Macroeconomic Stability and Inclusive Growth in Nigeria: A Cointegration Approach

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Abstract

The strategy of Inclusive growth is a newly introduced concept in Development economics that emerged in late 2000s out of the gross failure of traditional growth models to deal with the contemporaneity of high economic growth on one hand, and soaring poverty, inequality and unemployment on the other hand particularly in the developing world. Ever since, it has dominated policy-making framework in the world. This study sets out to examine the inclusiveness of growth in Nigeria and the role of macroeconomic stability to spur inclusive growth and development in Nigeria using the data for the period of 1960-2012. Due to lack of a standard measure of inclusive growth, an index of inclusive growth has been constructed using 23 agricultural, economic, education, environmental and health variables while applying Principal Component Analysis and Human Development Index formula. Econometric approaches of Johansen Cointegration testing and Vector Error Correction Model have been employed further to test the long run relationship between macroeconomic stability and inclusive growth in Nigeria. Our findings come up with three stylized facts: firstly, there is a long run relationship between all the regressors and inclusive growth; secondly macroeconomic stability has a significant impact on inclusive growth as GDPV and INV revealed an inverse relationship between them and inclusive growth. Lastly, TOP, FDI, C-GDP and GFC have negative impacts on inclusive growth. Hence the recommendation that there should be committed and sincere efforts towards diversifying the economy so as to contain the volatility by reducing the dominance of oil sector in the economy. Moreover, a macroeconomic policy targeting moderate inflation should be formulated just to make the economy stable and favorable for inclusive growth.

Keywords: Inclusive growth, Macroeconomic Stability and VECM

JEL Classification Codes: O49, E61, C32

I. Introduction

Filho, (2010) corroborated that the strategy of Inclusive growth emerged in the late 2000s out of the colossal failure of the traditional growth models to address the chant of coexistence of growth, poverty and inequality in the developing world. In the other words, the developing countries though witness high economic growth in recent times but with high poverty incidence and unemployment. Growth is inclusive if there is a rapid pace and sustainable growth in the long run, which reduces poverty substantially and it is broad-based across sectors thereby guaranteeing full employment of labor force (Ianchovichina and Lundstrom, 2009). Inclusive growth paradigm brings about sustained economic growth with equal and equitable opportunities to the citizenry in form of employment generation, rise in per capita income, availability of goods and services, price stability, access to better socio-economic services and their likes. As a result, the policy making environment has been engrossed by the inclusive growth strategy. Thus, policies that foster inclusive growth should create a favorable investment climate, clear obstacles to growth, and result in a greater number of opportunities in the society. Macroeconomic stability is a necessary condition for inclusive growth. This is particularly so as such macroeconomic stabilization policies (fiscal and monetary) are fundamental in achieving full employment, price stability, and high and sustained growth in an economy (Groepe, 2012). In view of the nature of inclusive growth, it is said to be central to attaining MDGs, as the MDGs advocate for human dignity, equality and equity over and above their primary goal of poverty eradication.

Just like any other developing countries, Nigeria is also well known with the paradox that though it is blessed with human and natural resources or rich and experiencing superb economic growth yet its people are impoverished, poor and unemployed. This is further compounded by the growing inequalities. In 2011, Nigeria witnessed an economic growth rate of 7.4% and with better outlook in the future. Unfortunately, the poverty and unemployment rates in same year stood at 54.4% and 23.90% respectively (World Bank, 2013 and NBS, 2011).

Against this backdrop, the paper strives to research for answers to the following questions: has economic growth in Nigeria been inclusive? And can macroeconomic stability lead to inclusive growth in Nigeria? The remaining part of the paper is organized as follows. The Section 2 reviews the related studies while Section 3 focuses on the methodology of the study. The Sections 4 presents and interprets the estimated results. Finally, Section 5 concludes the paper with policy implications and recommendations.

II. Literature Review

A. History of the Inclusive Growth Strategy

The traditional models of Kuznets, (1955) and Solow, (1956) were the outshining ideas about the link between growth, inequality and poverty in the late 1950s and 1970s. These models postulated that income inequalities rather deteriorate at the early stage of economic growth, and then succeeded by the gradual erosion of the income inequalities until the per capita income of the developing world converged or equalized with that of the developed one. The convergence is arrived at when the marginal returns of factors of production of both developed and developing world equalized. This corresponded with the period of *pre-Washington* consensus who believed that poor countries will remain poor unless government intervenes through infrastructural development and capital forming projects. Since development is all about system transformation via modernization and industrialization (Filho, 2010).

The above propositions were proven to be a 'figment of imagination' or illusive by the late 1970s and 1980s. This is so because the developing economies not only failed to converge with the developed ones but also their income inequalities degenerated further. This paved way to the emergence of monetarism and new classical economics thereby displacing the conventional *Keynesianism.* This resulted in paradigm shift where development postulation was tilted toward 'trickle-down effect' of the gains of economic growth. This was viewed as a *Washington Consensus (WC)* whose characteristic features were neoliberal and held a view that government intervention leads to inefficiencies and hence responsible for poverty and inequalities in the developing countries. The WC recommended free market policies as a panacea to the problems (see Atif, and Sardar, 2012).

