ESTIMATING THE GROSS DOMESTIC PRODUCT OF NIGERIA DURING MILITARY AND CIVILIAN REGIMES: A CHOW TEST

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ARTICLE INFO

ABSTRACT

Gross domestic product is the commonest economic variable that is used to measure economic performance, either for intertemporal or international comparison. Nigeria as a country has been ruled since independence by two sets of regimes: the military and the civilian. Arguments were and still are concerned with which of the two regimes favoured the country economically. The study therefore estimates the gross domestic product of Nigeria using Chow test. The essence of Chow test is to determine if there was structural break from the point the country fully began civilian dispensation from the previous military regime. Using both the F statistic and the Chow test, the results show that there was indeed structural break between the military regime and the civilian regime. This result was further confirmed by the Cusum Square test that shows that the overall model was unstable before the correction. The results further show that out of five components of aggregate demand, four of the variables have coefficients higher during the civilian than the military regime. The study therefore concluded that civilian rule is better economically than military rule in Nigeria. It was recommended that politicians and political office holders should act within the ambit of the law to sustain the democracy the country is currently enjoying.

1. INTRODUCTION

The national income, according to conventional economics definition, is the total monetary values of all the goods and services produced by the nationals and non-nationals residing in a particular country irrespective of the geographical location of producers. The estimates are usually done at periods of time, usually

once a year. It is captured by what is called gross domestic product. A lot of economic variables are used in determining the health situation of a particular country. Testing the economic situation of a country is often done in two layers; the intertemporal comparison and the international comparison (Iyoha, Oyefusi and Oriakhi, 1998). The intertemporal comparison situates the country's economic performance from year to year. That is, it is used when a particular period in the history of a country is needed to be compared with another period. On the other hand, international comparison is done when trying to compare the economic performances of two or more countries.

Since 1960 when the nation got its independence, Nigeria as a country has been ruled largely by two different regimes, the military and the democratic. The catalogue of the different regimes is epitomized by the arrival of Abubakar Tafawa Balewa on October 1, 1960 as the country's first Prime Minister. This was the period when the country practiced the parliamentary system of government, and the country's ceremonial Head of State was the Queen of England (Babatola, 2014). The country became a republic in 1963, with Tafawa Balewa still at the head of affairs. This democratic dispensation was terminated by the military coup on the 16th of January, 1966. This was the coup that brought in Major General Johnson Aguiyi-Ironsi. He was the Nigeria's Head of State for a period of six and a half months before he was assassinated and another military head of state, General Yakubu Gowon, took charge. Aguiyi Ironsi's period as the country's head of state was perhaps the longest of all the military regimes as he ruled the country between August 1, 1966 and 29th of July, 1975 (a period of approximately 9 years) before he was assassinated (Odinkalu, 2001; Ehwarieme, 2011)

The 1975 coup brought in the regime of General Muritala Muhammed on 29th of July, and he was in charge of the country's affairs for about 7 months before he was assassinated on 13th of February, 1976 by a coup led by Dimka. The death of Muritala Muhammed heralded another military regime headed by Major General Olusegun Obasanjo, who reigned until October 1, 1979 when he voluntarily handed over power to a democratically elected government of Alhaji Shehu Shagari. That period started the country's second republic and the country switched from the British parliamentary system of government to American presidential system. The four year period was successful completed on the 30th of September, 1983 and he was re-elected for the second and final term, expectedly to terminate on September 30, 1987. The second term was however cut short by another coup on the 31st of December, 1983. This was the coup that brought in Major General Muhammadu Buhari. Buhari was directing the country's socio-economic affairs of the country until his regime was equally terminated by a palace coup (Akanji, 2019) on the 27th of August, 1985. This coup brought in

General Ibrahim Badamosi Babangida who was the second longest serving head of state of Nigeria. He reigned for a period of 8 years before he "stepped aside" forcefully on 26th of August, 1993. His exit brought in an interim government headed by Chief Ernest Shonekan, the only non-military and non-democratic regime but was classified as the third republic (Kifordu, 2013). The interim government was brought down by General Sanni Abacha on the 17th of November, 1993 who took charge of the nation's affairs until death terminated his regime also on 8th of June, 1998. The demise of General Abacha ushered in the regime of General Abdusalami Abubakar on the 8th of June, 1998 (Ogbeidi, 2012). Abdusalami midwifed the transition to civil rule and within a period of one year, he handed over power to another democratically elected government headed by Chief Olusegun Obasanjo. The second coming of Obasanjo heralded the fourth republic which the country is still enjoying (State House, Federal Republic of Nigeria, 2019).

The point of the above exposition is that, given a period of 60 years of independence, the chronicle of regimes in the country shows that the country has been ruled approximately 30 years apiece both by the military and the civilian regime. While, there is no consensus on which regimes fare better in improving the lots of the citizenry in Nigeria, the popular opinion is that the worst of democratic regime is by far better than the best of military regimes. Typical macroeconomic objectives are synonymous with national objectives. (Abiola, 2019). These macroeconomic objectives are broadly divided along the lines of general and the specific. Irrespective of the economic status of a country or the type of dispensation at the helm of affairs of the country, a country would always pursue four general economic goals of increasing the growth of the nation's income or output, maintenance of price stability, reduction in unemployment rate and maintenance of balance of payment equilibrium.

