method: Panel EGLS with			
Dependent Variable: LGDP			
	Pooled (Cross-section SUR)	Fixed Effects	Random Effects
Variable			
LGDS	0.039308*** (0.002303) [17.06856]	0.110117*** (0.012874) [8.553160]	0.020704** (0.010434) [1.984237]
LFDI	0.187666*** (0.005545) [33.84683]	0.183964*** (0.023533) [7.817462]	0.132365*** (0.018664) [7.091792]
LCAB	0.046362*** (0.004208) [11.01675]	-0.095562*** (0.026040) [-3.669793]	0.031725* (0.017512) [1.811663]
C	0.135767*** (0.000588) [230.7006]	7.339986*** (0.167992) [43.69240]	8.414389*** (0.157575) [53.39913]
Weighted Statistics			
R-squared	0.836976	0.637121	0.106457
Adjusted R <sup>2</sup>	0.836295	0.600556	0.102724
F-statistic	1228.757***	17.42436***	28.51437***
Durbin-Watson Stat	1.145156	0.520528	0.530642
Unweighted Statistics			
R-squared	0.229893	-	0.196156
Durbin-Watson stat	0.461260	-	0.367759

Note:

NB: The value in the bracket is Standard Error, and the t-statistic value is in the parenthesis.

\*\*\* Indicates that the p-value is statistically significant at the 1 per cent significance level.

\*\* Indicates that the p-value is statistically significant at the 5 per cent significance level.

The R-squared of 0.8369 implies that the regressors account for almost 83.69 per cent of the total variation in the regressand. The adjusted R-squared implies that after adjusting for degree of freedom, the regressors would

still account for 83.69 per cent of the total variation in the regressand. The F-statistic of 1228.75 implies that the variables in the model are jointly significant, and this is statistically significant at the 1 per cent significance level (see Table 6 for the estimated outputs). The Durbin-Watson Statistic of 1.145156 suggested a positive autocorrelation, following these statistics  $dL= 1.8672$  and  $dU = 1.8844$  at 5 per cent critical values for Durbin-Watson statistic, with  $n=722$  and  $k=3$ .

#### 4.6. Causality Test

Granger causality test as reported in Table 7 shows that there is no causality between domestic saving and economic growth, between foreign direct investment and economic growth, between current account balance and economic growth, foreign direct investment, domestic saving does not granger cause current account balance. Meanwhile, the result shows that the current account balance granger causes domestic saving and foreign direct investment. Also, foreign direct investment granger causes domestic saving.

Table-7. Granger causality test

Null Hypothesis:	Obs	F-Statistic	Prob.	Decision
LGDS does not Granger Cause LGDP	887	0.89836	0.4076	Accept
LGDP does not Granger Cause LGDS		2.07544	0.1261	Accept
LFDI does not Granger Cause LGDP	807	2.62339	0.0732	Accept
LGDP does not Granger Cause LFDI		0.09541	0.9090	Accept
LCAB does not Granger Cause LGDP	751	2.74955	0.0646	Accept
LGDP does not Granger Cause LCAB		1.24071	0.2898	Accept
LFDI does not Granger Cause LGDS	735	4.63946	0.0099	Reject
LGDS does not Granger Cause LFDI		41.0192	1.E-17	Reject
LCAB does not Granger Cause LGDS	669	7.64110	0.0005	Reject
LGDS does not Granger Cause LCAB		0.15786	0.8540	Accept
LCAB does not Granger Cause LFDI	579	22.8002	3.E-10	Reject
LFDI does not Granger Cause LCAB		1.24334	0.2892	Accept

#### 4.7. Findings of the Study

The study found that gross domestic savings, foreign direct investment and current account balance are positively related to gross domestic products. In the continent, the foreign direct investment seems to be much more relevant to outputs growth than the gross domestic savings. Because a percentage increase in gross domestic savings will turn up outputs by 3.93 per cent. Meanwhile, a similar reaction to foreign direct investment will turn up outputs by 18.76 per cent. While the current account balance would cause outputs to increase by 4.63 per cent when it is increased by 1 per cent. Current account balance's contribution is slightly higher than the savings' contribution. Considering savings, foreign direct investment and current account balances as regressors for the gross domestic product which was proxy as economic output. Following Bankole and Fatai (2013) and, Aurangzeb and Haq (2012) all the variables were positively related to economic growth.

Also, there is no causality between domestic saving and economic growth. This finding confirms the position of Mohan (2006) on Low-Income Countries, which asserted no causality between domestic saving and economic growth. Also, this finding aligns with the findings of Ijeoma et al. (2011) and Sothan (2014) in both Lesotho and Cambodia respectively.. Both Solow and Keynesian theory were refuted in case of Africa as no causality nullifies the instance of which of the two precedes each other. Interestingly, there is an existence of bidirectional causality between foreign direct investment and domestic saving. Furthermore, the current account balance granger causes foreign direct investment and domestic saving respectively.

## 5. CONCLUSION AND POLICY IMPLICATIONS

We investigated the impact of savings on economic growth in Africa. Panel data were used. The data structure comprised thirty (30) cross-sections, that is, thirty countries were involved in the sample, based on the economic bloc and data availability for the country and thirty-five time-series feature, on an annual basis. The Panel Regression Method (EGLS) based on the Seemingly Unrelated Regression (SUR) was adopted for analysis. A percentage contribution of foreign direct investment was greater than that of savings. However, this result was not surprising because when saving is dormant, it cannot contribute in any way to the economic outputs. But the foreign direct investment is an expenditure earmarked for productive activities, thereby, the productivity of such resources is inevitable. Thus, it added to the national outputs and generally to the continent outputs. As a point of emphasis, it was found that a percentage increase in foreign direct investment (FDI) would increase outputs by 18.76 per cent. While a similar intervention on savings would only increase outputs by 3.93 per cent. It is evident that the continent of Africa still relies heavily on FDI than saving for productivity in the continent. Also, there is no causality between domestic saving and economic growth. Absence of causality signal low savings and as well unfavourable or deficit current account balance. Moreso, this is the reality as African countries are well financially indebted. However, bidirectional causality exists between foreign direct investment and domestic saving. The current account balance is very relevant to foreign direct investment and domestic saving. Thereby, there is a need to favour and promote policies that enhance savings in the continent, such as universal coverage pension and grassroots-oriented saving schemes. Ultimately, maintaining a surplus current account balance will greatly help the continent in attracting more foreign direct investment and improving domestic savings.

