



## PUBLIC SAVING, A SOCIAL VICE: IS KEYNES RIGHT? SUB-SAHARAN AFRICA ECONOMIC GROWTH IN PERSPECTIVE



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### ABSTRACT

#### Article History

Received: 5 September 2019

Revised: 8 October 2019

Accepted: 12 November 2019

Published: 16 December 2019

#### Keywords

Saving

Economic growth

sub-Saharan Africa

Panel cointegration

DOLS

SVECM.

#### JEL Classification:

E2; E62; O11; O40.

Several of Classical growth models pointed out saving as a condition that guarantees economic growth under the presupposition that adequate saving secures adequate capital formation. However, the new wave of ideas that rocks the macroeconomic landscape in the 1930s gave a new insight into the relationship with more focus on the consumption than saving. Most countries in Sub-Saharan Africa had consistently pursued consumption-stimulating policy in lieu of saving; albeit, owing to insufficient capital to produce what they consume, rising public debt, inflation, unemployment and others are the end results. Thus, this paper examined the role of saving on growth in sub-Saharan Africa using a panel cointegration, DOLS and SVECM methods. The study, in addition to the long run relationship established, suggested that while in the long run saving has a positive impact on growth, in the short run, Keynes “effect” seems to hold – saving had a prolonged negative shock on growth, with the implication that sub-Saharan Africa must face a trade-off between having an accumulated saving to increase economic growth in the long run and getting rapid economic growth in the short run.

**Contribution/ Originality:** This study is one of the few studies which have investigated the role of saving on economic growth alongside the fundamentals of economic freedom on growth in sub-Saharan Africa (SSA).

## 1. INTRODUCTION

To the Classical economists, increased public saving is a virtue that worth embracing not necessarily for the sake of capital formation and accumulation essentially derived thereof, but of substantial economic growth and development achievable as a by-product of the capital accumulated over a given time horizon, such that, a necessity for actualization of rapid economic growth and development is the quantity of saving in the economy. Thus, saving is elementally understood from the perspective of the need for economic growth and development. Savings generate capital formation; capital formation or accumulation is important to economic development (Najarzadeh *et al.*, 2014; Jagadeesh, 2015). To increase saving and boost capital formation, some part of current income need not be consumed but reserved. The fraction to save is dependent on the individual economy’s capacity in terms of total income earned and the degree of urgency of need of rapid economic advancement. Thus, given a level of income and the desire to fast-track economic development, the more the society is willing to abstain from the current consumption, the more the resources the society would be able to devote to accumulating new capital to augment nation’s wealth.

If the society saves less and consumes more the production capacity of the economy would fall in the nearest future. Since the current capital goods are subjected to depreciation, a new capital formation is needful for continuity of production and sustainability of economic growth. On the above note, Simon Kuznets emphasize the importance of capital formation and accumulation in the course of achieving a substantial rate of economic growth, Harrod-Domar's model of economic growth tells us that capital accumulation is important in the determination of economic growth. Besides, Walt Rostow in his linearized phases of economic growth model asserted that one of the dominant strategies of economic development required for any take-off is that of mobilization and accumulation of saving to generate sufficient investment to speed up the economic growth (Todaro and Smith, 2012). Summing it up in the Classical sense, saving is a condition required for investment creation, and hence, acceleration of economic growth.

In spite of the aforementioned roles of saving in the transitioning of the economy and building of future economy's capacity, Keynes (1936) sees nothing substantial in saving, particularly the public saving, except that it deepens economic woes. Although, for an individual, saving may be a virtue, certainly not for the community as a whole; increasing aggregate consumption rather than saving does it all – it is the ultimate panacea to driving forward economic prosperity (Keynes, 1936).

Many countries in sub-Saharan Africa in the past decades had consistently pursued the policies of stimulating consumption; albeit, since most of these countries lack sufficient capital to produce what they consume, it appears that a rising debt profile, increasing rate of unemployment, outward migration of labour, BOP deficit and growing rate of inflation owing to large volume of importation against exportation to meet local consumption needs are the end results of such consumption-stimulating policy. Subsequently, the applicability of “public saving – social vice” notion of Keynes (1936) in sub-Saharan Africa is highly bothersome and questionable. To this end, with the new set of data at hand, this research intends to find perhaps the public saving should be taken as a social vice and its implication on the economy of Sub-Saharan Africa.