The most prominent of these goals is the increase in national income or national output. While continuous increase in the nation's gross domestic product is only a sign of economic growth that does not translate into better welfare for the citizenry, it is at least a pedestal which the economic performance of a country is gauged with over time. The aim of this study is therefore to assess the economic performance of the two regimes, military and civilian, in Nigeria with a view of ascertaining which of the regimes impacted positively on the populace. While acknowledging the multi-diversity and the very sensitive debates and arguments that this topic is capable of throwing up, it is the desire of this study to narrow the scope of the discussion to only gross domestic products alone. This does not undermine other variables which historians, political scientists, diplomats and

other related discipline workers may want to bring into the equation of which regime fares better.

1.1. Objectives of the study

The broad objective of the study was to estimate the gross domestic product of Nigeria for the period of 1984-2018. The specific objectives are: to determine the economic performance of the country between 1984 and 1999, a period of military dispensation; to investigate economic performance of the country from 1999 to 2018, a period of democratic dispensation; situate the two periods with drawing a valid conclusion on which of the two regimes is better.

1.2. Review of literature

There exists quite a large number of economic literature that tackles estimating economic growth. Some studies examine economic growth from the angle of estimating the determinants of gross domestic product, others examine it from the angle of estimating the multipliers of the components of aggregate demand. Hashim et al (2018), opines that gross domestic product (GDP) growth is extremely vital in order to pursue continuous development and advancement needed for any nation. The paper examines the relationships between five macro variables, particularly, population, gross fixed capital formation, labour force participation, government expenditure on health and education, and real GDP in Malaysia. The findings reveal that population and gross fixed capital formation are positively related to GDP. Therefore, they are important factors in explaining higher GDP. Meanwhile, other factors do not essentially contribute to GDP growth and are negatively related to each other, respectively.

Chizonde (2016) investigates the determinants of economic growth in Zambia using the Bounds Approach to Integration developed by Persaran and Shin (1999). The study specifically pays attention to the role of copper, a major export item in the country, in the analysis of economic growth. In order to test the validity of this postulation, the study estimates an Autoregressive Distributed Lags (ARDL) Model with copper prices as one of the variables of interest. Estimation results indicate that, in the long-run, economic growth is determined by physical capital, exchange rate, inflation, crude oil price, government spending and agricultural productivity; international copper prices only influence growth in the short-run. Therefore, with proper planning and strategic policy interventions, the study concluded that Zambia can still achieve higher sustainable economic growth even when international copper prices are falling.

In another study related to economic growth, Maingi (1999) examines determinants of the real gross domestic product growth rate in Kenya. The objectives of the study were to identify the factors that determine fluctuations in real gross domestic product (GDP) growth rate in Kenya, measure the relative effect of the factors, and give policy recommendations. Time-series data were collected from government and the World Bank publications for the period 1973-1997. Data collected were integrated to make it stationary. Ordinary least squares (OLS) method of estimation using time-series programme (TSP) was applied to stationary data. Both linear and log-linear models were run and on the basis of results the linear model was adopted. From the linear regression results, growth of capital stock, export growth, financial development, external debt, exchange rate, and real interest rate were found to be significant determinants of real gross domestic product. On the basis of these findings, policy recommendations were then drawn on these variables so as to accelerate the pace of GDP growth rate in Kenya.

Ali and Salif (2017) evaluate the determinants of economic growth for Pakistan. The research tries to analyse the nature of causality between economic growth, foreign direct investment, agriculture rate, energy consumption and trade openness. The ADF unit root test is used to determine the order of integration of variables. While Johansen (1988) and Johansen and Juselius (1990) maximum likelihood estimation approach is applied to check the co-integration and VECM is used to check the short run correlations. Diagnostic test, impulse response function, variance decomposition and granger causality are also used to check autocorrelation and causality among these variables. The result shows that there is affirmative impact of agriculture, energy consumption, trade liberalization and foreign direct investment on gross domestic product. Moreover, in short run trade openness, agriculture rate and energy consumption have positive impact on economic growth, but foreign direct investment has negative impact on gross domestic product. Though, the block of exogeneity tests shows that the granger causality runs from gross domestic product, trade openness, foreign direct investment, energy consumption and agriculture growth rate, while only agriculture growth rate and energy consumption are significant.

Volatility and the sluggish nature of Nigeria's economic growth response to various macroeconomic efforts at enhancing the economy prompted Uwakaeme (2015). The study examines the major economic growth determinants as well as the direction of causality that exists between economic growth and some selected economic growth indicators in Nigeria, employing the Johansen Cointegration and Granger Causality tests for a period 1980-2012. Leaning on the newer endogenous growth framework and based on the empirical evidences, the

results demonstrate that a positive and significant long-run relationship exists between economic growth (GDP) and some selected economic growth indicators namely: productivity index (industrial), stock market capitalization and FDI indicating that they are major growth determinants. However, the impact of trade openness, although positive, is not quite impressive as reflected in the size of its regression coefficient in part. Others (inflation and excessive government fiscal deficit) show significant inverse relationship with economic growth, implying that they constitute impediment to the growth of the economy. The directions of causality between economic growth and the selected determinants are mixed – unidirectional, bilateral and independent. Overall, the speed of the equilibrium adjustment (as indicated by well-defined negative ECM coefficient) is slow and suggests that economic growth process in Nigeria tends to adjust slowly to the disequilibrium changes in those determinants suggesting policy lag effect. Based on these findings, the study recommends that the government should strive to achieve sustainable price stability, fiscal discipline, and economic efficiency driven by infrastructural support and enhanced technological capabilities, strong institutional and economic reforms to increase production capacity.

