STABILIZATION POLICIES, INFRASTRUCTURAL DEVELOPMENT AND INDUSTRIALIZATION PROCESS IN NIGERIA

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ABSTRACT

This study investigated the relationship between stabilization policies, infrastructural development and industrialization process in Nigeria. The study estimated a slightly modified form of the basic St. Louis equation with data ranging from 1981 to 2015. The main finding is that increase in electricity, gas and water infrastructure would facilitate industrialization process in Nigeria. The Johansen cointegration testing approach demonstrated a significant long-run relationship between these three variables. The study found that government revenue (fiscal policy), communication, electricity, gas and water infrastructures have significant effect on the development of crude petroleum and natural gas. The findings on solid mineral sector suggested that interest rate (monetary policy) has a significant inverse relationship with the development of solid minerals. The study also found that all the infrastructural variables have significant effects on solid mineral development. Also, the study found that transport infrastructure plays a significant role in the development of the manufacturing sector. It concluded that, with strong determination and positive actions, Nigeria will surmount its industrialization challenges.

JEL Classifications: E63, H54, O14

1. Introduction

FOR a nation to industrialize and develop, it must have efficient stabilization policies (hereafter referred to as monetary and fiscal policies) and infrastructure on ground. Nigeria is great not just because it is the seventh most populous country on the planet, but is also an important nation on account of its oil wealth, and the energy of its people, whose creativity and resilient spirit of enterprise continues to assure the nation progress in the face of seemingly hopeless situations. It is due to

the hard-work and industry of ordinary Nigerians (the nation's greatest asset), that the country attained a GDP rebased at $510 billion in 2013, exceeding that of South Africa to become the biggest African economy, even in the face of its parlous infrastructure. The feat is the result of the toiling of small-scale entrepreneurs, who continue to create value without adequate electricity, cottage food processors without affordable financing, farmers without the scantest of state support; artisans, bold and imaginative business men and women, dynamic financial managers, young innovators, creative artistes and hardworking professionals (Gbenga, 2015).

Since Nigeria became independent in 1960, achieving economic development through rapid industrialization has remained a major challenge. How to achieve rapid economic development has also remained the primary focus of succeeding administrations in the country. Thus, different economic development policies (with each having a bearing on the industrial sector) were adopted ranging from import substitution strategy (ISS) through indigenization to the structural adjustment programme (SAP). However, it seemed as if none of these policies provided sufficient answers to the challenges of the country's industries to the point that many have concluded that the more new policies introduced, the farther the movement away from industrialization (Iwuagwu, 2011).

The economy has been plagued with several challenges over the years. In spite of many and frequently changing fiscal, monetary and other macroeconomic policies, Nigeria has not been able to harness its potentials for rapid economic development (Ogbole, 2010). According to Adeoye (2006), the debate on the effectiveness of fiscal policy as a tool for promoting growth and development remains inconclusive, given the conflicting results of current studies (Abata, Kehinde and Bolarinwa, 2012).

Onwe (2014), in Ubesie (2016), posits that 'the role of fiscal and monetary policies in the development of emerging economies has been a major source of concern in economic literature. Majority of studies in this area have, however, concentrated on the industrialized countries of the Western World, with little or no reference to emerging economies of the developing countries'. According to Agu, Idike, Okwor and Ugwunta (2014), a review of Nigeria's macroeconomic indices shows that inflation has accelerated to double-digit levels (from 6.94 in 2000 to 18.87 in 2001) (IMF, 2001). This double-digit inflation continued up to 2005, and decreased to single digit in 2006 and 2007. In 2008, the inflation rate reverted to double digit (11.58) and continued to increase; in 2010, it was 13.72% (IMF, 2011). Per capita income has been increasing steadily from year 2000, when it was N39,657, to N71,131 in 2010 (IMF, 2011). This increase in per capita income has

not led to an increase in the standard of living of the citizens because of increasing cost of goods and services. The country's debt profile is also steadily increasing. According to Nwankwo (2010), Nigeria's debt profile was $32.5 billion (N5,241,667 million) as at September 2010. In 2000, the total outstanding debt was N3,995,638 million and continued to be an upward trend until in 2006, when it came down to N3,177,409 million because of the debt cancellation agreement between Nigeria and the Paris Club (Okwo, 2010). Thereafter, it rose again to reach N5,241,667 million in 2010.

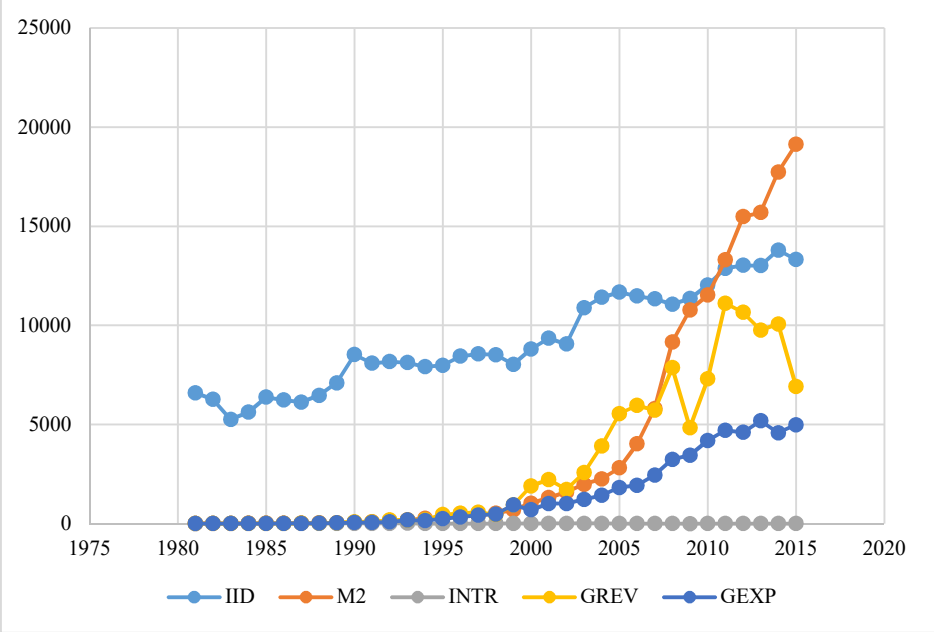

Figure 1: Relationship between index of industrial development and monetary and fiscal policies

