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The Effects of Macroeconomic Variables on Lagos State Economy: As Lagos Economy Goes, So Goes the Economy of Nigeria?

G. Solomon Osho[1] & Onyekachukwu Adishi[2]

Abstract

The Lagos state population was estimated about 17.5 million in 2017 and projected to increase to approximately 300 million in 25 years. While Lagos generates about10% of the Nigeria's GDP, the city is currently facing economy decline due to fluctuations in major macroeconomic index, particularly in the global oil prices. Nigeria has experienced fluctuation in oil revenue; in 2014 a barrel was $112 and averaged about $50 as of 2017; consequently, their daily crude output is about 2.5 MBPD. The Nigerian National Bureau of Statistics reported that in the first quarter of 2016, the economy had shrunk by 0.4%, causing the nation to lose about $30 million of daily revenues. Therefore, the principal aim of this research study is to attempt to examine the effects of major macroeconomic variables on the economy of Lagos state. Specifically, it will discuss how these major economic measures have inhibited the economic growth of major sectors of the economy of Lagos state. The finding indicates that the volatility in interest rate is a major determinant in gross regional domestic product. As real interest rate increases the GRDP fall, inhibiting urban economy growth in Lagos state. Therefore, some international financial institutions often introduced numerous financial initiates for the borrowing regional economy with little or no supervision of the proposed program-initiates.

Keywords: Lagos state, recession, interest rate, exchange rate, real estate, Gross Regional Domestic Product (GRDP) and inflation rate

Introduction

The city of Lagos is known as the urban city of excellence with highly attractive business and economic opportunities with rapid population growth located in Nigeria; the country is located in Sub-Saharan Africa and the fastest growing city in the whole of West Africa. Lagos is the fifth largest economy in Africa, generating about 90% of the Nigeria's overall trade flows, roughly 65% of the country's entire manufacturing sector, and approximately about 10% of the country's GDP. In fourth quarter of 2017 alone, Lagos accounted for half of Nigeria's capital importation. In general, Lagos state is now the main economic and financial nerve center of the nation.

However, despite this potential for growth, 60% of its population still continues to live in extreme poverty without access to adequate infrastructures such roads, clean water, electricity, healthcare, and more. Lagos is the economic hub of Nigeria; the state is recognized as the commercial entity that connects Nigeria to the rest of the world. It is therefore the epicenter of most economic and trade activities in Nigeria.

The economy of the state is driven by many factors; first is the entertainment industry. Not only is identified Lagos as the powerhouse for entertainment in Africa, the entertainment industry has become one of the main revenue generators for the state. Second, the economy of Lagos strongly relies on information, communications, and telecommunication industry, as it leads West Africa in that market. Third, the port of Lagos is Nigeria's principal port and the largest point of business in the continental Africa. Currently, Nigeria is going through an economic recession, which started in the first quarter of 2016.

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[1]Associate Professor of Economics, Department of Management and Marketing, Prairie View A&M University
[2]Graduate Student, Department of Management and Marketing, Prairie View A&M University

Since the beginning of this economic slump, many businesses and industries have experienced slow sales revenue and profitability. The recession also affected several commercial products ranging from manufacturing to financial industries. Therefore, the principal aim of this research study is to attempt to examine the effects of major macroeconomic variables on the economy of Lagos state. Specifically, it will explore how these major measures have inhibited the economic growth of major economic sectors.

In general, urban economic recession is a usually period where a regional sector a country's economy experiences a significant decline for some period, usually less than a year. When a regional economy goes into economic decline that implies there is a sharp and continuous drop in its major indicators. These may range from real GRDP, real regional income, regional unemployment, sectorial industrial productivity, and sales. Regional recession is when the real GRDP growth rate of a region is negative over a period of three successive quarters. However, an economic recession often starts before the quarterly real GRDP is noted. The first sign of looming decline in real GRDP is noted in some key economic indicators and sectoral part of the economy such as manufacturing, shipping, retail sales, and housing markets. Looking at Nigeria's gross domestic product growth rate, the first and second quarter rates in 2016 were -0.4% and -1.5%, respectively. Similarly, Nigeria's second quarter for 2017 fostered an 0.6% growth rate, indicating that Nigeria was coming out of the recession because of its positive growth rate. Nevertheless, a regional recession is often differed from nationwide because it usually begins after several quarters of down time after a sign of positive growth.