Also in Filho, (2010), the failure of the WC-type economic policies led to the once again emergence of the New Institutional Economics in 1990s, as people from all walks of life pressurized for the development of new policy frameworks. This was in connection with the 'economic miracles' of the 'newly industrializing countries (NICs) like Japan, the four Asian tigers (South Korea, Taiwan, Singapore and Hong Kong) in the 1960s and 1970s, and Indonesia and others in 1980s; using protectionism and guided macroeconomic policies.

As a consequence, the mainstream consensus split into the WC and the post-Washington Consensus (PWC) by the late 1990s and the early 2000 with the latter emerged victorious. The PWC advocated for *Pro-Poor growth policies.* This was indisputable given the global devotion and doggedness to the Millennium Development Goals (MDGs). By the late 2000s

the WC seemed to be more sophisticated with the new concept of *Inclusive growth*. Unlike the pro-poor growth that aims at improving the welfare of the poor; the Inclusive growth addresses all segments of the economy covering the labour force, the poor, the middle and the rich.

B. Conceptual Framework.

Although inclusive growth is a newly introduced concept in the development economic field, it attracts a multiple of definitions from various economists. These are in a way reflecting the central position it occupies in economics and policy making environment. The following are some of its essential definitions.

Definitions of Inclusive growth

Despite the fact that the 'inclusive growth' is newly introduced concepts in development economics, yet it attracts a lot of attention in terms of definitions and conceptualizing it to suit various policies' ambitions. To this end, this section will highlight the most comprehensive and interesting definitions of the concept so as to map out its glaring features.

According to Ianchovichina and Lundstrom, (2009), inclusive growth is "a rapid pace of growth that is broad-based across sectors and inclusive of the labour force and results in substantial poverty reduction". They suggest that for poverty to be substantially reduced rapid of growth is inevitable but for growth to be sustained over the long run it must be diverse or generic across sectors and a chunk of the country's labour force should incorporated in the process. Thus, their definition observed that there should be a synergy between macro and micro drivers of economic growth. Moreover, Ianchovichina and Gable, (2012) (cited in Anand, Mishra, and Peiris, 2013a) define inclusive growth as "raising the pace of growth and enlarging the size of the economy by providing a level playing field for investment and increasing productive employment opportunities".

To Hirway, (2011) as cited in UNDP, (2011), inclusive growth refers to as "the growth process that reduces poverty faster, that is broad-based and labour intensive, reduces inequalities across regions and across different socioeconomic groups, opens up opportunities for the excluded and marginalized not only as beneficiaries but also as partners in the growth process". This definition broader is than the first one as it includes 'inequalities'. Ali and Son, (2007) in Klasen (2010) sees inclusive as "growth that not only create economic opportunities but also one that ensures equal access to the opportunities created for all segments of the society, particularly for the poor".

The World Bank, (2009) in AfDB, (2012), views inclusive growth as one that "has to create an environment of equality in opportunity for all, by addressing employment creation, market consumption, production, and a platform for poor people to access good living conditions"

Lastly, the AfDB, (2012) refers to Inclusive growth as "economic growth that results in a wider access to sustainable socioeconomic opportunities for a broader number of people, regions or countries while protecting the vulnerable, all being done in an environment of fairness, equal justice, and political plurality"

Ingredients of Inclusive Growth

From the above definitions, we can deduce the following features of inclusive growth:

- The economic growth should be beneficial to the *generality* of the society by reducing poverty substantially and ensuring full employment.

- The rate of economic growth must be *high* and reasonable enough to meet the costs or expenditure of poverty reduction through empowerment, job creation and provision of infrastructures and social amenities.

- The economic growth should be *sustained* over the long run so as to avoid social and economic crises in the society.

- For economic growth to be sustainable, it must be *broad-based* across all sectors. This means that the economy should be well diversified; all sectors must be reinvigorated and interlinked just to tap the potentials of each sector.

- As opposed the pro-poor growth strategy that concentrates on the welfare of the poor; this strategy ensures fair, equal and equitable opportunities to all segments of the society.

The Drivers of Inclusive Growth

- Sound macroeconomic policies that ensure stability, probity, sustained growth and full employment (Birdsall, 2007). That a developing country should try to have a track record of credible fiscal management by maintaining very low public debt thereby reduce interest rate. These policies should be redistributive in nature and one leading to broad-based economic growth.

- Winters, (2014) and Governance and Social Development Resource Centre (2010) posited that infrastructure is a very essential driver of inclusive as it reduces the costs of trade and trade in turn raises the incomes beyond subsistence level. Also, having access to

infrastructures improves the well beings of the citizenry significantly as that eases the difficulties of doing economic activities. Thus, government should invest in such infrastructure that has direct bearing on business and trade as well as on the disadvantageous groups. These include transport, energy, communication, education and health facilities, dams, and so on.

- Social inclusion is a fundamental pillar of inclusive growth. There should be active and deliberate government intervention to protect the most vulnerable and deprived sections or disadvantageous groups through social security schemes like unemployment benefits, old age allowance, subsidies on essential goods and services, etc. (Porter, 2010). This is critical in keeping aggregate demand high enough to encourage investment.