## 2. LITERATURE REVIEW

In lieu of the positive role of saving on economic growth and development as postulated by the Classicists, Keynes (1936) standing position is that of what may be described as a “paradox of thrift”; a term characterizing a circumstance whereby the more the community saves, the poorer such the community becomes, such that saving is not beneficial and relevant to the economic progress. In the Keynesian theory of income or output determination, public saving is a source of negative shock and therefore no meaningful economic development or growth can be pulled off with a dosage of public savings. In addition, with a given level of income, there is a trade-off between saving and consumption, and since saving is a linkage, it is an increased consumption that can impel sustainable economic growth in the short-run. Thus, Keynes (1936) aptly substituted saving for consumption and therefore ignore the role of capital accumulated vis-à-vis saving in the economy.

Keynesian hold the belief that it is the expansionary monetary action of the Apex bank to ease the interest rate level that led to the rise of aggregate investment and production coupled with growth in income in accordance with a given consumption level (Ohiakpor, 1995). Instead of capital formation for economic growth made possible by the quantity of saving, Keynes (1936) makes capital growth dependent upon a high propensity to consume except in the situation of full employment that low propensity to consume is compatible for the capital growth. On another note, stressed that changes in capital depend not on the quantity of saving but of investment, saving not equal to investment; and since saving decreases the consumption goods demanded, then, higher savings decreases the production as well as employment level in the short run. In general, in his theory of income determination, Keynes (1936) finds saving not to play an active positive role.

On the other side, achieving a long-lasting economic growth demands much investment; without such level of investment, faster economic growth will necessarily mount untenable pressure on economic resources. Only higher

saving accomplished perhaps with an increase in public saving could bring higher investment. To increase public saving to a certain level of choice, public consumption must fall pro-rata. It is expected that in the meantime, the higher investment generated from the saving should uplift both the actual and the potential aggregate output level in the economy (Herd, 1989). In the classical growth models, economic growth depends on the amount of saving and the rate of the productivity of all processes in which the said saving is employed. For instance, the Harrod-Domar model of economic growth described economic growth in terms of the public net savings rate, and capital-output ratio.

Rostow growth model, on the other hand, posited that the takeoff stage of economic development is an increasing function of saving. According to Todaro and Smith (2012) economies that save up to a range of 15 to 20 per cent of its GDP could possibly advance at a faster rate compared to those economies with low saving. In addition, the growth of such an economy with high saving rate is believed to be self-sustaining. Consequently, rising national savings and investment is a means of driving economic growth and development. In other words, according to the Rostow growth model, low level of saving and hence low new capital formation is the major constraints or hindrance of economic growth and development in most of the developing or poor economies. Unfortunately, the Rostow model is not appealing on the basis that higher savings and investments are not a sufficient condition for speeding up the rate of economic growth (Todaro and Smith, 2012). Nevertheless, the model explicitly identified saving as a positive and active determinant of economic growth.

Besides the classical theory, the neoclassical growth models also emphasize the important role of saving in the course of economic expansion. In the traditional neoclassical growth model, economic growth comes from roughly three (3) factors: raise in the labour quality and quantity of which may be through improvement in education and population growth, growth in capital via the saving and investment, and finally, improvement in the technology. According to the Solow neoclassical growth theory, conditionally, countries would converge to equal income level if they have equal rates of savings, growth in the labour force, depreciation, and growth in productivity. Nevertheless, in the Solow model, an alterations in the level of saving rates can change the balanced growth path of the economy, and subsequently, the output level per worker but not the rate of growth of output per worker on balance growth path such that the alteration in the saving only has level and not growth effects (Romer, 2012). In terms of its scope, the Solow growth model is argued to be more relevant to the developed countries than the less-developed ones (Todaro and Smith, 2012; Adediyani and Ekomozor, 2019). Similarly, although it relies heavily on many of the assumptions of the traditional classical model that are unsuitable for the developing economies, the new growth (endogenous growth) theory also accentuates the significance of savings for pulling off rapid growth in the economy.

