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Examining Economic Growth Drivers in Nigeria

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Abstract

Enhanced and sustainable growth has remained a major economic objective of most national economies, including Nigeria. To this end, economic managers manipulate a mix fiscal and monetary policy tools to facilitate the growth process. The imperative for rapid economic growth has not only been of great concern to global institutions and agencies but dominates discussions at major economic meets at different national and international platforms. The depth of academic research in this area of knowledge is also an indication of its relevance in the life of a nation. To enhance the body of knowledge in this area of study, this research examined the drivers of economic growth in Nigeria based on annual data on selected performance indicators between 1981 and 2017. On account of theoretical justification, the study analyzed how dynamics in exchange rate, gross fixed capital, inflation rate, crude oil price and financial development support the output growth. Analysis of the time series properties of the data showed stationary trend for all the variables at their first difference. The ordinary least squares (OLS)-based estimation showed that movements in exchange rate and gross fixed capital catalyze growth while financial development (proxied as credit to the private sector in relation to gross domestic product) retards capacity for growth. The result further showed weak negative effect of inflation as well as weak positive effect of crude oil price on Nigeria economic growth. Based on the above outcome, it is advised that policies on exchange rate and capital formation be reinforced to consolidate growth while policy reform is advocated to enhance credit delivery to the private sector and limit the growth-impeding effect of inflation.

Keywords: Economic growth, macroeconomic fundamentals, monetary and fiscal policy, economic performance.

Introduction

It is not in doubt that productivity is a major determinant of economic performance. Nations are often concerned with the formulation and implementation of both economic and non-economic policies that will promote enhanced productive capacity of their respective economies. Such policies aim at delivering rapid industrial development and maintenance of balanced trade relationships. A major driver of industrial production is energy. Though there are several sources of energy for industrial production, oil remains a major source of energy for the sector. Other sources include, but not limited to, hydro (water), coal/carbon, wind, and solar. Basher and Sadorsky (2006) identify oil as critical for the survival of modern economies in their quest to attain rapid industrialization. As a critical input in the production process, the price of oil may likely impinge on the performance of the industrial sector, and by extension the entire economy, due to its influence on the competitiveness of its output.

Nigeria, no doubt, is richly endowed with human and material resources and therefore has immense potentials to be a formidable economic force in the comity of nations. However, attainment of such enviable status derives from effective planning, control and deployment of those resources.

Abdelaziz, Chortareas, and Upollinni (2008) argue that for oil exporting nations, an increase in oil price improves the balance of payment and current account balance thereby strengthening foreign asset position. They further contend that rising oil prices enhance private disposable income, improve domestic demand and corporate profitability, raise stock price and lead to exchange rate appreciation. Although increase in oil price could enhance the capacity to fund development projects, Omojolaibi (2014) argues that this opportunity is often wasted due to inefficiency in public sector spending and procurement procedures.

For oil producing nations, like Nigeria, oil price affects both revenue generation capacity and expenditure profile because they are both major exporters and importers of petroleum products. Nigeria, for instance, exports crude petroleum products and imports refined products for domestic and industrial consumption. Following from the basic law of economics, low production capacity is associated with rising oil prices and this relationship has empirical support in studies like Hamilton (1983). Higher oil price distorts market stability, fuels inflationary pressure and retards economic growth (McKillop, 2004).

The production process is one of value creation or value addition which entails the transformation of different inputs (raw materials) into finished or intermediate products. Components if industrial inputs like oil, plant and equipment, tools and replacement parts, raw materials, human capital, etc. are often imported. Thus, the dynamics of exchange rate also affect production capacity. Since exchange rate depreciation lowers the price of exports while simultaneously raising the price of imports, Aliyu (2009) posits that currency depreciation transfers income from importing to exporting countries thereby impacting the performance of both economies. However, the case of Nigeria is one of double jeopardy because it not only lacks domestic capacity to produce for foreign markets but also depends on imports for domestic and industrial goods. The net outflow of financial resources could adversely affect domestic production. Also, Jin (2008) identifies rapid increase in oil price and exchange rate volatility as obstacles to growth.