- Mendoza and Thelen (2008); Rauniyar and Kanbur, (2010) and Chakrabarty (2009) cited in Porter (2010) point out that private-public partnership also fosters inclusive growth; by so doing the goods and services to rescue poor people from poverty could be enhanced.

- Agricultural sector is integral to inclusive growth as it targets rural economy, which is the home of a vast majority of the population and the poor particularly in the developing world. Hence, investing in rural infrastructures and agricultural technologies might enhance inclusive growth by making rural population to have greater access to markets, basic needs and employment and income opportunities (Governance and Social Development Resource Centre, 2010).

- Good governance and strong institution are also weighty to inclusive growth (Arcenas, 2013). These guarantee credible, accountable, fair and transparent leadership. Such a leadership has the potential to formulate and implement policies that can promote inclusive growth by providing essential services, conducive investment atmosphere and quality infrastructures.

C. Survey of Empirical Studies

Being a newly introduced concept of economic development, it is indisputable to find few empirical studies on inclusive growth due to lack of standard unified measure of the concept, unavailability of data on it and high level of sophistication required to construct its approximate. As such, below are the few empirical studies available.

Anand, Mishra, and Peiris, (2013b) carried out a panel study of 143 countries across all continents of the world on the measurement and determinants of inclusive growth. They constructed a unified macro measure of inclusive growth by calibrating and combining PPP GDP per capita and income distribution. An unbalanced 5-year panel data was used and

estimated by a fixed effect panel model. Their results reveal that macroeconomic stability, human capital and structural changes are the major determinants of inclusive growth. Arcenas, (2013) explored the influence of mining sector on inclusive growth using binary logit model on a survey data set. His findings include among others, that mining sector has neutral impact on poverty as measured by household income disparity from poverty threshold. As a result, the author concluded that it is unlikely that mining sector can directly affect inclusive growth if the only channel is labour employment.

Regional inequalities and rural poverty are found to constrain economic growth from becoming inclusive in Egypt by Ghanem, (2014) using descriptive statistics. An inclusive system of planning and budgeting, better safety net systems, and implementing of agricultural policies were recommended by the author. Anyanwu, (2013) determined the correlates of poverty for inclusive growth using multivariate models (OLS, FGLS, IV-2SLS and IV-GMM) on 43 African countries for the period 1980-2011. The empirical results indicate that higher levels of income inequality, primary education alone, mineral rents, inflation, and higher levels of population aggravate poverty and thus bad for poverty reduction and inclusive growth in the continent. The results suggest further that higher real per capita GDP, net ODA, and secondary education have significant negative effect on poverty and hence favourable for poverty reduction and inclusive growth in the continent.

In the discourse of issues of international migration in inclusive growth, Jennifer and Elina, (2011) discovered that the macroeconomic policies that address migration tend to affect inclusive growth positively. While, a panel study by Kumah and Sandy, (2013) focused on the role of economic institutions and policy on inclusive growth. The study made use of the both fixed and GMM models on the data from selected advanced economies, low income countries and sub-Saharan Africa for the period 1960-2010. Their findings reveal that macroeconomic stability via reduction in inflation variability enhances per capita economic growth rate, which is the proxy of inclusive growth. Also, the structural reforms and quality of the business environment are found to impact on the inclusive growth significantly.

Dollar and Kraay, (2001) analyse the effect of various policies on economic growth and poverty reduction. They realized that trade openness, good rule of law and fiscal discipline alongside the avoidance of inflation are the major drivers in that right. Hence, their conclusion that growth basically benefits the disadvantageous group and any effort towards poverty reduction should lead to high economic growth.

The determinants of strong growth, employment and poverty reduction (components of inclusive growth) are found to be greater savings, investment, and more productive utilization of capital by better trained workers, reduction in the skill constraint and moderation in labour costs. Also, higher labour productivity growth enhances labour intensity. These were the findings of Faulkner, Loewald and Makrelov, (2013) using a dynamic computable general equilibrium model on South African data. The influence of globalization or international trade and infrastructures on inclusive growth was investigated by winters, (2014) using descriptive statistics. The results reveal that both are found to improve the well beings of the people and thus influencing inclusive growth.

From the literatures reviewed, it is obvious that few studies on that topic exist in Africa in general and Nigeria in particular. Thus, this study will help fill the research gap in the continent.

D. Stylized Facts about Inclusive Growth in Nigeria

A cursory view of the distribution of essential services in Nigeria reveals that there have not been meaningful improvements over the last four decades as indicated by table A below. Moreover, poverty, inequality and unemployment have all been on the upswing for the same period as shown by table B. However, this is happening at a time when the country is recording one of the fastest rates of economic growth in the world. But this growth in GDP has been majorly contributed by the *oil GDP* meaning that the growth has not been broad-based across all sectors in the country. Moreover, the gains from growth, although had been high and sustainable, they have not been benefitting the poor who constitute the lion share of the Nigerian population. What a paradox! That the country is rich but its people are deprived, unemployed and extremely poor.