Furthermore on the evaluation of the models or theories that incorporated saving in the determination of growth, the Modigliani-Brumberg model (lifetime income hypothesis) explicitly utilizes the inter-temporal framework to explain savings as being undertaking by the utility-maximizing economic agents. The essences of the saving according to the model is to make ways for the agents' planned stream of consumption to be different from the expected inter-temporal income stream of the agents over time. Among the key implications of the Modigliani-Brumberg Model according to Iyoha (2004) is that higher growth rate of the per capita income and higher aggregate savings ratios are associated. This model, however, is based on the happenings in the advanced economies without any serious regard to the less-developed countries. On the above models, because of the divergence on the role of saving in the output growth determination, various researchers have attempted to examine perhaps growth in saving, and more importantly, public savings bolster up economic growth as some of the models suggested.

Jagadeesh (2015) assesses the role of saving on the Botswana economic growth using both DOLS and ARDL methods. The study found that saving contributes fairly well to the economic growth in Botswana. Ciftcioglu and Begovic (2010) study the correlation between domestic saving and economic growth in the East and Central

European countries. The study employs panel pooled OLS and found a positive impact of domestic saving on growth. Najarzadeh *et al.* (2014) empirically study the relationship between economic growth and savings in Iran using the Autoregressive Distributed Lag model. Two different models were specified; the first model considers the impact of economic growth on saving, and the second model looks into the effect of growth on savings. The research establishes that saving has a positive impact on economic growth and vice-versa. In each of the models, the study also suggests a bidirectional relationship between saving and economic growth.

Aghion *et al.* (2009) seek to establish whether domestic savings really matter for economic growth. The research suggested that domestic saving is not important to the economic growth of the rich countries. However, the study found that saving really matters for poor countries economic growth. In Vietnam, on the contrary, Nhung and Nguyen (2017) investigated the impact of domestic saving on economic growth by employing the ARDL bound testing method. The research has shown that while saving has no positive impact on economic growth in the short run, in the long run, saving was found to exert a positive impact on economic growth in Vietnam. Thus, the study of Nhung and Nguyen (2017) authenticate the Keynes (1936) argument on the role of saving in output or income determination. Turan and Gjergji (2014) study the effect of saving on growth in the Albania economy. The study found a long run relationship between saving and economic growth, and that savings positively affect the economic growth of Albania.

Anoruo and Ahmad (2001) assessed the effect of saving rate on economic growth in Zambia, Ghana, Cote d'Ivoire, South Africa, Kenya, and Congo by employing VECM. The study finds a positive impact of saving rate on economic growth for all the countries with the exception of Nigeria. Additionally, Mohsen and Maysam (2013) employed the ARDL technique to study the relationship between economic growth and savings in Iran. The results obtained validate the assertion that saving, labour force, education, oil revenues, and real GDP have long run relationship. However, the impact of saving on economic growth is limited. Nevertheless, saving plays an important role in economic growth determination in the short run. Oladipo (2009) utilizes the Toda and Yamamoto approach to analyze the direction of influence between economic growth and savings in Nigeria. The research results suggest a unidirectional relationship between economic growth and savings. From the above literature reviewed, debate on the role of savings in the economic growth determination continues; however, as accurate and a new set of data are becoming available, the true nature of the impact of saving on growth or output and employment are expected to be established empirically.

### 3. DATA AND METHODOLOGY

Data on saving, per capita income (economic growth), labour, gross fixed capital formation and financial depth (credit to the private sector – GDP ratio) were gathered from the World Bank, while data on economic freedom was collected from the Fraser Institute website.

#### 3.1. Model and Estimation Approach

The theoretical model of this study modified the Augmented Solow growth model. In the Augmented Solow growth model, physical and human capital stock, labour and technological stock determine growth; thus:

$$\frac{y_t}{L_t} = f(K_{(t)}, L_{(t)}, H_{(t)}, A_{(t)}) \quad (1)$$

Where  $\frac{y_t}{L_t}$  is the ratio of output to labour (per capita income, a proxy for economic growth),  $K_{(t)}$  and  $L_{(t)}$  are the capital and labour,  $H_{(t)}$  is the human capital accumulation, all at time t. To augment Equation 1, suppositions

