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Research Article

Sensitivity of the Economic Performance of Sub-Saharan African (SSA) Countries to Selected Macroeconomic Variables: A Fully Modified Panel Least Squares Approach

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ABSTRACT

This work was set out to show the impact of selected macroeconomic indicators on the growth performance of SSA countries. The choice of SSA as the jurisdiction for this study was informed by the growth conundrum, which these countries have experienced over the years regardless of the abundance of natural endowments in these countries. The study covered the period 1990 to 2022 using Gross Domestic Product Growth Rate (GDPGR) as the measurement of economic performance and the explanatory variables are exchange rate, interest rate, inflation rate, trade outwardness, government expenditure and financial development. Using the Panel Fully Modified Least Squares, it was found that government expenditure, trade outwardness and financial development positively and significantly contributed to the growth of the SSA economies. Conversely, inflation, exchange rate and unemployment adversely affected the economic performance of the SSA economies. The study can be adjudged to have added to the conversation on growth drivers for the SSA countries while advancing evidence-based recommendations for the imperatives of all-inclusive growth in the region. It is believed that the study would open the door for further discussions and inquiry into the growth drivers in SSA and the necessity of a healthy macroeconomic environment for the region. Policy makers, economic players and other regional blocs continue to expect the region to break away from perennial low growth level and join the league of economies on the trajectory of sustainable growth and development. The role of stable and well-managed macroeconomic environment in actualizing this dream can never be underplayed.

Keywords: Panel Fully Modified Estimation, SSA, Macroeconomic environment, Economic Growth, Exchange Rate Volatility, Unemployment

INTRODUCTION

The fundamental requirement for attaining sustainable economic development is consistent growth. For most nations, attaining economic development is the main goal. Owing to the many variables influencing economic development, attaining this goal has proven difficult. Numerous macroeconomic variables, including foreign direct investment, inflation, money supply, exchange rates, industrial output index, and interest rates, influence a nation's economic development. The pursuit of economic growth is influenced by the interaction of macroeconomic factors in any given national economy, but this is particularly true in emerging countries like sub-Saharan Africa. The ubiquity of macroeconomic variables stems from the fact that the interplay of macroeconomic variables helps shape and describes events that change the entire economic performance of an economy.

The macroeconomic reaction to economic expansion in SSA has been shaped by a number of variables. For instance, the continent was somewhat shielded from the global financial shock of 2008, although sharing

many of the same characteristics as the rest of the globe, because of its less significant financial ties. But in 2015 and 2016, a shifting global climate posed a "triple threat" to the continent: (1) Due to strong supply and weak demand, the prices of Africa's primary exports, metals and oil, have drastically dropped and are expected to stay

low as the commodity super cycle has ended; (2) Africa's main bilateral trading partner, China, is slowing down its economy; (3) the cost of borrowing money abroad is rising as the US Federal Reserve keeps raising interest rates, making borrowing options more scarce; and (4) climate change, especially in East and Southern Africa, which will likely be severely affected by the 2016 El Niño (Rush, 2016). Sub-Saharan Africa's external environment is undoubtedly becoming less conducive to African development as a result of these upheavals as well as anticipated changes and uncertainties on a global scale. The area can more easily withstand the short-term shocks of declining commodity prices, a slowing Chinese economy, and rising US interest rates if timely and adequate macroeconomic measures are implemented (UNDP, 2015).

Because macroeconomic factors are inherently unpredictable, achieving economic development has proven to be challenging in sub-Saharan Africa. This region has seen several setbacks related to macroeconomic concerns, including volatility. But since Keynes' 1936 work on the "General Theory of Employment, Interest, and Money," a number of studies have examined how uncertainty shocks affect the macroeconomic response (see Ulrich (2012), Aastveit et al. (2013), Baker et al. (2013), and Bloom (2013)). It has an important bearing on how monetary policy is transmitted and implemented, which has an impact on economic performance. It is strongly tied to questions of probability, volatility, expectations, and stability (in both macroeconomic and financial variables). Inadequate knowledge of the economic framework may prevent policy measures from having the envisioned impacts, and a lack of comprehension of the effects of monetary policy may lead to poor judgement and significantly increase the costs of accomplishing policy goals. These factors are still threats to macroeconomic responsiveness (Ononugbo, 2012). Therefore, although political uncertainty—not knowing how the policymaker would act—may frighten the financial market, macroeconomic uncertainty can impact policy action or inaction.

The mismatch in the economic response of sub-Saharan African economies can be remedied by stabilizing macroeconomic variables through government policies, bearing in mind that macroeconomic variables are non-stationary in nature, which affects the performance of the economy, strict policy measures should always be taken to mitigate the effects (Chigbu and Njoku 2013). Globally, there is a debate among scholars on the sensitivity of economies to macroeconomic variables (see: Mirchandani 2013, Edwards 2001, Oluwaseyi, Adesoye and Oluwakemi 2015, Chigbu and Njoku 2013, Amassowiya, 201china Oukawiya, Nwosa and Chukwunonso, 2015), with most studies having different objectives. and conclusions. Given that most sub-Saharan African economies still lag behind even with records of growth and development, this current study is driven to moderate the sensitivity of sub-Saharan African economies to macroeconomic variables. At the time of writing, there is a limited number of literatures that discusses this topic holistically in the context of SSA, and this has generated much interest from fringe politicians.

The response of macroeconomic variables has raised great concern among policymakers because most macroeconomic variables are volatile in nature, leading to uncertain growth and advancement of the economy, especially in emerging nations such as sub-Saharan African nations.

African leaders have embraced an approach to advancement that has mainly depended on a comprehensive framework of government involvement and control for economic management since the 1960s, when most sub-Saharan African nations attained independence. Price controls, import licences, foreign currency limitations, bank loan and interest rate controls, taxation of the agricultural sector, and the creation of state businesses in key industries were the primary tools of economic governance in the area. Significantly, since then, overall exports have decreased and the growth rates of real GDP and per capita income have declined. The terms of trade increased throughout this time, but they then declined in the 1970s (mostly as a result of a large increase in oil prices). Growth performance in North Africa improved in the 1970s, despite average growth rates in that area being lower in the 1960s than in the SSA. Apart from the negative consequences of the oil shock, the majority of nations also experienced the immobilising influence of governmental initiatives and regulations. The budget was unnecessarily burdened by non-profit governmental businesses, savings and investment rates were grossly insufficient for the demands of infrastructure and human resources development, and private investment required for the growth of agriculture and industry was nonexistent. The private sector found it very difficult to operate under the state-run system of domestic price controls, agricultural marketing, bank interest rate allocation, credit allocation, import licence distribution, and foreign currency allocation.