Table 1: Distribution of Essential Services

Year	Access to Improved Water	Access to Better Health Services	Access to Improved Sanitation	Access to Electricity
1980	48	46	14	----
1985	46	40	----	----
1990	47	46	38	----
1995	51	66	36	----
2000	55	----	35	----
2005	58	----	33	50.6
2010	61	----	31	----
2013	59.6	----	34.0	44.2

Sources: UNDP (2013), WHO (2013) and NPC & ICF International, (2014)

Table 1 shows that the average increase in population with access to improved and safe drinking per year is as low as 1.62% since 1980 to date while that of improved sanitation has been relatively poor with average marginal increase of 1.53%. Also, the population with access to better health services have increased by 20% between 1980 and 1995. Additionally, the population having access to electricity has rather fallen down from 50.6% in 2005 to 44.2% in 2013; with all the so-called on-going reforms in the power sector. Thus, the distribution of the infrastructure shows that the disadvantaged group has been on the unfavourable side.

Table 2: The Trend of Unemployment, Poverty and Inequality in Nigeria

Year	Unemployment rate	Poverty Level	Inequality
1980	6.4	27.2	0.44
1985	6.1	46.3	0.43
1990	3.5	42.7	0.41
1995	5.5	65.6	0.49
2000	13.1	----	0.488
2005	11.9	54.4	----
2010	21.1	65.0	0.488

Sources: NBS (2011), World Bank, (2013), NBS (2005) and FOS, (1999) as cited in Aigbokhan (2008).

Table 2 reveals that the unemployment rate, poverty level and inequality have been on increase since 1980s to date. This is so because the growth has not been inclusive since then up till now. The table indicates that the rate of unemployment skyrocketed to 21.1% in 2010 from 6.4% in 1980 while the poverty level jumped to 65.5% in 2010 from 27.2%. The inequality measured by Gini coefficient has been deteriorating since 1980s as it rose from 0.44 to 0.488 implying widening the gap between the poor and the rich.

Table 3: Contribution of Oil Sector to GDP and Rate of Economic Growth

Year	Oil GDP (%)	GDP Growth	Year	Oil GDP (%)	GDP Growth
1980	28.48	4.2	**1985**	16.79	9.7
1990	37.5	38.2	**1995**	39.73	2.4
2000	47.82	5.4	**2005**	39.07	5.4
2010	33.58	7.9			

Sources: CBN Bulletin (2012) and Authors' Computations

Economic growth has been high and sustainable (with some fluctuations) since 1980s as it almost doubled itself between 1980 and 2010. However, it has not been broad-based across all sectors as the Oil sector has been dominating the economy. This is shown by the contribution of the oil sector as a share of GDP in Table C above. The sector is indicated to

have been contributing 20 to 40% to the GDP. And the sector is known to be generating less job opportunities. This might be the factor responsible for the increasing economic growth on one hand and rising unemployment, poverty and inequality on the other hand.

From the tables above, it could be inferred that economic growth has been high and sustainable since 1980s in Nigeria. Yet, it has not been broad-based across sectors; it has not reduced poverty, unemployment and inequality but rather increased them. Moreover, Nigerians are highly deprived in the provision of social services like health, water, sanitation, and electricity.

III. Methodology

A. Theoretical framework

Macroeconomic stability promotes sustained economic growth, and macroeconomic policies in turn enhances economic stability and sustained economic growth bring about reduction in poverty and inequality (Kumah and Sandy, 2013; Rodik 2000, Dollar and Kraay 2001, Pinkovskiy and Salai-Martin 2010). Also, improvement in the growth of gross domestic capital (GDP) enhances reduction in poverty in India (Bhalla, 2011). Since inclusive growth among other things implies sustained economic growth accompanied by substantial reduction in poverty, inequality and unemployment among the poor, there is an established link between macroeconomic stability, sustained economic growth and inclusive growth. We therefore, specify the augmented Solow where the production function of the economy is given as:

$$Y_t = f(AK_t, L_t, G_t)$$

Expressing in per capita by dividing through by L_t gives

$$y_t = f(Ak_t g_t)$$

Then, $y_t = Ak_t^{\alpha} g_t^{\beta}$ $\alpha + \beta = 1$

Taking the log and differencing with respect to time gives the growth rate of the variables as:

$$\frac{d\log y_t}{dt} = \frac{d\log A_t}{dt} + \alpha\frac{d\log k_t}{dt} + \beta\frac{d\log g_t}{dt}$$

$$\dot{y}_t = \dot{A}_t + \alpha\dot{k}_t + \beta\dot{g}_t$$

Where: are the growth rates of output, factor productivity, capital and economic stability respectively. This forms the basis of the empirical model specified below.

