

A comparative assessment of external debt management and infrastructural developments: perspectives on Nigeria's economy, 1979–2020

Assessment of external debt management

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Abstract

Purpose – The purpose of this study is to examine whether external debt procurements during the military and civilian regimes had a correlation with infrastructural developments using available data from Nigeria.

Design/methodology/approach – The sample period covering 41 years, was divided into two periods representing the military and civilian regimes with respective secondary data secured from the World Bank Group online database. The study employed robust least square regression, autoregressive distributed lag and the error correction term to test the variables at the 0.05 significance level.

Findings – The results affirmed that external debts shows positive and significant relationship with infrastructural developments proxy for capital investments during the short-run for both military and civilian regimes in Nigeria, while the outcome was only significant and negatively signed for the civilian regime in the long-run with 52.28% speed of convergence to long-run. This study concludes that external debt showed significant correlation with infrastructural development during the civilian regime better than the military regime in Nigeria and this conclusion applies globally.

Research limitations/implications – Research period covered only 41 years, between 1979 and 2020 and focused on sub-Saharan African country – Nigeria.

Practical implications – The research encourages civilian administration in governments and urged them to carefully appraise and contract external debts to finance self-liquidating priority projects.

Social implications – The national economy and the masses suffer during military regime but are better off during civilian regime.

Originality/value – Apart from adding to current literature, the work focused on a coverage period that comprehensively compares two different regimes of government – military and civilian administrations.

Keywords External debts, Infrastructure, Capital investments, Development, Debt servicing, Nigeria

Paper type Research paper

JEL Classification — H4, H5, H6, H8

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1. Introduction

Debts have been contracted from sophisticatedly advanced countries and specialized financial institutions by governments of emerging economies to prosecute several economic goals and infrastructural projects (Ijeoma, 2013; Ijirshar *et al.*, 2016). External debts is believed to be a strong catalyst for rapid economic growth and industrialization, as it exerts positively significant influence on national economic growth (Zaman and Arslan, 2014; Ekperiwari and Oladeji, 2012; Ijeoma, 2013), other school of thought argued that infrastructural growths occasioned by external borrowings do not produce positive effects on emerging economies (Udeh *et al.*, 2018; Isibor *et al.*, 2018; Essien *et al.*, 2016). This foregoing debate will be approached from the different government administrations that existed within the sample period, in order to establish a nexus between external borrowings, infrastructural growth and economic growth.

The purpose of this investigation is to assess Nigeria's external debt and infrastructural development between 1979 and 2020 by comparing the military regime performance with the civilian regime in terms of external debt utilization and management. This paper will attempt the above by dividing four decades into two component periods corresponding to 20 years rule of the military with another 21 years of democratic government necessitating a comparative study within the period. This will help us ascertain in concrete terms the impact of the borrowed funds on infrastructure for the period since debt (loan) is usually tied to capital investments. The hypothesis that would thus be considered is that, there is no significant correlation between external debt and Nigeria's infrastructural developments in the military regime; there is no significant correlation between external debt and Nigeria's infrastructural developments in the civilian regime.

The paper comprises of five sections. The introduction is immediately followed by the review of literature in section two, section three undertakes explanations on materials and methods for the study; while section four will deal with results and discussion, and raps up with conclusion and recommendations in the last section.

2. Review of related literature

The literature review considers the key concepts relating to external debts and infrastructural developments in the study area, the supporting theory and a review of key empirical investigations on subject.

2.1 Conceptual studies

Debt is also known as borrowings and may be divided into domestic (internal) and foreign (external) debts. Broadly classified into two, namely, external and internal debt. Government debts are also referred to as public debt being debt incurred to finance projects for public good. The recurrent problem of limited resources to sponsor infrastructure, expansionary policies and programs that stimulate growth and development leads to borrowing from both external and/or internal sources (Osadume and University, 2021). Obviously, infrastructural projects are giant stimuli to economic growth (GDP) of a country (Osadume and University, 2021).

Compensations for lent money known as interests are charges on contracted loans. The interest rate is most times determined by the lending institutions, sometimes influenced by the bargaining powers of contracting parties. In circumstances where the borrower fails to honor a loan agreement as at when due, it may amount to debt servicing which is additional burden to the borrowing nation. At times, the amount for servicing debts may erode the benefits of the capital borrowed, if not utilized in productive ventures/or projects which yield high returns. Debt, whether foreign or domestic, demands for security to facilitate the release of agreed funds (Osadume and University, 2021).

