Insurgency and Economic Growth in Nigeria

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ABSTRACT

This study investigates the impact of insurgency on economic growth in Nigeria within the context of the country's persistent insecurity challenges. Using time series data from 1999 to 2024 sourced from the Central Bank of Nigeria (CBN), National Bureau of Statistics (NBS), Global Terrorism Database, and Index Mundi, the study employed descriptive statistics, Augmented Dickey-Fuller (ADF) unit root test, Johansen co-integration, and Vector Error Correction Model (VECM) to examine the short-run and long-run dynamics between insurgency, discomfort index, terrorism risk index, and real gross domestic product (RGDP). The findings reveal that insurgency exerts a positive but temporary effect on economic growth in the short-run, possibly due to increased emergency-related expenditures, but significantly undermines growth in the long-run. Similarly, the discomfort index exhibited a short-run positive effect but a long-run negative and significant influence on RGDP, reflecting the adverse role of socioeconomic stressors on growth. The terrorism risk index also demonstrated a statistically significant negative effect on economic growth both in the short-run and long-run, with a 1% change in TRI reducing RGDP by approximately 0.66%. These results confirm that insurgency and terrorism pose substantial constraints on Nigeria's long-term economic development by discouraging investments, displacing populations, and weakening productive capacity. The study concludes that effective counter-insurgency measures, socioeconomic reforms to reduce unemployment and poverty, and community-based peace-building initiatives are critical to mitigating the adverse effects of insecurity on Nigeria's economic growth.

Keywords: Economic growth, insurgency, insecurity, terrorism, Nigeria.

JEL Classification codes: O47, F52, H56.

INTRODUCTION

Nations experiencing persistent security challenges are often associated with weak or negative economic growth indices. This relationship between insecurity and economic underperformance has been widely discussed in the literature as one of the most pressing threats to national development (Ali, 2013; Ewetan & Urhie, 2014; Onime, 2018; Ezeajughu, 2021). Empirical evidence from Abadie and Gardeazabal (2013) and corroborating case studies by Achumba, Ighomereho, and Akpan (2013), Ajibola (2016), and Aghaulor (2020) further confirm that insecurity undermines productive capacity and limits growth potential. In Nigeria, the situation has reached an alarming proportion, manifesting in loss of lives, population displacements, collapsing businesses, dwindling investments, relocation of multinationals, rising unemployment, and widespread fear among citizens (Onime, 2018). Such conditions threaten governance and economic stability, consistent with Stewart's (2004) assertion that the economic costs of insecurity are immense, ranging from the destruction of schools, roads, and power stations to the displacement of labour and decline in export capacity.

The Nigerian state continues to grapple with the menace of insecurity despite increasing government expenditure on security at both the federal and state levels. Individuals and communities also invest heavily in

private security to protect lives and property, yet the problem persists (Onime, 2018). In almost every region of the country, distinct patterns of insecurity can be identified: ethnic clashes in the North, kidnapping across the country (but prominent in the South-South and South-West), militancy and pipeline vandalism in the Niger Delta, terrorism and religious extremism by Boko Haram in the North-East, secessionist agitations by IPOB and MASSOB in the South-East, herdsmen–farmer conflicts in the North and North-Central, ritual killings in the South-West and East, and diverse political and economic disturbances (Onime, 2018).

These crises have had visible impacts on regional and national economies. In the North-East, Boko Haram insurgency has devastated communities, displaced millions into IDP camps, reduced employment opportunities, collapsed informal businesses, and eroded state revenues. Similarly, militancy and vandalism in the Niger Delta have forced multinational corporations to shut down or relocate operations, reduced Nigeria's oil production, triggered foreign exchange shortages, increased unemployment, and raised the cost of doing business. Comparable disruptions are evident in other conflict-prone regions, creating a national pattern where insecurity suppresses economic activities. The gravity of this situation underscores the need to systematically examine the relationship between insurgency and economic growth in Nigeria. Against this backdrop, this study investigates insurgency and economic growth in Nigeria, situating the analysis within the country's democratic dispensation where the dynamics of insecurity have intensified.

LITERATURE REVIEW

Conceptual Review

Economic Growth

Economic growth generally, can be described as a positive change in the level of production of goods and services by a country over a certain period of time. In other words, economic growth is the increase in the value of goods and services produced by an economy. It can also be referred to as the increase in the gross domestic product. It is a relatively straight forward measure of output and gives an idea of how well off a country is, compared with competitors and past performance. It is a beacon that helps policy makers steer the economy towards key economic objectives. Finally, it is a measure of the wellbeing of a State; usually in real terms, all other things being equal (Enu, 2009).

According to Haller (2012), economic growth is, in a limited sense, an increase of the national income per capita, and it involves the analysis, especially in quantitative terms, of this process, with a focus on the functional relations between the endogenous variables; in a wider sense, it involves the increase of the GDP, GNP and NI, therefore of the national wealth, including the production capacity, expressed in both absolute and relative size, per capita, encompassing also the structural modifications of the economy. In other words, economic growth is the process of increasing the sizes of national economies, the macro-economic indications, especially the GDP per capita, in an ascendant but not necessarily linear direction, with positive effects on the economic-social sector. Haller (2012) also concludes that economic growth is obtained by an efficient use of the available resources and by increasing the capacity of production of a country. It facilitates the redistribution of incomes between population and society. The cumulative effects, the small differences of the increase rates, become big for periods of one decade or more. It is easier to redistribute the income in a dynamic, growing society, than in a static one. When the rate of economic growth is big, the production of goods and services rises and, consequently, unemployment rate decreases, the number of job opportunities rises, as well as the population's standard of life. We shall, for the purpose of this study, employ the definition of economic growth by Haller (2012) as the working definition because it is broad-based and by far more encompassing in explaining economic growth than others.