B. Empirical model

Given the established relationship between economic stability and economic growth in literature, to examine the long-run relationship and short run dynamics between economic stability and inclusive growth, on the basis of the theoretical derivation of VECM employed by Greene, (2012) and Harris & Sollis, (2003), we specified the regression equation as follow:

$$IG_t = f(C\_GDP_t, GDPV_t, GFC_t, INV_t, TOP_t, FDI_t)$$

C_GDP= credit to GDP, GFC= gross fixed capital, INV= inflation variability, TOP= trade openness, GDPV=GDP volatility and FDI= foreign direct investment.

$$\Delta IG_t = f(\Delta C\_GDP_t, \Delta GDPV_t, \Delta GFC_t, \Delta INV_t, \Delta TOP_t, \Delta FDI_t)$$

Hence, to estimate the empirical model and conduct the Johansen Cointegration test, we specify the VECM in matrix form as follows:

$$
\begin{pmatrix} \Delta IG \\ \Delta C\_GDP \\ \Delta GDPV \\ \Delta GFC \\ \Delta INV \\ \Delta TOP \\ \Delta FDI \end{pmatrix}_t = \begin{pmatrix} v_1 \\ v_2 \\ v_3 \\ v_4 \\ v_5 \\ v_6 \\ v_7 \end{pmatrix}_t + (L) \begin{pmatrix} \varphi_{11} & \varphi_{12} & \varphi_{13} & \varphi_{14} & \varphi_{15} & \varphi_{16} & \varphi_{17} \\ \varphi_{21} & \varphi_{22} & \varphi_{23} & \varphi_{24} & \varphi_{25} & \varphi_{26} & \varphi_{27} \\ \varphi_{31} & \varphi_{22} & \varphi_{33} & \varphi_{34} & \varphi_{35} & \varphi_{36} & \varphi_{37} \\ \varphi_{41} & \varphi_{42} & \varphi_{43} & \varphi_{44} & \varphi_{45} & \varphi_{46} & \varphi_{47} \\ \varphi_{51} & \varphi_{52} & \varphi_{53} & \varphi_{54} & \varphi_{55} & \varphi_{56} & \varphi_{57} \\ \varphi_{61} & \varphi_{62} & \varphi_{63} & \varphi_{64} & \varphi_{65} & \varphi_{66} & \varphi_{67} \\ \varphi_{71} & \varphi_{72} & \varphi_{73} & \varphi_{74} & \varphi_{75} & \varphi_{76} & \varphi_{77} \end{pmatrix} \begin{pmatrix} \Delta IG \\ \Delta C\_GDP \\ \Delta GDPV \\ \Delta GFC \\ \Delta INV \\ \Delta TOP \\ \Delta FDI \end{pmatrix}_t + \Pi \begin{pmatrix} \Delta IG \\ \Delta C\_GDP \\ \Delta GDPV \\ \Delta GFC \\ \Delta INV \\ \Delta TOP \\ \Delta FDI \end{pmatrix}_{t-1} + \begin{pmatrix} e_1 \\ e_2 \\ e_3 \\ e_4 \\ e_5 \\ e_6 \\ e_7 \end{pmatrix}_t
$$

$$\Pi = \sum_{j=1}^{j=p} \varphi_j - I_k L = \text{The operator of lags}$$

However, there is no standard measurement of inclusive growth; we therefore, constructed an index from twenty three variables identified as the major determinants of inclusiveness of economic growth. The index was constructed by the use of Principal Components Analysis (PCA) and Human Development Index (HDI) formula. The choice of the variables used in constructing the index was based on the recommended indicators of inclusive growth by McKinley, (2010). We called it the "inclusive growth index" which proxy inclusive growth in our analysis. Johansen co-integration test was employed with the vector error correction model. Also, the logarithm of the deviation of inflation from the trend represents inflation variability (INV). And the standard deviation of GDP growth rate represents GDP volatility (GDPV). The INV and GDPV serve as proxy for the indicators of economic stability in our discussion.

IV. Discussion of Results

To examine the data, preliminary analysis of unit root test was conducted for all the variables using ADF test. The result of the test shown in Table 1 in the appendix indicates that all the variables are stationary at first difference. Also, lag exclusion (Wald) test retains maximum of two lags informing the inclusion of only two lags in the estimation of the VECM.

We further conducted post estimation test of model stability test (AR roots graph test and recursive residual test). The results (reported in figure 1 and figure 2) show that the model is not stable and by implication, any shock will lead to temporary or permanent disequilibrium in the system.

To examine the long run relationship and short run dynamics between dependent variable (inclusive growth) and all other explanatory variables, we conducted Johansen Cointegration test. The result of the test shown in tables 2 and 3, indicate one (1) co integrating vector and three (3) co integrating vectors for maximum Eigen value and trace statistics respectively.

The existence of long run relationship among the variables established by the co integrating test enables us to find out the long run impact of the explanatory variables on the dependent variable with the use of VECM earlier specified. The result is reported in table 4. The result shows evidence of long run equilibrium impact. The long term variables that explain inclusive growth (IG) are (INV, CGDP, GDPV, TOP, FDI and GFC) and the coefficients which measure the extent of LR changes in IG derived from the changes in the independent variables are calculated as the product of the coefficient of integration with the speed coefficient of response (speed of adjustment) the calculated values are reported in equation **(7)** below.

$$IG = -0.699CGDP - 0.177GDPV - 28.109GFC - 0.293INV - 0.055TOP - 0.056FDI$$

The speed of convergence to equilibrium is explained by the use of the error correction Cointegration coefficients of the short run dynamics (see table 5). Only GFC and INV found to have a positive short run impact on inclusive growth. The result indicates that a unit increase in GFC will lead to 5.12 increased in inclusive growth, and a unit increase in INV will generate 146.34 increased in inclusive growth respectively. Contrarily, we find CGDP, GDPV, TOP and FDI to have negative impact on inclusive growth in the short run. The result shows that a unit increase in CGDP, GDPV, TOP and FDI will lead to 87.43, 4.69, 54.82 and 14.12 decreases in inclusive growth respectively.