Against this background, oil price and exchange rate fluctuations have not only been of great concern to governments and policy makers all over the world but have continued to engage the attention of scholars at national and international academic conferences.

Review of Related Literature

Jin (2008) examined how economic growth responds to oil price shocks and exchange rate volatility in a sample of selected countries. The result indicates that while oil price correlates negatively with growth in China and Japan, it promotes growth in Russia. In a study on post-World War II performance of the American economy based on data between 1948 and1980, Hamilton (1983) observes strong growth-retarding effect of high oil price on economic growth.

Manasseh, Ogbuabor, Abada, Okoro, Egele and Onwumere (2019) used annual data for 1970-2013 to analyze the response of the Nigerian economy to dynamics in oil price and exchange rate. Data analysis was based on the methods of GARCH, EGARCH and Granger causality tests. The regression estimates show strong positive effect of oil price, exchange rate and interest rate as well as negative effect of external debt on Nigeria's economic performance. The study further indicates that fluctuations in in oil price significantly account for exchange rate volatility in Nigeria but did not establish causal link between them. Absence of causal relationship between exchange rate and oil price dynamics confirms the finding in Osamwonyi and Osakioyaigbinoba (n.d) which analyzed the nexus between oil price volatility and stock market returns in Nigeria between 1980 and 2012. A related study by Aliyu (2009) presents empirical support for short-run negative impact of lagged oil price and exchange rate on output growth. It also shows strong causal impact of oil price shock on economic growth. With regard to the exchange rate-output growth nexus, the result shows bi-directional causality between them. It also reveals that exchange rate volatility strongly causes shocks to oil price but not vice versa. The study was based on quarterly data between 1986(Q1) and 2007(Q4).

Omojolaibi (2014) used the structural vector auto-regression (SVAR) method to analyze the nexus between crude oil price and economic growth in Nigeria. Quarterly data over the period 1985-2010 was used for the study. Evidence from the study reveals strong positive impact of oil price volatility on output growth. Also, both the variance decomposition and impulse response results show that oil price volatility in Nigeria derives largely from domestic shocks. Employing the method of dynamic stochastic general equilibrium model, Balke, Brown and Yücel (2008) examined the response of US output to oil price shocks associated with demand and supply conditions at the domestic and international market arena. The authors observe that demand and supply shocks significantly account for oil price movements. They also discover that variations in US output derive mainly from domestic shocks.

Okwo, Eze and Ugwunta (2012) examined the link between financial sector development and economic growth in Nigeria. The study used ratios of broad money supply to GDP and private sector credit to GDP as proxies for financial development. Regression estimates based on the method of ordinary least squares (OLS) indicate negative effect of both measures of financial development on economic growth though the private sector credit did not significantly drive growth during the period. The Granger causality test did not establish causal relationship between financial development and economic growth.

Okoye, Evbuomwan, Ezeji and Erin (2016) used the method of ordinary least squares (OLS) to study the link between exchange rate management and economic development in Nigeria between 1970 and 2016. The study presents significant negative effect of exchange rate on economic development. Further evidence from the disaggregated sample shows that the negative result largely derives from the floating rate regime. An earlier study by Okoye, Modebe, Erin and Evbuomwan (2017) observe strong positive effect of exchange rate and inflation on economic growth in Nigeria. The study employed both ordinary least squares (OLS) and generalized least squares (GLS) estimation methods and data from 1981-2015.

The research by Danmaraya and Hassan (2016) investigated the nexus between manufacturing sector performance and electricity consumption in Nigeria between 1980 and 2013 using the autoregressive distributed lag (ARDL) test. The result indicates strong positive impact of current movements in capital and electricity consumption as well as their lagged (lag 1) values on manufacturing performance. The causality estimates show bi-directional causal link between manufacturing sector productivity and electricity consumption. Though there is no evidence of causal impact of gross fixed capital on manufacturing, the study shows that manufacturing sector dynamics cause changes in capital consumption.