Insurgency

Insurgency has been defined as an organized movement aimed at the overthrow of a constituted government with subversion and armed conflict (Haviland, 2012). The Counter-Insurgency Initiative (2009) has defined

insurgency as the organized use of subversion and violence to seize, nullify, or challenge political control of a region. Insurgents seek to subvert or displace the government and completely or partially control the resources and population of a given territory. They do so with force (including guerrilla warfare, terrorism, coercion or intimidation, propaganda, subversion, and political mobilization).

Boko Haram which in general terms, simply means “western education is forbidden” was founded in 2002 in Maiduguri in northeastern Nigeria by a charismatic Muslim cleric, Ustaz Mohammed Yusuf. The sect’s philosophy is rooted in the practice of orthodox Islam, and the group’s official name in Arabic, Jama’atu Ahlissunahlidda ’awatiwal Jihad, translates to “people committed to the propagation of the Prophet’s teachings and Jihad” (Chothia, 2012). Boko Haram is an Islamist movement that is tied to Al-Qaeda and its followers forbid Muslims or its groups to be involved in any political or social activity that is related to western education or ideology. The Islamic sect beliefs that Nigerian society is so corrupt that it is necessary for a devoted Muslim to migrate to a society that is free from deprivation. Akanji (2009) observes that the goals of Boko Haram are to overthrow the Nigerian government, incite religious tensions by acts of terror and eventually declare an Islamic state in Nigeria.

Insurgency is a condition of revolt against a government that is less than an organised revolution and that is not recognised as belligerency (Peter, 1964). It is the rising up against what is believed to be a constituted or legitimate authority. The term "insurgency" is used in describing a movement's unlawfulness and capacity to pose a threat to a state or seen as such by another authority, especially when viewed from the backdrop of its not being authorised, and therefore executing a cause that is illegitimate (Shafer, 1988). Those causing the uprising (insurgence) are seen as rebels, whereas those rising up will see the authority itself as being illegitimate. Insurgency is an act of rebellion against a legitimate authority. However, such an authority would have acquired the recognition by an international body such as the United Nations, while those taking part in the rebellion are not recognised as belligerents. It becomes deduced from the foregoing that if there is a rebellion against the authority (for example the United Nations) and those taking part in the rebellion are not recognised as belligerents, the rebellion is an insurgency. The United States Department of Defence [DOD] (2007) defines insurgency as an organised movement aimed at the overthrow of a constituted government through the use of subversion and armed conflict. The threats of insurgency has intensified and assumed global dimension in recent times. However, not all rebellions are insurgencies. A rebellion may not be viewed as an insurgency if a state of belligerency exists between one or more sovereign states and rebel forces, even if the revolt takes the form of armed rebellion.

THEORETICAL REVIEW

Social Structure-Anomie Theory

The social structure-anomie is a contemporary theory developed by Robert K. Merton, in social sciences that illustrates the active roles of deviant behaviour in criminality (Halliru, 2012). Merton focuses mainly on the “broad patterns of norm-violating behavior rather than in the behavior of individual deviants”, using cultural goals, institutional norms and social structures of the society. Merton analyzes how people situated in certain segments of the society are predisposed to environmental pressures and how it could encourage deviant behaviours. According the thinking of Merton, all sections of the society are expected to struggle for the cultural goal of physical accomplishment which includes money and the impressive possessions it can afford within its institution or structure.

Nevertheless, the society that places high emphasis on cultural environment for success attainment and social ascent for all its members ought to make adequate provisions for their accomplishments. Quite unfortunately, society emphasizes less on the means for members of the society to attain this goal and it predisposes them to criminality. Thus, the serious inconsistency between cultural goals and structural certainties does not only destabilizes social support for the established norms but also for the promotion of defilements of those norms (Merton, 1957). When persons are choked in their pursuit of economic success in the society, they are forced to acclimatize in deviant ways to this exasperating environmental condition. How people adjust to the

environmental burdens is therefore the vital contribution to the anomie tradition. This is illustrated in an analytical typology of how individuals adjust to the discrepancy between culture and social structure in the society, shown in Table 2.1.

Table 1: Typology of Individual Adaptations to Environmental Pressure

S/No.	Types of Adaptation	Cultural Goals	Institutionalized means
1.	Conformity	+	+
2.	Innovation	+	-
3.	Ritualists	-	+
4.	Retreatism	-	-
5.	Rebellion	±	±

Source: (Halliru, 2012).

Note: + means acceptance while - means rejection. The symbol for rejection of the existing goal or means and substitution of new goal is ±

As indicated in Table 2.1, adaptations define the types of social roles which persons engage in their reaction to cultural and structural pressures. Hence, conformity connotes a non-deviant adaptation where persons keep on engaging genuine work related or educational roles in-spite of the prevailing environmental pressures toward criminality. Thus, the conformists are persons who accept and strive for the cultural goal of material success (+) by following structural provisions (+).

On the other hand, innovation is an adaptation style for accepting the cultural goal (+) and discarding the legitimate institutionalized means (-) of achieving the goal, which propels innovators to engage in criminality via illegal means to obtain material success. The ritualist in the above typology is an over conformist. His or her quest hunts for the main cultural goal of economic success is avoided (-) in favour of the compulsive conformity to structural norms (+). The retreatism typology indicates the rejection of both cultural goals (-) and institutionalized means (+) in order to avoid the pressures and demands of organized society. In the final adaptation in the above table, rebellion, is specified by dissimilar symbolization than the other adaptations. The two ± signs show that the rebel does not only rejects the institutional goal and its means of accomplishment but actively attempts to replace them with new goals and means.