Following a reevaluation of development methods, a growing number of Sub-Saharan African (SSA) nations initiated comprehensive reforms aimed at achieving macroeconomic stability and eliminating government interventions impeding economic activity, particularly in the private sector. Throughout the 1980s, the

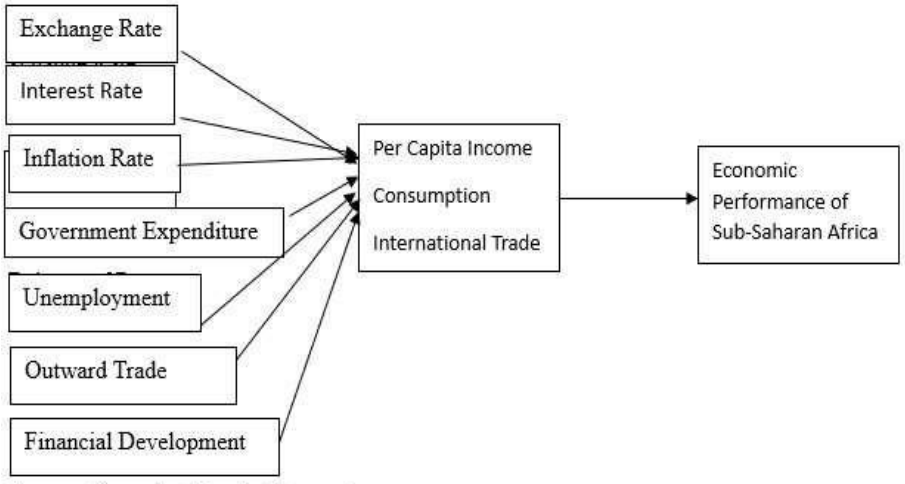
economy performed poorly, with per capita income declining. Inflation surged throughout the early part of the 1990s. It wasn't until the middle of the 1990s that the economy started to revive. Over the course of these fifteen years, significant inflows of foreign assistance and the cancellation of external debt were used to support persistently high investment savings gaps and fiscal imbalances. Throughout the 1980s and 1990s, North Africa's growth performance likewise declined.
Although African nations' overall economic performance during this period (1980–1995) was unsatisfactory there is some proof to suggest that those that successfully executed structural adjustment programmes and enhanced their macroeconomic policies performed better than those that did not. The number of excellent reformers or nations with greater growth has increased as a result of SSA reform initiatives carried out for longer periods of time by an increasing number of countries. Furthermore, in August 1994, fresh adjustment programmes based on a significant depreciation of the currency were launched by the West African and Central African franc zone nations, whose development had been persistently sluggish because of a highly overvalued exchange rate brief pause.

Despite various economic reforms, of which the Structural Adjustment Program (SAP) in SSA was one of the notable economic reforms in SSA, the ability of African economies to respond to macroeconomic variables has not promoted proper economic growth and advancement in the region. This needs to be addressed to ensure that effective growth and development is achieved in SSA countries. This calls for a timely study to assess how macroeconomic variables respond to sub-Saharan African economies. Having noted that the macroeconomic environment of sub-Saharan Africa is characterized by weak macroeconomic frameworks due to political diversity and instability, quality of governance and institutional frameworks, poor management of macroeconomic variables, weak implementation of monetary and fiscal policies, among others, lead to mis-synchronization. macroeconomic variables and the poor response to economic growth in sub-Saharan Africa. Therefore, this study intends to provide answers to the problems that hinder the sensitivity of macroeconomic variables to the economic growth and development of sub-Saharan Africa.

REVIEW OF RELATED LITERATURE

The discussion on the factors that drive economic growth is as old as economic studies and investigations. Following Aigbokhan (1995), economic growth refers to the increase in GDP per capita or any other aggregate income measure, (See Godwin (2007). Positive or negative growth is possible. One may refer to negative growth as the economy contracting. Economic distress and recession are its defining features. Economic development contributes to a lower unemployment rate, higher societal income, and the delivery of public services in the country.

However, we observe that the synchronization of macroeconomic variables in the sub-Saharan African economy has not led to increased economic growth and development, based on this, we examined the responsiveness of sub-Saharan African economies to macroeconomic variables and their interrelationship is conceptualized in the figure below.



Source: Conceived by the Researcher.

Figure 1: Diagram of the response of sub-Saharan African economies to macroeconomic variables

It is the wish of every nation to maintain a stable movement of macroeconomic variables from which the government creates policies to ensure economic growth and development. Many scholars believe that the emergence of contemporary industrial society led to an expansion of state activities, despite the fact that this has been loosely construed as the advancement of civilization. This has arguably increased the influence of the macroeconomic space on the activities of any economy. Wagner's law is thus sometimes referred to as the Law of Expanding State Activity. There would be an intense increase (more of the same activity) as well as a widespread rise (additional activities). Defence readiness is one instance of an intense rise. A significant increase might be represented by additional social security benefits. Stated differently, Wagner's assertion is ascribed to three key factors: (i) the state's development of social activities; (ii) a rise in administrative and protective acts; and (iii) the assumption of welfare functions. Additional causes mentioned include: (i) developments in technology and institutions; and (ii) democratisation in conjunction with increased per capita wealth. In summary, then, increased public spending is a result of social development, the income impact, population growth, urbanisation, technology, etc., some of which are supply-side factors and some of which are demand-side. Wagner's Law is sometimes known as the "Law of Increasing Public Expenditure" as a result. The law has been experimentally investigated using various methodologies for various nations, data sets, and time periods. GDP or GDP per capita have been seen as independent variables, whereas gross public spending, public expenditure per capita, and the ratio of public expenditure to GDP have been classified as dependent variables. These studies also take into account other variations of public spending, such as spending on public consumption, spending across the board for the public sector, total employment by the government and private sector, etc. In general, the law is upheld. There are other counterarguments about the causality element that are mentioned. This manifests as a tendency for governments to spend increasingly more when they enact countercyclical measures to lessen the effects of economic cycles (that is, as a percentage of GDP) compared to the growth they encourage.

After analysing Wagner's Law, two British economists, Alan T. Peacock and Jack Wiseman, concluded that Wagner had overlooked the leaps and jerks. Plotting the ratio of GDP to public expenditure across time over a considerable amount of time—roughly fifty years—reveals abrupt ups and downs. For example, except from a few minor jerks, one would notice two abrupt and significant jumps for the US, UK, Germany, France, and Japan over the years 1914–18 and 1939–1944. They contend that a societal upheaval like a war results in a permanent upward shift, meaning that when normalcy returns, the expected level will differ from what it was before to the upheaval. We call this upward movement the "displacement effect." For this reason, the "displacement effect hypothesis" is another name for their theory.