Ismaila and Imoughele (2015) examine the macroeconomics determinants of economic growth in Nigeria measured by real gross domestic product (RGDP). The study used time series data obtained from CBN for a period of 26 years (1986-2012). Augmented Dickey-Fuller (ADF) test was used for the unit root test and Johansen's co-integration test was also conducted to establish long run relationship between economic growth and its macroeconomics determinants. The result shows six co-integrating equations which establish the existence of long-run relationship among the variables. Ordinary Least Square statistical technique was used to assess the degree of influence the variables have on each other. The results show that gross fixed capital formation, foreign direct investment and total government expenditure are the main determinants of Nigeria economic output under a stable inflationary rate. The study recommended that there is the need for government to consciously develop the business environment by provision of necessary infrastructure, which will lower the cost of doing business in Nigeria. There is also the need for the government to retain tight monetary and fiscal policies in order to fight inflation in the Nigerian economy, since inflation has negative influence on investment and Nigeria economic growth and finally, there is the need to put stringent policy in place to minimise strike action in the Nigerian labour sector in order to enhance their performance to the nation economy.

Egbulonu and Ajudua (2017) also examined the determinants of economic growth in Nigeria using the macro-econometric approach for the period 1980-

2014. Data for the study were sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin and the National Bureau of Statistics (NBS). The macroeconomic model formulated used Gross Domestic Product (GDP) as the dependent variable while Foreign Direct Investment (FDI), Degree of Openness (DOO), Gross Capital Formation (GCF), Money Supply (MS), Interest Rate (INT), Government Expenditure on Education (GEE) and Employed Labour Force (ELF) are the explanatory variables. The data were tested for Stationarity using Augmented Dickey-Fuller (ADF) Unit Root test. The test revealed that all the variables used in the study are stationary at their first difference [i.e. 1(1)]. The data were also subjected to co-integration test in order to see whether using the variables together in the model would produce reliable results. The test revealed that a long run relationship exists between economic growth (GDP) and the macroeconomic variables used in the study. The study found that foreign direct investment, degree of openness, gross capital formation, money supply, government expenditure and labour force have positive and direct relationship with economic growth (GDP) while interest rate has a negative relationship with GDP. However, gross capital formation is the only variable that is not significant at 5% level. This led to the conclusion that all the variables specified in the model (except gross capital formation) are important determinants of economic growth in Nigeria. The study recommended that there should be an improvement in investment in major sectors of the economy, especially the agricultural and industrial sectors. Also, the government should adopt an aggressive national investment programme to channel all unexpected and unbudgeted incomes arising from oil windfalls, recovered loots and tie every such unforeseen gains to specific investment projects. In addition, foreign direct investors should be given operational terms favourable to the nation's economy, and foreign investors should be made target idle or new sectors in the economy. Finally, investment in human capital and engaging the huge unemployed labour force in the country should be of high importance to the government.

Panshak, Civcir and Ozdeser (2020) examine Nigeria's long run growth path using the externally and internally constrained version of Thirlwall's growth model from 1982 to 2015. The study modifies the SCA-BOPCG to take into account the effects the foreign contents in export growth and the domestic investment. Three Stage Least Squares method is used to obtain the required elasticities for the estimation of the domestic income growth. The study affirms the robustness and validity of the modified model in determining the growth path for Nigeria. The outcome of the empirical study reveals that Nigeria's economic growth process is balance-of-payment constrained. Even though monetary policies improve growth performance, Nigeria sustainably grows faster with policies aiming at improving external balance or reducing the import components of demands, in-

creasing export share to products with high elasticity of demand as well as keeping budget deficits within the universally acceptable limits.

The opinion of Adebayo (2016) is that economic growth in Nigeria has been under serious dimensional attacks especially since the commencement of the Buhari administration in 2015. The GDP as the proxy for economic growth has been surrendered to recession since the second quarter of 2016. Economic recession is synonymous with, what most commentators and analysts use as a practical definition of recession, two consecutive quarters of decline in a country's real (inflation adjusted) gross domestic product (GDP) - the value of all goods and services the country produces. It is considered as a period of falling demand, production, and economic activities which causes panic and great concern in financial markets generally. The quest for knowing what is next was the objective of this paper. The GDP in US Dollars was subjected to static forecasting models using 1960-2015 as the sample frame with a decade forecast of 2016-2025. Findings revealed that GDP, which was at a peak of US$568.51 billion in 2014 toed a downward trend of US$481.07 billion in 2015, picked from the downward trend increasing marginally to a forecast value of US$483.53 billion in 2016 and US$508.78 billion in 2017 to US$533.33 billion in 2018 and GDP of US$564.78 billion in 2019; but could not reach the 2014 peak (maxima), the peak to-trough (2014) output of US$568.51 billion, until the 1st quarter of 2020. The study recommended among others that the Federal Government should be economically diplomatic in handling the menace of militancy in the Niger Delta if it is difficult to balance the economy without oil. This will go a long way in revamping the economy provided that the level of destruction is still within economic repairable possibilities.