However, the long run relationship between explanatory variables and inclusive growth (IG) is reported in table 6. Both GFC and INV have negative impact on inclusive growth as shown by the coefficients (-5.49 and -0.00167) and we find both the variables to be statistically significant. This implies that a unit increase in GFC will bring about 5.5 units decrease in IG while, a unit increase in inflation variability (INV) will lead to 0.00167 units decrease in IG. On the other hand, CGDP, GDPV, FDI and TOP are positively related to IG. A unit increase in CGDP, GDPV, FDI and TOP will bring about 0.008, 0.038, 0.004 and 0.001 units increase in inclusive growth (IG).

V. Conclusion and Recommendation

This study focused on the empirical examination of the impact of macroeconomic stability on inclusive growth in Nigeria for the period 1960-2012. An index of inclusive growth has been constructed and tested against the macroeconomic stability variables using Johansen co integration approach and VECM. The tests established a long run relationship between macroeconomic stability and inclusive growth and confirmed by the VECM results. Likewise, the results conform to the theoretical signs as GDP volatility and inflation variability (all representing macroeconomic stability) impact negatively on inclusive growth. Other key findings are that trade openness, gross fixed capital, credit to GDP ratio and FDI have also significant and negative impacts on the inclusive growth. However, a descriptive analysis (tables A, B and C) of inclusive growth in Nigeria shows that growth has not been inclusive. Thus, the research questions have empirically been answered.

To this effect, it could be inferred from our findings that macroeconomic stability is very fundamental to any economic policy aiming at sustaining growth, equitable opportunities, full employment and poverty reduction. As such, the following recommendations have been suggested by the authors. First, holistic, committed and sincere efforts should be geared towards diversifying the economy. This is so because the economy is featured to be highly volatile given the oil domination in the economy as shown table C. Second, a macroeconomic policy-mix targeting stable inflation, exchange rate and other prices should be formulated. By so doing, a favourable investment atmosphere will be created; which is also friendly for inclusive growth.

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APPENDIX

Table A1: Augmented Dickey Fuller (ADF) Unit Root Test Result

Variable	ADF Statistic	Critical Value			Order of Integration
		1%	5%	10%	
IG	-6.906129	-3.565430	-2.919952	-2.597905	I(1)
INV	-6.029730	-4.148465	-3.500495	-3.179617	I(1)
GFC	-5.972496	-3.565430	-2.919952	-2.597905	I(1)
TOP	-7.822809	-2.611094	-1.947381	-1.612725	I(1)
FDI	-4.042034	-3.562669	-2.918778	-2.597285	I(1)
C/GDP	-5.995531	-3.568308	-2.921175	-2.598551	I(1)
GDPV	-6.744220	-3.571310	-2.922449	-2.599224	I(1)

Source: Computed by the Authors

Table A2: Result of Cointegration Test

Hypothesized No. of CE(s)	Eigen value	Trace Statistic	0.05 Critical Value	Prob.**
None*	0.652705	158.6368	125.6154	0.0001
At most 1*	0.513212	107.8730	95.75366	0.0057
At most 2*	0.451649	73.31649	69.81889	0.0256
At most 3	0.329253	44.47622	47.85613	0.1003
At most 4	0.293161	25.30679	29.79707	0.1508
At most 5	0.164768	8.653112	15.49471	0.3984
At most 6	0.000227	0.010891	3.841466	0.9166

Source: Computed by the Authors, Trace test indicates 3 cointegrating eqn(s) at 0.05 level, * denote rejection of the null hypothesis at the 0.05 level, Series: IG C_GDP GDPV GFC INV TOP FDI, Unrestricted Cointegration Rank Test (Trace)

Table A3: Result of Cointegration Test

Hypothesized No. of CE(s)	Eigen value	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None*	0.652705	50.76382	46.23142	0.0153
At most 1	0.513212	34.55651	40.07757	0.1837
At most 2	0.451649	28.84027	33.87687	0.1774
At most 3	0.329253	19.16942	27.58434	0.4016
At most 4	0.293161	16.65368	21.13162	0.1890
At most 5	0.164768	8.642221	14.26460	0.3171
At most 6	0.000227	0.010891	3.841466	0.9166

Source: Computed by the Authors, Max-eigenvalue test indicates 1 cointegrating eqn(s) at 0.05 level, * denote rejection of the null hypothesis at the 0.05 level, Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Table A4: Vector Error Correction Estimates