The data in figure 1 suggest that monetary and fiscal policies have not been moving in the direction that would spur industrialization. The expenditure pattern of Nigeria has been on the increase. In 2000, the total expenditure was N701,059m, which then increased steadily to reach N4,199,429m in 2010. Generally, increase in expenditure should lead to reduced unemployment rate but; in Nigeria, the reverse was the case, as this increased the rate of unemployment. This is because a greater percentage of the total expenditure was channelled to recurrent expenditure—this proportion is worsening. In 2000, the percentage of total expenditure spent on recurrent was 66%, increasing to 79% in 2010. The implication is that less

percentage of total expenditure was spent on capital projects, which create jobs in the economy. One of the major issues raised against Nigeria's 2012 budget was the high rate of recurrent expenditure. Based on the budget, the government proposed spending most of its money on running the administration rather than in the badly needed infrastructure projects to create jobs and boost growth in the then Africa's second largest economy (Olajide and Adekoya, 2012). Today, monetary and fiscal policies are both commonly accorded prominence in the pursuit of macroeconomic stabilization in developing countries, especially in Nigeria; but the relative importance of these policies has been a serious debate between the Keynesians and the monetarists.

In the last three decades, Nigeria has pursued industrialisation with the hope of transforming the economy from a monolithic, inefficient and import-dependent economy to a more dynamic and export-oriented economy, especially exports of industrial goods. These aspirations, as contained in the successive development plans (especially, first and second development plans) of the federal government were further reinforced by the windfalls of the crude oil boom of 1972/73 and 1979/80 periods. However, despite series of deregulation policies introduced since 1986 by successive governments to facilitate the industrialisation process in an economically conducive manufacturing environment, the performance of the industrial sector remains undesirable. In the last two decades, Nigeria recorded an unremarkable economic performance, especially in the manufacturing industry in the areas of production and international trade. Besides, its poor macroeconomic management might have largely contributed to such unfavourable performance of the industrial (manufacturing) sector. Regardless of the numerous constraints facing the industrial sector, the country still has some hope in the sector in propelling the necessary economic diversification from risk and uncertainty of the mining sector (Adeoye, 2005).

Between the end of 2006 and the first half of 2017, Nigeria's industrial sector could be said to have passed through its most difficult period since independence. During this period, the sector grappled with numerous challenges, including low capacity utilization resulting from: unstable infrastructure (especially poor power supply and bad roads), which impacted negatively on cost of doing business; absence of venture capital, especially for business start-ups; high cost of capital from banks and other financial institutions; lack of long-term loans; poor macroeconomic environment (including inadequate regulation and lack of business incentives); multiple taxation, etc. These combined to bring industry's contribution to National GDP to just a little over 4%. Expectedly, some manufacturing

companies even shut down, while others migrated to neighbouring countries where the business environment was considered friendlier (Iwuagwu, 2011).

The current dwindling in the industrial sector and seeming collapse in the entire socioeconomic infrastructures of the Nigerian economy has made several scholars to tag the country a sick nation. The manufacturing sector is sick and the productive sector is in crisis, as its average contribution to the nation's GDP over the past few years has not gone beyond 5%. Many years of neglect and maladministration on the part of successive governments, coupled with corruption and indiscriminate policy reversals, have conspired to render the industrial sector comatose. Of course, economic growth and development do not take place in a vacuum. A virile economy presupposes the existence of virile infrastructures, defined as the basic structures and facilities necessary for a country or organization to function efficiently. These include buildings, transport, water and energy resources, and administrative systems (Honby, 1995). In general, they refer to the economic and social facilities which are provided by the government or by private sector operators for the social and economic development of the individual and society at large.

Figure 2 shows a divergent movement between industrial development and economic growth. As a rough typology, a distinction may be drawn between physical infrastructure (such as roads, dams, canals and railways) and public utilities (such as electricity, potable water, sanitation and sewage), and between economic and social infrastructure. While the aforementioned facilities can pass for economic infrastructure, health and educational facilities, such as hospitals and schools, constitute social infrastructure. However, the three facilities to be considered - water supply, electricity and transport – combined the elements of economic and social infrastructure. These facilities are expected to significantly affect the industrialization process, or ameliorate the lives of Nigerians. The question then is: What is the magnitude of the contribution of stabilization policies and infrastructure on industrialization process in Nigeria? Thus, this study was designed to answer this question.

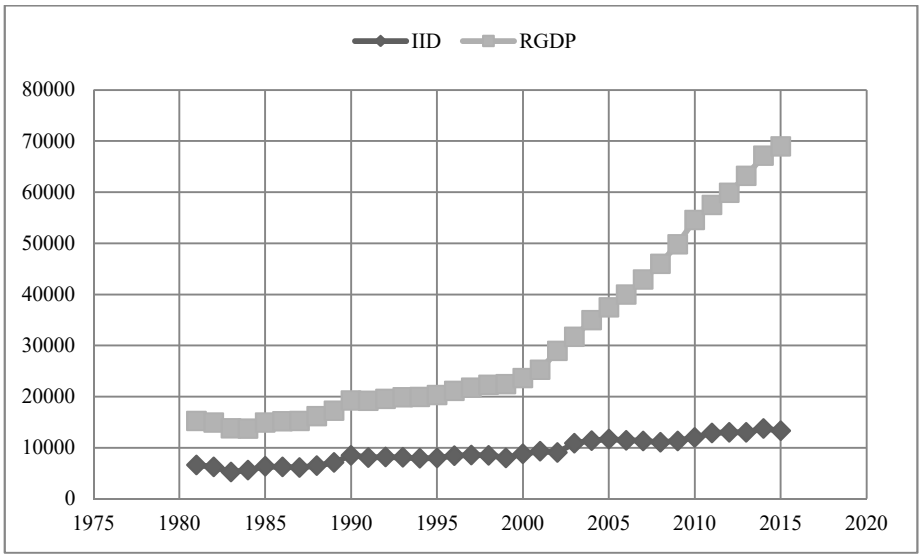

Figure 2: Relationship between index of industrial development and economic growth

The participation of new independent power producers (IPPs) in the sector is crucial because, while privatization of existing utilities merely transfers ownership to the new operators, it is the new greenfield IPPs that add capacity to the network. Unfortunately, in the past five years no new IPP has been commissioned in Nigeria. As a matter of fact, no single turbine was imported to Nigeria last year and none has been imported this year, compared to 15 GE turbines that were shipped to Egypt this year alone. Ten years running, this reform has been hampered by the difficulties associated with private sector participation in infrastructural development identified previously. The difference is the sense of urgency that the resolution of these issues in the power sector demands.