The study by Uchechukwu and Ibiok (2015) analysed sectoral contributions to Gross Domestic Product by agriculture, industry and service sectors of the economy using a Vector Autoregressive (VAR) approach. The test of stationarity using Augmented Dickey Fuller (ADF) showed that all the variables were integrated of order one. Granger causality was used to find the linkages among the variables under consideration. The result showed bilateral causality between GDP and sectoral contribution to GDP by Industry. Thereafter the unrestricted VAR parameter estimate was obtained for GDP and sectoral contribution to GDP by industry. In conclusion, it is recommended that the Nigerian government should come up with strategic master plan to diversify the economy using the agriculture and service sectors since the Nigerian economy from our analysis is grossly dependent on sectoral contributions of industry to GDP.

Babalola, Salako, Yusuf and Egbekunle (2015) empirically compared the impact of government expenditures of adjudged critical sectors on economic growth be-

tween the military and civilian period in Nigeria. It employs quantitative analysis by the use of Auto Regressive Distributed Lag model to estimate both short-run and long run impact of Government expenditures on economic growth between these periods. The study reveals that during the military era government expenditures on education, agriculture and defence have positive and significant impacts on the economic growth in the long-run. Government expenditures on defence and agriculture were retarding the growth in the short run. However, during the democratic system, government expenditures on agriculture and transport/communication sectors promote growth in Nigeria both in the long run and short run. The government expenditures on education and defence have significant negative impacts on the economy in the long run. The study concludes that the reason for the failure of public expenditures to achieve the fiscal objectives is not connected to the fact that the level of corruption is outrageous to the extent that if it is not at par with corruption during the military regime it surpasses it. Consequently, the study decries a policy prescription that the government expenditures of these sectors should be increased except for the education sector to meet the UNDP recommendations. The government should avoid the proliferation of anti-graft agencies but strengthen the available ones to carry out their functions diligently without political interference.

Closely related to this is the study by Anyiwe and Oziegbe (2016) that carried out a statistical investigation on the Nigerian system (which has experienced both democratic and military regimes) to determine which regime has brought a greater level of economic growth, Statistical time-trend analyses are applied to some Nigerian economic variables. Eleven economic growth variables such as gross domestic per capita, food production per capita and discomfort index were used. The results show that seven of the eleven variables indicate better performance during democracy compared to military rule, while both regimes performed abysmally in the remaining four variables. It is therefore recommended that for greater economic growth, Nigeria should continue to embrace democracy and that well-articulated macroeconomic policies to encourage economic variables such as non-oil export trade, foreign direct private investment, food production, etc. should be made in democratic and good governance settings.

The study conducted by Anazor (2011) is about leadership and governance in Nigeria. This study compared and contrasted as well as examined critically the military rule and civilian rule in Nigeria government and politics and also suggested some solutions for effective leadership and good governance in Nigeria. The researcher raised six questions backed up by three formulated hypotheses. The questionnaire approach to statistical analysis was adopted. The primary instrument of data collection was the interview method. Exactly 175 people were

duly interviewed from the six geo-political zones of Nigeria including FCT Abuja. The three hypotheses formulated serve as a guide to the work. They were accepted or rejected based on the analysis of the data generated, using descriptive or content analysis. Majority views and minority views were recorded and most times more than a single person shared the same opinion in various issues. The findings of the study include: bad leadership and ineffective governance impede development; the negative influence of colonialism, imperialism, and neo-colonialism militates against development in Nigeria; the military rule militates against development in Nigeria. Some recommendations made include: decolonization, transparency and accountability, radical but non-violent revolution, and the pursuit of true freedom by dismantling of Whiteman's throne theory.

Etim and Ukpere (2012) examine the impact of military rule on democracy in Nigeria. The paper seeks to explain the rationale of the militarized dispositions of politicians in the current democracy. It adopts descriptive and case history perspective, asserting that the behavioural trend is an outcome of the long years of military governance. The paper found out that military rulership affects the executive, legislature, the judiciary and the civil society. The values and norms imbibe manifests in the practice of the current democracy. This explicates the use of force rather than dialogue in the suppression of dissent in 'Odi', and 'Zaki-biam', disobedience of the court orders, closure of media houses, the arrest of journalists and militancy as in the Niger-Delta.

2. METHODOLOGY AND MODEL SPECIFICATION

As stated in the title of this study, the methodology adopted is econometrics with special emphasis on unit roots tests, co-integration test and Chow test. The Chow test is a statistical and econometric test of whether the coefficients in two linear regressions on different data sets are equal. The Chow test was invented by economist Gregory Chow (1960). In econometrics, the Chow test is most commonly used in time series analysis to test for the presence of a structural break. In macroeconomics, a structural break occurs when there is an unexpected shift in the data of a time series (Luitel and Mahar, 2015). For the purpose of this analysis, we broke the trend of Nigeria's gross domestic product to two periods, 1983-1999 (the military period) and 1999-2018 (the civilian period).