were made. First, it is presumed that the fraction of income saved is directly related to the total amount of capital acquired to stimulate economic growth for country  $i$  at time  $t$ . That is,

$$sY_{it} = f(K_{it}) \quad (2)$$

Where " $s$ " is the proportion of income not consumed by the country  $i$  at time  $t$ . This assumption is premised on the notion that an economy with large existing capital stock only need small saving to augment or maintain it and, therefore, saves little; whereas, countries with little or grossly inadequate of capital stock is expected to save more to expand the capacity of the existing ones. Secondly, since the level of impact of human capital on growth depends largely on the level of the economic freedom enjoyed by the economic agents, and the state of technology is constant, then, the proportion of income saved, the total quantity of labour force and economic freedom are the basic constraints of the economic growth; functionally stated as:

$$\frac{y_{it}}{L_{it}} = (sY_{it}, EF_{it}, LAB_{it}) \quad (3)$$

In Equation 3,  $\frac{y_{it}}{L_{it}}$  and  $sY_{it}$  are as earlier defined,  $LAB_{it}$  implies country  $i$ 's labour force at time  $t$ ; economic freedom for country  $i$  at time  $t$  is denoted as  $EF_{it}$ . The economic freedom is captured by the economic freedom index suggested by the Frazer Institutes. The index is made up of five (5) elements: the freedom to engage in trade globally, the security of properties rights and legal system, government size, sound money accessibility, and regulation of labour, credit and business. These were individually measured on a scale of 0 – 10, with zero standing for lack of economic freedom and 10 means the highest level of economic freedom that can be attained by the economic agent. Averaging the five components yields the average value of economic freedom used in the estimation. Thus, more economic freedom is expected to enhance growth; the same thing is expected of labour and saving. To estimate the long run relation of the Equation 3, the Panel Dynamic Ordinary Least Square (DOLS) as suggested by Kao and Chiang (2000) an extension of Stock and Watson (1993) and Saikkonen (1991) DOLS estimator, is employed. The Panel DOLS is known to produce robust estimates even when the variables involved are integrated of different orders. It is a parametric method developed to estimate equilibrium relationship while correcting simultaneity bias and serial correlation problems through the inclusion of the leads and lags of the "differenced" regressors. The Panel DOLS estimates are obtained from Equation 4.

$$y_{it} = \theta_i + X'_{it} \beta + \sum_{k=-q_1}^{k=q_2} \alpha_{ij} d(X_{i,t+j}) + V_{it} \quad (4)$$

Where the  $q_1$  and  $q_2$  in Equation 4 are the lag and lead lengths expected to mop up any correlation between

$V_{it1}$  and  $V_{it2}$  in the long run. The estimate  $\hat{\beta}$  in Equation 4 is derived as Equation 5:

$$\hat{\beta} = \sum_{i=1}^N (\sum_{t=1}^T Z_{it} Z'_{it})^{-1} (\sum_{t=1}^T Z_{it} \hat{y}_{it}) \quad (5)$$

Note that in Equation 4, while the “d” denotes first differenced operator, the  $\alpha_{ij}$  is the vector of coefficients of the leads and lags of the first-differenced regressors.

The research adopted both the Kao (residual-based test) and Johansen panel cointegration test method to investigate the equilibrium relationship prior to the application of the Panel DOLS. But owing to much interest in the short run effect or impact of saving on growth, the Panel SVECM (Impulse Response Function, IRFs,) is utilized alongside the panel DOLS method. Consider a Panel VAR(p) of K time variables stated in Equation 6.

$$\mathbf{Z}_{it} = A_1 \mathbf{Z}_{i,t-1} + \dots + A_p \mathbf{Z}_{i,t-p} + \Phi D_t + \varepsilon_t \quad (6)$$

Where  $\mathbf{Z}_{it}$  is a vector of economic growth, saving, labour and economic freedom;  $A_1 \dots A_p$  are the coefficients matrix,  $\mathbf{Z}_{i,t-1}, \dots, \mathbf{Z}_{i,t-p}$  are the vector of the “p” order lagged of variables;  $D_t$  denotes all the regressors that have to do with the deterministic term, and  $\varepsilon_t$  is the vector of the stochastic error terms usually with time-invariant variance and zero-mean. The structural shock/innovation is, therefore, retrieved from Equation 6. However, because of the cointegration relations, a restricted version (panel VECM) of Equation 6 is estimated.

