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Institutions And Economic Growth In Sub-Saharan Africa: A Panel Analysis

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ABSTRACT

Countries in sub-Saharan Africa are experiencing sluggish growth. The cause of the sluggish growth is yet unknown. Many researchers argue that one of the major causes is the quality of institutions in the sub-Saharan African countries. Therefore, this study aims to determine the effects of institutional quality on economic growth in sub-Saharan Africa. Annual panel data from 43 sub-Saharan African Countries were employed from 2001 to 2020. The Levin, Lin & Chu stationarity test was carried out and system Generalized Method of Moment (Sys-GMM) was employed in the analysis. The findings revealed that institutional quality had mixed effects on the economic growth of countries in SSA. The political environment encourages economic growth while the quality of public and civil services is too poor to encourage growth. Hence, the government needs to improve the quality of public and civil services in the countries in order to encourage economic growth.

Keywords: Institutions, panel, dynamic analysis, GMM, growth, Sub-Saharan Africa,

1.0 INTRODUCTION

Sub-Saharan Africa is one of the least developed regions of the world with the lowest GDP per capita, poor quality of institutions, unstable political environment, high inflation rate, high unemployment rate, and low standard of living. The region is plagued with high rate of corruption and social vices (Weil, 2013; Onwuka, et al, 2024). On the contrary, the region has huge supply of human and natural resources, but the level of development in the region is far below the world average. The government at both regional and country level adopted several policies with the goal to boost the physical capital and improve the standard of living at large. This has not yielded significant improvement in the region. The region has made several attempts to improve economic growth through foreign loans, foreign aid, and even domestically through increase in government consumption expenditure. Despite these efforts, the region still experiences sluggish economic growth.

Acemoglu argued that *“attempting to increase (economic) growth merely by focusing on proximate causes would tantamount to dealing with symptoms of disease without understanding what the disease themselves are. While such attack on symptoms can sometimes be useful, they are no substitute for a fuller understanding of the causes of the disease, which may allow a more satisfactory treatment.”* In as

much as the government makes effort to improve the economic growth without establishing functional institutional framework and improving the political environment, the effort could be equivalent to an individual that is building castle in the air. Therefore, this study focused on finding out the effect of institution on economic growth in SSA.

Strong institutions are crucial for economic growth as they provide rules, regulations and frameworks that govern economic activities. Countries with strong institutions encourages investment and innovation by reducing uncertainties, improves rule of law and fosters trust for investors (Onwuka, et al., 2024). Unfortunately, the quality of institution in SSA is the lowest in the world. The transparency International data depicts that SSA measures the lowest average score in the corruption perception index at 33 out of 100. More than 90 percent of the countries in SSA score below 50 percent. The lowest scorers include Equatorial Guinea with 13, Eritrea with 13, Somalia 9 and South Sudan 8 (Transparency International 2024). Rodrik, (2000) argued that due to high rate of corruption in the region, most institutions in SSA merely work in favour of the government in power instead of the good of the general public. For instance, the legal institutions, occasionally, are influenced by those in power therefore cannot deliver justice. The regulatory institutions sometimes are more concerned with personal interest instead of public interest (Rodrik, 2000; Ugwunna & Obi, 2023). SSA countries are plagued with unproductive activities such as theft, smuggling, kidnapping for ransom, banditry and even civil war (Weil, 2013). This may seem mundane but it actually takes resources away from productive uses. This encourages nonproductive spending such as hiring guards, construction of high fences and iron doors, or installation of cameras and alarm systems. People in SSA tend to involve more in rent seeking and brain drain activities. In other words, majority tend to join politics or travel outside the country in other to enjoy bigger slice of the pie rather than work for the productive sector.

Considering the SSA region and the Asian Tigers, one may be tempted to ask; how did the Asian tigers manage to grow while SSA failed to take advantage? If physical capital is so important, why did the SSA region fail to invest more in physical capital? If education is so important, why are education levels in SSA still very low? And why is the existing human capital being used less effectively compared to that of Asian tigers? Some researchers argued that the poor growth of the region is due to poor quality of deeper determinants such as poor institutional framework, unstable political environment and landlocked countries (Acemoglu, 2009; Boldeanu & Constantinescu, 2015; Ugwunna & Obi, 2023).