Peacock and Wiseman provide the following explanation for the above: people's willingness to pay a certain amount in taxes rather than the idea of a desirable level determines public spending. In regular times, people's perceptions of "desired level of expenditure" and "tolerable tax burden" continue to differ. Nevertheless, this disparity narrows in the event of a societal upheaval or major disruption (like a war). When things go back to normal, new concepts for reasonable tax rates arise, and spending reaches a new ceiling. Public spending will once again be assumed to represent a constant percentage of GDP, but it will do so at a different rate—that is, greater than it was prior to the disruption. Peacock and Wiseman acknowledge that "tax yields with given tax rates too may rise with rising real GNP per capita," despite the fact that the link between tax rates and tax yields is not particularly clear-cut. People are more concerned with rates than with total costs when it comes to acceptable boundaries. The peace period plateau can have a little increasing slope with higher tax yields. Individuals will adopt previously unaccepted means of soliciting money during times of need. However, under regular circumstances, the government might not feel secure enough to carry out its desired policies. Following a disturbance, the government may then put those plans into action as individuals get used to the higher taxing levels and rates. Another phenomenon known as the "inspection effect" occurs when individuals become aware of their responsibilities. Additionally, there is the "concentration effect," which states that while the central government is responsible for carrying out the stabilisation role, its proportion of the government grows with each upheaval.

The Peacock-Wiseman hypothesis is more often employed in relation to absolute per capita public spending than it is to the proportion of public spending in GDP as it is in Wagner's Law. This makes drawing a straight contrast between the two challenges. The Peacock-Wiseman Hypothesis, on the other hand, is more concerned with the change in the level (i.e., in the sense of intercept) between two calm periods punctuated by an upheaval, while Wagner Law is more focused on a general rising trend. An upheaval-induced change in levels is called a "structural break." This is due to the fact that, ceteris paribus, the idea that institutions, tastes, and preferences are consistent does not hold true—that is, the parameters fluctuate.

Various economic schools of thought, such as the Austrian school and classical economics, argue that state intervention or regulatory actions lead to an increase in unemployment.

Their combined points of view constitute the traditional explanation of unemployment. Therefore, regulation
and intervention trigger unemployment in a variety of ways. Increasing the minimum wage, for instance, results in higher labour expenses than in real labour's economic worth, particularly in low-skill sectors. In an effort to save expenses and streamline operations, businesses refuse to recruit new staff in response to these minimum wage rules. Labour regulations that restrict layoffs and downsizing, support tenure security, and require the supply of benefits beyond pay are among additional examples. Because of the financial and legal ramifications of stringent labour rules, several firms are reluctant to increase their staff or recruit more employees.

Additionally, the renowned economist "Alfred Marshall" asserts the comparable salary per unit of labour efficiency in his well-known "Efficiency Wage Theory" from his 1890 book "Principles of Economics". This preliminary theory's proponents claimed that wages for workers should vary according to productivity. Stated otherwise, an employee who performs better should be paid more than an employee who performs worse. Marshall's idea developed into the useful wage hypothesis. They contend that if companies pay salaries beyond the level of equilibrium, they will be able to function more effectively and produce more. Raising pay beyond the going rate might specifically encourage more effort from workers, lower employee attrition, draw in highly skilled workers and improve the well-being of workers.

Paying high salaries beyond the equilibrium level does have a drawback, however. Paying well will inevitably draw more workers to a business. In order to remain competitive in the labour market, other companies could also provide better compensation. Increasingly prevalent adoption of this practice could lead to unemployment because it raises labour costs, discourages employers from growing their workforce, and sets unattainable standards for the labour market. Workers would be reluctant to offer jobs at lower pay because they believe it could be a sign of incompetence, and employers would prefer to avoid hiring people who offer lower pay.

The best theories for trade outwardness are those related to global commerce. Different theories account for different facets of global trade which include the Heckscher-Ohlin Theory, the factor proportions theory and the product life cycle idea developed in the 1960s by Harvard Business School professor Raymond Vernon.

The premise that financial deepening promotes growth serves as the foundation for the supply-leading theory. Thus, the growth and presence of the financial markets are seen as a source of higher levels of investment and saving, which in turn encourages the effectiveness of capital accumulation. Ohwofasa and Aiyedogbon (2013) state that the supply-leading hypothesis is based on the notion that sound financial firms can promote general economic efficiency, create and boost liquidity, promote savings, enhance the generation of capital, reallocate resources from non-growth sectors to more contemporary growth-stimulating sectors, and foster capable entrepreneurship in these modern economic sectors. Furthermore, financial depth is a key indicator of economic development, which is the main tenet of the supply-leading hypothesis, according to Adeyeye et al. (2015). The advancement of the financial sector is thus seen as a prelude to the most efficient use of financial resources. The fundamental tenet of this theory is that there is a causal link that really flows from financial development to economic growth. According to Mckinnon (1973) and Shaw (1973), an effective financial sector tends to increase financial intermediation by reducing transaction and monitoring costs as well as asymmetric information. According to the supply-leading concept, the degree of financial development significantly determines the rate of growth in the real sector. Therefore, it is anticipated that financial deepening would provide excellent chances for the economy to expand quickly and steadily.

Robinson (1952) is credited with developing the demand-following theory, which is predicated on the idea that financial deepening develops over time as an outcome of economic expansion. Stated differently, the theory of causation posits that financial advancement follows economic expansion. As the economy grows, demand for financial services rises, which strengthens the financial system (Calderón and Liu, 2002). Demand-following hypothesis proponents contend that when macroeconomic results rise, the growth of the real sector encourages the growth of the financial sector. In the literature on monetary economics, it is claimed that the demand-following understanding of financial market development is just a delayed reaction to economic expansion. Stated differently, demand for financial goods is thought to be stimulated by development in the real sector of the economy. In other words, as the economy grows, there is a higher need for financial services, which in turn spurs financial growth. Given the demand-following concept, it may be considered a waste of resources to grow the financial system at the cost of the industry. Optimal resource allocation, however, necessitates concentrating on the real sector during its early phases of expansion, which in turn generates chances for the financial sector's growth. The expansion of the economy drives up demand for financial services, which in turn drives up financial development. The idea

that the growth of the real sector encourages financial deepening with strong prospects for economic recovery was backed by Demetriades and Hussein (1996).

The connection between capital flows, exchange rate regimes, and currency crises in emerging countries was studied by Edwards (2001). The paper illustrates the political conflicts that have arisen in Mexico, East Asia, and the 1990s crises in Brazil and Russia. According to the study's findings, a floating exchange rate might operate well under the correct legislative and economic conditions. Since most emerging economies are still having difficulty determining the best exchange rate policy, whether fixed or floating, the issue with exchange rate policy is that no approach seems to be infallible.