Error Correction	D (I G)	D(C_GDP)	D(GDPV)	D (G F C)	D (I N V)	D (T O P)	D (F D I)
CointEq1	-0.869357 (0.27630) [-3.14637]	-87.42558 (21.1092) [-4.14159]	-4.686630 (7.27499) [-0.64421]	5.12E+09 (1.9E+10) [0.27138]	146.3383 (92.2300) [1.58667]	-54.81745 (41.8374) [-1.31025]	-14.11875 (10.1606) [-1.38956]
D(IG(-1))	0.351244 (0.24051) [1.46043]	82.42662 (18.3743) [4.48597]	-10.61507 (6.33246) [-1.67630]	1.40E+10 (1.6E+10) [0.85477]	-63.72799 (80.2809) [-0.79381]	51.86999 (36.4170) [1.42433]	12.95262 (8.84422) [1.46453]
D(IG(-2))	0.020735 (0.26110) [0.07942]	39.94085 (19.9474) [2.00231]	-0.095500 (6.87461) [-0.01389]	1.28E+10 (1.8E+10) [0.71542]	-85.63689 (87.1541) [-0.98259]	9.299570 (39.5349) [0.23522]	40.99235 (9.60141) [4.26941]
D(CGDP(1))	0.007672 (0.00223) [3.43903]	0.339476 (0.17044) [1.99171]	0.076420 (0.05874) [1.30096]	-38244777 (1.5E+08) [-0.25096]	-0.298133 (0.74471) [-0.40034]	0.145160 (0.33781) [0.42971]	0.055981 (0.08204) [0.68236]
D(CGDP(2))	0.001061 (0.00314) [0.33851]	0.052607 (0.23951) [0.21965]	0.136942 (0.08254) [1.65903]	-46234377 (2.1E+08) [-0.21590]	-0.348079 (1.04646) [-0.33263]	-0.484392 (0.47469) [-1.02043]	-0.038554 (0.11528) [-0.33442]
D(GDPV(1))	0.009217 (0.01119) [0.82334]	2.111801 (0.85521) [2.46935]	-0.065148 (0.29474) [-0.22104]	-94052725 (7.6E+08) [-0.12300]	-4.523528 (3.73656) [-1.21061]	-1.034677 (1.69498) [-0.61044]	0.815770 (0.41164) [1.98175]
D(GDPV(2))	0.001859 (0.00798) [0.23292]	0.636041 (0.60991) [1.04285]	0.003389 (0.21020) [0.01612]	90599453 (5.5E+08) [0.16614]	-1.840115 (2.66480) [-0.69053]	2.795373 (1.20881) [2.31250]	0.626153 (0.29357) [2.13289]
D(GFC(-1))	-6.20E-12 (3.1E-12) [-1.97393]	-4.42E-10 (2.4E-10) [-1.84451]	-5.39E-11 (8.3E-11) [-0.65196]	0.091927 (0.21438) [0.42880]	-5.29E-10 (1.0E-09) [-0.50527]	5.85E-10 (4.8E-10) [1.23123]	-1.95E-10 (1.2E-10) [-1.69195]
D(GFC(-2))	-3.34E-12 (3.3E-12) [-0.99631]	-9.08E-11 (2.6E-10) [-0.35518]	-8.16E-11 (8.8E-11) [-0.92598]	0.019343 (0.22869) [0.08458]	5.14E-10 (1.1E-09) [0.46038]	-2.36E-10 (5.1E-10) [-0.46623]	-7.46E-12 (1.2E-10) [-0.06058]
D(INV(-1))	-0.000966 (0.00066) [-1.46875]	-0.048995 (0.05025) [-0.97505]	-0.011668 (0.01732) [-0.67377]	15678537 (4.5E+07) [0.34897]	0.131543 (0.21955) [0.59916]	-0.086831 (0.09959) [-0.87188]	-0.054532 (0.02419) [-2.25463]
D(INV(-2))	-0.000970 (0.00061) [-1.59585]	0.018924 (0.04642) [0.40771]	-0.001365 (0.01600) [-0.08530]	1.07E+08 (4.2E+07) [2.58687]	-0.304814 (0.20280) [-1.50304]	0.117922 (0.09199) [1.28185]	0.007326 (0.02234) [0.32792]
D(TOP(-1))	0.000217 (0.00113) [0.19250]	0.179110 (0.08627) [2.07621]	0.036746 (0.02973) [1.23596]	3532247. (7.7E+07) [0.04579]	0.133185 (0.37692) [0.35335]	-0.019641 (0.17098) [-0.11488]	-0.010874 (0.04152) [-0.26189]
D(TOP(-2))	0.000952 (0.00108) [0.88240]	0.096224 (0.08240) [1.16780]	-0.016717 (0.02840) [-0.58870]	31378034 (7.4E+07) [0.42591]	-0.152682 (0.36001) [-0.42410]	0.224794 (0.16331) [1.37650]	0.022740 (0.03966) [0.57337]
D(FDI(-1))	0.000178 (0.00400) [0.04445]	0.659529 (0.30584) [2.15647]	-0.116943 (0.10540) [-1.10948]	29070123 (2.7E+08) [0.10631]	-1.066128 (1.33627) [-0.79784]	1.511928 (0.60616) [2.49428]	-0.321713 (0.14721) [-2.18539]
D(FDI(-2))	0.000409 (0.00417) [0.09818]	0.260494 (0.31846) [0.81798]	-0.125127 (0.10975) [-1.14008]	65170621 (2.8E+08) [0.22888]	-1.404091 (1.39141) [-1.00911]	0.734533 (0.63117) [1.16376]	-0.093933 (0.15329) [-0.61280]
C	0.004203 (0.00662) [0.63436]	0.211639 (0.50613) [0.41815]	-0.216284 (0.17443) [-1.23993]	1.45E+08 (4.5E+08) [0.32037]	0.042262 (2.21140) [0.01911]	0.686505 (1.00314) [0.68436]	0.098605 (0.24362) [0.40475]
R-squared	0.479664	0.636304	0.311610	0.317543	0.282898	0.556681	0.583182
Adj. R-squared	0.235757	0.465822	-0.011073	-0.002359	-0.053244	0.348875	0.387799
F-statistic	1.966582	3.732374	0.965683	0.992625	0.841603	2.678852	2.984809
Akaike AIC	-3.171049	5.500867	3.370338	46.72354	8.450023	6.869034	4.038488
S.D. dependent	0.049756	4.546723	1.138969	2.97E+09	14.14746	8.162126	2.044292