An attempt is noble therefore, to carry out a research of this magnitude on the effects of institution on the economic growth of SSA countries to forestall impending crises, in order to propel and sustain higher economic growth levels in the future beyond the conventional wisdom so as to assume the dominant players in the world economy. Generating sustained economic growth in Africa remained one of the most pressing challenges for global development, but little is known about the determinants of economic growth in the region (Anyanwu, 2014; Ugwunna & Obi, 2023)

2. Review of Related Literature

2.1 Overview of Sub-Saharan African Countries

Geographically, sub-Saharan Africa (SSA) is the area of the African continent that lies south of the Sahara. In the definition by United Nations, it is made up of all African Countries that are fully or partially located south of Sahara. Forty-six (46) out of fifty-four (54) countries in Sub-Saharan Africa will be employed in this study due to availability of data. Countries with insufficient data were dropped while countries with at least 85 percent of the required data were employed. Countries that will be used in the analysis are Angola, Benin, Burkina Faso, Botswana, Central Africa Republic, Cote d'Ivoire, Cameroon, Democratic Republic of Congo, Republic of Congo, Comoros, Cabo Verde, Eritrea, Ethiopia, Gabon, Ghana, The Gambia, Guinea-Bissau, Equatorial Guinea, Kenya, Liberia, Lesotho, Madagascar, Mali, Mozambique, Mauritania, Mauritius, Malawi, Namibia, Niger, Nigeria, Rwanda, Sudan, Senegal, Sierra Leone, Somalia, South Sudan, Sao Tome and Principe, Seychelles, Chad, Togo, Tanzania, Uganda, South Africa, Zambia and Zimbabwe.

2.2 Challenges faced in SSA countries

The challenges faced in SSA countries can be classified into four viz-a-viz

i. Unproductive activities: This includes illegal activities such as theft, smuggling, kidnapping for ransom, banditry and even civil war (Weil, 2013). This may seem mundane but it actually takes resources away from productive uses. This encourages nonproductive spending such as hiring guards, construction of high fences and iron doors, or installation of cameras and alarm systems.

Angola is richly endowed with oil, diamond and other minerals but due to 27 years of civil war from 1974 to 2002, the income per capita dropped to \$2426, lower than when the war began. They experienced a drastic U-turn when the country had relative peaceful years because their income per capita doubled in only seven (7) years. People in SSA tend to involve more in rent seeking and brain drain activities. In other words, majority tend to join politics or travel outside the country in order to enjoy bigger slice of the pie rather than work for the productive sector.

ii. Idle resources – This is a case of unemployment or underemployment of labour and capital. Underemployment frequently results from institutional arrangements that encourage the hiring of more workers than are needed. Most African government parastatals and corporations are notorious for overstaffing (Weil, 2013). Air Afrique was owned by a consortium of eleven (11) African governments. In 2001, the airline had 4,200 employees but only 8 aircrafts. This corresponds to a ratio of more than 500 employees per airplane. By contrast, the most efficient European airline such as Britains Easy Jet, had a ratio of 66 employees per airplane. Despite its huge staff, Air Afrique's service was appalling until it's collapse in 2002 (The Economist, 2001; Weil, 2013)

iii. Misallocation of factors among sectors:-

This refers to directing resources to the wrong sectors of the economy. Sectors may simply be different regions of a country such as urban sectors and rural sectors. This may take place due to barriers to mobility. Since moving from one part of a country involves costs, both economic and psychological, people in the rural area may choose to remain there while earning low wages compared to their output and effort. People working in the subsistence agricultural pattern are more likely to earn below their effort. They may only be able to receive a payment of their average product rather than their marginal product. Recall that the value of output is maximized when the marginal product of labour in the two sectors are equal.

iv. Technology blocking: This is a situation when technology could feasibly be used but someone is deliberately preventing its use. The origin of that technology could be foreign or local. This happens a lot in African countries due to corruption and personal interest. The implication of this to the economy is that the economy will keep operating under inefficient technology thereby not producing optimally.