Policy formulators only lament and sing the power inadequacy like a song and failing to take the practical executive actions that do not even require legislation to achieve. These authors, as operators in the sector, have outlined some immediate steps to be taken to recalibrate the power sector reform. The country has not witnessed the construction of any new greenfield port over the last four decades despite a rapidly expanding economy. According to AFDP 2013 study, of all the freight that arrived Nigerian port, only 0.2% throughput was travelled by rail. Oil refineries are in an incredibly bad shape. Nigeria, the 5th largest producer of oil, has turned into a net importer of petroleum products due to the shameful state of gas and pipeline infrastructure. Hospitals and education facilities are in a state of

decay, crippled by the menaces of poor maintenance and underdevelopment. The reasons for infrastructural decay include inadequate investment from both public and private sectors, inadequate maintenance programmes and capacity building. In order to upgrade the nation's infrastructure to support the desired economic growth target and socioeconomic development objectives, AFDP forecasts that Nigeria requires $350 billion USD CAPEX investment over a period of nine years. It also estimates that US$100 billion is required over the same period as OPEX investment. A recent McKinsey projection on the cost of upgrading Nigeria infrastructure is not too far from AFDP assumptions. McKinsey projected that $31 billion USD is required annually over a period of ten years. Both studies expect most of CAPEX investment to come principally from the federal government infrastructure funding commitment, public-private sector partnership and direct private sector investment. Unfortunately, the funding commitment from the government has been disappointing, as only a meagre US$3.6 billion commitment to capital expenditure was made in the 2014 budget. Private sector commitment has also been small and slow in coming.

The task of building a resilient infrastructure that will meet the developmental needs of the country is huge but the study will limit itself to five critical areas, as it assumes that policymakers will be more interested in how to scale the hurdles than an exhaustive list of the problems. Thus the study identified funding; administrative and bureaucratic impediments to private sector participation in infrastructure development; manpower challenges; lack of an industrial base to locally produce infrastructural facilities; and re-calibration of the electricity sector reform. Consequently, the major questions answered by this study were: Has Nigeria created efficient stabilization policies for efficient resource allocation in order to promote industrialization in the neighbourhood of economic liberalisation and deregulation paradigms? To what extent has Nigeria restructured her infrastructural systems for effective industrialization within the on-going diversification process?

The study examined stabilization policies, infrastructural development and industrialization process in Nigeria between 1981 and 2016. In examining the history of infrastructure policies, the work also focused on water supply, electricity and transport. It shed light on the differential and complementary roles of government and private sector operators, and especially on recent trends, indicating a steady retreat of the state from the provision of urban infrastructure. The work combined chronological and thematic approaches to capture the highlights of general and sectoral changes in Nigeria.

2. Review of Relevant Literature

2.1 Conceptual framework

The term fiscal policy has conventionally been associated with the use of taxation and public expenditure to influence the level of economic activities. The implementation of fiscal policy is essentially routed through government's budget. A budget is, therefore, more than a plan for administering the government sector. It reflects and shapes a country's economic life. In fact, the most important aspect of a public budget is its use as a tool in the management of a nation's economy (Omitogun and Ayinla, 2007). Fiscal policy deals with government's deliberate actions in spending money and levying taxes with a view to influencing macroeconomic variables in a desired direction. This includes sustainable economic growth, high employment creation and low inflation (Microsoft Corporation, 2004). Thus, fiscal policy aims at stabilizing the economy. Increases in government spending or a reduction in taxes tends to pull the economy out of a recession, while reduced spending or increased taxes slows down a boom (Dornbusch and Fischer, 1990).

Fiscal policy involves the use of government spending, taxation and borrowing to influence the pattern of economic activities and also the level and growth of aggregate demand, output and employment. Fiscal policy entails government's management of the economy through the manipulation of its income and spending power to achieve certain desired macroeconomic objectives (goals) among which is economic growth (Medee and Nembee, 2011). Olawunmi and Tajudeen (2007) opined that fiscal policy has conventionally been associated with the use of taxation and public expenditure to influence the level of economic activities. They further said the implementation of fiscal policy is essentially routed through government's budget. Fiscal policy, as mostly to achieve macroeconomic policy; is to reconcile the changes which government modifies in taxation, expenditure and programmes or to regulate the full employment price and total demand (Hottz-Eakin, Lovely and Tosin, 2009). As noted by Anyanwu (1993), the objective of fiscal policy is to promote economic conditions conducive to business growth while ensuring that any such government actions are consistent with economic stability.

Monetary policy is concerned with discretionary control of money supply by the monetary authorities (central bank with central government) in order to achieve stated or desired economic goals. Governments try to control money supply because most governments believe that its rate of growth affects the rate of inflation. Hence, monetary policy comprises government actions designed to

influence the behaviour of the monetary sector. Monetary policy is the deliberate use of monetary instruments (direct and indirect) at the disposal of monetary authorities, such as the central bank, in order to achieve macroeconomic stability. It is essentially the tool for executing the mandate of monetary and price stability. It is essentially a programme of action undertaken by monetary authorities, generally the central bank, to control and regulate the supply of money with the public and the flow of credit with a view to achieving predetermined macroeconomic goals (Dwivedi, 2005).

The word 'infrastructure' connotes different meanings to different people. Generally, it is the set of interconnected structural elements that provide the framework for supporting the entire structure. It usually applies only to structures that are artificial. The term is used differently in a variety of fields; perhaps the single most well-known usage is in economics, where it refers to physical infrastructure such as buildings and roads (Adewoye and Momoh, 2006). The term is used most often in urban planning contexts to denote the facilities that support specific land uses and built environment. Typically, in the urban context, it denotes two general groups of support systems: transport modalities (roads, rail, etc.) and utilities. These comprise public and private systems, and some ambiguously held in common.

Infrastructure may also refer to necessary municipal or public services, whether provided by the government or by private companies. If provided by nature (a river), they are called nature's services and are defined (at least in economics) as the product of natural capital. This may be augmented or directed by infrastructural capital, e.g. a dam or canal or irrigation ditch. In general, what is called infrastructure tends to be much embedded in the natural landscape and cannot be moved from place to place. Even municipal services rely necessarily on fixed locations, e.g. fire stations in central positions in a city, radio towers on tall buildings, etc. Infrastructure, in civic sense, includes transport (roads, highways, railroads, public transport, airports, ship transport, such as ferry and barge, bike paths, sidewalks, greenways); public utilities (electricity, natural gas, coal delivery, water supply, sewers, telephone services, radio and television broadcasts); public services (fire service or fire department, flood protection, police protection, waste management); national services (defence, monetary systems or currency, including the minting of coins, and printing of banknotes; postal system, frequency allocation, i.e. electromagnetic spectrum management for broadcasts, both terrestrial and satellite).