Literature Review

Over the past decades, the national economy had been shaken, specifically 2011-2017, when the dollar-to-naira exchange rate rose from₦150to₦350.This decline in economic activity has affected several sectors of Lagos' urban economy. Since 2016-2017, the regional state government in Lagos noted several effects of recession on state economy. Several studies have shown that lack of proper economic planning is a key factor of the current recession in the Nigeria (Amadeo, 2017). Specifically, there is no concrete implementation of the economic planning and this has affected the budgeting and exchange rate policy. However, the government expressed that it had planned to implement some general indulges such as improving manufacturing sectors, raising agriculture output, and encouraging foreign investment. The government had limited concrete strategies to implement that could enhance diversifying the economy and improving viable economic sectors.

Nonetheless, the Nigeria government has taken some steps to eliminate dollar purchase for selected foreign products like poultry, meats, margarine, wheelbarrows, textiles, rice, cement, toothpicks, and private planes. Despite the implementation to prevent importers from importing the items mentioned, such actions have yet to reduce the causes of poverty in Nigeria. The disparity between the exchange rate given by the Central Bank of Nigeria to selected businesses starts at$1 U.S. Dollar for ₦350, while in the major market the $1 U.S. for ₦450. Selected businesses often get a lower rate from major banking industries as low as $1 U.S. for ₦300. These losses in exchange rate due to central banking policy are funds that could be invested into salaries, healthcare and agriculture.

Inflation Rate

The inflation rate in Nigeria is a main factor that has led the country into recession in recent time. To alleviate the purchasing power of its currency, the government implemented a complete ban on selected major agricultural products indefinitely. Noko (2016) noted that there are several factors mitigating price level volatility in Nigeria. The primary causes of inflation in Nigeria are due to rising oil price, lack of budgetary approval, instability in the financial market, and the removal of fuel subsidy. Table 1 shows the significant change in consumer products before and during the recession of 2015-2017 where food baskets are very expensive now.

Table 1. Consumer Price Spike and Elasticity for Selected Goods

	2015	2016	%Δ	Price Elasticity
Tomato (Basket)	₦12,000	₦45,000	275	Low
Pepper (Basket)	₦6,000	₦20,000	233	Moderate
Garri 50kg(Basket)	₦11,000	₦18,000	63.6	Moderate
Rice 50kg (Basket)	₦9,000	₦14,500	61.1	Low
Beans 50kg (Basket)	₦15,000	₦16,000	6.7	Low
Onion (basket)	₦4,000	₦10,000	150	Moderate