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## REFERENCES

- African Development Bank. (2018). *African economic outlook*. Abidjan: African Development Bank.
- Anoruo, E. (2001). Saving-investment connection: Evidence from the ASEAN countries. *The American Economist*, 45(1), 46-53.
- Arndt, H. W. (1991). Saving, investment and growth: Recent Asian experience. *BNL Quarterly Review*, 44(177), 151 - 163.
- Aurangzeb, A., & Haq, U. (2012). Impact of investment activities on economic growth of Pakistan. *Business and Management Review*, 2(1), 92-100.
- Bankole, A. S., & Fatai, B. O. (2013). Relationship between savings and economic growth in Nigeria. *The Social Sciences*, 8(3), 224-230.
- Barro, R. (2009). *Intermediate macro*. Boston, Massachusetts: South-Western Publishing.
- Domar, E. D. (1946). Capital expansion, rate of growth, and employment. *Econometrica, Journal of the Econometric Society*, 14(2), 137-147.
- Elias, S., & Worku, A. (2015). Casual relationship between gross domestic saving and economic growth in east Africa: evidence from Ethiopia, Uganda and Kenya. *Journal of Agriculture and Social Research (JASR)*, 15(2), 31-39.
- Fabris, N., & Galić, J. (2015). Essay on saving and consumption. *Central Banking Theory and Practice*, 3, 123-136. Available at: 10.1515/jctp-2015-0014.
- Harrod, R. F. (1939). An essay in dynamic theory. *The Economic Journal*, 49(193), 14-33.
- Ijeoma, O., Paramaiah, C., & Moshoeshoe, R. E. (2011). Financial development, savings and economic growth in Lesotho: Evidence from trivariate causality test. *International Journal of Economics and Business Studies*, 1(2), 41-55.
- King, R. G., & Levin, R. (1994). *Capital fundamentalism economic development and economic growth*. Paper presented at the Carnegie Rochester Conference Series on Public Policy.

- Lewis, W. A. (1982). *The growth of mature economies*. (C. P. Kindleberger, & G. di Tella, Eds.). New York: New York University Press.
- Loaya, N., Schmidt-Hebbel, K., & Servén, L. (2000). Saving in developing countries: An overview. *The World Bank Economic Review*, 14(3), 393-414.
- Maddison, A. (1992). A long-run perspective on saving. *Scandinavian Journal of Economics*, 94(2), 181-196. Available at: 10.2307/3440445.
- McKinnon, R. I. (1973). *Money and capital in economic development*. Washington D. C: Brookings Institution.
- Misztal, P. (2011). The relationship between savings and economic growth in countries with different level of economic development. *Finansowy Kwartalnik Internetowy e-Finanse*, 7(2), 17-29.
- Modigliani, F. (1970). *The life cycle hypothesis of savings and an inter-country difference in the saving ratio*. (W. A. Eltis, M. F. Scott, & J. N. Wolfe, Eds.). London, United Kingdoms: Clarendon Press.
- Modigliani, F. (1990). *Recent development in saving rates: A life cycle perspective*. Paper presented at the Frisch Lecture: Sixth World Congress of the Econometric Society. Barcelona, Spain.
- Mohan, R. (2006). Causal relationship between savings and economic growth in countries with different income levels. *Economics Bulletin*, 5(3), 1-12.
- Naraliyeva, A., & Katircioglu, S. T. (2006). Foreign direct investment, domestic savings and economic growth in Kazakhstan: Evidence from co-integration and causality tests. *Investment Management and Financial Innovations*, 3(2), 34-45.
- Ndikumana, L. (2014). Savings, capital flight, and African development. In C. Monga & J. Y. Lin (Eds.), *The Oxford Handbook of Africa and Economics. Policies and Practices* (Vol. 2): Oxford University Press.
- Romer, D. (1996). *Advanced macroeconomics*. United States of America: McGraw-Hill.
- Saltz, I. S. (1999). An examination of the causal relationship between savings and growth in the third world. *Journal of Economics and Finance*, 23(1), 90-98. Available at: <https://doi.org/10.1007/bf02752690>.
- Shaw, E. S. (1973). *Financial deepening in economic development*. London and New York: Oxford University Press.
- Sinha, D., & Sinha, T. (1998). Cart before the horse? The saving-growth nexus in Mexico. *Economics Letters*, 61(1), 43-47.
- Solow, R. M. (1956). A contribution to the theory of economic growth. *The Quarterly Journal of Economics*, 70(1), 65-94.
- Sothan, S. (2014). Causal relationship between domestic saving and economic growth: Evidence from Cambodia. *International Journal of Economics and Finance*, 6(9), 213-220.
- Stern, N. (1991). The determinants of growth. *The Economic Journal*, 101(404), 122-133.
- United Nations. (2001). *Economic development in Africa: Performance, prospects and policy issues*. Paper presented at the New York: United Nations Conference on Trade and Development.
- United Nations. (2009). *System of national accounts, 2008 (2008 SNA)*. New York: United Nations.
- World Bank. (2015). *World development indicators*. Washington, D. C.: World Bank.

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