Soft infrastructure denotes institutions that maintain the health and cultural standards of the population. Principally, this refers to public education, public health systems, including public hospitals, public libraries, social welfare. In short, 'infrastructure' refers generally to manpower, physical structures and installations which a country establishes for the purpose of facilitating its agricultural, industrial and commercial production, rendering social services and maintaining the security of the community.

Industrialisation is seen as a veritable channel for attaining the lofty and desirable conception and goals of improved quality of life for the populace. This is because industrial development involves extensive technology-based development of the productive (manufacturing) system of the economy. In other words, it could be seen as a deliberate and sustained application and combination of suitable technology, management techniques and other resources to move an economy from the traditional low level of production to a more automated and efficient system of mass production of goods and services (Ayodele and Falokun, 2003).

2.2 Theoretical evidence

Different opinions have indeed continued to emerge on how fiscal policy can affect economic activities. The genesis of the controversy has been traced to the theoretical exposition of the different schools of thought: the classical, Keynesian and neoclassical. To the classical school of thought, fiscal deficits, incessantly financed by debt, crowd out private investment and, by extension, lower the level of economic growth. As summarized by Tchokote (2001), classical economists believe that debt issued by the public has no effect on private sector savings. To them, a deficit financed by increasing the supply of securities, *ceteris paribus*, reduces its price and raises real interest rates, crowding out private investment. In sum, excessive deficit can lead to poor economic performance.

According to Omitogun and Ayinla (2007), the Keynesian school of thought postulates a positive relationship between deficit financing and investment and consequently on economic growth. This school of thought sees fiscal policy as a tool of overcoming fluctuations in the economy. As put by Tchokote (2001), this school regards deficit financing as an important tool for achieving a level of aggregate demand consistent with full employment. When debt is used to finance government expenditures, consumers' income will increase. Given that resources are not fully utilized, crowding out of private investment by high interest rates would not occur. The position of Keynesians on the possible effects of fiscal deficits on economic activities has been challenged by the neoclassical school of

thought on the premise that the former ignores the significance of fiscal deficits to the effect of policy variables on macroeconomic performance. The neoclassical postulates that the manner in which deficits are financed can influence the level of consumption and investment and, by extension, economic growth.

In Nigeria, government's economic activities and the general achievements in economic performance have been mixed. The economy experienced growth in real output in some years and declined in others. But the overall picture is low-scoring for the country's development efforts. The economic crisis of the 1980s and early 1990s brought out vividly the distinction between growth and development. The objectives of monetary and fiscal policies in Nigeria are wide-ranging. These include increase in GDP growth rate, reduction in the rates of inflation and unemployment, improvement in the balance of payments, accumulation of financial savings and external reserves, as well as stability in naira exchange rate. The policy and instruments applied to attain these objectives, however, have until recently been far from adequate, as undue reliance has been placed on fiscal policy rather than monetary policy.

The first generation plant was established in 1898 at Lagos to serve the colonial administration. This was followed with several isolated power stations to which various towns were linked. The creation of Electricity Corporation of Nigeria (ECN) in 1950 brought about strategic programmes at establishing a power industry that is sound, operational, reliable and flexible to manage. The Niger Dams Authority (NDA) was established in 1962 and, by 1968, the government built and commissioned the Kanji Hydro Station. ECN built more generating stations (thermal and hydro) and transmission lines to link generating stations in a grid system to towns and cities. In 1973, ECN and NDA were merged to form the National Electric Power Authority (NEPA), which was responsible for the generation and distribution of electricity nationwide (Sagaya, 2006).

Before the reform of the electricity sector, there were eight power stations, including the moribund Afam Power Station, with an installed capacity of 5,920MW. The available capacity of less than 3,000MW and the demand for power of 9,700MW means that most Nigerians will continue to go on without electricity. The reform in the electricity sector has opened up the sector and has encouraged participation of the private sector in the generation and distribution of power. Independent power producers are now building power stations; some have been commissioned, while others are in various stages of completion. The government, however, has not left everything in the hands of private investors, as it has embarked on building power stations, which on completion will boost the power

available for distribution. It is unfortunate that all the billions of naira that have been invested in NEPA have not been able to guarantee Nigerians near regular supply of power. Part of the problem can be traced to lack of basic infrastructure and maintenance culture.

Transport is a vital infrastructure needed for economic growth. The ease with which people and raw materials move from one part of a country to the other speaks volume about the economy of that country. Even though there are different types of transports like rail, water, air and pipeline, much emphasis is on transport by road. Just like other infrastructures that depend heavily on proper government planning and the state of technology, the state of transport infrastructure in the country has been in a state of neglect and this has impacted negatively on the state of development of the economy. Land transport consists of roads, vehicles and motor parks, among others, but the most important component is the road. This mode of transport consists of about 95% of all surface transport in Nigeria, with total national assets of over 200,000km, worth over three trillion naira. Despite the huge assets, annual budget allocations for maintenance and the importance of this transport mode, less than 27% of the road network is in good condition (Ezekwe, 1992). The state of the roads in Nigeria is bad and is becoming embarrassing to all stakeholders. Based on this challenge, the Nigerian Society of Engineers (NSE) and the Federal Ministry of Works organized a workshop on 'making Nigerian roads motorable' at the Hilton Hotel, Abuja, on 13 January 2006. The workshop recommended that the private sector should be included in the building and maintenance of roads; that tollgates be reintroduced; a road fund and road management institute should be established, among others.

Towards the end of the year 2005, Nigeria suffered three unfortunate air disasters. The Belview Airline that crashed in Lisa village claimed over 100 lives, while a Sosoliso Airline crashed in Port Harcourt, killing over 50 school children among other passengers. There was also an incident in Kaduna where all the crew and passengers on the plane died. Besides the three accidents of that year, there were several incidences of aircrafts veering off the runway on landing or overshooting the runway or aircrafts running into cattle or birds on landing. Nearly all the accidents and incidences that occurred in the aviation industry in Nigeria are attributable to the very old aircrafts in the fleet and the obsolete navigational and landing equipment, as well as the compromising attitudes of some the personnel in the industry, with regard to monitoring and enforcement of rules. The findings of the commission of enquiry into the activities of the aviation industry revealed the rot in the industry. As government's directives begin to take effect, old aircrafts in

the fleet of airline companies are being changed and equipment and facilities are being refurbished and updated.