Harrod-Domar Growth Model

The Harrod-Domar models are based on the assumptions of full employment, absence of government interventions, open economy, equality between average propensity to save APS and marginal propensity to save MPS, savings and investment relates to income of the same year and constant ratio of capital stock to income.

Based on these assumptions, Domar's model tries to explain the rate of growth in investment that would cause income to rise by a size equal to the rise in productive capacity, so that full employment is maintained.

The growth models propounded by Harrod and Domar are based on the experiences of the advanced capitalist economies. They both emphasize the role of investment in economic growth based on the dual characteristics of investment. Firstly, it creates income and secondly, it augments the productive capacity of the economy by increasing its capital stock. The former is regarded as the 'demand effect' while the later is the 'supply effect' of investment. In his work titled "The Theory of Economic Growth" (1957), Domar's Model as cited by Jhingan (2003), was given as $\Delta/I = \alpha\partial$

Where I= Investment,

Δ = Change in I,

∂= Net potentials social average productivity of investment (=DY/I)

α =MPS

His model shows that to maintain full employment, the growth rate of net autonomous investment (Δ/I) must equal α∂ (the MPS times the productivity of capital). This is the rate at which investment most grow to ensure the use of potential capacity in order to maintain a steady growth rate of the economy at full employment. According to Domar, any divergence between the two will lead to cyclical fluctuations. When Δ/I is greater than ∂, the economy would experience boom and when Δ/I is less than ∂, it would suffer from depression.

Professor Harrod tries to show how steady growth may occur in the economy. Once the steady growth rate is interrupted, and the economy falls into disequilibrium, cumulative forces tend to perpetuate this divergence thereby leading to either secular deflation or secular inflation. Harrod's model is based upon three growth rates; the actual growth rate (G) which is determined by the savings ratio and the capital output ratio. The actual is given as G=S/C where G is the rate of growth of output in a given period of time, C is the net addition to capital and its given as the ratio if investment to the increase in income (I/DY) and S is the average propensity to save, APS. The second is the warranted growth rate GW which is given as GW=S/Cr where Cr = the capital requirement needed to maintain GW. This equation shows that if the economy is to grow at the steady rate of G what will fully utilize its capital; income must grow at the rate of S/Cr per year. The third is the natural growth rate. This is the rate of increase in output at full employment as determined by a growing population and the rate of technological progress, Jhingan (2003). Harrod's equation for the national growth rate is Gn. Cr = or ≠ S where Gn is the natural full-employment rate of growth. For full employment equilibrium growth, Gn=GW=G. Any divergence between the three rates of growth would cause condition of secular stagnation or inflation in the economy.

The Harrod- Domar growth models were criticized on the ground of their unrealistic assumptions such as the existence of full-employment, non-government intervention in the economy, constancy of MPS (s) and the capital output ratio (∂) Jhingan (2003).

Romar's Model of Endogenous Growth

Romar's Model of endogenous growth addresses technological spillovers (in which one firm's or industry's gain lead to productivity gains in other firms or industries) that may be present during industrialization (Todaro, 2009). It is valuable to think of each firm's capital stock as including its knowledge. The knowledge part of the firm's stock is essentially a public good that is spilling over instantly to the other firm in the economy. As a result, this model treats learning by doing as "learning by investment".

According to the neo-classical theories of economic growth the prevailing low capital – labour ratio of developing countries is an impetus for high investment which in turn enhances growth. But the situation in these countries leaves more to desired. It is based on this abnormal behavior of developing countries that the concept of endogenous growth theory or more simply, the new growth theory was developed. This theory provides a theoretical framework for analyzing endogenous growth, that is determined by the system governing the production process rather than by forces outside that system. The modern growth theory seems to explain the factors that determine the size of the GDP growth rate that is unexplained in the Solow's neo-classical growth model. Prof. Romer, in his Endogenous Growth Theory Model, includes the technical spillovers which are attached with industrialization. Therefore, this model not only represents endogenous growth but it is closely linked with developing countries also. Moreover, in Romer's model, just the technological spillovers are considered ignoring the determinants of savings and the problems of general equilibrium.

Empirical Review

Illo, Akanmu and Osman (2023) investigated the impact of the Boko Haram insurgency in Nigeria on human security. To this end, responses were collected through a qualitative approach using in-depth interviews. Findings indicate that the terror activities of Boko Haram have led to the death of thousands of lives, loss of properties, shortage of food supply, and an increase in number of internally displaced people in the affected regions. Also, the study revealed that education has been drastically affected and small businesses have collapsed, thus increasing the poverty level in the country. The paper concluded that the insurgency has an adverse effect on indispensable factors that constitute human security such as health, education, food and nutrition, small business enterprises, and human rights and liberty.

Ezeajughu (2021) examined the relevant issue of insecurity in Nigeria and its effect in socioeconomic development; and noted that the continuous rise in Insecurity and deterioration in the economic development in Nigeria call for a concern among researchers and policy makers over the years. However, these two hydraheaded problems remain the greatest challenges facing nations all over the world. Since the past decade or more, Nigeria has witnessed an unprecedented security challenge occasioned by the activities of militants in the SouthSouth region, kidnappers in the south east, violent armed robbery in almost parts of the country, political assassination, ritual killings and more recently activities of Boko Haram in some parts of the northern region especially north east. These social menaces, when put together impinge on the security of lives and property of both Nigerian citizens and foreigners living or even trying to invest in the country. To ensure economic development in Nigeria therefore, the study recommends various measures of curbing insecurity including preventive community policing, human development centered growth perspective, equitable distribution of resources as well as channeling of resources to frontline sectors of the economy among others. This has become worrisome in the face of Nigeria's preparedness to be ranked among the twenty (20) developed countries of the world by the year 2020. These social menace triggers off a worrisome sense of insecurity that challenges Nigeria's efforts towards national economic development and consequently its vision. It also scares the attraction of foreign investment and their contributions to economic development in Nigeria. This paper recommends effective leadership and good governance as a panacea to solving problems of insecurity, unemployment, poverty, hunger, disease, among other negative indices.