Khobai, Mugano and Le Roux (2017) studied how electricity price affect South Africa using data for the period 1985-2014. Based on the analytical method of ARDL, the authors observe that increase in energy (electricity) price retards economic growth. They also report growth-enhancing effect of electricity, trade openness, capital and employment. In Belke, Greger and Haan (2010), the authors

used data from 25 OECD countries to analyze causal relationships among energy consumption, energy price and economic growth. The study covered the period 1981-2007. Evidence from the study indicates causal effect of energy price on energy consumption, which suggests that higher energy prices cause reduction in the rate of economic activity, and thereby growth. The study also shows that energy price is driven by growth in economic activities. This further suggests that increased economic activities make heighten the demand for energy thereby raising its price.

The relationship between economic growth and electricity consumption was also examined in Madhavan, Sharma and Karunagaran (2010) for Malaysia based on data for 1971-2003. Data analysis was based on the method of ARDL. The result of the study further validates existence of long-run interaction among the components of the tri-variate model. The authors report causal link from electricity consumption to economic growth. The work of Abbas, Saeed,Manzoor, Arshad and Bilal (2014) used generalized least squares (GLS) and Hausman test to analyze the relationship among electricity consumption, inflation, economic growth, and employment in developing countries. The study covered the period 1990-2012 and the countries studied are India, China, Pakistan, Malaysia and South Africa. The study presents evidence that electricity consumption and employment strongly affect output performance. However, it did not produce evidence of strong effect of inflation on economic growth.

Hondroyiannis, Lolos, and Papapetrou (2002) investigated the relationship between energy consumption and economic growth in Greece over 1960-1996. The regression result from the vector error correction model (VECM) shows empirical support for long-run effect of energy price and energy consumption on economic growth. The Granger causality test further confirmed the growth-inducing effect of energy consumption. It did not only show causal link from energy usage to output growth, it also indicates stronger causal impact of industrial energy usage on output growth than residential or domestic consumption.

The work of Iwayemi and Fawowe (2011) used a vector autoregressive (VAR) model to examine how oil price shocks affect four major African oil exporters: Nigeria, Egypt, Libya and Algeria. The study was based on annual data on consumer price index inflation, GDP deflator inflation, real output growth rate, industrial value-added growth rate, and gross fixed capital growth rate between 1970 and 2006. The authors employed three measures of oil price shocks: changes in nominal oil price (linear) as well as changes (positive and negative) in real oil price (non-linear). Impulse response function was used to show how the variables respond to oil price shocks and variance decomposition to indicate the extent to which shocks to oil price contribute to variations in the individual variables. The impulse response analysis indicates that oil price shocks lead to volatile behaviour in the macroeconomic variables which are largely volatile at the initial stages. However, the Granger causality test produced mixed results: for Nigeria, oil price shocks show causal impact on gross fixed capital, and also partially granger-cause output growth and industrial value-added (only one measure of oil price shocks demonstrate causal impact); for Egypt, all indicators of oil price shocks cause changes in gross fixed capital and only negative oil price shocks granger-cause GDP deflator inflation; for Libya, oil price shocks induce changes in consumer price index inflation, and output growth show positive response to oil price shocks except for shocks associated with negative movements in oil price and oil volatility; and for Algeria, there is evidence of asymmetric effect of oil price: positive oil price shocks granger-cause GDP deflator inflation, real output growth rate, industrial value-added growth rate but negative oil price shocks do not affect any.

In Isibor, Ojo and Ikpefan (2016), the authors examined the effect of financial deregulation on economic development based on data for 1970-2016 and observe strong negative effect of deregulation and investment on economic development initiatives in Nigeria. The work of Ugwuanyi, Odo and Ogbonna (2015) which studied how major indicators of financial development affect economic growth in Nigeria did not establish any significant impact of financial development on growth.

Scope and Methodology

The study aimed at identifying major drivers of economic performance in Nigeria between 1981 and 2017 based on time series data obtained from the database of the Central Bank of Nigeria and BP Statistical Review of World Energy (2018). A six-variable ordinary least squares (OLS) model, composed of exchange rate, inflation rate, financial development, gross fixed capital, oil price (independent variables) and GDP (dependent variable) was used for the study. The ADF test was used to establish the time series properties of the dataset to enhance the robustness of the regression estimates.