$$d(\mathbf{Z}_{it}) = \psi \mathbf{Z}_{i,t-1} + \Omega_1 d(\mathbf{Z}_{i,t-1}) + \dots + \Omega_{p-1} d(\mathbf{Z}_{i,t-p+1}) + \varepsilon_t + \Phi D_t + \varepsilon_t \quad (7)$$

From Equation 7, the short run structural response of economic growth to shocks or innovations in the other variables, vice-versa, would be captured.

## 4. RESULTS AND POLICY IMPLICATION OF FINDINGS

### 4.1. Correlation and Cointegration Analyses

In Table 1, the correlation result reported suggests a positive and mild level of association between saving and economic growth. The correlation coefficient of economic growth and economic freedom is also positive and statistically significant. However, the quantity of labour supply negatively correlates with economic growth. The inverse relationship between the labour force and economic growth may probably have emanated from the endogeneity problem.

Table-1. Correlation matrix.

Correlation				
t-Statistic	RGDPP	GDS	EFRD	LAB
RGDPP	1.000000			
GDS	0.553068	1.000000		
	15.77925			
EFRD	0.213623	-0.067286	1.000000	
	5.197753	-1.603009		
LAB	-0.201853	0.094455	0.104956	1.000000
	-4.898822	2.255246	2.508627	

A better understanding of the relationship among the above variables is expected to be provided vis-à-vis the panel DOLS approach. Table 2 showed the panel cointegration (Johansen and Kao) test results.

Table-2. Panel cointegration results.

No	Johansen (Fisher)		Johansen test (from VAR Model)	
	Fisher statistic (Trace) & prob.	Fisher statistic (Max-Eigen) & prob.	Trace statistic & prob.	Max-Eigen & prob.
None	243.2 [0.00]	243.2 [0.00]	86.43 [0.00]	48.94 [0.00]
At most 1	611.2 [0.00]	481.9 [0.00]	37.48 [0.01]	32.05 [0.00]
At most 2	324.6 [0.00]	268.0 [0.00]	5.43 [0.76]*	3.84 [0.88]*
At most 3	423.0 [0.00]	423.0 [0.00]	1.59 [0.21]*	1.59 [0.21]*
Kao cointegration (Residual) method				
ADF	t-statistic			Prob.
	-3.203446			0.0007

Note: \* means acceptance of null hypothesis at 1%, 5% and 10%; hence, no cointegrating equations.

The outcome of the test suggests equilibrium or long run relationship. Consequently, the long run impact of saving on growth is examined. In Table 3, giving that saving is the only relevant factor, as suggested in the Model 1, that influence economic growth, the result revealed that saving has a positive and statistically significant effect on economic growth in the long run. In Model 2, additional two constraints: economic freedom and labour force were imposed on economic growth. As expected, saving also has a positive and significant impact on growth. However, the impact of saving on economic growth in the second model is relatively smaller in relation to the first model.

Table-3. Results from the panel DOLS approach.

List of regressors included	Model (1)	Model (2)
	Coefficient & prob.	Coefficient & prob.
Saving	0.002809 [0.0230]	0.004539 [0.0123]
Economic freedom	-	0.433033 [0.0000]
Labour force	-	0.339389 [0.0191]
$R^2$	0.999000	0.999390
Adjusted $R^2$	0.997966	0.997425
Regression S.E	0.044839	0.050293

Note: Constant term, financial depth and gross fixed capital formation entered both the equations as co-integration (equation) deterministic.

Additionally, although saving has a positive impact on economic growth, the size of its impact on growth is smaller than anticipated. In the first model, a 100 per cent increase in the rate of saving cannot induce economic growth, on average, beyond 0.3 per cent in the long run. In Model 2, similarly, a 100 per cent increase in saving would increase economic growth marginally by about 0.6 per cent which is twice of that of model 1 probably as a result of the influence of economic freedom and labour force upon which growth is constrained. More so, in Equation 2, economic freedom appeared as the largest determinant of economic growth in the long run with the impact size of about 0.43 per cent. Next is the quantity of the labour force. Labour force has a positive and significant effect on growth in the long run. The residual plot in Figure 1 adequately showed that the residual obtained from the Panel DOLS estimate is mean-reverting.

