# THE IMPACT OF INFLATION ON THE MANUFACTURING SECTOR OF THE NIGERIAN ECONOMY

# (1981- 2011)

**BY**

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# THE IMPACT OF INFLATION ON THE MANUFACTURING SECTOR OF THE NIGERIAN ECONOMY

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## APPROVAL PAGE

This is to certify that this research project was carried out by **NWOLE ANN ADAORA EC/2009/761** in Economics Department of Faculty of Management and social sciences in Caritas University, Enugu State.

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## DEDICATION

I dedicate the entire project to the "Sacred Heart of Jesus and Immaculate heart of Mary" for their wisdom and protection, above all for the unmerited grace they have showered upon me.

## ACKNOWLEDGEMENT

I thank God Almighty for making this work a success and seeing me through to the end.

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# ABSTRACT

This study analyses the linkage between inflation rate and manufacturing sector of the Nigerian economy over the period of (1981-2011). The study used data sourced from the Central Bank of Nigeria (CBN). The ordinary least square technique (OLS) was used to specify and examine the relationship between the variables Government expenditure, inflation rate and money supply which are the independent variables and the manufacturing index which is the dependent variable for the first model. The independent variables for the second model are consumer price index, Nominal interest rate and exchange rate while the dependent variable is the manufacturing index. The explanatory power of the models was given by the $R^2$ of 11.799% for the first model and 62.85% for the second model and was subjected to the t-test and f-test to test the significance of the independent variables. The second model based on the result, we found out that it was more significant than the first model. The research revealed that inflation has a positive effect on the manufacturing sector in Nigeria. This goes a long way to say that increase in inflation leads to increase in the manufacturing output and that manufacturers should not to be discouraged by the increase in inflation rate, and depreciating value of Naira.

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# CHAPTER ONE

# INTRODUCTION

## 1.1 BACKGROUND OF THE STUDY

Inflation has remained a chronic problem for Nigerian economy for some time. Inflation is not a new wood in the world economy and not out rightly bad, but the case of Nigeria is severe and i t will destabilize the entire economic frame work if it is not properly checked. This problem has brought about reduction of purchasing power discouragement of real investment balance of payment disequilibrium and unemployment.

Inflation in Nigeria can be said to be a direct result of the policies of the country's government to stimulate a fast rate of economic growth and development since 1951 when it was introduced. Inflation trend since independence shows to distinctive period. Until 1969 we had a single digit inflation and even a negative growth rate in 1963, 1967 and 1968. The year 1975, recorded 33-7 percent indicating the effect of 1974 Udojji salary

Awards (Adigun, M.S 1985 "Reviving the Nigeria economy")

The Nigerian economy seemed to have experience moderate inflation prior to the advent of the structural Adjustment programme (SAP) in 1986. Inflation on it own is not bad as studies have shown that there exists a positive relationship between inflation and growth. But the problem lies on a country continuously having high inflation rates. It has been revealed that a close relationship exists between inflation and diminishing growth rate across a variety of inflation ranges. Average growth rates falls slightly as inflation rate across a variety rates more towards 20-25 percent. The growth rate declined more steeply as inflation rates approaches 25-30 percent and growth rates became increasingly negative at a higher rate of inflation (Ogwuma, P.A. 1986; Gains and pains of inflation in the manufacturing sector of the Nigerian economy"

Manufacturing involves the conversion of law materials into finished consumer goods or intermediate or producers goods manufacturing creates avenues for

employment, helps to boost agriculture, helps to diversify the economy while helping the nation to increase its foreign exchange earnings and enables local labour to acquire skills. The manufacturing sector in Nigeria has passed through four clear stages of development. T

The first was the pre-independence era, when manufacturing was limited to primary processing of simple consumer items by foreign multinational corporations.

The second was the immediate past colonial era of the 1960's characterized by more vigorous import substitution and the beginning of decline for the export oriented processing of raw materials.