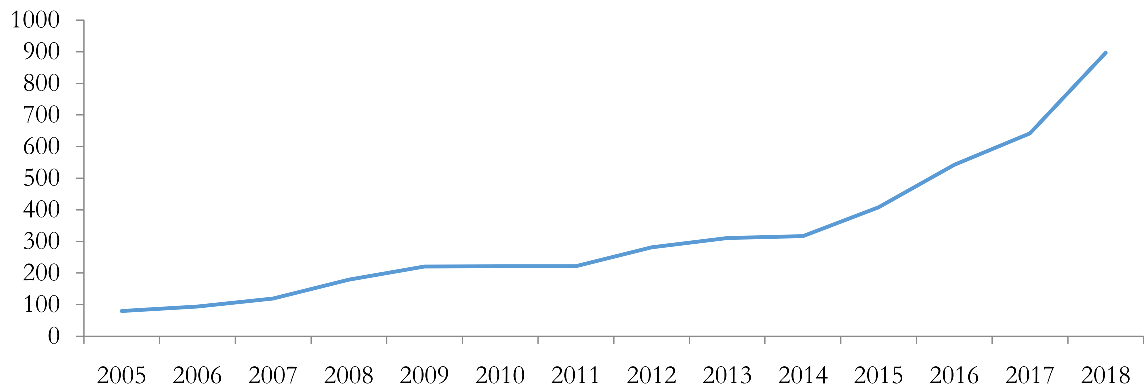
Taxation

Investing in Nigeria market is very difficult due to the high interest rate imposed by the banks. The real interest rate has been fluctuating between 27% and 30% which is considered by most economists as too high. The unemployment rate has been increasing dramatically, causing a drastic reduction in households pending. Generally, taxation is very important in any country for the economy to grow and helps generate revenue for the country or city. A high tax rate was imposed on several firms such that businesses cut down their level of investment in Lagos state. The current ones are struggling to keep up with the imposed tax rate. The Nigerian government imposed a high tax rate during the recession.

Lagos State Revenue Outlook

The current GRDP of Lagos roughly stands at $136 billion, its economy noted 5% growth in 2018, while the overall nation is projected to see growth by 3%, as the International Monetary Fund. The state government noted that by embarking on its policy intervention initiatives, they have enabled a serious reduction in unemployment rate for the projected economic outlook.

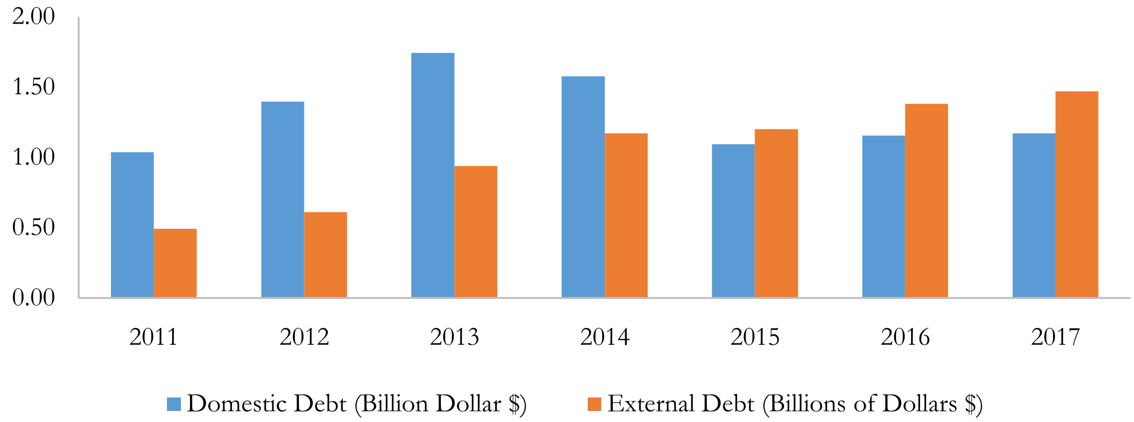
Figure 1. Revenue in Billion Naira



While Lagos state is the fastest growing market and still the fifth largest economy in Africa,the state has been experiencing gradual the drop in the GRDP value from $131billion. However, this is attributed to the fluctuation in foreign exchange.

There have been several research studies on urban economic growth and the determinants of regional economic growth. Chief among them is Solow (1956), who empirically noted that the main determinants of regional urban growth are based on the neoclassical theory population growth, interest rate, exchange rate, and technological progress. Nevertheless, some studies on regional economic growth theorists disagree, in favor of an endogenous economic structural growth model that assumes capital accumulation (Khan and Yim, 2000). Sun and Parikh (2001) suggested that the association between exports is a significant determinant in regional economic growth in developing nations. Their study noted that the influences of exports on the non-exports sectors of the economy and higher borderline productivity in the exports sector in relation to other sectors are vital in promoting GRDP growth. While this is important, of Lagos state is the most indebted state in Nigeria. Their debt rose from the 2014 level of ₦456.8 billion to ₦813.04 billion in 2017, accounting for 18.08 percent of the total debt stock of state governments.