Aghaulor (2020) conducted a study on growth impact of insecurity on the Nigerian economy and investigated restructuring national security for economic growth in Nigeria for the period 1981 to 2017. In a bid to actualize the main objective of the study, literature materials were reviewed and data were collected from secondary sources such as the various editions of CBN Statistical Bulletin. The data were analyzed using Augmented Dickey-Fuller (ADF) Unit Root test, Johansen co-integration test, Error Correction Model. The selected variables (i.e. Gross Domestic product, Life expectancy at birth, terrorism risk index, discomfort index, adult literacy rate, corruption perception index and unemployment rate) had a co- integrating relationship indicating long-run relationship among the variables. The result of the Error Correction Model (ECM) had the expected negative sign and statistically significant at the 0.05 level, an indication that any disequilibrium in the system will be adjusted. Based on the conclusion made, it is recommended that government should restructure and decentralize security architecture, increase capital expenditure on security and provide the enabling environment for people to work especially in the area of security of lives and property. This is against the back-drop that no meaningful economic activity can thrive in the face of insecurity.

Ebipre and Wilson (2020) examined the impact of national insecurity on economic growth using the case of Nigeria. The study aimed at addressing the challenges of kidnapping, robbery, and herdsmen-farmers' conflict, ethno-religious crisis and terrorism, and proffer solutions to the attendant impacts that negatively affect the economy. Descriptive analysis was adopted as a method of the study. It was discovered that national insecurity has not only impeded the attainment of sustainable economic growth but that there has been a drastic decline in economic activities in all geo-political zones in the country. The paper recommends that government should develop strategies to enhance good governance, increase recurrent and especially capital expenditures on

internal security, workable anti-terrorism measures, build strong and legitimate institutions that can safely curb the menace of insecurity.

Onime (2018) examined the effect of insecurity on economic growth in Nigeria and noted that apart from its direct effect on the populace, it also affects the economy. Using elements of descriptive qualitative analysis and data from secondary sources, the study analyzed its effect on some economic parameters. The analysis showed that insecurity affects economic growth by drying-out investments, increases unemployment and dwindles government revenue, amongst others. Despite these effects, government capital expenditure on internal security did not grow astronomically to match the hydra-headed problem. The study therefore recommended an increase in capital expenditure on internal security and concludes with a discussion of some policies to be designed and targeted at addressing the economic effects of insecurity.

Ukpong-Umo (2016) carried out a study on insurgency in Nigeria and the challenge of nationhood and stressed that insurgency in Nigeria has become an endemic social ill taking toll on all categories of members of the Nigerian society as terror is unleashed with a corresponding incidence on the various classes of people in the society (the wealthy and poor; young and old; male and female; Indigenes and aliens almost alike). This condition which poses a serious security challenge to national integration is enthroned through the perpetuation of kidnappings, terrorism, etc. The study used the library research data collection method and data were collected using secondary sources with rapid appraisal assessment. The study was framed on the basis of conflict theory of post-colonial states. The study suggested that true federalism, liberal democracy and improved political structure among other measures should be adopted to strengthen our internal democracy; installation of youth mobilization programme through massive job creation for all categories of the working class youth as well as resolution of internal grievances.

Ajibola (2016) conducted a study on economic growth amidst insecurity in Nigeria. Time series data were collected from 1981 to 2014 on Real Gross Domestic Product, Total Expenditure on security, Gross Fixed Capital Formation, Total Labour Force, corruption perception index and poverty index to show the relationship empirically with the use of multiple regressions (OLS) method. It was found out that 90% systematic variation in Real GDP is caused by variation in total labour force, total expenditure on security, corruption perception index, poverty index, unemployment rate, inflation rate and gross fixed capital formation. The study showed that security and other related variables do not only contribute positively to economic growth in Nigeria, but its impact on economic growth is strong and statistically significant. Also, Nigeria potential GDP growth rate is 11% while the actual growth rate is 6%, which implies that Nigeria economy if efficient due the level of insecurity, corruption, unemployment, and poverty. Therefore, based on the findings, the study concluded that the structure and trend of allocation to security is still inadequate to face the challenges of boko haram. Security funding and reduction in unemployment rate has to treated as matter of urgency in Nigeria i.e. increase in security funding will lead to increase in economic growth. The study therefore recommended that government should as a matter of priority implement the policy of EFCC in order to reduce the level of corruption in the country. The donor agencies like the World Bank, UNDP, UNESCO, etc. should also be encouraged to inject funds into the security sector.

METHODOLOGY

Data Needs and Sources

This study used data secondary data which were collected from published data in textbooks, journal and Statistical Bulletin such as CBN statistical bulletin, Annual Reports and Statements of Accounts, and National Bureau of Statistics (NBS) publications as well as global terrorism database and index mundi. The collected data covered a period from 1999 – 2024. The quantitative research design was employed in the study using time series data. This approach is adopted because it enabled the study to obtain data-driven and evidence-based findings; it also enabled the research objectives of this study to be achieved. This research design is also selected because it enables impact analysis to be carried out among variables in a study and it enables causality to be tested among or between variables used in the study.

Model Specification

Aghaulor (2020) while examining the impact of insecurity on the Nigerian economy, adopted the pro-poor growth model by Mahbub (1997) stated in implicit form as:

$$GDP = f(DCI, TRI) \ldots \ldots \ldots (1)$$

Equation (3.1) was stated explicitly as:

$$GDP = \alpha_0 + \alpha_1 DCI + \alpha_2 TRI + \varepsilon_i \ldots \ldots \ldots (2)$$

Where GDP is gross domestic product, DCI is discomfort index and TRI is terrorism risk index, α_0 is intercept, α_1 & α_2 are estimated parameters.