Summarily, the extant literature reviewed exhaustively show how responsive macroeconomic indicators are to economic performance. Some of the studies like Agalega and Antwi (2013), Kolawole (2013), Antwi, Mills and Zhao (2013), Okuzeto et al. (2015), Mbulawa (2015), Khamfula (2004), Tonori (2012), Godwin (2007), Mirchandani (2013), Chigbu and Njoku (2013), Hameed and Ume (2011), Mustapha, Mathew and Oluwaseun (2017) all argued that macroeconomic variables have significant positive effects on economic performance; while Abubakr et al. (2021), Breintung (2000), Manyok (2016) and Ahmed et al. (2018) found negative and substantial effects between macroeconomic variables and economic performance in their respective studies. This very study therefore poised to explore the responsiveness of economies of selected Sub-Saharan African countries to macroeconomic variables.

METHODOLOGY

To fulfill the stated research objectives, this study focused primarily on examining the sensitivity of the economies of selected sub-Saharan African countries to macroeconomic variables from 35 selected sub-Saharan African countries between 1990 and 2022. After conducting a review of theoretical and empirical literature, we considered the following exchange rate variables (EXR), interest rate (INTR), inflation rate (INFR), government expenditure (GEXP), employment (EMP), trade outwardness (TOW) and financial development (FD) as measures of macroeconomic variables, while the African economy was measured by per capita income (PCI), consumption (CONS), investment (INV) and international trade (TRADE), while the control variables are macroeconomic volatility (MEV) and unemployment (UMP). The data set is secondary data that covers the period 1990-2022 due to data availability. We have drawn this data from the following sources; The World Bank's World Development Indicators (WDI), World Governance Indicators (WGI), and macroeconomic volatility were measured using the standard deviation of quarterly real GDP growth for each year under review.

We conducted this study by using all the sub-Saharan African nations for the period 1990 to 2022. The area and areas of the African continent that are south of the Sahara are referred to as sub-Saharan Africa by the World Bank. These include West Africa, Southern Africa, East Africa, and Central Africa. Geographically speaking, the word may refer to state entities that have just a portion of their territory, as defined by the United Nations (UN), in addition to African nations and territories that are entirely included inside this designated zone. This geographic area is regarded as unconventional, and depending on whatever organisation (such as the UN, WHO, World Bank, etc.) describes it, there are somewhere between 46 and 48 nations involved. The African Union (AU) divides the continent's 55 member nations into five unique and uniform regions, using a different method of regional recognition.

Model Specifications

The empirical model representing the relationships that are tested are specified in this section. The baseline model – panel dynamic model was adopted following a similar study by Pole and Cavusoglu (2021) which appears thus:

$$InASI_{It} = \beta_0 + \beta_1 INF_{it} + \beta_2 EXCHR_{it} + \beta_3 MS_{it} + \varepsilon_{it} - - - - - - - (1)$$

Where ASI = All Share Index. EXR = Exchange Rate, INF = Inflation, MS= Money Supply.

However, we captured the relationships that exist between sub-Saharan African economic performance and macroeconomic variables as follows:

$$InGDP_{it} = \beta_0 + \beta_1 InEXR_{it} + \beta_2 InINTR_{it} + \beta_3 InINFR_{it} + \beta_4 InUNEMP_{it} + \beta_5 InTO_{it} + \beta_6 InGEXP_{it} + \beta_7 InFD_{it} + \varepsilon_{it} - - - - - -(2)$$

Where In entails that the variables are in natural logarithm, β_0 is the constant, β_1 to β_7 represent the coefficients of the parameters, GDP represents the measurement of economic performance, EXR is the exchange rate, INTR is the interest rate, INFR is the inflation rate, TO is trade outwardness, GEXP is

government expenditure, FD is financial development. Also, t represents time, i is the cross-sectional identifier while ε_{it} represents the noise or error term.

Description of Model Variables

The variables for this study which will form the basis for the estimation of the specified model is summarized below:

S/No	Name of Variable	Notation	Role in Model	Source	Expected Sign
1	Gross Domestic Product	GDP	Dependent Variable -Measurement for economic performance	WDI	
2	Financial Development	FD	Independent Variable – An index that shows the development of the financial system.	IFS – IMF	+
3	Government Expenditure	GEXP	Independent Variable – Aggregate expenditure of government which can also point to public sector activity	WDI	+
4	Trade Outwardness	TO	Independent Variable – This is a measurement of the degree of openness of the economy. It is given as (Export plus Import divided by GDP)	Data from WDI and computed by the researcher.	+
5	Inflation Rate	INFR	Independent Variable – the measurement for change in price level.	WDI	-
6	Exchange Rate	EXR	Independent Variable – the measurement for the relative value of the countries currency with the US Dollar as the reference currency.	WDI	-
7	Interest Rate	INTR	Independent Variable – the measurement of the prevailing capitalization rate.	WDI	+ or -
8	Unemployment	UNEMP	Independent Variable – aggregate rate of unemployed relative to the size of the labour force.	WDI	-

Source: Researcher's Compilation.

Estimation Technique

This research used the Fully Modified Panel model as the primary estimating approach to analyse how sensitive the economies of a subset of Sub-Saharan African nations were to macroeconomic factors. As per Bahmani-Oskooee and Ng (2002), Kyophilavong (2013), and Pesaran and Shin 1999, the model's peculiarity lies in its ability to be employed in research studies regardless of the order of integration of the model variables I(0) or I(1). Additionally, it provides more realistic statistically significant estimates when contrasted to other
estimation techniques and can estimate both long-run and short-run relationships at the same time.
Pre-estimation tests like the panel descriptive statistics, correlational analyses and assortment of panel unit root tests will be deployed before the key estimation technique.
Furthermore, to investigate the relationship between economies of Sub-Saharan Africa the researcher formulated the Panel model framework as follows:

$$\Delta InGDP = \beta_{01} + \sum_{t=1}^{n1} \beta_{11}\, \Delta InGDP_{t-1} + \sum_{t=1}^{n2} \beta_{12}\, \Delta InEXR_{t-1} + \sum_{t=1}^{n3} \beta_{13}\, \Delta InINTR_{t-1} + \sum_{t=1}^{n4} \beta_{14}\, \Delta InINFR_{t-1}$$
$$+ \sum_{t=1}^{n5} \beta_{15}\, \Delta InGEXP_{t-1} + \sum_{t=1}^{n6} \beta_{16}\, \Delta InUNEMP_{t-1} + \sum_{t=1}^{n7} \beta_{17}\, \Delta InTO_{t-1} + \sum_{t=1}^{n8} \beta_{18}\, \Delta InFD_{t-1}$$
$$+ \alpha_{12} InEXR_{t-1} + \alpha_{13} InINTR_{t-1} + \alpha_{14} InINFR_{t-1} + \alpha_{15} InGEXP_{t-1} + \alpha_{16} InUNEMP_{t-1}$$
$$+ \alpha_{17} InTO_{t-1} + \alpha_{18} InFD_{t-1} + \varepsilon_{t-1} - - - (10)$$

Where In demands that the variables are expressed in natural logarithm, Δ is thedifference operator, GDP denotes the measures of economic performance which include the per capita income, consumption, investment and international trade, all other variables are as defined earlier, β_{01} is the constant, β_{11} to β_{18} represents short-run coefficients, α_{12} to α_{18} represents the long-run coefficients, $n1$ to $n18$ represents the lag length and ε_{t-1} represents the stochastic term in the model.