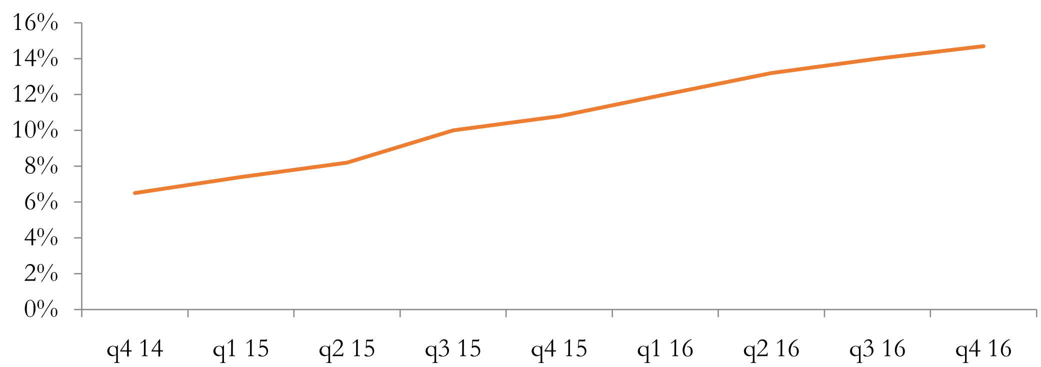
Figure 2. Lagos State Annuaal Debt Profile



Impact on Employment

As businesses are struggling during the recession, this also affected the creation of jobs for citizens of Nigeria. In fourth quarters of 2016, according to Nigeria's National Bureau of Statistics (NBS), the unemployment rose to 14.2%, and has continued to increase over the course of nine consecutive quarters.

Figure 3. Nigeria's Unemployment Rate q4 2014 - q4 2016



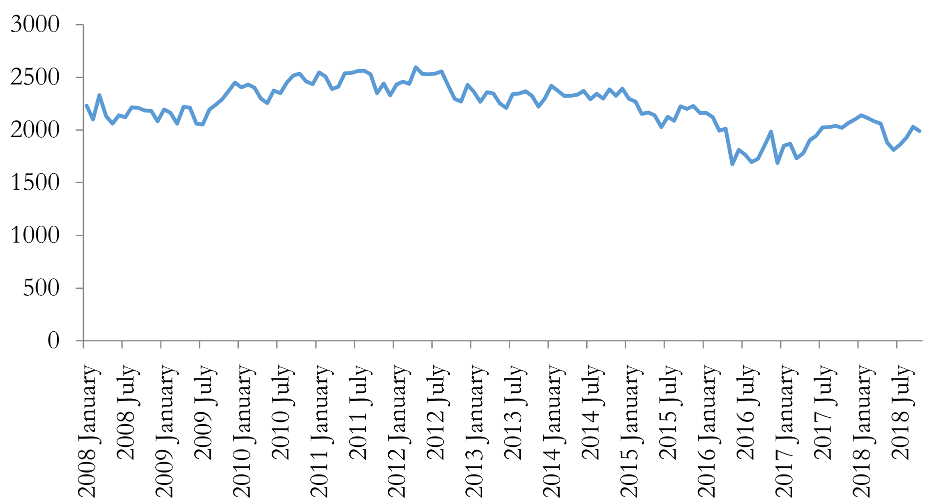
Due to the high unemployment rate, the government made several policy measures and efforts to boost employment especially in several local government areas in Lagos. Tax cut incentives were given to firms to prevent them from cutting jobs and attempting to discover and create jobs for those out of work. The state government is also threatening to withdrawal local banks licenses for firing workers, feeding into the efforts to employ as many people as possible. This attempt to increase employment did not make any difference to the unemployment rate (Kazeem, 2017). For internal revenue generation in the fourth quarter of 2016, the state tax agency received over one million job applications compared to second quarter of 2016, with over a million job applications for 10,000 jobs advertised by Nigerian Police Force.