Rail transport was the traditional method of transport during the colonial era and the period immediately preceding 1960. Even though the rail-track of narrow gauge was originally meant for transporting raw materials from the hinterlands to the ports for export, with proper maintenance, it was also used for moving people and goods from one part of the country to the other during and after the colonial era. Today, the rail system is in a sorry state. There is hardly anything functional in the rail system under the Nigerian Railways Corporation. Corruption and mismanagement, which were the hallmark of the 1980s and 1990s, led to the death of the system in the country. The rail system can be revitalized and wider rail tracks laid in new places in addition to introducing electric trains to make this mode more efficient and reduce the pressure and, thus, rates of accident on our roads.

Pipeline transport became popular after the discovery of oil in Nigeria. This mode is mainly for transporting oil around the country; in some countries, pipes are used for transporting gases to homes and industries just like water pipes. Pipeline transport in Nigeria is still underutilized. The problem of pipe vandalization is a major battle that is being fought in recent times. The relevance of water as an infrastructure cannot be overemphasized, especially in industries where it is used for production, such as fire-fighting services, and at home for domestic uses. According to the World Bank, Nigeria's total water resource available/capital, including water flow from other countries, is 2,260m^3, while the annual use as percentage of the total is 1.4. This shows under-exploitation, operation, control and management of the abundant water resources. Water supply, especially from the public mains, has been unreliable over the years. It is even worse in rural areas, where people have resorted to unclean water for domestic uses and other applications. In urban areas where there is concentration of industries, the problem is usually that of exploitation and efficient distribution to places where they are needed. Problems affecting the generation and distribution of water include:

1. Inadequate resources to change ageing generation and distribution equipment
2. Shortage of dedicated, efficient and well-trained manpower
3. Misappropriation and, in some cases, outright embezzlement of funds meant for the maintenance of the few available equipment
4. Indiscriminate digging of grounds for construction purposes that, in most cases, leads to destruction of water distribution pipes.

The availability of adequate water resources in the country shows that opportunity abounds if the resources are well utilized. To ensure proper utilization and management of these resources to meeting industrial and domestic uses, there is the need to privatize the generation and distribution of water resources to achieve efficiency and judicious use of funds.

Over the last decade, the growth impact of fiscal policy has generated a large volume of theoretical and empirical literature. However, most of these studies paid attention to developed economies; the inclusion of developing countries in cross-country studies was mainly to generate enough degrees of freedom in the course of statistical analysis (Aregbeyen, 2007). Fiscal and monetary policies are inextricably linked in macroeconomic management, as developments in one sector directly affect developments in the other. Undoubtedly, fiscal policy is central to the health of any economy, as government's power to tax and spend affects the disposable income of citizens and corporations, as well as the general business climate.

Monetarists strongly believe that monetary policy exact great impact on economic activity, as unanticipated change in the stock of money affects output and growth; i.e., the stock of money must increase unexpectedly for a central bank to promote economic growth. They are of the opinion that an increase in government spending would crowd out private sector; a situation that can outweigh any short-term benefit of an expansionary fiscal policy (Abata, Kehinde and Bolarinwa, 2012). On the other hand, the concept of liquidity trap (a situation in which real interest rates cannot be reduced by any action of the monetary authorities) was introduced by Keynesian economics. Hence, at liquidity trap, an increase in the money supply would not stimulate economic growth because of the downward pressure of investment, owing to the insensitivity of interest rate to money supply. John Maynard Keynes recommended fiscal policy by stimulating aggregate demand in order to curtail unemployment and reducing it in order to control inflation. While there are several studies on this debate between Keynesians and monetarists for developed countries, only fragmented evidence has been provided on the issue in the case of Nigeria (Abata et al., 2012).

Fiscal policy aims at stabilizing the economy (Amadi and Essi, 2006). Increases in government spending or decreases in taxes tend to pull the economy out of a recession; while reduced spending or increased taxes slow down a boom (Dornbusch and Fischer, 1990). Government interventions in economic activities are basically in the form of controls of selected areas/sectors of the economy. These controls differ and depend on the specific needs or purpose the government desires to achieve. Samuelson and Nordhaus (1998) distinguished between two forms of

regulation: economic regulation (involving control of prices, entry and exit conditions, regulation of public utilities, such as transport and media organizations, or regulation of the financial sector operations); and social regulation (aimed at protecting the health and safety of workers at the workplace, the environment and protection of consumer rights. The focus of this study is economic regulation.

Proponents of government expansion are of the view that government expenditures provide valuable public goods, such as education, roads and security (Mitchell, 2005). They claim that increases in government spending are capable of enhancing growth through, perhaps, rises in the purchasing power of the citizenry, both in the short and long run (Samson, 2013). Proponents of minimal government spending, however, are of the opinion that high government spending crowds out private investments and, hence, undermines economic growth. They maintain that increases in government spending often transfer resources from the productive sector of the economy to government, where the resources are likely to be used inefficiently. They also argue that expanding public sector can complicate efforts aimed at implementing pro-growth policies, such as fundamental tax reforms and personal retirement accounts (Mitchell, 2005).

Dar-Atul and Amirkhalkhali (2002) investigated the endogenous growth model of fiscal policy and concluded that in the model (on government expenditure and income) is crucial in predicting future economic growth. Abdullah (2000) analysed the relationship between government expenditure and economic growth and found that the size of government expenditure is very important in determining the performance of the economy. He further advised that government should not only support and encourage the private sector to accelerate economic growth, but should also increase its budgetary provision on infrastructure, social and economic activities. Nijkamp and Poot (2004) also conducted a meta-analysis of past empirical studies on fiscal policy and growth and found that in a sample of 41 studies, 29% indicated a negative relationship between fiscal policy and growth, 17% a positive one, and 54% an inconclusive relationship. Khosravi and Karimi (2010) maintains that fiscal policy is generally believed to be associated with growth; or that appropriate fiscal measures in particular circumstances can be used precisely to stimulate economic development and growth. Ghosh and Roy (2004) investigated the impact of government expenditure on economic growth using panel data and discovered that countries with large government expenditures in terms of budgetary provisions tend to experience higher economic growth, but the effects vary from one country to another. Mansouri (2008) studied the relationship between fiscal policy and economic growth in Egypt, Morocco and Tunisia. The

span of data for each country was: 1970-2002 for Morocco, 1972- 2002 for Tunisia and 1975-2002 for Egypt. The results showed that 1% increase in public spending raised the real GDP by 1.26% in Morocco, 1.15% in Tunisia and 0.56% in Egypt. The study also found the existence of long-run relationship for the three countries.