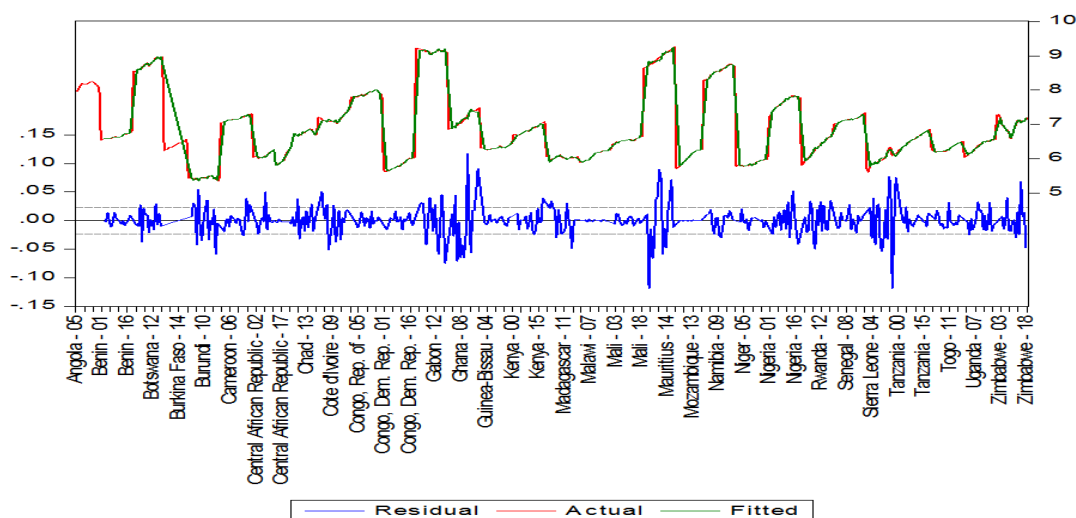


Figure-1. Panel DOLS residual plots.

It must be re-stated here that the Keynes (1936) saving-growth argument is essentially a short run phenomenon; therefore, the short run impact of saving on growth is imperative to the substantiation of Keynes (1936) assertion. Figure 2 represents the Impulse Response Functions, IRFs, simulated over a period of 10 years in order to study the short run saving – economic growth dynamic. From Figure 2, it is observed that saving has a very short term positive, and a prolonged and an increasing negative shock on economic growth. While the short term positive shock of saving on growth brisk, spanning over the first and second period, it died out in the third period; thereafter, it turned to negative and increasingly became negative at an increasing rate up to the tenth period. On the contrary, the labour force appeared to have a neutral effect on growth particularly in the first period, and the fifth through the eighth period. The impact size of the labour force on economic growth in the short run seemed negligible and irrelevant such that labour force is not a serious constraint on economic growth in the short run in Nigeria.