The model was slightly modified by adding Adult Literacy Rate and Corruption Perception Index. The researcher (Aghaulor, 2020), then formulated model one as:

$$GDP = f(TRI, DCI, ADLIT, CUPI) \ldots \ldots \ldots (3)$$

Linearizing the function, the author arrived at a multiple regression equation below:

$$GDP = a_0 + a_1 TRI_t + a_2 DCI_t + a_3 ADLIT_t + a_4 CUPI_t + U_t \ldots \ldots \ldots (4)$$

Where, GDP is Gross Domestic Product, TRI is terrorism risk index, DCI is discomfort index (addition of unemployment and inflation rates), ADLIT is adult literacy rate CUPI is corruption perception index a_0 is constant, $a_1 - a_4$ are parameters t is the time trend and Ut is error term.

Model two was formulated implicitly as:

$$LEX = f(TRI, CUPI, ADLIT, UMR) \ldots \ldots \ldots (5)$$

$$LEX = b_0 + b_1 TRI_t + b_2 CUPI_t + b_3 ADLIT_t + b_4 UMR_t + U_t \ldots \ldots \ldots (6)$$

TRI, CUPI, ADLIT are as defined above UMR = Unemployment Rate b0 = Constant and b1-b4 are parameters t = is the time trend and U_t is the error term.

Following Aghaulor (2020), the model for this study is formulated as stated below taking into cognizance the specific objectives of the study:

$$RGDP = f(ISG, DCI, TRI, CUPI, GFCF, FISE) \ldots \ldots \ldots (7)$$

If Equation (7) is explicitly stated, we have:

$$RGDP = \beta_0 + \beta_1 ISG + \beta_2 DCI + \beta_3 TRI + \beta_4 CUPI + \beta_5 GFCF + \beta_6 FISE + \mu \ldots \ldots \ldots (8)$$

Where, RGDP is real gross domestic product, ISG is insurgency measured as number of terrorist attacks in Nigeria in a year, DCI is discomfort index, TRI is terrorism risk index, CUPI is corruption perception index, GFCF is gross fixed capital formation and FISE is federal government security expenditure. β_0 is the intercept, $\beta_1 - \beta_6$ are estimated parameters and μ is the error term.

The *a priori* expectation of the study's model involves the expected sign and significance of the values of the coefficient of the parameter between dependent and independent variables. Thus, the study expects to have β_5, $\beta_6 > 0$ and β_1, β_2, β_3, $\beta_4 < 0$.

Data were analyzed using descriptive statistics and econometric analytical tools. The descriptive statistical tools that were used are tables, charts, ratios and percentages while the econometric analytical tools include the unit root test of stationarity that was conducted on each variable before the estimation of the equation. If the variables are stationary, the ordinary least square technique of estimation might be employed in estimating the equation. If the variables are differenced to be stationary, the Johanson co-integration test comes in handy to ascertain the existence of long run relationship between the variables. If there exist a long run relationship, the error correction model for the short run will be estimated (Engle and Granger, 1988, 1991). If there is no long run relationship among the variables, the differenced ordinary least square will be used to estimate the relationship between the variables. Granger causality test will be tested to determine the causal relationship among the variables. The statistical package to use is E-view 12 software.

The methodology adopted in this study is deemed appropriate because the series of this study failed to be stationary at level. The error correlation mechanism account for the short-run dynamics of the study variables and also reveals how long it variables takes to randomly walk back to equilibrium.

RESULTS AND DISCUSSIONS

Descriptive Statistics

The data on the study's variables were calculated using descriptive statistics. Among the statistics are mean, median, maximum, minimum, standard deviation, skewness, kurtosis, Jarque-Bera, sum, and sum-squared deviation. To evaluate the statistical properties of the important research variables, these statistics were computed. The results are presented in Table 2.

Table 2: Summary Statistics of the Variables used in the Study

Statistic	RGDP	ISG	DCI	TRI	CUPI	GFCF	FISE
Mean	42520.33	246.7813	23.34281	6.833438	23.84781	7.70E+12	200.3747
Median	38735.23	238.0000	17.43000	7.150000	25.00000	6.39E+12	107.9000
Maximum	73060.06	588.0000	76.87000	9.310000	30.00000	2.46E+13	728.8300
Minimum	19199.06	12.00000	9.180000	3.210000	12.88000	2.63E+11	2.390000
Std. Dev.	20480.17	192.1571	16.21602	1.806979	4.187426	6.96E+12	218.5513
Skewness	0.237650	0.243945	2.019838	-0.564179	-1.142313	0.876416	1.035580
Kurtosis	1.423188	1.596766	6.230721	2.139697	3.878135	2.945026	3.045471
Jarque-Bera	3.616330	2.942803	35.67539	2.684419	7.987513	4.100593	5.722360
Probability	0.163955	0.229603	0.000000	0.261268	0.018430	0.128697	0.057201
Sum	1360651.	7897.000	746.9700	218.6700	763.1300	2.46E+14	6411.990
Sum Sq. Dev.	1.30E+10	1144655	8151.740	101.2203	543.5707	1.50E+27	1480705.
Observations	23	23	23	23	23	23	23

Source: Researcher's Computations from Eviews 12

Skewness and kurtosis measurements were provided by Jarque & Bera (1987); the Jarque-Bera test is widely used to judge the normality of distributions. The study performed a normality test on the series employed in the investigation using the Jarque-Bera, skewness, and kurtosis statistics. The conventional value of skewness for

the normal distribution, which distributes data along its mean, is zero. The majority of the study's series have skewnesses that differ noticeably from those that are commonly believed to have a normal distribution. The left (negatively) or right (positively) of these series are not, however, noticeably distorted. This demonstrates that these series' distributions resemble the normal distribution. The kurtosis statistic of a normal distribution is 3. It measures how peaked and flat a normal curve is. The kurtosis gauges how peaky a distribution is, which is typically taken to be about normal. Leptokurtic (k>3) distributions with a high peak and "fat tails" are what the series DCI, CUPI and FISE typically display. However, RGDP, ISG, TRI and GFCF have platykurtic (k<3), thinner tails, and somewhat flat-topped curves.