If equation 11 holds, we will estimate the existence of long-run cointegration between economic performance of Sub-Saharan Africa and macroeconomic variables. Thus, to estimate this relationship, tests like bounds test will be utilized under the following null hypothesis

Null Hypotheses: H_0: $\alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5 = \alpha_6 = \alpha_7 = \alpha_8 = \alpha_9 = \alpha_{10} = 0$

Alternative Hypotheses: H_1: $\alpha_1 \neq \alpha_2 \neq \alpha_3 \neq \alpha_4 \neq \alpha_5 \neq \alpha_6 \neq \alpha_7 \neq \alpha_8 \neq \alpha_9 \neq \alpha_{10} \neq 0$

The best explanation for these theories was provided by Pesaran, Shin, and Chu (2001). The next step after establishing cointegration among the variables is to estimate the error correction model (ECM), as suggested by Pesaran, Shin, and Chu (2001). As a result, we provide the following error correction model derived from the subsequent long-run component of the equation:

$$\Delta InGDP = \beta_{01} + \sum_{t=1}^{n1} \beta_{11}\, \Delta InGDP_{t-1} + \sum_{t=1}^{n2} \beta_{12}\, \Delta InEXR_{t-1} + \sum_{t=1}^{n3} \beta_{13}\, \Delta InINTR_{t-1}$$
$$+ \sum_{t=1}^{n4} \beta_{14}\, \Delta InINFR_{t-1} + \sum_{t=1}^{n5} \beta_{15}\, \Delta InGEXP_{t-1} + \sum_{t=1}^{n6} \beta_{16}\, \Delta InUNEMP_{t-1}$$
$$+ \sum_{t=1}^{n7} \beta_{17}\, \Delta InTO_{t-1} + \sum_{t=1}^{n7} \beta_{19}\, \Delta InFD_{t-1} + \alpha_{11} + \partial ECT_{t-1} + \varepsilon_{t-1}$$

In the preceding equations, all variables are defined, with ∂ representing the coefficient of the error correction model and 〖ECT〗_(t-1) denoting the error correction term. Theoretically, it is postulated that the error correction model's coefficient is negatively signed and possesses statistical significance in quantifying the rate at which the system adjusts from short-term to long-term equilibrium following a short-term disequilibrium.

RESULTS

To show the basic descriptive characteristics of the panel dataset, table 1 below gives a summary of the distributional statistics.

Table 1 – Summary of Panel Descriptive Statistics

	GDPLCU	GNEXP	INF	OEXR	PDEBT	UNENPILO	BZSCORE	TO
Mean	1.14E+13	2.96E+10	6.818756	521.9779	5.93E+09	8.138832	14.44018	0.199119
Median	2.61E+12	1.14E+10	4.865119	446.0000	2.03E+09	4.968000	14.30266	0.002607
Maximum	1.32E+14	4.58E+11	97.64232	3787.754	1.02E+11	25.54000	38.68299	12.09950
Minimum	2.18E+08	7.71E+08	-3.099781	1.986154	2.68E+08	0.600000	2.730522	7.89E-05
Std. Dev.	2.51E+13	6.59E+10	9.361215	715.3319	1.23E+10	6.514673	5.520695	1.168434
Skewness	3.536641	4.583721	5.601656	2.064644	4.775507	0.967111	0.572181	8.572920
Kurtosis	15.50983	24.53615	49.23561	7.623160	29.55533	2.495472	3.677997	79.47026
Jarque-Bera	11617.15	29675.08	127307.6	2081.334	43138.73	224.7619	95.83415	345469.5
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	1.54E+16	3.85E+13	9205.320	678571.2	7.70E+12	10987.42	18772.24	268.8109
Sum Sq. Dev.	8.51E+29	5.65E+24	118216.0	6.65E+08	1.95E+23	57252.85	39591.01	1841.707
Observations	1350	1300	1350	1300	1300	1350	1300	1350

Source: *Authors' Computation*

The series are observed to be largely leptokurtic as it is consistent with economic and financial observations. Though the Jarque Bera statistics suggests non-normality, it does not change the reliability of the datasets for the panel investigation.

Table 2 reports the test of the panel linear association amongst the investigated series. This shows the possible linear co-movement among the investigated panel estimators.

Table 2 – Summary of Panel Correlational Matrix

Correlation								
t-Statistic								
Probability	GDPLCU_B	GNEXP_B	INF_B	OEXR_B	PDEBT_B	UNENPILO_B	BZSCORE	TO
GDPLCU	1.000000							
GNEXP	-0.037152	1.000000						
	-1.144681	-----						
	0.2526	-----						
INF	-0.049649	0.051310	1.000000					
	-1.530548	1.581901	-----					
	0.1262	0.1140	-----					
OEXR	0.663701	-0.161414	-0.074913	1.000000				
	27.31974	-5.035912	-2.313052	-----				
	0.0000	0.0000	0.0209	-----				
PDEBT	-0.014693	0.838337	0.110773	-0.129480	1.000000			
	-0.452453	47.34834	3.431780	-4.020480	-----			
	0.6510	0.0000	0.0006	0.0001	-----			
UNENPILO	-0.307053	0.452428	0.202153	-0.463761	0.315095	1.000000		
	-9.933924	15.62019	6.355427	-16.11699	10.22239	-----		
	0.0000	0.0000	0.0000	0.0000	0.0000	-----		
BZSCORE	0.009488	0.047026	-0.157218	0.087308	0.046938	-0.033828	1.000000	
	0.292150	1.449517	-4.901641	2.698470	1.446808	-1.042137	-----	
	0.7702	0.1475	0.0000	0.0071	0.1483	0.2976	-----	
TO	-0.078726	-0.015881	0.750140	-0.115947	-0.031373	0.184086	-0.153284	1.000000
	-2.431491	-0.489017	34.92701	-3.594196	-0.966427	5.766471	-4.776001	-----
	0.0152	0.6249	0.0000	0.0003	0.3341	0.0000	0.0000	-----

Source: Author's Computation

The result of the panel correlational matrix is a mix-bag of positive and negative correlation. Unemployment, trade openness, public debt and expenditure were found to share negative correlation with economic growth. This indicates that these indicators move in opposite direction with economic growth.