In Nigeria, Ekpo (1994) studied the contributions of public expenditure to economic growth over the period 1960-1992. The findings provided support to fiscal policy-led growth through crowding-in private investment resulting from government expenditure on infrastructure. Nurudeen and Usman (2010) analysed the impact of government expenditure on economic growth in Nigeria over the period 1970 – 2008. The study revealed that government total capital expenditure, total recurrent expenditure and expenditure on education have negative effect on economic growth, while expenditures on health, transport and communication are growth-enhancing. On the other hand, Oyinlola (1993) studied the impact of budgetary expenditure on the defence sector on economic development and found that defence expenditure exerts significant positive influence on economic growth.

Aschauer (1989) studied the impact of government spending on economic growth in the United States and found that expenditure on the main infrastructure (streets and highways, mass transit, water and sewage systems and electricity and gas supplies) had a powerful explanatory role in economic growth, while infrastructures, such as police and fire stations, court houses and office buildings, had a mild positive and statistically significant impact on growth. Also, education infrastructure (such as construction of classroom) was statistically insignificant in impacting on economic growth. Swaroop, Devarajan and Heng-fu (1996) used functional categories of public expenditure in their economic growth regressions and found that public expenditure has a negative impact on developing countries, but has a positive impact on developed countries. The study categorized expenditures into productive and non-productive, taking into account the level of resources invested and output produced by different programmes. For instance, the study reported that government expenditure on health, transport and communications was growth-promoting, but found no positive impact of education and military spending on economic growth. Albala-Bertrand and Mamatzakis (2001), using time series data covering 1960-1995 to estimate a Cobb-Douglas production function that includes public infrastructure for Chile, found a positive and significant correlation between public infrastructure and economic growth. The study reported that public investment crowds out private investment. One major weakness of the study was that it omitted the impact of important variables, such as education, health care and public order and security. Albala-Bertrand and

Mamatzakis (2001) studied the impact of external debts on economic growth and investment in Kenya and found that investment in human capital development supported growth. But lagged public investment in human capital was found to adversely affect growth. The weaknesses of the study were that the time series data used were for a short period of time and it took into account investments in human capital while ignoring those in physical infrastructure. Dar-Atul and Amirkhalkhali (2002) studied how government size affected the economic growth by looking at OECD countries in the period 1970–1999. Using panel data, the study alluded to the fact that government size has a negative and statistically significant impact on economic growth. The only countries which did not fall under the above conclusion were USA, Sweden and Norway, with their coefficients being statistically insignificant. Jerono (2009) conducted a study on the impact of government spending on economic growth in Kenya and found that, though expenditure on education has a positive relationship with economic growth, it does not spur any significant change to growth. Given the reason that the expansion of education is higher than that of job growth in Kenya and there are relatively few job opportunities outside government for secondary and university graduates, education has been blamed for producing surplus graduates, who await non-existing government jobs. The study also asserted that expenditure growth does not necessarily bring about the potential to spur growth; growth in GDP was dependent on other factors, such as political will efficiency and prioritization of key economic components. Maingi (2010) studied the impact of government expenditure on economic growth in Kenya and found that improved government expenditure in physical infrastructure development and education enhances economic growth, while expenditures in such areas as foreign debt servicing, government consumption, public order and security, salaries and allowances were growth-retarding. The foregoing shows that in spite of the demonstrable importance of infrastructure, only passing references were made to it in the literature in relation to stabilization policies; indeed, there are a few studies of this subject till now.

3. Methodology

The question of whether an expansionary monetary policy (MP) or fiscal policy (FP) will help raise output starts from the basic Keynesian model. In general, either an increase in government expenditure or an expansionary monetary policy (MP), leading to an increase in investment via lower interest rate, will lead to an increase in output. Nevertheless, for many years and, to some extent and even now, Keynesians maintained that only fiscal policy (FP) can affect income and output,

while monetarists believe that only MP can have such an effect. It turns out, therefore, that in certain special cases, only FP works, while in others, only MP works. It has, however, been observed that only FP will work and MP will have no effect if one of the links between changes in money supply and changes in investment is broken.

The accounts of Keynesian theory concentrate on the liquidity trap as the extreme Keynesian special case. The important implication of the liquidity trap is that once the rate of interest has fallen to the level at which the liquidity trap occurs, an increase in money supply will not reduce the interest rate any further. Therefore, if the level of investment which occurs at this minimum rate of interest is still not great enough to provide expenditure equal to full employment output, then MP will not be able to increase investment and, thereby, restore full employment and income by this route. However, in a liquidity trap, an increase in government expenditure will still increase output. In fact, as long as the liquidity trap remains, an increase in government expenditure will have the full effect on the income predicted by the multiplier, because interest rates do not rise at all and there is no crowding out of private investment to offset any of the effects of the increase in government expenditure. Hence, this becomes the basis for supporting the fiscal action of the government to boost output. On the other hand, those who accuse Keynesians believe that only fiscal policy can work, and that monetary policy cannot. They point out the extreme unlikelihood of liquidity trap, and the lack of evidence that it has ever occurred. But it seems that most Keynesians who claim that monetary policy cannot raise income do not have liquidity trap in mind. Instead, they base their views on the other link between monetary policy and investment. If investment is completely insensitive to the rate of interest, then monetary policy will have no effect, even if it does to a fall in the interest rate accept that investment is sensitive to interest rate. Today, virtually all economists accept that investment is sensitive to interest rate; hence, the general theoretical framework accepted by Keynesians indicates that provided that the economy is not in a liquidity trap and provided that there is some sensitivity of investment to interest rates, monetary policy would affect output. This view is accepted as the empirically relevant case. From the foregoing, the study follows the Keynesian model and the quantity theory of money. The study follows Bakare-Aremu and Osobase (2015) who estimated a slightly modified form of the basic St. Louis equation of the form:

$$Y_t = go + \Sigma_{mi} M_{t-i} + \Sigma f_j F_{t-i} + \Sigma_{xi} X_{t-i} + \mu_t \qquad 1$$

The log-linear model took the form:

$$InY_t = \alpha o + \beta_1 InM_t + \beta_2 InF_t + \beta_3 InX_{t-} + \mu_t \quad 2$$

Where, Y is the index of industrial production (proxy for industrialization), M, F, and X are the vectors of monetary, fiscal, and infrastructure variables respectively.