2.3 Review of Related Theories

The Neoclassical Growth Theory: The neoclassical growth theory is credited to Solow (1956) and Swan (1956) commonly referred to as the Solow-Swan model. Four basic assumptions of the model are that there exist constant returns to scale, such that, if all inputs are changed proportionately, output will change by the same proportion. This can be presented empirically as $\lambda Q = F(\lambda K, \lambda L) = \lambda F(K, L)$ for all $\lambda > 0$. Secondly, there is diminishing marginal productivity of capital for all capital. Diminishing returns hold when one input is fixed and the other input is increasing. For instance, if one has a particular fixed area of land, the addition of more and more labour would result to diminishing returns to each additional unit of labour. This can easily be illustrated using the Cobb-Douglas production function. Hence, most studies that adopt this model use the Cobb-Douglas production function in order to ensure there exist diminishing returns in the model. Thirdly, the technological progress is exogenously determined; this means that technology can increase independent of the model. This can be achieved through increase in the machinery such as computers or through increase in the human capital formation through education, health, worker's skill, et cetera. They also assume substitutability of capital and labour. The model allowed for substitution and flexibility between factors of production so that the relative endowment of capital and labour could be reflected. Today, economists use Solow's sources-of-growth accounting to estimate the separate effects of economic growth of capital, labour and technological progress.

Technological progress captures efficiency, increasing technology, worker's skill levels, education, health, institutions, and also the net effect of errors and omissions from economic data. That residual is sometimes referred to as the measurement of our ignorance about the growth process. Those variables which are not captured by the capital stock and labour supply which might influence both are captured in the residual. Furthermore, the Solow-Swan model argued that the savings rate is only relevant in the short run but don't really matter for growth in the long run. This differs from the Harrod-Domar model which suggests that the poor countries can only increase the economic growth if they double their savings. Solow model argued that the effect of such capital deepening would be transitory because sooner than later the nation will run into diminishing returns. They argued that only population growth and technological change could promote long term economic growth (David, 2006). The model further predicts convergence in the growth rates.

The Deeper (Fundamental) Determinants:

In an attempt to determine the determinants of economic growth of nations, economists argued that some factors such as the government efficiency, institutional quality, political environment, cultural and social factors, geography and demography contribute to the economic growth of nations. These factors are referred to as ultimate or deeper determinants. They argued that considering only the physical capital, labour and technological progress without looking at those deeper determinants will tantamount to treating the symptoms of a disease instead of diagnosing the actual illness that leads to those symptoms.

2.4 Empirical Review

Acemoglu, Johnson and Robinson (2004) were among the first that carried out empirical analysis to depict that institution is one of the fundamental causes of long-run growth. They argued that institutions of countries matter in determining the growth of the economy using Korea which has been divided into North and South Korea, where the two new economies adopted different kinds of institution. They showed evidence that South Korea prospered more than the North Korea because they . Therefore, their findings revealed that differences in institutions are fundamental causes of differences in economic development. Hashim, Alexiou and Tsaliki (2012) studied the role of institutions in economic development using panel data from 27 SSA countries for the period 1984 to 2003. They found that conventional variables of economic growth are not able to explain the SSA experience, instead, the quality of institutions play great role in explaining the economic growth in SSA.

Akinlo, (2016) examined the quality of institutions and economic growth in SSA from 1986 to 2016. They employed panel pooled OLS and dynamic GMM models. Their findings revealed that institution has negative impact on economic growth in SSA.

Epaphra and Kombe (2017) examined the impact of institution on economic growth in Africa using 48 countries for the period 1996 to 2016. Fixed Effect and Random Effect method of analysis were employed for the analysis. Their findings supported that institutions matter for economic growth in Africa. Specifically, they found political instability as the most significant factor in explained real GDP per capita growth in Africa.

Wadeda, Masai & Nyandem (2021) studied the effects of institutional quality on economic growth in SSA using panel data from 35 SSA countries for the period 2006 -2018. They employed system GMM. They found evidence that improvement in situational quality positively and significantly improve SSA countries output. The findings revealed that institutional quality are more effective in driving economic growth in West African region than the other three regions in Eastern and Central Africa. Afonso and Almeida (2021) employed 2SLS to estimate the impact of institutional quality on medium and long-term growth in OECD. Their findings supports the view that institutions had positive and significant effect on economic growth.