The stationarity properties of the panel series are shown by the results of the panel unit root tests. This is reported in table 3 below:

Table 3 - Panel Unit Root Test

VARIABLE	LLC		IPS		ADF Fisher		PP Fisher	
	T-stat	Inference	T-stat	Inference	T-stat	Inference	T-stat	Inference
GDP	-32.53 (0.00)	I(0)	-31.28 (0.00)	I(0)	727.43 (0.00)	I(0)	733.32 (0.00)	I(0)
GNEXP	-30.29 (0.00)	I(0)	-28.62 (0.00)	I(0)	639.91 (0.00)	I(0)	658.54 (0.00)	I(0)
INF	-31.44 (0.00)	I(0)	-29.76 (0.00)	I(0)	639.81 (0.00)	I(0)	681.69 (0.00)	I(0)
OEXR	-32.61 (0.00)	I(0)	-30.38 (0.00)	I(0)	687.70 (0.00)	I(0)	804.01 (0.00)	I(0)
RINT	-33.66 (0.00)	I(0)	-31.24 (0.00)	I(0)	714.03 (0.00)	I(0)	780.20 (0.00)	I(0)
UNENPILO	-30.63 (0.00)	I(0)	-30.07 (0.00)	I(0)	649.74 (0.00)	I(0)	845.71 (0.00)	I(0)
BZSCORE	-33.20 (0.00)	I(0)	-30.05 (0.00)	I(0)	678.96 (0.00)	I(0)	845.89 (0.00)	I(0)
TO	-32.74 (0.00)	I(0)	-29.43 (0.00)	I(0)	632.65 (0.00)	I(0)	656.62 (0.00)	I(0)

Source: Extracted by the Author using E-Views.

The fact that the panel are all found to be stationary at levels supports the use of the dynamic form of the

panel least squares.

Panel Regression Result

The key estimation of this study follows the fully modified panel least squares and a summary of the results is presented in table 4 below: The table presents the summary of the Panel Fully Modified Least Squares (FMOLS) results, which is a robust method for exploring the long-term relationships between co-integrated variables in a time series or panel data settings. The table outlines the key FMOLS results including the coefficients, statistical significance, and implications of the variables in the model. These results form the foundation for subsequent in-depth discussion, offering insights into variable relationships and their significance for the research objectives.

Table 4: Summary of Panel FMOLS result

VARIABLES	Coefficient	T-stat	P-value
LOG(GNEXP_B)	0.125741	6.173286	0.0000
INF_B	-0.081321	-65.61474	0.0000
LOG(OEXR_B)	-0.013766	-0.522200	0.6017
RINT_B	-0.005235	-5.720000	0.0000
UNENPILO_B	-0.058648	-13.22332	0.0000
BZSCORE	0.006516	2.215059	0.0271
TO	0.172581	10.83263	0.0000

Source: *Extracted by the author from E-views*

Evidence demonstrates that government spending, financial growth, and trade outwardness have a positive and major impact on economic growth. The data shown in the table confirms that government expenditure, financial advancement, and trade outwardness all contribute favourably and considerably to the growth of economies. This means that as government spends more, develop the financial system, and enhance openness in trade relations in the SSA region, the economy grows. Conversely, interest rate, inflation and unemployment are found to affect the growth of the SSA economies adversely and significantly. This result is used in testing the formulated hypotheses in the subsequent section.

In line with this objective and using Panel FMOLS model to test the hypothesis, the finding reveals that government expenditure has a positive and substantial effect on the growth of the economies of sub-Saharan African countries. This implies that a unit change in government expenditure would lead to a 12% increase in the growth of the economies of the SSA countries. This positive and significant impact can be as a variety of reasons. First and foremost, government expenditure helps to stimulate economic activities by increasing the demand for goods and services. Secondly, government expenditure helps to increase the level of productivity and efficiency by investing in infrastructure and in human capital. Again, the government expenditure can promote economic growth by providing a predictable, conducive, and stable environments for businesses to operate in. Additionally, government expenditure helps to reduce poverty and inequality by providing social services and safety nets.

In line with this objective and using Panel FMOLS model to test the hypothesis, the result shows that rate of inflation has a negative and significant impact on the growth of the economies of sub-Saharan African countries. This implies that a unit change in the rate of inflation would have an 8% decrease in the growth of the economies of sub-Saharan African countries. This negative impact can be attributed to the fact that in a situation where inflation rate is high, it can erode the purchasing power and reduces real wages, which leads to lower consumption and investments. Again, a high rate of inflation leads to uncertainty and instability, which discourages investments and economic activities. Furthermore, high inflation can lead to a decrease in the all the SSA countries international competitiveness, making it more difficult for the countries to attract foreign investment. Additionally, a higher rate of inflation can result is a decline in the value of the local currency, which can make it more difficult to import goods and services and increase the cost of debt servicing.

In line with this objective and using Panel FMOLS model to test the hypothesis, the finding reveals that Official exchange rate has a negative and insignificant on the growth of the economies of sub-Saharan African countries. There are hosts of reasons why exchange rate in the SSA countries is negative and have an insignificant impact in the countries of the region. Firstly, many countries in this region have a limited access to foreign exchange markets, and so the official exchange rate may not reflect the true market value of the currency. Again, many nations in the region have weak institutions and high levels of corruption, which can limit the effectiveness of any economic policies. Also, most countries in the SSA region have very high levels of inflation, which can make the official exchange rate less meaningful.

Consistent with this goal, the hypothesis was tested using the Panel FMOLS model. The findings indicate that the real interest rate has a substantial and adverse effect on the economic development of the nations in the SSA region. High interest rates in sub-Saharan African nations may significantly impede economic development by discouraging investment and economic activity. The reason for this is due to a high interest rate increases the cost of borrowing for firms, making it more costly for them to finance their expansion or invest in new technology. This may result in a decline in economic growth and also has the potential to result in increased unemployment. Similarly, elevated interest rates might provide challenges for people seeking to get loans for buying mansions or other extravagant goods, so resulting in a decline in consumer expenditure and further impeding economic expansion.

In line with this objective and using Panel FMOLS model to test the hypothesis, the finding reveals that unemployment has a negative and significant impact on the growth of the economies of sub-Saharan African countries. This implies that a unit change in unemployment would lead to a 5% decrease in the growth of the economies of the countries in this region. Unemployment can have a negative and significant impact in the region in a number of ways. Firstly, it leads to a loss of skills and experience, as those who are unemployed may lose the ability to find work in the future. Secondly, it reduces consumer spending, as those who are unemployed have less money to spend. Furthermore, it can lead to a decrease in productivity, as those who not employed are not contributing to the economy. Finally, it can lead to social problems, such as crime and violence, as those without jobs may become frustrated and resort to illegal activities.