The study pre-estimated the following equation:

$$\Delta Y_t = (Y_t - Y_{t-1}) = \mu_t \quad 3$$

This is simple enough to ensure that the variables attain stationarity. The cointegrated equation for the model is stated as:

$$\left[\eta_m \log Y_t = \alpha_0 + \sum_{i=1}^{p} \alpha_i \eta_m Z_i - \left[\eta_m \log Y_t - \sum_{i=1}^{p} \beta X_{i-1} + \nu_{1t}\right]\right] \quad 4$$

Where

$\eta_m \log Y_t - \sum \beta X_{t-i}$ is the linear combination of the cointegrated vectors. The presence of unit root and cointegration is the necessary and sufficient condition for an error correction mechanism.

The error correction model equation

If equation 4 is true, then the individual influence of the cointegrated variables cannot be separated, unless with an error correction mechanism through an error correction model:

$$\left[\eta_m \log Y_t = \alpha_0 + \sum_{i=1}^{p} \alpha_i \eta_m Z_i - \lambda ECM_{i=1} + \nu_{2t}\right] \quad 5$$

Where $-\lambda ecm$ is the error correction mechanism, $-\lambda$ is the magnitude of error corrected each period specified in it's a priori form so as to restore $\eta_m log Y_t$ to equilibrium.

To estimate equation 5, quarterly secondary data from 2005 to 2016 were sourced from Central Bank of Nigeria's statistical bulletin of 2017.

Model justification

A little over a half century ago, during the heyday of the Keynesian revolution, Milton Friedman and David Meiselman (1963) used a simple reduced form ordinary least squares regression equation to compare the effectiveness of monetary and fiscal policies, but even more so to compare and empirically test Keynesian

and monetarist theories. Their brash study was designed to ultimately show that monetarism should supersede Keynesianism as the correct macroeconomic theory. There were many criticisms of Friedman and Meiselman's seminal study, but most important was the need to put their empirical study into first difference form. One early paper that attempted to answer that particular criticism was to become one of the classics in monetary literature: Leonall Andersen and Jerry Jordan's *Monetary and Fiscal Actions: A Test of Their Relative Importance in Economic Stabilization* (Andersen and Jordan, 1968), published in the Federal Reserves Bank of St. Louis Review. Andersen and Jordan fully supported the Friedman and Meiselman single-equation approach but expanded it to answer several of the criticisms that had befallen that seminal paper. This is the key justification for the adoption of the basic St. Louis equation. Significant changes to the St. Louis equation introduced here, beyond the simple inclusion of new time periods, are the use of a new dependent variable, the employment of a lagged dependent variable to proxy aggregate supply effects, and infrastructural variables to tease out the unbiased impacts of monetary and fiscal policies.

4. Results and Discussion

Summary statistics of the variables under investigation are shown in table 1. In the result, the observation is 57 for all the variables, except for government expenditure that has one missing value. There appears to be a wide variation in the spread of the data, as the standard deviations of all the variables are greater than the mean values. More so, there is a wide variation between the minimum and maximum values of each variable. The data appear to be skewed to the left, which explains why the mean values could be greater than the median values.

Table 1: Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
iid	57	4214.045	7593.943	6	46012.52
m2	57	5229.511	10451.95	6.25	63218.72
intr	57	4375.545	8783.708	8	54612.27
grev	57	5384.573	11220.71	10.5087	69023.93
gexp	56	4861.064	9895.421	6	59929.89
tranf	57	4095.139	8034.358	8	49856.1
comnf	57	5381.755	10865.94	11.4337	67152.79
egwnf	57	4470.62	9279.648	9.75	57511.04

Pre-estimation test

The study employed augmented Dickey-Fuller test to investigate the level of stationarity of the variables and found that all the variables are stationary after first

differencing. However, government expenditure, communication infrastructure, and electricity, gas and water infrastructure are stationary after differencing at 10% critical values, while other variables are stationary at the conventional 5% level of significance. The estimated results before logarithm and differencing show that interest rate and transport infrastructure are the only variables with significant effect on industrialization. However, after introducing logarithm to obtain their rate of change, the number of variables with significant effect on industrialization increased to 3 with the addition of communication infrastructure. Surprisingly, after differencing and logarithmic introduction, only electricity, gas and water infrastructure had significant effect on industrialization index with a positive sign. The value of the coefficient shows that increase in electricity, gas and water infrastructure by 1% would increase industrialization index by about 73%. This finding conforms to those of Bakare-Aremu and Osobase (2015) for OECD countries and Maingi (2010) and Jerono (2009) for Kenya.

However, there appears to be some surprise with broad money supply and government revenue. The result shows that increases in money supply and government revenue would lead to a decline in industrialization index. But this could be explained by Nigeria's high corruption index, especially in the management of its revenue. This is in line with the findings of Jerono (2009) and Swaroop, Devarajan and Hengfu (1996) for developing countries. Figure 3 suggests that industrialization index increases gradually as other variables increase but the study is unsure that the increase in other variables causes the gradual increase in industrialization.

Substituted Coefficients:

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LOG(D(IID)) = 4.976455898 - 0.7150406902*LOG(D(M2)) - 0.240603397*D(INTR) - 0.1032666635*LOG(D(GREV)) + 1.672320549*LOG(D(GEXP)) - 0.07814734192*LOG(D(TRANF)) + 0.7271236179*LOG(D(EGWNF)) - 0.8375042707*LOG(D(COMNF))

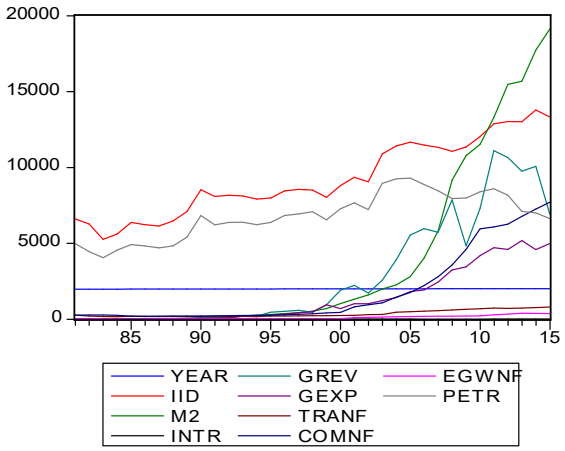

Figure 3: Relationship between stabilization policies, infrastructure and industrialization

Deterministic linear trend (Johansen cointegration)

The null hypothesis is that there is no cointegration among the explanatory variables in the model. The cointegration result shows that there are 5 cointegration equations at rank 1. This implies a long-run relationship between the explanatory variables and industrialization index. The error correction mechanism suggests that the short-run disequilibrium would be corrected in the next period to 53%.