Hussein (2023) examined the relationship between institutional quality and economic growth in SSA using panel data from 1991 to 2015. Variables for institutional quality were classified into three components, viz-a-viz investment –promoting economic institutions, democratic and regulatory institutions, and conflict preventing institutions. They found out that investment-promoting and democratic and regulatory institutions have significant positive effect on economic growth.

Acquah, Carbonaru, Farcomeni and Trovato (2023) studied institutions and economic development. They proposed new indices for measuring institutional quality using variables provided by Fraser institute (2018). Their findings revealed that institutions matter especially in low and middle-income countries. Further improvement in institutions always determine a positive level effect on per capita GDP.

Some researchers employed other determinants of economic growth but included institutional quality as variable in their model such as Benny and Cook (2009) analyzed whether the recent growth in Africa is due to “metals” or “management” or both; where ‘metals’ refers to favourable terms of trade and increase in export while ‘management’ refers to institutional and policy reforms. By employing OLS method of estimation and using ‘panel data of 57 African countries over the period 1960 -2005, they found that both ‘metals’ and ‘management’ are relevant for economic growth in Africa from the year 1995 and afterwards. Lee and Hong (2010) studied the determinants and prospects of economic growth in Asia using 12 developing Asian Economies. They adopted growth accounting framework to examine factors that contributed to Asia’s rapid economic performance from 1981 to 2007. Using 3SLS, they found that robust growth in capital accumulation has contributed more to the rapid economic growth than labour input, education and total factor productivity. They also made projections for 2011 – 2020 and 2021 – 2030 using exogenous values of labour input and human capital. They found that projection for the next two (2) decades tend to be lower than the historical performance of these countries. Trpkova and Tashevskaja (2011) studied the determinants of economic growth in South East Asia using panel data for seven (7) countries for the period 1995 and 2007. This makes the period of study 13 years across 7 countries bringing the number of observation to 91 (is 7*13=91). Fixed effect method of analysis was adopted to account for the variations across individual countries. They found that current account/GDP, exchange rate, population, general government expenditure, inflation, large scale privatization and price liberalization are the key determinants of economic growth in this region. Anyanwu (2014) who examined the factors that affect economic growth in Africa and compared the findings from Africa to that of China. For African countries, they found that institutional quality had positive and significant effect on the economic growth of Africa. Ugwunna and Obi (2023) studied the determinants of economic growth in 23 middle income economies in SSA. They employed fixed effect and random effect. Their studies revealed that institutions had positive effect on economic growth.

2.3. Summary of Empirical Literature

Most of the studies in this area are carried out with data that ended in 2020 or prior to that, such as Anyanwu (2014), Akinlo, (2016), Epaphra & Kombe (2017) Afonso and Almeida (2021). This study also differ in terms of number of countries and variables captured in the study. Some countries employed only few countries like Ugwunna & Obi (2023) that focused on middle income economies of SSA only. This study covered 43 SSA countries.

This study also stands out because it employed System-GMM which address the endogeneity of institutional quality variables.

3.0 RESEARCH METHODS

3.1 Theoretical Framework and Model Specification

This study adopted augmented Solow growth model because it allows for the inclusion of many variables. Four variables collected individually from specific countries in SSA will be employed as explanatory variables while the RGDP is the dependent variable. Lag of RGDP is included in the model to account for the dynamic effect required by the Sys-GMM employed for this study. Thus the model is stated as:

$$\text{LogRGDP}_{it} = \alpha_i + \beta_1 \log(\text{RGDP}_{it-1}) + \log(\text{irgdppc}_{it}) + \beta_2(\text{gfcf}_{it}) + \beta_3 \log(\text{polenv}) + \beta_4 \text{Log}(\text{inst}) + \epsilon_{i,t}$$

Where:

- RGDP is the Real GDP with 2010 constant basic prices in country i at time t
- α_i is a fixed effect reflecting time differences between countries
- RGDP_{it-1} is the lagged value of the dependent variables. This makes the model dynamic.