In line with this objective and using Panel FMOLS model to test the hypothesis, the finding reveals that financial development has a positive and significant impact on the growth of the economies of sub-Saharan African countries. By implication, a unit change in financial development would lead to an increase in the growth of the economies of the countries in the SSA. This positive impact can be attributed to the fact that financial development can improve access to capital for businesses and entrepreneurs, allowing them to invest in new technologies and expand their operations. Also, financial development helps to reduce the cost of doing business, as businesses can access cheaper credit and improve their efficiency. Again, financial development helps to reduce poverty and inequality, as those with access to financial services can use them to improve their standard of living. Finally, financial development can help to promote stability and growth by ensuring that the financial sector is well-regulated and that there is transparency and accountability. This, in turn, can reduce volatility and help to ensure that the economy is resilient to shocks. In sum, the benefits of financial developments cannot be over emphasized and should be pursued.

Consistent with this goal and using the Panel FMOLS model to examine the hypothesis, the findings indicate that trade openness has a favourable and substantial effect on the economic development of Sub-Saharan African nations. The beneficial result of this is that it enables nations to engage in specialisation, focusing on the production of commodities and services in which they excel, while importing those in which they have a comparative disadvantage.

This means that resources are used more efficiently, and countries can export more, which increases their income. Furthermore, trade openness can lead to the transfer of technology and knowledge from abroad, which can help to improve productivity and growth. Lastly, trade outwardness can encourage foreign investment, which can provide much-needed capital for economic development.

CONCLUSION

This work was set out to show the impact of selected macroeconomic variables on the growth performance of Sub-Saharan African nations. It adopted the expost facto research design and was empirical in its approach to the resolution of the raised research problem. The choice of SSA as the jurisdiction for this study was informed by the growth conundrum which these countries have experienced over the years regardless the abundance of natural endowments in these countries. The research focused on examining the impact of the management of macroeconomic environment and the relative variables in driving growth in the region.

Given the observed positive and substantial effect of government expenditure on the growth of the economies of sub-Saharan African countries, it is recommended that government should intensification the level of productive spending in the region. Recurrent spendings and fiscal indiscipline should be checked with the view to enhancing the growth impact of public expenditure on the SSA region.

Also, it is observable that inflationary pressure has been affecting the growth level in SSA countries. This is consistent with the findings of this study. It is therefore recommended that monetary policy, fiscal policy and direct measures should be adopted to stem the rising inflation level. Inflation targeting as

monetary policy approach by the Central Bank should be adopted together with other stabilization and price control policies.

In addition, the volatility of exchange rate should be controlled through a well-thought-out exchange rate management system. To contain the adverse effect of exchange rate swings, such negative practices like roundtripping, unhealthy speculation, dollarization of the region should be checked using market-based and policy-enhanced approaches.

It is theoretically consistent that high interest rate such as is the case in the SSA region stifles growth by increasing the cost of accessing funds and doing business. Selective credit and priority sector credit enhancement through interest rate subsidy is recommended for the SSA region as this will act as stimulant for growth.

The productivity of the SSA region has been blighted over the years by unemployment and underemployment and this is consistent with the findings of the study. It is therefore recommended that empowerment of small and medium scale enterprises, skill acquisition and other policy objectives that emphasizes self-employment should be encouraged. This will reduce the growth-limiting effect of unemployment in sub-Saharan African countries.

An efficient financial system is undoubtedly a growth accelerator. Given that financial development was found to have a positive and significant impact on the growth of the economies of sub-Saharan African countries, bank development, stock market development, insurance sector development should be given priority attention by the government. This will ensure efficient financial intermediation which is a driver of growth and sustainable development.

Trade outwardness of the SSA region has largely been in the area of primary product sales. Much as this has increased foreign exchange earnings and arguably enhanced growth, it is recommended that the trade outlook of the region should be rebalanced by also encouraging production and exportation of finished goods. This will be enhanced growth through increased local capacity utilization.

The study can be adjudged to have added to the conversation on growth drivers for the SSA countries while advancing evidence-based recommendations for the imperatives of all-inclusive growth in the region. It is believed that the study would open the door for further discussions and inquiry into the growth drivers in SSA and the necessity of a healthy macroeconomic environment for the region. Policy makers, economic players and other regional blocs continue to expect the region to break away from perennial low growth level and join the league of economies on the trajectory of sustainable growth and development. The role of stable and well-managed macroeconomic environment in actualizing this dream can never be underplayed. There is a new measure of economic performance put forward by the world bank known as economic fitness which

places emphasis on local capacity and economic diversification. An investigation into how the studied macroeconomic variables can influence the economic fitness of SSA countries is recommended for further study.

REFERENCES

1. Adekunle, O.A., Alalade, Y.S.A. &Okulenu, S.A. (2016). Macroeconomic variables and their effect on the growth of the Nigerian capital market. International Journal of Economics and Business Management, 2(2), 22-37.
2. Agalega.E, &Antwi.S., (2013). The Impact of Macroeconomic Variables on Gross Domestic Product: Empirical Evidence from Ghana. International Business Research. [electronic magazine] 6 (5)
3. Aghion, P. & Howitt, P. (1992), "A model of growth through creative destruction", Econometrica, Vol. 60 No. 2, pp. 323-351.
4. Antwi, S., Mills, E.F. & Zhao, X. (2013), The impact of macroeconomic factors on economic growth in Ghana: a cointegration analysis, International Journal of Academic Research in Accounting, Finance and Management Sciences, Vol. 3 No. 1, pp. 35-45.
5. Arewa. A. and Nwakahma. P. C, (2013). Macroeconomic variables and the dynamic effect of public spending; Long-term trend analysis in Nigeria. Journal of Knowledge Management, Economics and Information Technology. [e-journal] Vol. 3 (6).
6. Argy, V. (1989), Choosing an Exchange Rate Regime for a Smaller Economy: A Survey of Some Key Issues, in Choosing an Exchange Rate Regime, ed. Victor Argy and Paul De Grauwe