Figure 4. Unemployement Rate(%) in Nigeria among Young People - Q4 2016

Oil and Gas Economy

The energy sector is the major mainstay of Nigeria economy. The nation is the largest oil producer in Africa and the world's eighth exporter of crude oil, roughly accounting for 70% of the nation's revenue. Nigeria daily crude output is about 2.5MBPD. Furthermore, since 1987, the national economy has deteriorated dramatically for several decades. The National Bureau of Statistics reported that in the first quarter of 2016, the economy shrank by 0.4%, and that the GDP of Nigeria has declined by 1.5%. The decline in the GDP is due to a sharp drop in global oil prices and a decrease in domestic production. This is a result of insurgents' attacks on oil and gas groundwork and substructure facilities. The local currency naira-dollar exchange rate has continued to drop accordingly, leading to inflation in the local market. Oil prices have been experiencing ongoing fluctuation since 2014, where a $112 barrel was currently $50.In 2016,Nigerian oil production dropped by 20% from 0.5MBPD to 0.6MBPD, causing the country to lose roughly $50 million per day in crude oil revenues.

Figure 5. Nigeria Crude Oil Production (Thousand Barrels per Day)



Real Estate Market

The oil and gas industry was not the only major sector heavily affected by the recession, as the real estate sector was as well. The recession caused significant damage to the economy; the one sector of the economy particularly affected was real estate in Lagos, Abuja, and Port-Harcourt. The housing market was gradually influenced by rapid technological advancements and substantial demographic shifts that include growing population, urbanization, and differentiated lifestyle patterns of younger generations. Also, the decline of naira against dollar rendered transaction in real estate in some areas unattainable to low income earners. The decrease in naira value affected the ability for individuals or businessmen to borrow from the bank due to the tightening of lending windows.

Model Specification

The fundamental portion of the aggregate urban economic performance is the total amount of goods and services offered by sectors of its economy in a specific given year, known as the gross regional domestic product (GRDP). Lagos state's GRDP measures the aggregate output of goods and services in various local government council areas of the state. The GRDP accounting systems enables policy decisions as a means for gaining insight and understanding economic and market volatility, tracking market performance, and implementing policies that would stabilize the urban region and sectoral components of its economy. From classical macroeconomics theory, the total amount of output produced from all sectors of a given economy equals the aggregate value of its expenditure:

$$GRDP = C + G + I + NTE \quad (1)$$

$$NTE = X - M \quad (2)$$

Where C= consumption, I= investment, G =government spending, NTE = net exports, X = exports, and M = total imports. The datasets were obtained from the Lagos Bureau of Statistics and the Ministry of Economic Planning and Budget. The information comprised ofgross regional domestic product, revenue, employment rate, interest rates, percentage of government spending, and real interstate rate. The appropriate model specification was given below:

$$GRDP = \beta_0 + \beta_1 CS + \beta_2 ETR + \beta_3 RI + \beta_4 PGR + \varepsilon_t \quad (3)$$

The estimated model for this study is based on the ISLM-BP approach with a fixed real interest rate. To examine the impacts of interest rates, percentage of government spending, and real interstate rate as concrete macroeconomic variables, the GRDP measures until it reaches state equilibrium. This stated in the specified model was estimated:

$$GRDP_t = \beta_0 + \beta_1 CS + \beta_2 ETR + \beta_3 RI + \beta_4 PGR + \beta_5 GRDP_{t-1} + \varepsilon_t \quad (4)$$