Unit Root Tests

In order to avoid spurious regression results, stationarity properties of the series used in this study were subjected to tests using the ADF. The results obtained are presented in Table 3.

Table 3: Stationarity Test Results

Variable	t-Statistic	Critical value @ 5%	Order of Integration	Decision
RGDP	-4.878664	-3.587527	I(1)	Reject H_0
ISG	-6.925622	-3.568379	I(1)	Reject H_0
DCI	-4.504278	-2.963972	I(1)	Reject H_0
TRI	-5.113333	-2.967767	I(1)	Reject H_0
CUPI	-3.874789	-2.991853	I(1)	Reject H_0
GFCF	-4.137075	-2.991878	I(1)	Reject H_0
FISE	-3.843825	-3.622033	I(1)	Reject H_0

Source: Researchers' Computations from Eviews 12

Table 3 shows the stationarity test results. The results show that most of the series failed to attain stationarity at levels, except GFCF, which was stationary at level. The series RGDP, ISG, DCI, TRI, CUPI and FISE attained stationarity at their first logarithmic differences. Thus, the null hypotheses of the series having unit roots were rejected as indicated in the fifth column of Table 4.

Cointegration Results

Unit root results showed that all the variables used in the study to establish a long-run relationship among the variables were stationary at the first difference. Based on this, the long-run relationship that existed among the variables used in the VAR system have been established. The study made use of the Johansen Cointegration technique as it is required of series whose order of integration is I(1). The Johansen Tests were conducted and the results are shown in Table 4.

Table 4: Results of Unrestricted Cointegration Rank Tests (Trace and Max-Eigen Statistic)

Hypothesized no. of CE(s)	Eigen value	Trace Statistic	0.05 Critical Value	Prob.**	Eigen Value	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None*	0.876029	188.3221	111.7805	0.0000	0.876029*	62.63117	42.77219	0.0001

At most 1*	0.718723	125.6909	83.93712	0.0000	0.718723*	38.05250	36.63019	0.0339
At most 2*	0.690924	87.63843	60.06141	0.0001	0.690924*	35.22503	30.43961	0.0117
At most 3*	0.604688	52.41340	40.17493	0.0019	0.604688*	27.84242	24.15921	0.0152
At most 4*	0.379069	24.57098	24.27596	0.0459	0.379069	14.29606	17.79730	0.1558
At most 5	0.276470	10.27492	12.32090	0.1076	0.276470	9.708382	11.22480	0.0913
At most 6	0.018707	0.566539	4.129906	0.5136	0.018707	0.566539	4.129906	0.5136

Source: Researchers' Computations from Eviews 12.

Trace test and Max-Eigen tests indicates 5 & 4 Co-integrating Equation(s), respectively at the 0.05 level.

* denotes rejection of the hypotheses at the 0.05 level using the MacKinnon-Haug-Michelis (1999) p-values denoted by **.

Table 4 presents the Johansen Cointegration results. The results show that the Trace test has indicated five cointegrating equations while the Max-Eigen test has indicated four cointegrating equations. This is because the Trace statistics of 188.3221, 125.6909, 87.63843, 52.41340 and 24.57098 are greater than their respective critical values of 111.7805, 83.93712, 60.06141, 40.17493 and 24.27596 at 5% level of significance. Thus, we reject the null hypotheses of None*, At most 1*, At most 2*, At most 3*, and At most 4* of the hypothesized number of cointegrating equations. For the remaining hypothesized number cointegrating equations (for At Most 5 and At Most 6), we cannot reject the null hypotheses as their Trace statistics are less than their respective 0.05 critical values.

The table also shows that the Max-Eigen test has indicated four cointegrating equations at 0.05 critical value. This is because the Max-Eigen statistics of 62.63117, 38.05250, 35.22503 and 27.84242 are respectively greater than their critical values of 42.77219, 36.63019, 30.43961 and 24.15921 at 5% level of significance. Therefore, we reject the null hypotheses of none*, At most 1*, At most 2* and At most 3* of the hypothesized number of cointegrating equations for the Max-Eigen statistic. The remaining hypothesized number of cointegrating equations (ranging from At most 4 to At most 6), we cannot reject the null hypotheses as their Max-Eigen statistics are less than their respective 0.05 critical values.

Long-Run Impact of Insurgency on Economic Growth in Nigeria

The presence of five and four cointegrating equations for the Trace and Max-Eigen Statistics depict that cointegrating relationship among variables used in the VAR system had been established. The nature of the longrun relationship between insurgency and economic growth in Nigeria using the cointegrating coefficients normalized by b^1*s11*b=1 (the inverse matrix) was estimated and the results are presented in Equation 4.1.

$$\ln RGDP = -0.2938^{*}\ln ISG - 0.6300^{*}\ln DCI - 0.6617^{*}\ln TRI - 2.2147^{*}\ln CUPI + 0.7347^{*}\ln GFCF + 0.0355\ln FIS$$

(0.0932) (0.1125) (0.1895) (0.4202) (0.0539) (0.0577)

Note: Standard error in parentheses.