2.2 Theoretical studies

The study is anchored on the resource allocation theory which stipulates that firm or institutions should determine the best way to allocate its resources between various productive activities it wishes to engage (Bower, 2017). It emphasizes the use of the planning process in assessing future projects and the way in which past outcome feed into the future projects.

Nurse (1959, as cited in Elom-Obed *et al.*, 2017) propounded that sharing of increase in productive resources should be to all economic based on demand. Economic resources (capital and technology) should be utilized by different industries in an economy to promote efficiency and enlarged market size. The proponent argued that investments in diverse industries enhance vertical and horizontal integration, promote division of labor and technical skills.

2.3 Empirical studies

Several empirical studies have attempted to assess the effect of external and internal borrowings on national economic outputs without successful consensus. Some of these studies include;

Ajayi *et al.* (2018), studied the comparative analysis of public debt management and economic growth in Nigeria focusing on the military and civilian regime between 1981 and 2015. The study used variables such as real gross domestic product, External debt borrowings, domestic debt borrowings and gross fixed capital formation using OLS and VECM techniques, and discovered that though overall, there was significant cointegration between external debt and economic growth, however, in both the civilian and military regimes, there were insignificant effects of external debt on economic growth.

Udeh *et al.* (2018) investigated the influence of external debt on Nigeria's economy and found a negatively insignificant impact of debt stock and debt servicing costs on the Nigeria's economic growth.

Isibor *et al.* (2018) studied the outcome of government debt on Nigeria's national output between 1982 and 2017, using two-stage least square regression, regressed lagged internal and external debts on GDP in the first stage. It discovered that while external debt impacted negatively on the economy, internal debt had a positive impact. In the next equation, GDP, total savings deposits in DMBs and capital expenditure were regressed on local debt and evidence demonstrated that all variables were connected to domestic debt. The study suggested that the authorities should minimize borrowing from external sources and also fight against corruption.

Elom-Obed *et al.* (2017) examined government debt effect on Nigeria's national output between 1980 and 2015. The research used VECM (vector error correlation model) statistical data analysis method, employed variables such as RGDP, foreign borrowings and local private savings. The result of the research revealed that government borrowings had negatively significant impacts on national output growth and domestic debt had significant positive link to national output growth for same period.

Essien *et al.* (2016) through empirical investigation of the macro-economic variables x-rayed the outcome of government debt in Nigeria using selected econometric tools such as Granger-causality, impulse response, VAR, and variance decomposition of many innovations to measure the outcome. The study discovered how changes to foreign debt can create shocks to the Central bank lending rate for lagged period. Results from this paper suggest that authorities should sustain borrowing from the long-term market.

Ijeoma (2013) studied the impact of debt on the Nigerian economy and discovered a significant effect of external debt stock on real gross domestic product. Also, the effect was significant on debt service costs, and gross fixed capital formation.

Dereje and Joakim (2013) in their study of the effect of external debt on economic growth for eight heavily indebted African countries, the study discovered a significant effect.

In 2012, Ekperiware and Oladeji researched on how foreign debt relief affects Nigeria national output between 1975 and 2005 using quarterly time series regression method for variables such as external debt, real GDP and external debt service cost. Application of Chow-test to the regression outcome resulted to structural breakage among the variables. The work further established that external debt relief was a necessary panacea for developing and debt-ridden countries because it provided resources for economic growth.

Kaluluma (cited in [Essien et al., 2016](#)) used a panel research to examine how public debt interplay with interest for the economies of Canada, the United Kingdom, the United States of America and Germany using the Johansen error-correction model (ECM) statistical technique. Interest rate, exchange rate, domestic asset stock and the real GDP, were the variables used and the result showed no positive outcome on the variables.

[Ayadi and Ayadi \(2008\)](#) had a comparative study on external debt and output growth in two countries, namely South Africa and Nigeria between 1980 and 2007. The research used least square estimation to test the annual series variables adopted. Results indicated external debt and external debt servicing showed negative correlations on the selected economies.