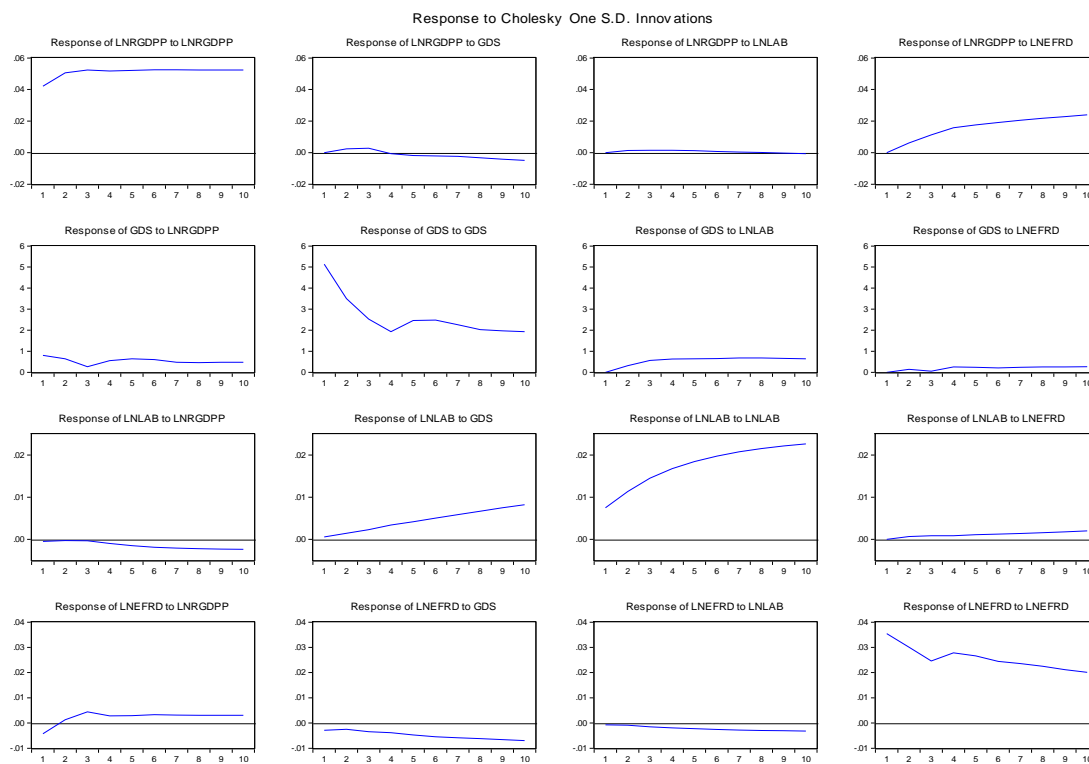


Figure-2. Impulse response analysis.



Regarding the role of economic freedom, economic freedom has a raising positive shock on economic growth throughout the period. The level of the impact of a shock in economic freedom on economic growth is larger than that of either the saving or labour force, if not altogether, in the short run. Hence, with more economic freedom, economic growth would be more for sub-Saharan Africa in the short run.

## 5. SUMMARY AND CONCLUSION

In Classical growth models, saving largely contributes to economic growth. Several of these models such as the Solow model pointed out saving as a necessary and sufficient condition that guarantees economic growth under the presupposition that adequate saving secures adequate capital formation. This, thus, implied that rapid economic growth is accompanied by an increasing saving rate. This is the general belief prior to 1936. However, with the new wave of ideas that rock the macroeconomic landscape particularly in the 1930s, a new insight into the relationship between saving and economic growth surfaced. According to Keynes (1936) in the place of a community striving to better her economic conditions through saving, the culture of raising aggregate consumption should be adopted and focused on because at the community level, it is the consumption and not saving that matters. Among the recent concerns on the Keynes (1936) postulation is the question of whether his assertion adequately describes the happenings in the developing world. With the recent and updated dataset available on saving and economic growth, a clear image of the relationship between saving and growth can be obtained.

On this basis, this paper investigated the impact of saving on economic growth in sub-Saharan Africa using a panel cointegration, panel DOLS and Panel SVAR (IRFs) methods. The study in addition to the long run relationship established suggested that while in the long run saving has a positive and significant impact on growth, in the short run, Keynes “effect” seems to hold: saving is found to have a prolonged and an increased negative shock on growth. A possible implication of this finding for Sub-Saharan Africa is that there must be a trade-off between having an accumulated saving to increase economic growth in the long run and getting rapid economic growth in the short run. Therefore, although economic growth may be badly affected in the short run, if Sub-Saharan Africa can give up more consumption and increase saving in the short run, the reward for such abstinence is the higher economic growth accomplishable in the long run. Among the control variables included in the model, labour force, although much relevant in the long run, appears not to be a serious challenge to actualizing rapid economic growth in the short run in Sub-Saharan Africa. Whereas, expanding economic freedom is essential to pulling up economic growth both in the short and the long run. In conclusion, the impact of saving on growth among other things depends on the time horizon. Thus, if the decision of the policymakers is to increase economic growth in the long run, sacrifice in form of increasing saving and a reduction in the level of economic growth in the short run have to be tolerated.

**Funding:** This study received no specific financial support.

**Competing Interests:** The author declares that there are no conflicts of interests regarding the publication of this paper.

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