* denotes that the coefficient is significant at 5% level.

Equation 9 shows estimates that were obtained from the model to establish a long-run relationship between insurgency and economic growth in Nigeria. The estimates in the regression were treated as elasticities of RGDP with respect to the independent variables in the equation, since all other variables are held constant in each case when a particular variable is being treated. As shown in equation 4.1a, coefficients of variables in the long-run

are significant at 5% level of significance, with the exception of FISE – which was not statistically significant at 5% level of significance.

The results show that, a one percent increase in insurgency (ISG) is associated with 0.2938% decrease in the growth of RGDP (real gross domestic product) – the size of the economy in the long-run. This means that when there is increase in ISG, the growth of real gross domestic product will fall quickly in the long-run. This finding is in line with that of Ajibola (2016) who reported that insurgency has a negative influence on economic growth in Nigeria. The results of equation 9 shows that the impact of insurgency on economic growth is statistically significant at 5% level, thus, the null hypothesis one, which state that insurgency has no significant impact on economic growth in Nigeria is rejected and its alternative accepted.

The results also show that discomfort index (DCI) is associated with a coefficient of 0.6300, which implies that a one percent increase in DCI leads to 0.6300% decrease in RGDP and vice versa, in the long-run. This means that increases (decreases) in discomfort index precipitate decreases (increases) in economic growth in Nigeria in the long-run. This relationship is statistically significant at 5% level of significance, suggesting rejection of null hypothesis two, which states that discomfort index does not have a significant impact on economic growth in Nigeria, and thus its alternative is accepted. Therefore, discomfort index has significant impact on economic growth in Nigeria. The finding of a negative and significant relationship between DCI and RGDP corroborates that of Aghaulor (2020), who found that discomfort index has a negative but insignificant effect on economic growth of Nigeria. However, this was a short-run dynamic.

Terrorism risk index (TRI) shows a negative influence on economic growth as expected. The coefficient of 0.6617 indicates that a one percent change in TRI leads to 0.6617% negative change in economic growth, in the long-run. The relationship between TRI and RGDP is statistically significant at 5% level of significance, which means that the null hypothesis three – that terrorism risk index has no significant impact on economic growth in Nigeria – is rejected, and its alternative accepted. This finding is in line with that of Aghaulor (2020) who reported a short-run negative relationship between terrorism risk index and economic growth in Nigeria.

The results of Equation 9 also show that corruption perception index (CUPI) has a coefficient of –2.2147. This implies that a 1% increase in CUPI leads to 2.3147% decrease in real GDP in the long-run and vice versa, this relationship is statistically significant at 5% level. The results also show that gross fixed capital formation (GFCF) and federal insecurity expenditure (FISE), individually exerted positive influences on real GDP in Nigeria in the long-run, in line with a priori expectations. However, FISE was found to be statistically insignificant at 5% level.

Error Correction Model

Before the estimation of the model, an appropriate lag length was chosen and the results are presented in Table 4.4.

Table 5: Lag Order Selection Criteria for model of Life Expectancy

Lag	Log L	LR	FPE	AIC	SC	HQ
0	76.55047	NA	0.001495	-3.669255	-3.455978	-3.592733
1	138.4388	104.7342*	6.59e-05*	-6.791735*	-6.535802*	-6.699909*
2	138.5871	0.243330	6.90e-05	-6.748057	-6.449469	-6.640926

*indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

Source: Researchers' Computation, 2025

On the basis of the results presented in Table 4.4, the lag length of 1 was selected as the optimum lag that best explain how backwards to go in a bid to capture the dynamic behaviour of the variables in the VAR system regarding the models that explain the effect of insurgency on economic growth in Nigeria. The first year was selected as the optimum, having produced the minimum AIC, SC, HQ and FPE. The results for the leading models in their first logarithmic differences on the short-run relationship between insurgency and economic growth in Nigeria are presented in Table 4.5.

Table 6: Vector Error Correction Estimates

Variables	**Coefficient**	**Std. Errors**	**t-statistic**
RGDP (-1)	0.711915	0.13488	5.27808*
ISG(-1)	0.211245	0.01131	4.99386*
DCI(-1)	0.190292	0.01514	3.27414*
TRI(-1)	-0.219263	0.02016	-3.65436*
CUPI(-1)	-0.035624	0.05128	-0.69475
GFCF(-1)	0.037364	0.03265	1.14427
FISE(-1)	0.013047	0.01775	0.73510
ECM(-1)	-0.256541	0.00713	-4.72812*
C	0.004562	0.00934	0.48823
R-Squared =	0.605583		
Adj. R-squared =	0.573241		
Sum Sq. Resids =	0.013941		
S.E. equation =	0.025766		
F-statistic =	4.030396		
Log likelihood =	-72.54328		
Akaike AIC =	-4.236219		
Schwarz SC =	-3.815859		
Mean dependent =	0.044667		
S.D. dependent =	0.034912		

Source: Researcher's Computations from Eviews 12

Rgdp is dependent variable

* denotes significance at the 5% level.

Table 6 shows the short-run VEC estimates. The results show that in the short-run, the growth of RGDP in the current year is positively influenced by the growth of insurgency (ISG (-1)) in the previous year. This implies that a one percent increase in ISG (-1) is associated with 0.211245% increase in RGDP. The result also show that

discomfort index (DCI (-1)) had a positive influence on RGDP in the current year. These are contrary to expectations and may be attributed to increase in budgetary provisions for social security and emergencies arising from insurgency. The result show that terrorism risk index (TRI (-1)) exerted negative influence on the growth of RGDP in the short-run. In line with expectations, corruption perception index (CUPI (-1)), exerts negative influence on economic growth (RGDP) in the short-run. The results also show that, in line with expectations, gross fixed capital formation (GFCF (-1)) and federal security expenditure FISE (-1), all collectively exert positive influence on the growth of RGDP in the short-run.