- $irgdppc$ is the initial real GDP per capita. This is used to test for possibility of conditional convergence in SSA.
- $gfcf$ is gross fixed capital formation
- $polenv$ is the index for political environment proxied by political stability index
- $inst$ is the index for institutional factor proxied by the government effectiveness index
- $\varepsilon_{i,t}$ is the error term
- Subscripts i and t represent country and time period respectively.

3.4 Description of Variables: Two key variables were employed to proxy the institutional quality: viz-a-viz – political stability and institutional framework.

Political environment helps researchers to study the stability of government in a country. Political stability is one of the indicators of government quality. It measures the perception of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means including political motivated violence and terrorism. The variables used to form this index includes armed conflicts, violent demonstrations, political terror scale, security risk rating and intensity of internal tension. The index is rated from -2.5 to 2.5 where value closer or equal to -2.5 shows weak political environment while value closer or equal to 2.5 shows stronger political environment. An index developed by the World Bank group called political stability would be adopted as a proxy for political environment.

Institutional framework measures the quality of institutions in a country such as legal institution and regulatory institutions. Other types of institutions include the institution for property rights, institution for macroeconomic stabilization, institution for social insurance, and institution of conflict management. In this study, the government effectiveness index would be adopted as a proxy for institutional framework. This index is one of the government quality indicator developed by the World Bank group. It a better indicator for institutional framework because it measures the perception of the quality of public services, the quality of the civil services, and the degree of it's independence from political pressures, the quality of policy formulation and implementation, the credibility of government commitment to such policies. The government effectiveness index is rated between -2.5 and 2.5. Values closer or equal to -2.5 suggests that the country have weak institution while value close to or equal to 2.5 shows stronger institutional framework.

Other variables employed are the real GDP which serves as proxy for economic growth, initial GDP per capita which is employed to determine the possibility of conditional convergence in SSA countries and the gross fixed capital formation which serves as a proxy for capital (a core determinant of economic growth).

3.5 Estimation Technique and Procedure

This study applied System- Generalized Method of Moment (SYS-GMM). Sys-GMM is a dynamic panel data estimator. It uses moment conditions that are functions of the model parameters and the data in a way that their expectations is zero at the parameters true value. It is preferred to static analysis because it controls for the endogeneity of the lagged dependent variable in a dynamic panel model. This occurs when there is correlation between the explanatory variable and the error term in the model. GMM controls for omitted variable bias, unobserved panel heterogeneity and measurement errors in the data

4. PRESENTATION AND DISCUSSION OF FINDINGS

The analyses carried out include the correlation test used to check if there is presence of multicollinearity among the variables. This was followed by the Levin Lin Chu stationarity test carried out to determine if there is presence of unit root in the data. Then, the system GMM was used to determine the variables that are relevant for economic growth in SSA.

The Pearson Correlation matrix

The Pearson correlation was carried out to ensure the absence of multicollinearity. The correlation matrix was presented in Table 1.

Table 1: Pearson Correlation matrix

	LRGDP	IGDPPC	LGFCF	LPENV	LINST
LRGDP	1.000000				
IGDPPC	0.273080	1.000000			
LGFCF	0.225394	0.299896	1.000000		
LPENV	-0.272222	0.390668	0.214574	1.000000	
LINST	0.196188	0.387511	0.325170	0.604245	1.000000

Author's Computation from Eview Output

The correlation matrix revealed that the relationships between the variables are not strong. Therefore, there is no need to worry about the problem of multicollinearity in the model. The coefficients of all the variables are less than 0.7 individually. Institutional framework and political environment have the highest correlation coefficient of 0.60 while real gross domestic product and institution quality have the least coefficient of 0.19.

Table 2: Unit Root Test

Variable	Unit roots with Common Process		Unit Root with individual Process			Level of Integration
	LLC	Prob.	Fisher-ADF	Probability	Fisher PP	
LGDPG	-13.97	0.0000	128.54	0.0008	159.56	I(1)
IGDPPC	-28.84	0.0000	120.08	0.0025	146.48	I(1)
LGFCF	-160.61	0.0000	98.92	0.0194	138.15	I(0)
LPENV	-44.60	0.0000	154.58	0.0000	194.23	I(0)
LINST	25.44	0.0000	139.01	0.0002	183.20	I(0)

The unit root test revealed that real GDP and initial GDP per capita are stationary at first difference. This means that they are integrated of order one. Gross fixed capital formation, political stability and government effectiveness are stationary at level. This means that there is no unit root in the variables. Hence, the data are appropriate for further analysis.