Source: Computed by the Authors

Table A5: Vector Error Correction Estimates

Error Correction	D(IG)	D(CGDP)	D(GDPV)	D(GFC)	D(INV)	D(TOP)	D(FDI)
Coint Eq1	-0.8693 (0.276) [-3.146]	-87.4255 (21.109) [-4.1415]	-4.6866 (7.274) [-0.644]	5.12E+09 (1.9E+10) [0.271]	146.3383 (92.230) [1.586]	-54.8174 (41.837) [-1.310]	-14.1187 (10.160) [-1.3895]

Source: Computed by the Authors

Table A6: Cointegrating equation

Cointegrating Equations	IG(-1)	CGDP(-1)	GDPV(-1)	GFC(-1)	INV(-1)	TOP(-1)	FDI(-1)
Coint Eq1	1.000	0.0078 (0.001) [5.558]	0 . 0 3 7 7 (0.003) [9.947]	-5.49E-12 (0.000) [-4.837]	- 0 . 0 0 1 (0.000) [-4.086]	0 . 0 0 1 (0.000) [2.325]	0 . 0 0 3 (0.003) [1.310]

Source: Computed by the Authors

Table A7: VAR Lag Exclusion Wald Tests

	IG	C_GDP	GDPV	FDI	GFC	INV	TOP	Joint
Lag 1	45.79	48.05	53.91	10.42	36.52	20.96	53.09	231.24
	[0.00]	[0.00]	[0.00]	[0.16]	[0.00]	[0.00]	[0.00]	[0.00]
Lag 2	20.56	25.82	8.06	2.05	4.95	12.59	28.65	121.45
	[0.00]	[0.00]	[0.32]	[0.95]	[0.66]	[0.08]	[0.00]	[0.00]
df	7	7	7	7	7	7	7	7

Source: Computed by the Authors, Chi-squared test statistics for lag exclusion, Numbers in [ ] are p-values, Sample 1960 2012, Included observation: 49
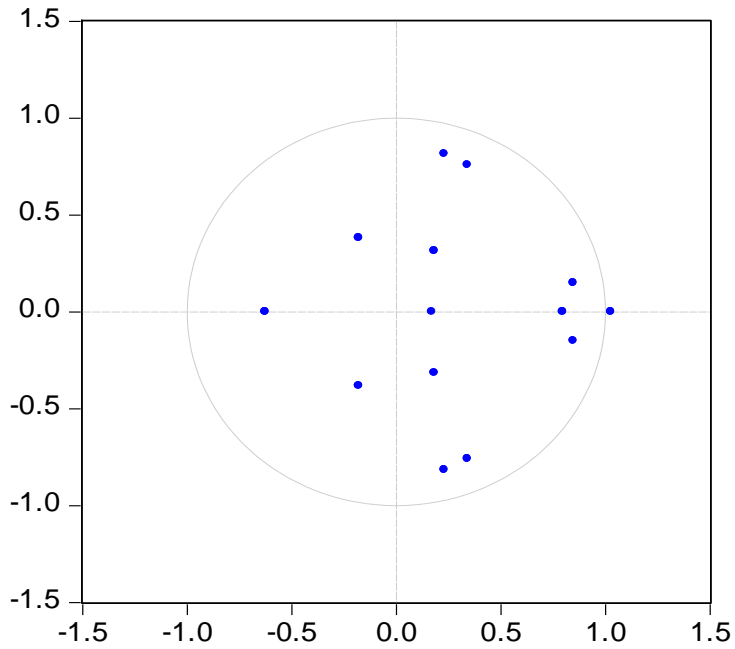
Figure A1: Stability Test

Inverse Roots of AR Characteristic Polynomial

Figure A2: Recursive Residual