Where CS=government spending, ERT=exchange rate, RI= interest rate as a measure of investment level, $GRDP_{t-1}$=lag period of gross regional domestic product and ε_t= error term. The GRDP was verified for joint condition mean and variance test by the error equations:

$$\varepsilon_t = \beta_0 + \beta_1 CS + \beta_2 ETR + \beta_3 RI + \beta_4 PGR + \beta_5 GRDP_{t-1} + \beta_6 t + \beta_7 \widehat{GRDP} \quad (5)$$

$$\varepsilon_t^2 = \beta_0 + \beta_1 CS + \beta_2 ETR + \beta_3 RI + \beta_4 PGR + \beta_5 GRDP_{t-1} + \beta_6 t + \beta_7 \widehat{GRDP}_{t-1}^2 \quad (6)$$

Through the data output, joint complete mean and variance tests were conducted to detect these specific misspecification problems. The tests show that the ordinary least squares produced linearly unbiased estimators with least variance. While equation (3) yields unbiased estimators, the parameter estimates were inefficient and ordinary. Least squared assumptions of normality, parameter stability, autocorrelation, and constant variance were not violated.

Results

The correlation matrix in the Table 2depictsa moderate degree of association between GRDP and population growth rate (%), percentage of capital spending, exchange rate, and real interest rate. These all indicate no multicollinearity by using Durbin-Watson statistic tests range 0 to 4. Correlation coefficient estimates are presented in Table 2. The coefficients suggested that there are positive relationships generally between GRDP and population growth rate, percentage of capital spending, exchange rate, and real interest rate.

Table 2. Correlation Matrix

	Revenue	GRDP (in million)	Population Growth Rate (%)	%Capital Spending	Exchange Rate	Real Interest Rate
Revenue						
GRDP (in million)	0.71334					
Population Growth Rate(%)	0.3888	0.2314				
%Capital Spending	0.4812	0.5415	0.0466			
Exchange Rate	0.4070	0.2805	0.1351	0.5749		
RealInterest Rate	0.2653	0.0614	0.6106	-0.0912	0.4178	
Time Lag	0.9273	0.6821	0.4338	0.4957	0.6389	0.4241

Model I provides parameter estimates for GRDP component in Lagos state. This indicates an increase in GRDP and in percentage of capital spending. The exchange rate and real interest rate both have significant negative impacts on annual GRDP with a coefficient of determination of about 79%.

Table 3. Model I- Model I-Estimated Parameter for GRDP Component in the Lagos State, Nigeria

Variable	Estimated Coefficient
Intercept	130760.9
	(0.0187)
Population Growth Rate (%)	-468095
	(0.0834)
%Capital Spending	619.076
	(0.2473)
Exchange Rate	-606.977
	(0.0971)
Real Interest	-44.354
	(0.0212)
Time Lag	3394.318
	(0.0392)

R^2 = 0.6925. The values in parenthesis indicate standard errors.*DW* =2.09015

Model II- A double log model was used with intercept parameter estimates for GRDP component with results shown in Table 4. The log-log model helps to measure the sensitivity of GRDP with respect to changes in macroeconomic variables. The results indicate that the GRDP is very sensitive to changes in exchange rate, population growth rate, percentage of capital spending, and real interest rate. Largely, it shows that GRDP is negatively sensitive to changes in exchange rate, population growth rate, and real interest rate. Similarly, the GRDP is positively sensitive to changes in percentage capital spending and time lag with a coefficient of determination of about 69%.

Table 4. Model II- Double Log with Intercept Estimated Parameter for GRDP Component in the Lagos State, Nigeria

Variable	Estimated Coefficient
Intercept	12.7817
	(0.0022)
Population Growth Rate (%)	-0.15843
	(0.0834)
%Capital Spending	0.2397
	(0.3001)
Exchange Rate	-0.5350
	(0.0334)
Real Interest	-0.0229
	(0.0679)
Time Lag	0.1623
	(0.0206)

R^2 = 0.6925. The values in parenthesis indicate standard errors.