The system GMM was carried out and the result presented in Table 3.

Table 3: System GMM

Dependent Variable: Log of Real Gross Domestic Product (LRGDP)		
Explanatory variables	Coefficients	t-statistics
LGDPG(-1)	0.811730	12.00588
IGDPPC	0.098534	2.870316
LGFCF	0.103211	2.765359
LPENV	0.207506	3.141521
LINST	-0.014759	-0.127810
J-statistic	1.9892	
Prob.(J-statistic)	0.7377	
Instrument rank	9	
AR (1)	0.9767	
AR (2)	0.1752	

The results, as presented in Table 3, revealed that institutional quality have mixed effect on the real GDP of countries in SSA. Two variables – political stability (PENV) and institutional framework (INST) were

used to represent the institutional quality in the analysis. Political stability had positive and significant effect on the real GDP of SSA countries. More precisely, one unit increase in political environment will lead to 20 percentage increase in the real GDP. On the other hand, the coefficient of institutional framework had negative and insignificant effect on the real GDP. Recall that institutional framework actually measures the perception of the quality of public services, the quality of the civil services, and the degree of its independence from political pressures, the quality of policy formulation and implementation, the credibility of government commitment to such policies. This means that the perception of the quality and public and civil service in SSA countries is too low to contribute to economic growth. Hence, there is need for SSA economies to improve on the quality of their public and civil servants.

The initial GDP per capita was included in the model to check if there is evidence of convergence in SSA. The coefficient of initial GDP per capita was positive. This implies that there is no evidence of conditional convergence in SSA. This is in-line with findings of Anyanwu, (2014), but contrary to the findings of Ugwunna and Obi, (2023). The reason for the contrary findings could be as a result of other variables added to the model.

The gross fixed capital formation had positive and significant effect on the economic growth. This implies that it is relevant for economic growth.

Further diagnostic tests revealed that there is no problem of autocorrelation as shown by the Arellano-Bond serial correlation test. The probability of AR(1) and AR(2) are 0.97 and 0.1 respectively, meaning that they are not significant. Hence, there is no serial correlation of order one and two respectively. The probability of Hansen J-statistics is 0.73 which is also not significant. This implies that the instruments are not over-identified.

5. CONCLUSION AND RECOMMENDATION

This study is set out to determine the impact of institutions on economic growth in sub-Saharan Africa, using data from 43 countries. Some pre-test were carried out, such as the correlation test and stationarity test. The correlation result revealed that there is not strong relationship between the variables. Hence, there is no problem of multicollinearity.

The system GMM result revealed that institutional quality in the SSA countries had mixed effect on the economic growth in SSA. The political environment had positive and significant impact on the economic growth of SSA. This implied that political environment in the SSA countries triggers growth. On the other hand, the institutional framework had negative but insignificant effect on the economic growth. This implies that the perception of the quality of public services, the quality of the civil services, and the degree of its independence from political pressures, the quality of policy formulation and implementation, the credibility of government commitment to such policies are too low to contribute to the economic growth of SSA.

REFERENCES

- Abramovitz, M. (1986). Catching up, forging ahead, and falling behind. *The Journal of Economic History*, 46(2), 385-406.
- Acemoglu, D, Johnson, S. and Robinson, J. (2004). Institution as the fundamental cause of long-run growth. NBER working paper.
- Acemoglu, D. (2009). *Introduction to modern economic growth*. Princeton University Press.
- Afonso, O. & Almeida, I. (2021). Impact of Institution on economic growth across OECD countries. *Prague Economic Papers*, 6, 654 -674.
- Ahuru, R.R., Uffie, E.J. (2015). Testing the Solow model in Nigeria's economy. *Journal of Research and National Development*. 13(1), 286-297.
- Akinlo, T. Institution and economic growth in Sub-Saharan Africa (1986-2013), *Sage Journals*, 2(2)
- Aladejare, S. A. (2020). Macroeconomic vs. resource determinants of economic growth in Africa: a COMESA and ECOWAS study. *International Economic Journal*, 34(1), 100-124.