Chow Test examines whether parameters of one group of data are equal to those of other group. Simply put, the test checks whether data can be pooled. If only intercepts are different across groups, this is a fixed effect model, which is simple to handle. Let us consider two groups.

$$y = \alpha + \beta x + \varepsilon \qquad \text{for all observation}$$
$$y = \alpha_1 + \beta_1 x + \varepsilon_1 \qquad \text{for } n_1 \text{ observations (group 1)}$$
$$y = \alpha_2 + \beta_2 x + \varepsilon_2 \qquad \text{for } n_2 \text{ observations (group 2)}$$

The null hypothesis is $\alpha_1 = \alpha_2$ and $\beta_1 = \beta_2$. If the null hypothesis is rejected, two groups have different slopes and intercepts; data cannot be pooled.

$$F(J, n_1 + n_2 - 2K) = \frac{(e'e - e_1'e_1 - e_2'e_2)/J}{(e_1'e_1 + e_2'e_2)/n_1 + n_2 - 2K} = \frac{(SSE - SSE_1 - SSE_2)/J}{(SSE_1 + SSE_2)/n_1 + n_2 - 2K}$$

where $e'e$ is the SSE of the pooled model and J is the number of restrictions (often equal to K—all parameters

The model adopted for this study is the Keynesian model of open macroeconomy where

$$Y = f(C, I, G, X, M) \tag{1}$$

Linearly expressed as

$$Y = \alpha + \beta_1 C + \beta_2 I + \beta_3 G + \beta_4 X + \beta_5 M + \varepsilon \text{ for all observations} \tag{2}$$

$$Y = \alpha_1 + \beta_1^1 C + \beta_2^1 I + \beta_3^1 G + \beta_4^1 X + \beta_5^1 M + \varepsilon_1 \text{ for } n_1 \text{ observations (group 1)} \tag{3}$$

$$Y = \alpha_2 + \beta_1^2 C + \beta_2^2 I + \beta_3^2 G + \beta_4^2 X + \beta_5^2 M + \varepsilon_2 \text{ for } n_2 \text{ observations (group 2)} \tag{4}$$

Where

Y = Gross Domestic Product

C = Household Consumption Expenditure

I = Private Investment Expenditure

G = Government Expenditure

X = Export

M = Import

For the purpose of this study, three log linear regression equations were estimated. The first for the overall data set spanning from 1984 to 2018. The second spanning the period of 1984-1998, while the last one spanning the period of 1999-2018.

3. EMPIRICAL ANALYSIS AND RESULTS

3.1. Trend Analysis of Nigeria GDP

A very vantage position to begin with our analysis is the examination of the trend of the country's gross domestic product between 1984 and 2018. This is presented in Figure 1 below:
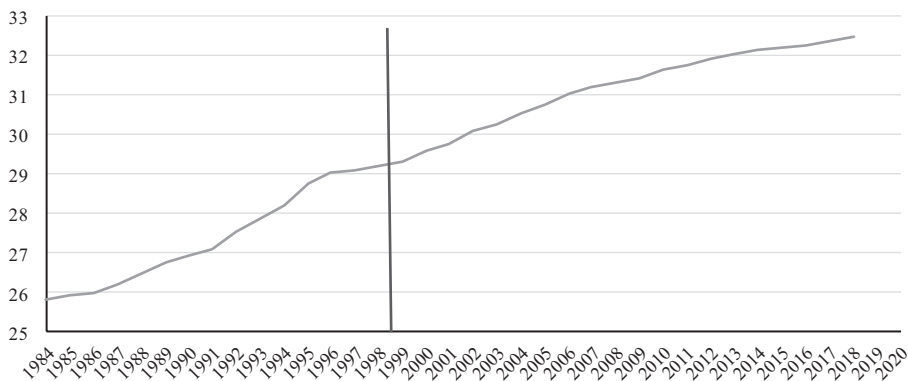

Figure 1: Trend of Nigeria GDP
Source: Computed by the author

A casual observation of the figure above shows that there does not seem to be a break in the trend throughout the period of observation, especially the period under consideration. Therefore, it is imperative we use Chow test to confirm if indeed there was no structural break in the GDP of Nigeria. The results which are presented in Appendices 1, 2 and 3 are summarized in the Table 1 below:

Table 1: OLS estimates of the overall data (1984-2018)

Variables	Constant	C	I	G	X	M
Coefficient	0.932	0.563	0.341	0.063	0.186	-0.151
t statistics	1.913	13.079	5.997	3.852	5.520	-3.504
$n=n_1+n_2$			35			
R^2			1.00			
Adjusted R2			0.999847			
SSE			0.04			
Durbin Watson			1.26			
$Df=n_1+n_2-2k=23$			23			

Source: Author's calculation (2021)

Table 2: OLS estimates of the military regime data (1984-1998)

Variables	Constant	C	I	G	X	M
Coefficient	-0.001	0.519	0.429	-0.010	0.219	-0.148
t statistics	-0.229	12.170	5.590	-0.364	11.672	-9.393
n_1	15					
R^2	1.00					
Adjusted R^2	0.999783					
SSE	0.004					
Durbin Watson	2.58					
Df=n_1-2k	3					

Source: Author's calculation (2021)

Table 3: OLS estimates of the civilian regime data (1999-2018)

Variables	Constant	C	I	G	X	M
Coefficient	-0.023	0.524	0.433	0.012	0.201	-0.129
t statistics	-0.789	117.019	21.669	9.659	35.716	-19.649
n_2	20					
R^2	1.00					
Adjusted R^2	0.999948					
SSE	0.006					
Durbin Watson	1.47					
Df=n_2-2k	8					

Source: Author's calculation (2021)

From the F specified above, the estimated F is as given below:

$$F(6,23) = \frac{\left(e'e - e_1'e_1 - e_2'e_2\right)/J}{\left(e_1'e_1 + e_2'e_2\right)/n_1 + n_2 - 2K} = \frac{\left(0.04 - 0.004 - 0.006\right)/6}{\left(0.004 + 0.006\right)/23} \approx 12.5$$

The decision rule is such that if F calculated as observed with the 12.5 is greater than F from the table ($F_{(k,n-k,5\%)} = F_{(6,23,5\%)}$) = 2.53, then the null hypothesis of the same slope and the same intercept is rejected and data cannot be pooled. The implication of the result is that the hypothesis for stability of parameters is rejected and that there exists structural break between the military era and the civilian era as regards the Nigeria GDP.