[Jirshar et al. \(2016\)](#) studied the connection holding external debt with economic growth in Nigeria from 1981 to 2014. They employed descriptive and econometric tools to analyze the time series data. It was observed that external debt was significantly related to GDP in the long run while external debt servicing had negatively impacted output.

From the foregoing reviewed literature, the following gaps were identified which this study intends to fill; Specific correlation of external debt with infrastructural development in emerging economies, indicating the period of assessment from 1979–2020 amounting to four decades, with the comparative analysis within the period of assessment corresponding to military rule of 20 years and 21 years of democratic government in Nigeria.

3. Materials and methods

The study engaged secondary key data sourced from the World Bank Group between 1979 and 2020. The variables considered include – real gross domestic product (RGDP), external debts (EXDT), capital investments (CAIV), inflation rate (INFR) and total debt service cost (TDS).

3.1 Model specifications

This work will employ the findings of [Elom-Obed et al. \(2017\)](#) with moderate modifications, considering the variables and econometric methods employed. The primary model used EXDT, domestic debts, real RGDP and investments savings as variables while this study will use economic growth (RGDP), EXDT, CAIV, INFR and TDS and represented in [equation \(1\)](#) below;

$$CAIV = \beta_0 + \beta_1 EXDT + \beta_2 RGDP + \beta_3 INFR + \beta_4 TDS \quad (1)$$

where, CAIV, EXDT, RGDP, INFR and TDS are as define in above paragraph.

TDS = Total Debt Service ratio to Gross National Income (GNI) %

$\beta_0 - \beta_4$ = Parameters

Apriori expectation = $0 < EXDT > 0$, positive and significant.

Definitions of Terms:

- (1) TDS – Total debt service (%GNI) is used to measure the main facility amount repayments with interest paid in agreed denomination such as in cash or goods/ services for long-term debt, while interest accruals for short-term debt and repayments are made to the monetary fund.

- (2) EXDT – External debt is the proportion of a nation’s loan profile that is borrowed from external fund lenders and institutions such as international financial institutions. This is measured as percentage ratio of GDP while in other instances could be expressed as percentage of gross national income.
- (3) CAIV – Capital investment is the expenditure of funds by a company, institution or country in the establishment of long-term revenue producing assets that are public goods in nature. Expressed as %GDP consisting of investments in additions to the fixed assets of a country in addition to stock level net changes. Tangible fixed assets will cover land acquisitions with upgrades, plants, equipment and machines, social infrastructure provisions such as schools, railways, road and hospital constructions, national buildings and properties.
- (4) RGDP – This is usually with inflation-adjusted real gross domestic product, is the rate of growth of products or services manufactured in a country in a given year expressed as percentage.
- (5) INFR – Inflation rate is the general increase in price level of unit products or services in a defined period of time.

4. Data and analysis

This section considers the treatment of selected variables as specified in section 3.0 using various diagnostic tests methods. This is preceded by the conduct of the relevant hypothesis testing and discussions of the outcome.

4.1 Diagnostic tests

The diagnostic tests assist to check data and model suitability for the research work and adopt appropriate refinery process to make it useable for our research work and reliable output.

4.1.1 Explanatory statistics. Table 1 indicates that over 83.3% of the variables show an average kurtosis greater than 3, which indicates a platykurtic features while 16.7% are below 3, indicative of a leptokurtic character. Most of the variables show a significant Jarque–Bera statistics of *p*-values below the 5% significant level (see Table 2).

4.1.2 Stationarity tests. This test indicates that the data in the series are stationary at a given level with significant *p*-value.

	CAIV	EXDT	INFR	RGDP	TDS
Mean	39.04244	61.54439	18.75585	3.263805	2.637146
Median	36.63000	51.16000	12.22000	4.210000	1.880000
Maximum	94.23000	228.3700	72.84000	15.33000	6.520000
Minimum	14.90000	4.130000	5.380000	-13.13000	0.100000
Std. Dev.	22.42058	59.14040	16.72602	5.361210	2.090490
Skewness	1.077321	0.939632	1.862895	-0.928802	0.488567
Kurtosis	3.424663	3.286470	5.312534	4.839207	1.830661
Jarque–Bera	8.238978	6.173401	32.85009	11.67369	3.966999
Probability	0.016253	0.045652	0.000000	0.002918	0.137587
Sum	1600.740	2523.320	768.9900	133.8160	108.1230
Sum Sq. Dev.	20107.30	139903.5	11190.39	1149.703	174.8059
Observations	41	41	41	41	41

Source(s): Author’s e-views 10 computation

Table 1. Explanatory statistics for external debt with infrastructural development

All the variables (fluid) have probabilities that are significantly integrated at first level at the 5% chosen significance level. This level of integration will also influence the econometric technique adopted, which include robust least square regression, autoregressive distributed lad and the error correction model.