- Anyanwu, J.C. (2014). Factors affecting economic growth in Africa: Are there any lessons from China? *African Development Bank Review*, 26(3) 468-493.
- Arbache, J., Go, D.S., & Page. J. (2008). *Is Africa's economy at a turning point?* Washington DC: Worldbank. <https://openknowledge.worldbank.org/handle/10986/6527>
- Arbache, J.S., & Page, J.(2007). Patterns of long term growth in sub-Saharan Africa. Policy Research Working Paper; No. 4398. World Bank, Washington DC: *Worldbank*. <https://openknowledge.worldbank.org/handle/10986/7586>
- Barro, R. (2003). Determinants of economic growth in a panel of countries. *Anal of Economics and Finance*, 4, 231-274
- Beny, L. N., & Cook, L. D. (2009). Metals or management? Explaining Africa's recent economic growth performance. *American Economic Review*, 99(2), 268-74.
- Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, 87(1), 115-143.
- Boldeau, F., & Constantinescu, L. (2015). The main determinants affecting economic growth. *Bulletin of the Transilvania University of Brasov Series*, 8(57), 329-338.
- Chang, C. C., & Mendy, M. (2012). Economic growth and openness in Africa: What is the empirical relationship?. *Applied Economics Letters*, 19(18), 1903-1907.
- Chirwa, T. G., & Odhiambo, N. M. (2016). Macroeconomic determinants of economic growth: A review of international literature. *The South East European Journal of Economics and Business*, 11(2).
- Easterly, W. & Levine, R. (1995). Africa's growth tragedy: A retrospective 1960-89. *The World Bank Policy Research Working Paper*, 1503.
- Epaphra, M., & Kombe, A.H. (2017). Institutions and economic growth in Africa: Evidence from panel estimation. *Journal of Business and Economic Horizon*, 5, 570-590.
- Ezewulu, A.U., & Ugwunna, T.O. (2023), Impact of monetary and fiscal policies on stock market capitalization of five selected African countries. *Journal of Economic Studies*, 20(1), 310-322
- Ghazanchyan, M. & J.G. Stotsky (2013). Drivers of economic growth: Evidence from SSA Countries. *IMF Working Paper*. WP/13/236.
- Hashim, O.R, Alexiou, C & Tsaliki, P. (2012). The role of institutions in economic development: Evidence from 27 sub-Saharan African countries. *International Journal of Social Economics*, 39 (1/2), 142-160. <https://doi.org/10.1108/03068291211188910>
- Hossain, S. M., & Mitra, R. (2012). Determinants of economic growth in Africa. A dynamic causality and panel cointegration analysis. *Economic Analysis and Policy*, 43(2), 217-226.
- Kalu, C. U., Metu, G. A., & Okeyika, K. O. (2019). Is geography really a determinant of economic growth and development in sub-Saharan Africa?. *IOSR Journal of Humanities and Social Sciences*, 24(5), 46-55.
- Lee, J., & Hong, K. (2010). Economic growth in Asia: Determinants and prospects. Asia Development Bank Economics Working Paper Series No.220. *Asia Development Bank*. <https://ssrn.com/abstract=1688733>
- Mijiyawa, A.G. (2008). Sustained economic growth: Do institutions matters and which one prevails? *Cato Journals*, 28(3), 385-420.
- Mijiyawa, A. G. (2013). Africa's recent economic growth: What are the contributing factors?. *African Development Review*, 25(3), 289-302.
- Moral-Benito, E. (2012). Determinants of economic growth: A Bayesian panel data approach. *A Review of Economics and Statistics*, 94(2) 566-579.
- Most, S. J., & De Berg, H. V. (1996). Growth in Africa: Does the source of investment financing matter?. *Applied Economics*, 28(11), 1427-1433.
- Ndambiri, H.K., Ritho, C., Ng'ang'a, S.I., Kubowon, P.C., Mairura, F.C., Nyangweso, P.M., Muiruri, E.M., & Cherotwo, F. (2012). Determinants of Economic Growth in sub-Saharan Africa Country. A panel data approach. *International Journal of Economics and Management*, 2(2). 18-24.