3.2. Chow breakpoint test

Giving credence to the above F-statistic analysis is the Chow breakpoint test as estimated using E-views. The result is presented in the Table 4:

Table 4: The Chow Breakpoint test result

Chow Breakpoint Test: 1999
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1984 2018

F-statistic	9.140087	Prob. F(6,23)	0.0000
Log likelihood ratio	42.67088	Prob. Chi-Square(6)	0.0000
Wald Statistic	54.84052	Prob. Chi-Square(6)	0.0000

Source: Author's calculation (2021)

The F statistic from the above results which is 9.14 is found to be significant judging from the probability value of 0.000. The implication of the null hypothesis of no breaks at specified points is rejected. This further supports the above F analysis that there is structural break between the military and the civilian regimes with respect to the GDP of Nigeria during the period of observation.

3.3. Stability test for the model

The essence of this test is to confirm whether there is actually a sharp departure of Nigerian gross domestic product during civilian regime from what was previously obtained during the military regime. The result is presented in the Figure 2.
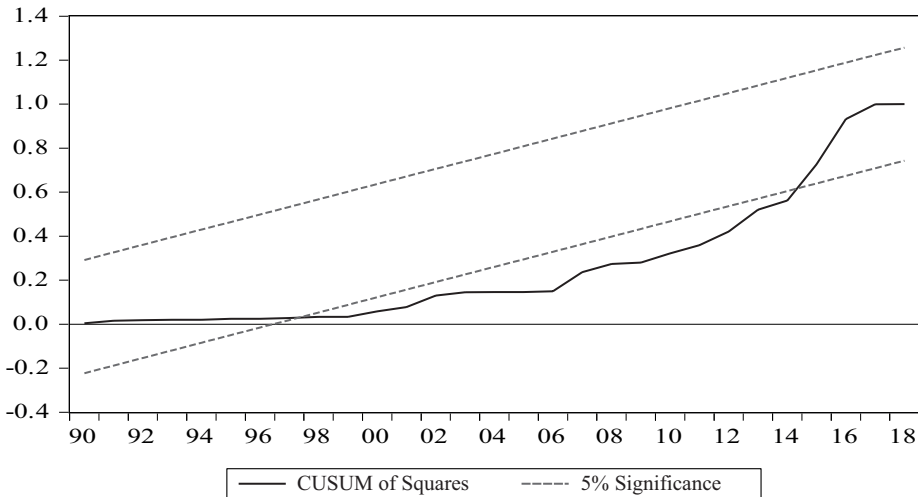

Figure 2: Stability test for the model
Source: Computed by the authors

The blue line outside the boundary line of 5% level of significance is an indication of non-stability of the country's gross domestic product during the period of observation. Although the concern of the study is more for 1999 when the country returned to the civil rule, the noticeable departure from the normal trend of the country's gross domestic product was in 1997. This coincided with the period the military regime of Abacha facing legitimacy challenges from civil societies in the country.

However, with the introduction of dummy variables with zero covering the period of military regime and 1 covering the period of civilian regime, the instability was corrected and the result is as shown in the Figure 3.
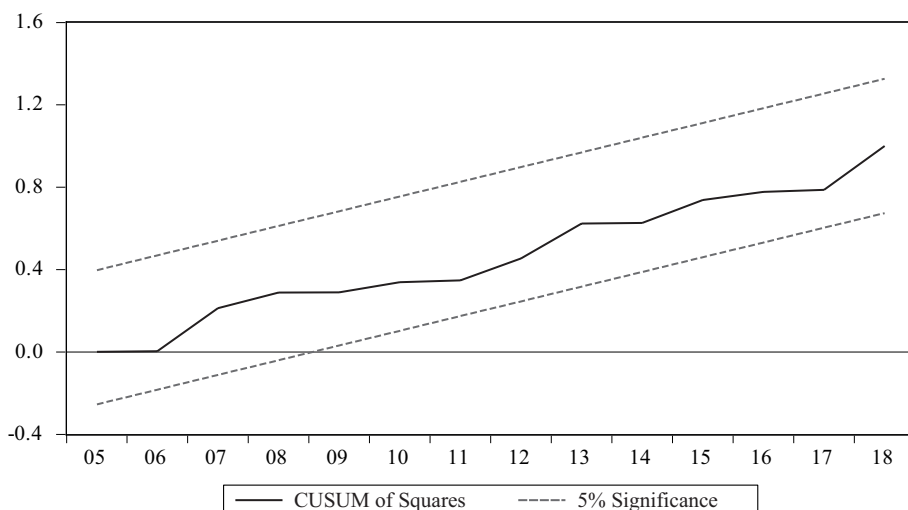

Figure 3: Adjusted stability test for the model
Source: Computed by the author

With the introduction of the dummy variables using zeros for military periods and 1s for civilian periods, the noticed instability was corrected and the model becomes stable as shown with the blue line falling within 5% significance level boundary.