A double log model without intercepts was estimated. Results pertaining to parameter estimates for GRDP components are shown in Table 5. The results indicate that the GRDP is positively sensitive to changes in exchange rate, population growth rate, percentage of capital spending, real interest rate, and time lag with a coefficient of determination of about 99%.

Table 5.0 Model III- Double Log without Intercept Estimated Parameter for GRDP Component in the Lagos State, Nigeria

Variable	Estimated Coefficient
Population Growth Rate (%)	-2.1371
	(0.0847)
%Capital Spending	0.2077
	(0.5600)
Exchange Rate	0.7185
	(0.0437)
Real Interest	0.0150
	(0.0873)
Time Lag	0.0871
	(0.0685)

R^2 = 0.9938. The values in parenthesis indicate standard errors.

The regional economy performance as measured by the GRDP is key to urban economic growth. The linear model of GRDP is exhibited by equation (2), while the parameter estimates indicate unbiased and consistently efficient results, due to the longitudinal series nature of the data. Investment level is captured by a variation in real interest rate; the GRDP is sensitive to investment decisions implemented by the state based on macroeconomic growth factors such as exchange rate, interest rates, oil prices, and population growth rate. One main component of the findings is that the GRDP is very sensitive to changes in percentage of exchange rate, population growth rate, percentage of capital spending, and real interest rate. It is negatively sensitive to exchange rate, population growth rate and real interest rate, while positively sensitive to percentage of capital spending and time lag. The findings robustly suggest that in Lagos state, the GRDP is significantly sensitive to changes in exchange rate, population growth rate, percentage of capital spending, and real interest rate and time lag. Therefore, specifically in a period of recovery from a recession, investment decisions by a state government are very sensitive to economic growth. The results indicated that GRDP increases as the rate of investment increases. Similarly, the local economy GRDP sharply contracts as investment level drops. Consequently, government spending should increase as a percentage of gross regional domestic product in order to enhance regional economic growth as evidence in Lagos state data.

Conclusions

This current research study attempts to examine the effects of macroeconomic determinants of Lagos state economy. In particular, the effects of population growth rate, percentage capital spending, exchange rate, real interest rate and time lag on the GRDP. The effects indicate that capital spending is a crucial element of GRDP in Lagos state. It shows that Lagos state economy is very sensitive to fluctuations in capital spending. This is proven by urban economic theory, expressing investment and government spending display typical tendencies as established by macroeconomic theory.

However, one significant characteristics of this research is the fundamental determinants of urban regional growth. The finding indicates that the volatility in interest rate is a major cause in gross regional domestic product: as real interest rate increases, the GRDP falls, hence inhibiting urban economic growth in Lagos state. Therefore, successive Lagos state administrations should evaluate policy recommendations before taking and accepting loans from both domestic and international lenders. Some international financial institutions often introduced numerous financial initiatives for borrowing to regional economy with no apparent monitoring mechanism and inadequate supervision of the proposed program initiatives. Similarly, these international financial institutions pay little or insufficient attention to the viability of these program interventions in such regions.

Despite the effect the recession had on the economy, another factor is the effect of population growth ration the state. Lagos state government should stimulate the state economy through capital projects to ensure enabling business environment for both small and medium scale businesses. The state government should attempt to safeguard prudent use of state resources to help reduce unemployment and promote social welfare for the increasing population. The state administration has to make sure that Lagos state is safe and provide policies for stable economic growth, while also ensuring that capital is readily available to small and large business, and while also increase their own capital expenditure. This enables businesses to purchase materials as part of government spending and as proportion of the gross regional domestic product. As the Lagos state government is implementing various economic policies to revive the economy, other states are following the same steps to better their economy.

Finally, as a result of this the country aggregate economy would be strengthen. Hence, as Lagos economy goes, so goes the economy of Nigeria.

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