4.1.3 *Heteroskedasticity tests.* Table 3 indicates no heteroskedasticity in the model since *p*-values are insignificant and greater than the 0.05 significance level (see Table 4).

4.2 *Hypothesis testing*

The hypotheses tested in this section are shown below;

4.2.1 *Hypothesis testing 1.*

H0. No significant relationship between external debt and Nigeria infrastructural development in the military regime.

H1. There is a significant relationship between external debt and Nigeria infrastructural development in the military regime.

The above hypothesis will be tested using robust least square regression, ARDL and ECM.

The hypothesis aims to ascertain whether there was achieved during the military regime or during the democratic regime and we rerun the basic tests splitting the periods between

Table 2.
Unit root tests

Fluid	Stat (ADF)	Crit. value @ 5%	<i>p</i> -value	Integration
CAIV	-5.4268	-3.5330	0.0004	(1)
EXDT	-6.0668	-3.5298	0.0001	(1)
INFR	-6.2332	-3.5331	0.0000	(1)
RGDP	-9.1213	-3.5298	0.0000	(1)
TDS	-6.3098	-3.5298	0.0000	(1)

Source(s): Author's e-views 10 computation

Table 3.
Heteroskedastic test result using BPG

Heteroskedastic test: Breusch-Pagan-Godfrey				
<i>F</i> -statistic	1.896329	Prob. <i>F</i> (4,24)	0.1438	
Obs* <i>R</i> -squared	6.964445	Prob. Chi-Square(4)	0.1378	
Scaled explained SS	8.916523	Prob. Chi-Square(4)	0.0632	

Source(s): Author's e-views 10 computation

Table 4.
Robust least square regression result

Dependent variable: CAIV Method: robust least squares Sample (adjusted): 1980 2003				
Variable	Coefficient	Std. Error	<i>z</i> -Statistic	Prob.
C	57.48767	5.174465	11.10988	0.0000
EXDT(-1)	-0.126712	0.063566	-1.993407	0.0462
INFR	0.038714	0.156053	0.248084	0.8041
RGDP	-1.820917	0.390157	-4.667145	0.0000
TDS	1.240120	1.459127	0.849905	0.3954

Source(s): Author's e-views 10 computation (See Table A2 for details)

1979 and 1999 with an overlap into 2004, to represent period of military rule while between 1999 and 2020 will represent the period of civilian administration in Nigeria.

The robust least square regression results shows that there is significant connection between external debt and capital investment (proxy for infrastructural developments) in the military administration.

However, the ARDL result in [Table 5](#) with a p -value in excess of 0.05 level of significance ($p = 0.4236$), indicates a negative and insignificant relationship with the variables of interest.

The result of the error correction model in [Table 6](#), reinforces the insignificant co-integration between external debt and infrastructural developments initiatives of the government (CAIV). Hence, there is no long-run convergence between external debt and capital investments with $p = 0.6832$ at the 5% level of confidence for the military rule era in Nigeria.

Comments: The result shows that capital projects financed during the military rule between 1979 and 1999, correlated with various external loans procured in the short-term but failed co-integration in the longer term based on the positive and insignificant outcome of the ARDL and error correction models.

4.2.2 Hypothesis testing 2.

H0. No significant relationship between external debt and Nigeria infrastructural development in the civilian regime

H1. There is a significant relationship between external debt and Nigeria infrastructural development in the civilian regime.

Result from [Table 7](#) indicates the existence of a significant relationship with external debt procured during the civilian regime between 1999 and 2020 with p -value (0.0000) less than the chosen significance level that is 0.05. Hence, correlation exists in the short-term between negotiated external loans and infrastructural development of Nigeria.