(Washington: International Monetary Fund, 1990).
7. Azariadis, C. & Stiglitz, J. (1983). "Implicit Contracts and the Fixed Price Equilibrium." Quarterly Economic Journal. 98. DOI: 10.7916/D83R13GF
8. Barro, R. J. & Gordon, D. B. (1983), Rules, Discretion, and Reputation in a Model of Monetary Policy, Journal of Monetary Economics 12, pp. 101-20.
9. Bayraktar, N. & Wang, Y. (2006), "Banking sector openness and economic growth", Policy Research Working Paper, No. 4019, World Bank, Washington, DC, ©WorldBank, Available at: https://openknowledge.worldbank .org/handle/10986/9273 License: CC BY 3.0 IGO.
10. Brixiová .Z., & Ndikumana . L., (2011). Supporting Africa's growth after the crisis: The role of macroeconomic policies. Research Institute of Political Economy. [pdf] Massachusetts.
11. Calvo, Guillermo & Carmen Reinhart, (2002), Fear of Floating. Quarterly Journal of Economics, 117, no. 2 May, pp. 379-408.
12. Chappelow, J. (2020). Unemployment guide. INVESTOPEDIA.
13. Ciccone, A. &Jarocinski, M. (2010), "Determinants of Economic Growth: will data tell?", American Economic Journal: Macroeconomics, Vol. 2 No. 4, pp. 222-246.
14. Dimas, P., Stamopoulos, D., Tsakanikas, A., & Vasileiadis, M. (2022). Globalinto Input-Output Intangibles Databank: Sector-level intangible assets data for the EU-27 and the UK. Data in brief, 41, 107932.
15. Doppelhofer, G., Miller, R.I. & Sala-i-Martin, X. (2004), 'Determinants of long-run growth: a Bayesian approach to averaging classical estimates (bace), OECD Economics Department Working Papers 266, OECD Publishing.
16. Easterly, W.R., & Wetzel, D.L. (1989). Policy Determinants of Growth: A Review of Theory and Evidence, Policy, Planning and Research Working Paper Series No. 343, World Bank, Washington DC., pp. 1-41.
17. Edwards, S, (2001), Exchange Rate Regimes, Capital Inflows and Crisis Prevention, NBER and University of California, Working Paper.
18. Eregha, P.B. (2010). Interest Rate Variation and Investment Determination in Nigeria. International Business Management, 4 (2), pp. 41-46.
19. Fischer, S. (1991). Growth, macroeconomics and development. In Nber Macroeconomics. New York, 8-9 March 1991. New York: MIT Press. 329-379.
20. Grossman, G.M. &Helpman, E. (1991), Quality rankings in growth theory, The Review of Economic Studies, Vol. 58 No. 1, pp. 43-61.
21. Hameed, I. & Ume, A. (2011). Title: The impact of monetary policy on gross domestic product (GDP). Institute of Interdisciplinary Business Research. Pages: 1348-1361.
22. Harmse.C., (2006). The relationship between South African macroeconomic policy and the performance of different asset classes. SARB Conference. [pdf]
23. International Monetary Fund, (2014). Macroeconomic Development in Low-Income Developing Countries. [pdf] September 29.
24. Islam, N. (1995), Growth Empirics: a panel data approach, The Quarterly Journal of Economics, Vol. 110 No. 4, pp. 1127-1170.
25. Josiah, M. &Akpoveta, E.B. (2019). Macroeconomic Variables and Nigerian Stock Market Returns. Accounting & Taxation Review, 3(1), 55-68.
26. Keynes, J.M. (1936). General theory of employment, interest and money. Britain: Palgrave MacMillan. ISBN: 978-0-230-00476-4
27. Khamfula Y., (2004). Macroeconomic Policy, Shocks and Economic Growth in South Africa. [pdf] International Monetary Fund.
28. Kira.A. R., (2013). Factors Affecting Gross Domestic Product (GDP) in Developing Countries: The Case of Tanzania. European Journal of Business and Management. [e-journal] Vol 5 (4).
29. Kolawole.O. B., (2013). Growth effects of macroeconomic stability factors; Empirical evidence from Nigeria. Developing Country Studies [ejournal] Vol. 3 (14).
30. Lucas, R.E., Jr. (1988), On the mechanics of economic development, Journal of Monetary Economics, Vol. 22, pp. 3-42.
31. Mahmudul, A., & Gazi Salah, U. (2009). The relationship between interest rates and stock prices: Empirical evidence from developed and developing countries. International journal of business and management, Vol.4, No 3, pp. 43-51.
32. Mankiw, N.G., Romer, D. & Weil, D.N. (1992), A Contribution to the Empirics of Economic Growth, Quarterly Journal of Economics, Vol. 107 No. 2, pp. 407-437.
33. Marshall, A. (1890). Principles of Economics. London: MacMillan

34. Mbulawa.S., (2015). The Impact of Macroeconomic Variables on Economic Growth in Botswana. Journal of Economics and Sustainable Development. [pdf] Vol. 6 (4).
35. McKinon, Ronald, (1963), Optimal Currency Areas. American Economic Review, 53, pp. 717-724
36. Montiel, Peter J. & Jonathan Ostry, (1991), Macroeconomic Implications of Real Exchange Rate Targeting in Developing Countries IMF Working Paper 91/29. International Monetary Fund.
37. Mordi, N. O. (2006), Challenges of Exchange Rate Volatility in Economic Management in Nigeria, In the Dynamics of Exchange Rate in Nigeria, Central Bank of Nigeria Bullion, Vol. 30, No. 3, pp. 17-25.
38. Moshi.H. P.B, &Kilindo. A. A. L., 1999. The Impact of Government Policy on Macroeconomic Variables: A Case Study of Private Investment in Tanzania. African Consortium for Economic Research. [pdf] Nairobi.
39. Okudzeto et al, (2015). Ghana 2015. [pdf] Available at:< http://www.gh.undp.org/content/dam/ghana/docs/Doc/Inclgro/UNDP_GH_INCGRO_AEO-2015-Ghana_country-note.pdf>
40. OSAA, (2009). Africa Fact Sheet; Main economic indicators. [pdf] Office of the United Nations Special Adviser on Africa.
41. Field, H. & Cavusoglu, B. (2021). The Impact of Macroeconomic Variables on Stock Return Volatility in the Nigerian Stock Market. Asian Journal of Economics, Finance and Management, 3(3), 32-43.
42. Reddy, Y. V. (1997), Exchange Rate Management: Dilemmas, Inaugural Address at the XIth National Assembly of the Forex Association of India on 15 August 1997.
43. Sala-i-Martin, X., Doppelhofer, G. & Miller, R.I. (2004), Determinants of long-term growth: a bayesian averaging of classic estimates (BACE) approach, American Economic Review, Vol. 94 No. 4, pp. 813-835.
44. Solow, R.M. (1956), A contribution to the theory of economic growth, Oxford Review of Economic Policy, Vol. 23 No. 1, pp. 3-14.
45. Uchendu, O.A. (1993). Interest rate policy, savings and investment in Nigeria. Central Bank of Nigeria Economic and Financial Review, 31(3) pp. 34-52.
46. UNCTAD, (2010). Financial Crisis, Macroeconomic Policy and the Challenger to Development in Africa. United Nations Conference on Trade and Development. July 8th.
47. Williamson, John. (1993). Exchange Rate Management.The Economic Journal, Vol. 103. No. 416. Pp. 189 – 197.
48. World Bank, (2015). Global Economic Outlook; Sub-Saharan Africa. [Online], available at: <http://www.worldbank.org/content/dam/Worldbank/GEP/GEP2015a/pdfs/GEP2015a_chapter2_regionaloutlook_SSA.pdf >
49. World Bank (1990), Adjusting Credit Policies for Sustainable Growth. Policy and Research Series, World Bank, Washington DC.
50. Zhenhui, X., & Pal, S. (2022). Magazine. Journal of Management Science and Engineering. Available online 28 May 2022. In Press, Journal Pre-proof.