The Adjusted R-squared of 0.605583 shows that even with adjustments in the model, the explanatory variables included in the model can still explain 60.56% of changes in the RGDP in the short-run. The ECM (-1) value of -0.256541, with the standard error of 0.00713 and a corresponding t-statistic of -4.72812, show that the speed of adjustment is significant. This implies that variables included in the model have the ability of returning to their long-run equilibrium values after experiencing short-run perturbations at a speed of adjustment of 25.65%. The F-statistic value of 4.030396 reports the synergy effect of explanatory variables on the dependent variable. This means that explanatory variables included in the study model are collectively significant determinants of economic growth in Nigeria in the short-run.

DISCUSSION

The first objective of this study was to examine the impact of insurgency on economic growth in Nigeria. The results of the descriptive statistics show that insurgency is not normally distributed, just as the unit root results show that the series – insurgency (ISG) failed to attained stationarity at level, however, became stationary after it was differenced once. The results of the short-run model show that insurgency in the first year lag exerted positive influence on economic growth in Nigeria. However, in the long-run, as expected, insurgency exhibited a negative and significant influence on economic growth in Nigeria. On empirical basis, there are strong evidences for expecting insurgency to exert negative influence on economic growth. This is because, rising security issues, discourage investments, leads to loss of jobs, lives and properties. Daura (2014) assert that, “Developing nations like Nigeria in particular experience pervasive risk of devastation, human and property loss resulting from human and natural disasters. In addition, According to Henderson (2004) “This level of risk was attributed to socio- economic stress, aging, and inadequate physical infrastructure, weak education and preparedness for disasters and in sufficient fiscal and economic resources to carefully implement the preparedness, response, mitigation, and recovery components of emergency management.”

The second objective of this study was to evaluate the impact of discomfort index on economic growth of Nigeria. Descriptive statistics show that discomfort index exhibit characteristics far from those considered to be normally distributed. Equally, the series (discomfort index) failed to attain stationarity at level, however, it became stationary after it was differenced once. The short-run results of the error correction model show that discomfort index’s relationship with economic growth, was positive and contrary to expectations. However, in the long-run, the results show that discomfort index has a negative and statistically significant relationship with economic growth. This called for the rejection of null hypothesis two and the acceptance of its alternative, thus implying that discomfort index has a significant impact on economic growth in Nigeria. The finding of a negative and significant relationship between DCI and RGDP corroborates that of Aghaulor (2020), who found that discomfort index has a negative but insignificant effect on economic growth of Nigeria. However, this was a short-run dynamic. The results suggest that since the turn of the new millennium, which was the period of clear comparison and computation of the discomfort index, Nigeria had always record disturbing record in the index which is attributable to security issues.

The last objective of this study was to analyse the impact of terrorism risk index on economic growth of Nigeria. Results of descriptive statistics of terrorism risk index revealed that terrorism risk index was not normally distributed. The unit root test conducted to determine the stationarity property of this series (TRI) showed that the series became stationary after it was differenced once. The short-run results revealed that, the series drifted away from its equilibrium value, however, have the tendency of randomly walking back to its equilibrium value

in the long-run. The long-run results showed that terrorism risk index has a negative and statistically significant impact on economic growth in Nigeria. The null hypothesis number three—that the terrorist risk index has no meaningful impact on economic growth in Nigeria—is rejected in favour of its alternative since there is a statistically significant association between TRI and RGDP at the 5% level of significance. This means that terrorism risk index has significant negative impact on economic growth in Nigeria. According to the coefficient of 0.6617, a one percent change in TRI over time results in a negative change in economic growth of 0.6617 percent. This result is consistent with that of Aghaulor (2020), who found a short-term inverse link between Nigeria's economic development and the terrorist risk index.

CONCLUSION AND POLICY RECOMMENDATIONS

Based on the findings of this research work, it can be concluded that insurgency has negatively influenced the long-run economic growth process in Nigeria. It can also be concluded that insecurity occasioned by the activities of militants, kidnappers, violent armed robbers and more especially Boko Haram in the country can truncate the country's goal of achieving economic development, if not tackled or checked by the government. Overall, a nation replete with insecurity can never attract investments nor grow its economy.

The study therefore, recommended based on its findings that since insurgency and terrorism risk indices have significant long-run negative impacts on economic growth, Nigeria must prioritize strengthening its security framework. This includes investing in modern surveillance technologies, enhancing intelligence gathering and sharing, and improving the capacity of security agencies through adequate funding, training, and accountability mechanisms. Proactive intelligence-led operations can help prevent insurgent attacks, reduce terrorism-related risks, and restore investor confidence in the Nigerian economy.

The findings show that insurgency, terrorism, and the discomfort index are linked to socioeconomic stressors such as poverty, unemployment, weak infrastructure, and inequality. Government policies should therefore focus on inclusive economic growth by expanding job opportunities, particularly for youths, through skill acquisition programs, agricultural development, and MSME support. Investment in education, healthcare, and social welfare can also reduce grievances that fuel radicalization, while improving resilience against insecurity.

Finally, it is Given that terrorism risk and insurgency negatively affect economic growth across regions, Nigeria should complement military responses with regional stabilization programs and community-driven peace initiatives. Government should engage local leaders, traditional rulers, religious institutions, and civil society in dialogue and reconciliation processes, particularly in insurgency-prone areas such as the North-East and Niger Delta. Strengthening social cohesion, rebuilding destroyed infrastructure, and supporting internally displaced persons (IDPs) with livelihood opportunities will help stabilize communities, reduce insurgent recruitment, and stimulate local economic recovery.

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