The outcome of the ARDL in [Table 8](#), reveals the existence of co-integration (p -value = 0.0115) and indicates the existence of a long-term relationship between Nigeria external loan (EXDT) and infrastructural development (CAIV) during the civilian regime in Nigeria between 1999 and 2020.

Dependent variable: CAIV

Method: ARDL

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
CAIV(-1)	0.797934	0.115588	6.903231	0.0000
EXDT(-1)	-0.030965	0.037563	-0.824360	0.4236
INFR	-0.049806	0.069334	-0.718351	0.4844
INFR(-1)	0.131723	0.060788	2.166914	0.0480
RGDP	-0.457774	0.251997	-1.816584	0.0907
RGDP(-1)	0.290597	0.218850	1.327835	0.2055
RGDP(-2)	0.393576	0.206835	1.902849	0.0778
TDS	0.007451	0.776585	0.009594	0.9925

Source(s): Author's e-views 10 computation (See [Table A3](#))

Table 5.
Autoregressive distributed lag model result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ECT01	0.052813	0.127201	0.415197	0.6832

Source(s): Author's e-views 10 computation (See [Table A4](#))

Table 6.
Error correction model result

The result of the ARDL analysis in [Table 8](#), is thus confirmed by the error correction test of [Table 9](#) with a negatively signed coefficient that is statistically significant with a *p*-value of 0.0058. The result shows a long-run convergence at a speed of 52.28% during the democratic rule.

4.3 Discussions of findings

This study comparatively assesses the nexus between external debt management and infrastructural developments between the military and civilian regime in Nigeria between 1979 and 2020. The after appropriate pre-treatment were analyzed using the robust least square, Autoregressive distributed lag and the error correction model. The first hypothesis tests indicates that during the military regime, external debts contracted shows a negatively significant effect on infrastructural developments proxy by capital investments in the short-run (*p*-values was 0.0462) but insignificant in the long-run (*p*-value was 0.6832 from the ECM). This outcome is supported by the findings of [Elom-Obed et al. \(2017\)](#) of a negatively significant relationship between external debt and infrastructural development in the short-run; however, this nexus is insignificant in the long-run per the findings of [Udeh et al. \(2018\)](#),

Table 7.
Robust least square regression (NGN civilian regime)

Dependent variable: CAIV Method: robust least squares Sample: 1995 2020				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	17.85731	1.345349	13.27337	0.0000
EXDT	0.199571	0.020315	9.823849	0.0000
INFR	-0.182638	0.053406	-3.419815	0.0006
RGDP	-0.015234	0.165105	-0.092269	0.9265
TDS	1.273971	0.525343	2.425027	0.0153

Source(s): Author's E-views 10 computation (See [Table A5](#))

Table 8.
Autoregressive distributed lag model result 3

Dependent variable: CAIV Method: ARDL				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
CAIV(-1)	0.725982	0.180674	4.018195	0.0015
EXDT	0.202818	0.069029	2.938144	0.0115
EXDT(-1)	-0.067120	0.065272	-1.028309	0.3226
EXDT(-2)	-0.108897	0.067453	-1.614421	0.1304
INFR	-0.331933	0.156279	-2.123978	0.0534
INFR(-1)	0.361739	0.131739	2.745872	0.0167
RGDP	-0.168388	0.147028	-1.145274	0.2727
RGDP(-1)	0.263256	0.153304	1.717223	0.1097
TDS	1.665467	0.646883	2.574603	0.0231

Source(s): Author's e-views 10 computation (See [Table A6](#))

Table 9.
Error correction model result 2 (NGN civilian regime)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ECT02(-1)	-0.522766	0.165570	-3.157381	0.0058

Source(s): Author's e-views 10 computation

while the result of this study disagrees with the findings in [Ajayi et al. \(2018\)](#) of a significant co-integration.

The second hypothesis reveals that a positive and significant effect of external debt on infrastructural development exists in the short-run during the civilian regime (p -value = 0.0000). This outcome is corroborated by the findings of [Elom-Obed et al. \(2017\)](#); [Ijeoma \(2013\)](#). The outcome of the long-run tests agrees with the findings of [Ajayi et al. \(2018\)](#) and [Isibor et al. \(2018\)](#) of a positive and significant effect of external debt on infrastructural development. This outcome is in sync with the expected outcome from extant literature. The outcome was however, significant for the democratic rule era with p -values being below 0.05. This result shows that the democratic rule in Nigeria and by extension most emerging economies channeled most of its borrowed external debts to developmental projects and the economies witnessed more rapid national growth during such periods than during the military regimes and the error correction term showing a speed of adjustment to long-run of 52.27% for a negatively significant relationship.