Lag interval: 1 to 1

Eigenvalue	*Likelihood Ratio*	*5 Percent Critical Value*	*1 Percent Critical Value*	*Hypothesized No. of CE(s)*
0.937010	257.9770	124.24	133.57	None **
0.869123	166.7394	94.15	103.18	At most 1 **
0.647614	99.63396	68.52	76.07	At most 2 **
0.614245	65.21399	47.21	54.46	At most 3 **
0.376608	33.77974	29.68	35.65	At most 4 *
0.288345	18.18462	15.41	20.04	At most 5 *
0.190135	6.959275	3.76	6.65	At most 6 **

*(**) denotes rejection of the hypothesis at 5%(1%) significance level

Causality test result

At lag 2, the result shows that a change in the index of industrial production would cause a change in broad money supply and transport infrastructure. However, none of the explanatory variables granger-causes the changes in index of industrial production. Moreover, at lag 4, the study discovered that changes in the index of industrial production granger-cause changes in transport infrastructure as well.

However, no other causality (unidirectional or bidirectional) exists between the index of industrial production and other explanatory variables.

Lags: 2

Null Hypothesis:	*Obs*	*F-Statistic*	*Probability*
M2 does not granger cause IID	33	0.48852	0.61866
IID does not granger cause M2		3.67046	0.03840
INTR does not granger cause IID	33	0.13758	0.87205
IID does not granger cause INTR		1.24741	0.30272
GREV does not granger cause IID	33	0.11877	0.88846
IID does not granger cause GREV		1.89250	0.16947
GEXP does not granger cause IID	33	1.35718	0.27380
IID does not granger cause GEXP		2.35665	0.11326
TRANF does not granger cause IID	33	1.44468	0.25286
IID does not granger cause TRANF		5.76947	0.00798
COMNF does not granger cause IID	33	0.77672	0.46957
IID does not granger cause COMNF		2.52448	0.09818
EGWNF does not granger cause IID	33	0.42106	0.66044
IID does not granger cause EGWNF		2.08881	0.14271

At lag 4

Null Hypothesis:	*Obs*	*F-Statistic*	*Probability*
M2 does not granger cause IID	31	1.23597	0.32461
IID does not granger cause M2		2.18514	0.10412
INTR does not granger cause IID	31	0.11135	0.97723
IID does not granger cause INTR		1.52595	0.22925
GREV does not granger cause IID	31	0.30410	0.87207
IID does not granger cause GREV		0.88355	0.48993
GEXP does not granger cause IID	31	0.91674	0.47176
IID does not granger cause GEXP		2.22972	0.09877
TRANF does not granger cause IID	31	0.76066	0.56199
IID does not granger cause TRANF		3.10191	0.03627
COMNF does not granger cause IID	31	0.58746	0.67512
IID does not granger cause COMNF		2.14838	0.10875
EGWNF does not granger cause IID	31	1.48915	0.23963
IID does not granger cause EGWNF		2.26153	0.09514

Disaggregating industrial output

The study disaggregated industrial output into three sectors – crude petroleum and natural gas, manufacturing, and solid mineral. The results show that government revenue (fiscal policy) in communication infrastructure, and electricity, gas and water infrastructure has significant effect on the development of crude petroleum and natural gas. The results on solid mineral sector suggest that interest rate (monetary policy) has a significant inverse relationship with the development of solid minerals. The results also show that all the infrastructural variables have

significant effect on solid mineral development. The result on manufacturing sector suggests that interest rate (monetary policy) has a significant inverse effect on manufacturing sector development. This implies that a decrease in interest rate would spur growth in the manufacturing sector. The result also shows that transport infrastructure plays a significant role in the development of the manufacturing sector.

5. Conclusion and Recommendations

Nigeria has all it takes to turn around its infrastructure and build an economy that will surpass all predictions. The country has the most important asset a nation needs to be at the top – a very determined people – never giving up when even no one gives them a chance to pull through. Just 17 years ago, the country had only 400,000 phone lines; today, this number has risen to about 100 million. In 2015, Nigeria conducted peaceful general elections even when some predicted its disintegration. The country has the energy to confront its challenges, coming up stronger and better from behind. Indeed, with strong determination and positive actions, it can surmount its industrialization challenges. Though the obstacles to accelerated industrial expansion are daunting, they are surmountable. The study recommends that policymakers and implementers should immediately take far-reaching actions that are focused and sustained along the following areas:

1. There should be a reordering of government expenditure to allow for commitment of at least 50% to capital expenditure in the 2018 budget and with the aim of increasing to 60% and 70% in 2019 and 2020 budget cycles, respectively.
2. The federal government should embark on contractor-financed infrastructure projects based on internationally benchmark pricing— in the construction of rail tracks, supply of locomotives and coaches, and other critical infrastructure. Such selected projects must have the necessary cash-flow to qualify for approval.
3. There should be an immediate bid process for the concessioning of two sites for the construction of two greenfield ports in areas with natural port depths.
4. Bureaucratic curtains and red tapes, as well as duplication of regulatory approvals for private sector direct investment in infrastructural development should be eliminated, especially in the power sector. This can be achieved through the instrumentality of sectorial guidelines and standard operating procedures detailing timeline for processing applications with a high-level audit system.

5. The government should use its sovereign financial instruments to give credit guarantees to strategic private sector investments in key areas, such as power generation and transmission, as well as other urgent infrastructural priorities.

The following should also be important policy objectives and goals to evolve a new economy imbued with the capacity for achieving sustainable development:

1. Monetary and fiscal policy must be geared towards the growth of infrastructure, manufacturing and solid mineral.
2. Tax and revenue collection must be reformed to increase nationally collectable revenues.
3. Interest rate must be kept at single digit, between 5 and 8%.
4. Economic planners must prioritize massive investment in iron and steel, meteorology, machine tools, glass production and petrochemicals.

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