4. DISCUSSION OF RESULTS

Since the results of the Chow test indicate the presence of structural break, this implies that three models estimated are valid. From the results, two of three estimates are in conformity with economic theory that affirms positive relationship

between the determinants of aggregate demand and aggregate demand itself with the exception of import. This means that the estimate for the military regime that shows a negative relationship between government expenditure and gross domestic product is at variance with economic theory of positive relationship. The most feasible explanation for this is connected with high level of corruption that are associated with military regimes especially money laundering, a major characteristic of all military regimes but most prominent in Abacha regime of 1993-1998.

A juxtaposition of the coefficients of the two regimes shows that out of five variables that make up the aggregate demand, the military regime only fares better in the area of export, where the coefficient of 0.219 exceeds that of the civilian of 0.201. In other variables of consumption, investment, government expenditure and import, the civilian regime fares better that military as the coefficients of 0.524, 0.433, 0.012 and -0.0129 exceed that of 0.519, 0.429, -0.010 and -0.148 for civilian and military regimes respectively.

The fact that all observations have been brought down to logarithm shows that a unit rise in household consumption under the civilian regime means that the gross domestic product will increase by 0.524, while a unit rise in household consumption will increase GDP by 0.519 unit under the military regime. For the case of government expenditure, a unit rise in government expenditure raises GDP by 0.012 unit under civilian regime, while a unit rise in government expenditure decreased GDP by 0.0129 unit under the military regime.

In all three estimates, the t values (represented by the figures in parenthesis) are significant at both 1% and 5% for all variables with the exception of the government expenditure variable under the military regime. This implies that all variables individually belong to the model.

In terms of serial correlation that implies biasedness in terms of the result obtained, with the Durbin Watson of 1.47 and 2.58 for civilian and military regimes respectively, using the rule of thumb, it can be evidently concluded that the model for military regime implies the absence of serial correlation, while there is inconclusive evidence to suggest the presence of serial correlation in the model for civilian regime.

5. CONCLUSION AND RECOMMENDATION

Gross domestic product is the commonest economic variable that is used to measure economic performance, either for intertemporal or international comparison. Nigeria as a country has been ruled since independence by two sets of

regimes: the military and the civilian. Arguments were and still are concerned with which of the two regimes favoured the country economically. The study therefore estimates the gross domestic product of Nigeria using Chow test. The essence of Chow test is to determine if there was a structural break from the point the country fully began civilian dispensation from the previous military regime. Using both the F statistic and the Chow test, the results show that there was indeed a structural break between the military regime and the civilian regime. This result was further confirmed by the Cusum Square test that shows that the overall model was unstable prior to correction. The results further show that out of five components of aggregate demand, four of the variables have coefficients higher during the civilian regime than the military.

The study therefore concluded that civilian rule is better economically than military rule in Nigeria. It is therefore recommended that politicians and political office holders should act within the ambit of the law and do everything humanly possible to sustain the democracy the country is currently enjoying.

REFERENCES

Abiola, A. (2019). *Macroeconomics Illustrated*. An unpublished lecture notes on Intermediate Macroeconomics. Oyo, Oyo State, Nigeria: Ajayi Crowther University, Ajayi Crowther University

Adebayo, G.A. (2016). Forecasting the Gross Domestic Product in Nigeria using Time Series Analysis and a Sample Frame of 1960-2015. *Journal of Business and African Economy*, *2*(2)1-14.

Akanji, F. F. (2019). *Reading Nigeria's Political History*. The Republic, June 23 Edition. Retrieved from: https://republic.com.ng/june-july-2019/reading-nigeria-political-history/

Alfajarat, J. & Alalaya. M. A. (2017). Determinants of Growth GDP per Capita through Panel Data Analysis in Selected Arab Countries. *Global Advanced Research Journal of Management and Business Studies, 6*(5), 121-139.

Ali, A & Salif, S. (2017). Determinants of Economic Growth in Pakistan: A Time Series Analysis. *European Online Journal of Natural and Social Sciences, 6*(4), 686-700

Anazor, E. C. (2011). *Good Leadership and Governance in Nigeria: A Comparison of Military Rule and Civilian Rule (1985-2017)*. An Unpublished M.Sc Thesis Submitted to the Department of Public Administration and Local Government

Anyiwe, M.A. & Oziegbe, A. (2006). Democracy and Economic Growth: Statistical Evidence from Nigeria 1960-2002. *Journal of Applied Sciences, 6, 257-265*.

Babalola, B. T. A., Salako, M. A., Yusuf S. A. and Egbekunle, S. O. (2015). Comparative Analysis of Sectoral Civilian and Military Government Expenditures on Economic Growth in Nigeria: ARDL Approach" *Journal of Applied Economics and Business,* 3(1), 52-73.

Babatola, J. E. T. (2014). *Politics and Power Struggles in Nigeria: 1945-1999*. Department Postgraduate Seminar Paper. Ekiti, Nigeria: Ekiti State University.