Policy implications of the above results is that a 1% growth in external debt during the military regime resulted to 12.67% decline in infrastructural development while for a similar 1% growth in external debt during the civilian regime, resulted to a 19.96% rise in infrastructural developments. This results shows that the government under the civilian regime showed better deployment and management of external debts toward generating reproductive infrastructures unlike the military regime.

5. Conclusion

The study investigated a comparative assessment of external debt management and infrastructural developments during two government regimes in Nigeria – military and civilian regimes. We can infer and conclude from the outcome of this study that external loan contracting impacts infrastructural developments significantly in the short-run during both the military and civilian regimes in Nigeria; but such effects is only significant in the long-run during the civilian regime while insignificant for the military regime in the long-run.

Based on the foregoing, we recommend that;

- (1) Civilian administrations are enjoined to carefully appraise and contract external loans for financing of self-liquidating, priority projects, in their countries such as industrial complex developments, oil refinery constructions and power generations, etc.
- (2) Appropriate debt management strategies should be enshrined by the country's debt management office, to set relevant ceilings that will sustain practicable debt-to-GDP ratios of less than 25% to avoid debt over-hang.

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Year	EXDT	RGDP	EXRS	TDS	INFR	CAIV
1979	13.30	6.759	94.48	0.83	13.30	92.36
2019	60.05	2.208	35.4	1.183	11.40	21.33
2020	70.57	-1.801	40.2	1.323	13.20	26.25

Source(s): World Bank, International Debt Statistics, 2021

Table A1.
Table showing selected
sample variables

Dependent variable: CAIV
Method: robust least squares
Sample (adjusted): 1980 2003

Variable	Coefficient	Std. Error	z-Statistic	Prob.
<i>C</i>	57.48767	5.174465	11.10988	0.0000
EXDT(-1)	-0.126712	0.063566	-1.993407	0.0462
INFR	0.038714	0.156053	0.248084	0.8041
RGDP	-1.820917	0.390157	-4.667145	0.0000
TDS	1.240120	1.459127	0.849905	0.3954

Robust statistics

<i>R</i> -squared	0.438397	Adjusted <i>R</i> -squared	0.320165
Rw-squared	0.758101	Adjust Rw-squared	0.758101
Akaike info criterion	30.57476	Schwarz criterion	40.26832
Deviance	2203.003	Scale	9.506226
Rn-squared statistic	44.07198	Prob(Rn-squared stat.)	0.000000

Source(s): Author's e-views 10 computation

Table A2.
Robust least square
regression tests –
military regime NGN

Dependent variable: CAIV
Method: ARDL

Variable	Coefficient	Std. Error	<i>t</i> -Statistic	Prob.*
CAIV(-1)	0.797934	0.115588	6.903231	0.0000
EXDT(-1)	-0.030965	0.037563	-0.824360	0.4236
INFR	-0.049806	0.069334	-0.718351	0.4844
INFR(-1)	0.131723	0.060788	2.166914	0.0480
RGDP	-0.457774	0.251997	-1.816584	0.0907
RGDP(-1)	0.290597	0.218850	1.327835	0.2055
RGDP(-2)	0.393576	0.206835	1.902849	0.0778
TDS	0.007451	0.776585	0.009594	0.9925
<i>C</i>	8.323357	7.382816	1.127396	0.2785
<i>R</i> -squared	0.956363	Mean dependent var	47.94478	
Adjusted <i>R</i> -squared	0.931427	S.D. dependent var	16.45714	
S.E. of regression	4.309533	Akaike info criterion	6.045708	
Sum squared resid	260.0090	Schwarz criterion	6.490032	
Log likelihood	-60.52564	Hannan–Quinn criter	6.157454	
<i>F</i> -statistic	38.35340	Durbin–Watson stat	1.708790	
Prob(<i>F</i> -statistic)	0.000000			