Model Specification

The implicit form of the model used in the study is stated below:

GDPR = f(EXR, INF, FDPT, GFCF, OPR) ……………………… (i)

Where: GDPR = GDP growth rate
      INF = Inflation rate
      FDPT = Financial development (proxied as ratio of private sector credit to GDP)
      GFCF = Gross fixed capital formation
      OPR = Oil price

Presentation and Discussion of Results

The result of the Augmented Dickey Fuller and ordinary least squares (OLS) tests are presented and discussed in this section.

Unit Root Test

The result of the ADF unit root test, used to ascertain the time series properties of the data, is presented as follows:

Table 1: Unit Root Test Result

Variables	ADF test statistics	Test Critical Values @ 10 per cent	Remark
EXR	-3.392396	-3.204699	Stationary at 1st Difference
INF	-5.964127	-3.204699	Stationary at 1st Difference
FDPT	-8.792524	-3.204699	Stationary at 1st Difference
GDPR	-6.833517	-3.221728	Stationary at 1st Difference
GFCF	-6.357906	-3.204699	Stationary at 1st Difference
OPR	-5.524720	-3.204699	Stationary at 1st Difference

Source: Authors Computation, 2019

Regression Estimates

The ordinary least squares (OLS) regression test was conducted to ascertain the extent to which each of the independent variables explain output growth in Nigeria over the period of the study. The result is as presented in table 2

Table 2: Ordinary Least Squares Result

Dependent Variable: LGDPR				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.477827	1.936744	0.246716	0.8069
EXR	3.006499	0.005323	1.220829	0.0320
LFDPT	-3.263773	0.797965	-1.583745	0.0241
LGFCF	4.081048	0.677857	1.594803	0.0216
LOPR	0.135547	0.228660	0.592789	0.5579
INF	-0.013711	0.010424	-1.315369	0.2987
R^2	0.744303	Adj. R^2	0.714010	

Source: Authors Computation, 2019

Table 2 shows the effect of each of the explanatory variables on output growth. From the result, it is observed that exchange rate exerts strong positive impact on economic growth. This result indicates an exchange rate increase of 1 per cent produces about 3.06 per cent increase in output growth. The result also shows strong positive effect of gross fixed capital on economic growth. The result implies that an increase in gross fixed capital by 1 per cent causes the level of economic activities to grow by 4.08 per cent. With regard to financial development, the result indicates high level of financial development accelerates economic growth. This implies that as the financial sector develops, its capacity to finance growth-promoting activities is enhanced. The finding is a further validation of the finance-led theory.

The study further shows the growth-inducing potential of oil price over the period of the study, though it did not demonstrate strong capacity to drive growth. For a major oil producing nation, endowed with large deposits of oil resources, the result implies that the country may not be taking optimum advantage of the resource due to factors that include, but not limited to, under-production, quota requirements, and or sub-optimal deployment of oil revenue. Finally, the result shows non-significant positive effect of inflation on economic growth, an indication that inflation does not pose a major threat to economic performance in Nigeria.

The R^2 and adjusted R^2 which measure the joint explanatory power of the model indicates that over 70 per cent of variations in output growth are explained by the endogenous variables and the Durbin-Watson statistic of 1.975 (which approximates to 2) indicates absence of auto-correlation.

Conclusion and Recommendations

The study analyzed how dynamics in exchange rate, gross fixed capital, inflation rate, crude oil price and financial development support the output growth. Analysis of the time series properties of the data showed stationary trend for all the variables at their first difference. The ordinary least squares (OLS)-based estimation showed that movements in exchange rate and gross fixed capital catalyze growth while financial development (proxied as credit to the private sector in relation to gross domestic product) retards capacity for growth. The result further showed weak negative effect of inflation as well as weak positive effect of crude oil price on Nigeria economic growth. Based on the above outcome, it is advised that policies on exchange rate and capital formation be reinforced to consolidate growth while policy reform is advocated to enhance credit delivery to the private sector and limit the growth-impeding effect of inflation.

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