Chizonde, B. (2016). *The Macroeconomic Determinants of Economic Growth in Zambia: Do Copper Prices Matter.* An unpublished M.A. Dissertation submitted to the Department of Economics, University of Dar es Salaam. Dar es Salaam, Tanzania: University of Dar es Salaam

Chow, G.C. (1960). Tests of Equality between Sets of Coefficients in Two Linear Regressions. *Econometrica, 28*, 591-605.

Egbulonu, K.G. & Ajudua, A. (2017). Determinants of Economic Growth in Nigeria: A Macroeconomic Approach. *International Journal of Innovative Finance and Economics Research*, *5*(1), 22-33.

Ehwarieme, W. (2011). The Military Factor in Nigeria's Democratic Stability. *Sage Journal, 37*(3), 494-511.

Etim, O. F. & Ukpere, W. I. (2012). The Impact of Military Rule on Democracy in Nigeria. *Journal of Political Science*, *33*(5), 285-292.

Hashim, E., Norimah R., Nurhanani A., Norasibah A.,Syazwani, M. B., & Ng W. R. (2018). Determinants of Real GDP in Malaysia. *The Journal of Social Sciences Research*, *3*, 97-103.

Ismaila, M. & Imoughele, L. E. (2015). Macroeconomic Determinants of Economic growth in Nigeria: A Cointegration Approach. *International Journal of Academic Research in Economics and Management Sciences 4*(1),34-46.

Iyoha, M. A., Oyefusi, S. A. & Oriakhi, D. E. (1998). *An Introduction to Modern Economics*. Benin City, Edo State, Nigeria: Marej Publishers

Johansen, S (1988). Statistical Analysis of Cointegration Vectors. *Journal of Economic Dynamics and Control*, *12* (2-3), 231-254.

Johansen, S. & Juselius, K. (1990). Maximum Likelihood Estimation and Inference on Cointegration —with Applications to the Demand for Money. *Oxford Bulletin of Economics and Statistics*, *52*, 169–210.

Kifordu, H. A. (2013). Nigerian Political System Since Political Independence: Changes and Trajectories. *UNIEURO*, *Brasilia*, *12,* 87-124

Luitel, H.S. & Mahar, G. J. (2015). A Short Note on the Application of Chow Test of Structural Break in US GDP. *International Business Research*, *8*(10), 112-116.

Maingi, N. J. (1999). Determinants of the Real Economic Growth in Pakistan: A Time-series Analysis 1976-2015. *European Online Journal of Natural and Social Sciences*.

Odinkalu, C. A. (2001). The Management of Transition to Civil Rule by the Military in Nigeria (1966-1996). *IFRA*, 57-99

Ogbeidi, M. M. (2012). Political Leadership and Corruption in Nigeria Since 1960: A Socio-economic Analysis. *Journal of Nigerian Studies*, *1*(2), 1-25.

Panshak, Y., Civcir. I. & Ozdeser, H.(2020). Towards Determining Nigeria's Economic Growth Path: A balance of Payment Constrained Growth Approach. *EconomiA, 21*(1), 104-119.

Pesaran, M.H. & Shin, Y. (1999). An Autoregressive Distributed Lag Modelling Approach to Cointegration Analysis. *Econometrics and Economic Theory in the 20th*

Century: The Ragnar Frisch Centennial Symposium, Strom, S. (ed.). Cambridge, UK: Cambridge University Press.

State House, Federal Republic of Nigeria (2019). Past Presidents and Heads of State. Retrieved from: www.statehouse.gov.ng

Uchechukwu, G. & Ibiok, E. U. (2015). Sectoral Contributions to Nigeria Gross Domestic Product using VAR Approach. *Global Journal of Pure and Applied Sciences, 21*(2), 137-143.

Uwakaeme, O. S. (2015). Economic Growth in Nigeria: An Empirical Investigation and Causal Relationship (1980-2012). *America Journal of Economics, 5*(1), 9-20.

ПРОЦЈЕНА БРУТО ДОМАЋЕГ ПРОИЗВОДА НИГЕРИЈЕ ТОКОМ ВОЈНОГ И ЦИВИЛНОГ РЕЖИМА: ТЕСТ ЧОУ

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САЖЕТАК

Бруто домаћи производ је најчешћа економска варијабла која се користи за мјерење економских перформанси - било за поређење током времена или за међународно поређење. Од успостављања своје независности Нигеријом владају два режима: војни и цивилни. Расправе и даље трају око тога који је од та два режима наклоњен земљи у економском смислу. Наша студија стога процјењује бруто домаћи производ Нигерије помоћу теста Чоу. Суштина теста Чоу је у утврђивању да ли је дошло до структурног прекида у тренутку када је држава у потпуности започела цивилно ослобађање од претходног војног режима. Користећи Ф статистику и тест Чоу, резултати показују да је заиста постојао структурни прекид између војног и цивилног режима. Овај резултат је даље потврђен CUSUM-квадрат тестом који показује да је укупни модел прије корекције био нестабилан. Надаље, резултати показују да од пет компоненти агрегатне тражње, четири варијабле имају више коефицијенте током цивилног режима у односу на војни. Закључак студије јесте, између осталог, да је цивилна владавина економски боља од војне владавине у Нигерији. Препоручено је да политичари и носиоци политичких функција дјелују у оквирима закона како би се одржала тренутна демократију.

Кључне ријечи: *бруто домаћи производ, војни режим, цивилни режим, тест Чоу.*