Source(s): Author's e-views 10 computation

Table A3.
Autoregressive
distributed lag model
result – military
regime NGN

Table A4.
Error correction model
result military regime

Dependent variable: D(CAIV)				
Method: least squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.845625	1.098954	-2.589395	0.0191
D(EXDT)	0.027106	0.035750	0.758200	0.4587
D(INFR)	-0.092880	0.060740	-1.529148	0.1446
D(RGDP)	-0.252887	0.190178	-1.329736	0.2012
D(TDS)	-1.580357	0.909238	-1.738111	0.1003
ECT01	0.052813	0.127201	0.415197	0.6832
R-squared	0.369470	Mean dependent var		-2.819130
Adjusted R-squared	0.184020	S.D. dependent var		5.812526
S.E. of regression	5.250550	Akaike info criterion		6.374001
Sum squared resid	468.6607	Schwarz criterion		6.670217
Log likelihood	-67.30101	Hannan-Quinn criter		6.448499
F-statistic	1.992286	Durbin-Watson stat		1.496747
Prob(F>statistic)	0.131513			

Source(s): Author's e-views 10 computation

Table A5.
Robust least square
result - civilian regime

Dependent variable: CAIV				
Method: robust least squares				
Sample: 1995 2020				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	17.85731	1.345349	13.27337	0.0000
EXDT	0.199571	0.020315	9.823849	0.0000
INFR	-0.182638	0.053406	-3.419815	0.0006
RGDP	-0.015234	0.165105	-0.092269	0.9265
TDS	1.273971	0.525343	2.425027	0.0153
Robust statistics				
R-squared	0.832468	Adjusted R-squared		0.798961
Rw-squared	0.931021	Adjust Rw-squared		0.931021
Akaike info criterion	20.81466	Schwarz criterion		31.27186
Deviance	133.6412	Scale		2.967360
Rn-squared statistic	223.0143	Prob(Rn-squared stat.)		0.000000

Source(s): Author's e-views 10 computation

Table A6.
Autoregressive distributed lag model result (civilian regime)

Dependent variable: CAIV				
Method: ARDL				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
CAIV(-1)	0.725982	0.180674	4.018195	0.0015
EXDT	0.202818	0.069029	2.938144	0.0115
EXDT(-1)	-0.067120	0.065272	-1.028309	0.3226
EXDT(-2)	-0.108897	0.067453	-1.614421	0.1304
INFR	-0.331933	0.156279	-2.123978	0.0534
INFR(-1)	0.361739	0.131739	2.745872	0.0167
RGDP	-0.168388	0.147028	-1.145274	0.2727
RGDP(-1)	0.263256	0.153304	1.717223	0.1097
TDS	1.665467	0.646883	2.574603	0.0231
C	2.880511	4.611604	0.624622	0.5430
R-squared	0.970110	Mean dependent var		23.95043
Adjusted R-squared	0.949417	S.D. dependent var		8.303729
S.E. of regression	1.867564	Akaike info criterion		4.386167
Sum squared resid	45.34132	Schwarz criterion		4.879860
Log likelihood	-40.44092	Hannan-Quinn criter		4.510329
F-statistic	46.88099	Durbin-Watson stat		2.313915
Prob(F-statistic)	0.000000			

Source(s): Author's e-views 10 computation

Dependent variable: D(CAIV)				
Method: least squares				
Sample (adjusted): 1997 2020				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.141037	0.425210	-0.331688	0.7442
D(EXDT)	0.128995	0.044628	2.890489	0.0102
D(INFR)	-0.287338	0.081753	-3.514731	0.0027
D(RGDP)	-0.176097	0.121593	-1.448253	0.1657
D(TDS)	0.849071	0.364667	2.328349	0.0325
ECT02(-1)	-0.522766	0.165570	-3.157381	0.0058
R-squared	0.618574	Mean dependent var		-0.665217
Adjusted R-squared	0.506390	S.D. dependent var		2.613721
S.E. of regression	1.836332	Akaike info criterion		4.272876
Sum squared resid	57.32598	Schwarz criterion		4.569092
Log likelihood	-43.13807	Hannan-Quinn criter		4.347373
F-statistic	5.513914	Durbin-Watson stat		1.687258
Prob(F-statistic)	0.003389			

Table A7.
Error correction model result – civilian regime

Source(s): Author's e-views 10 computation

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