- Nelson, R.R., & Sampat, B.N. (2001). Making sense of institutions as a factor shaping economic performance, *Journal of Economic Behavior and Organization*, 44, 31-54.
- North, D.C. (1990). Institutions, institutional change, and economic performance. Cambridge. *Cambridge University Press*.
- Onwuka, I.N, Agu, A.O, Udeze, C.R. & Ugwunna, O.T. (2024). Political turbulence and its impact on foreign direct investment inflows in some selected African countries. *International Journal of Current Science Research & Review*, 7(11), 8210-8225 DOI: 10.47191/ijcsrr/V7-i11-08
- Oyebanjo, O. (2017). Determinants of economic growth In Sub-Saharan Africa: decomposition of exports and imports (Master's thesis, University of Cape Town).
- Oyebowale, A. Y., & Algarhi, A. S. (2020). Macroeconomic determinants of economic growth in Africa. *International Review of Applied Economics*, 34(6), 839-857.
- Sachs, J. D., & Warner, A. M. (1997). Sources of slow growth in African economies. *Journal of African Economies*, 6(3), 335-376.
- Trpkova, M., & Tashevskva, B. (2011). Determinants of economic growth in South-East Europe: A panel data approach. *Perspectives of Innovations, Economics, and Business*, 7(1231-2016-100745), 12-15.
- Ugwunna, O.T. & Obi, K.O, (2023). Is there evidence of convergence in sub-Saharan Africa? *International Journal of Education and Social Science Research*, 6(2) 221-229
<https://doi.org/10.37500/IJESSR.2023.6220>
- Ugwunna, O.T. & Obi, K.O, (2023). Determinants of economic growth in SSA. *GVU Journal of Management and Social Sciences*, 8, Special Issue, 25-37.
- Wandeda, D.O., Masai, W, & Nyandemo, S.M. (2021). Institutional quality and economic growth: evidence from sub-Saharan African countries. *African Journal of Economic Review*, 9(4) 106-125.
- WDI, (2019). *World bank Open Data: Free and open access to global development*. World Bank Group: <https://data.worldbank.org/>
- WDI, (2020). *World bank Open Data: Free and open access to global development*. World Bank Group: <https://data.worldbank.org/>
- WDI, (2021). *World bank Open Data: Free and open access to global development*. World Bank Group: <https://data.worldbank.org/>

System GMM

Dependent Variable: LRGDP

Method: Panel Generalized Method of Moments

Transformation: Orthogonal Deviations

Date: 03/29/23 Time: 08:26

Sample (adjusted): 2006 2016

Periods included: 3

Cross-sections included: 38

Total panel (unbalanced) observations: 109

White period instrument weighting matrix

White period standard errors & covariance (d.f. corrected)

Instrument specification: @DYN(LRGDP,-2) LPENV LINST LGFCF

Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LRGDP(-1)	0.811730	0.067611	12.00588	0.0000
IGDPPC	0.098534	0.034329	2.870316	0.0050

LGFCF	0.103211	0.037323	2.765359	0.0067
LPENV	0.207506	0.066053	3.141521	0.0022
LINST	-0.014759	0.115477	-0.127810	0.8985

Effects Specification

Cross-section fixed (orthogonal deviations)

Mean dependent var	-0.103119	S.D. dependent var	0.071393
S.E. of regression	0.068748	Sum squared resid	0.491529
J-statistic	1.989257	Instrument rank	9
Prob(J-statistic)	0.737735		

Arellano-Bond Serial Correlation Test

Equation: Untitled

Date: 03/29/23 Time: 08:25

Sample: 1996 2016

Included observations: 109

Test order	m-Statistic	rho	SE(rho)	Prob.
AR(1)	0.029171	0.002696	0.092439	0.9767
AR(2)	1.355609	0.067703	0.049943	0.1752

CORRELATION MATRIX

	LRGDP	IGDPPC	LGFCF	LPENV	LINST
LRGDP	1.000000				
IGDPPC	0.273080	1.000000			
LGFCF	0.225394	0.299896	1.000000		
LPENV	-0.272222	0.390668	0.214574	1.000000	
LINST	0.196188	0.387511	0.325170	0.604245	1.000000