The third stage was the decade of the 1970's. This was remarkable because of advent of oil and enormous resources it provided for fierce government to investment in manufacturing. This made the government to exercise almost a complete monopoly in the following sub-sectors basic steel production petroleum refining, petrochemicals, liquefied natural gas edible salt machine tools yeast alcohol, fertilizers etc. the period was marked by initiation of the indigenization programme and hence intense

economic activity but poor results since governments attempt at diversification into non-traditional products such as steels, petrochemicals, fertilizers and vehicle assembly yielded little success.

The last phase was the decade of the 1980's here government revenue fall because of serious decline of oil prices in the world market. This led to the adoption of export promotion strategy and the SAP era beginning from July 1986 has even emphasized this strategy especially as it relates to non-oil exports hence the extension of export promotion incentives of various descriptions (Enu, 1993: the Nigeria economy after structural adjustment programme "problems and prospects")

## 1.2 STATEMENT OF PROBLEM

Inflation worsens the balance of payment positions. Inflation has helped forced up interest rates thus determining investment and so by doing reduces the real values of aggregate consumer wealth such as government debt and money. It has inhibited and distorted consumer

spending by rising domestic prices relative to foreign prices, the currency inflation inhibits exports and stimulates imports thus, depleting the nations scarce foreign resources.

Due to the inflationary situation savers find out that the value of their savings is eroded hence they are forced to add their current consumption thus hindering capital formation and the nation's economic growth. Inflation militates against long term savings plan of the consumer and hence becomes a function in improving a sub optimal lifetime consumption pattern upon the consumer.

Current inflation rates in Nigeria have tremendously complicated and continued to complicate the task for makers of government fiscal and monetary policies. Even when they believe that rate of inflation is really the public does not. This inflation not only makes it harder for policy makers to diagnose the factors affecting aggregate demand.

## 1.3 RESEARCH QUESTION

The questions we are investigating here are:

- What significance does inflation have on the manufacturing sector of the Nigerian economy?
- What is the effect or impact of inflation on the money sector of the Nigerian economy?
- Does government expenditure have positive effect on the manufacturing sector of the Nigerian?
- Is there any relationship between interest rate and the manufacturing sector of the Nigerian economy?
- What is anti-inflationary policies pursued at present and in the past by Nigerian government?

## 1.4 OBJECTIVES OF THE STUDY

The major objective of this study is to determine empirically the impact of inflation on the manufacturing sector of the Nigerian economy.

The specific objectives includes

1. To investigate empirically the relationship between inflation and the manufacturing sector.
2. To assess the impact of government expenditure on the manufacturing sector

3. To determine the nature of the relationship between interest rate and manufacturing sector of the Nigerian economy.
4. To review the past and present anti-inflationary policies of the Nigerian government

## 1.5 RESEARCH HYPOTHESIS

- H0: inflation does not have any significant impact on the manufacturing sector of the Nigerian economy
- H1: inflation has a significant impact on the manufacturing sector of the Nigerian economy.
- H0: interest rate does not have any significant impact on the manufacturing sector of the Nigerian economy.
- H1: interest rate has a significant impact on the manufacturing sector of the Nigerian economy.

## 1.6 SIGNIFICANCE OF THE STUDY

This research will enable us to understand the factors responsible for the persistent rise in the price of goods and services produced in the economy by the manufacturing sector. It will provide appropriate recommendation on the ways, of eliminating inflation or

reducing it, so as to empower the economy for self sustained development capable of enhancing the economic well being of a greater number of populations. It will also equip the policy makers with adequate tools in formulating the right policy.

## 1.7 SCOPE OF THE STUDY

The study covers a period oaring from 1981-2011. The period was chosen in order to have serious investigation into the activities of the manufacturing sector.

The multiple regression models will be employed in determining the functional relationship between inflation and the research variables.

## 1.8 LIMITATION OF STUDY

In carrying out the investigation sources of data posed a problem of its own. It is difficult to lay hands on up to data statistical data for empirical analysis especially in developing countries such as Nigeria. In any case one had to mean the best use of what was available.

Resulting from the short time limit couple with the financial constraints, the researcher was limited to primary and secondary sources.

Generally the researcher suffers frustration owing to administrative logistics. Below are some of the identifiable limitations.

1. Unpublished data were rarely made available to researcher by government officers who avoid violation of the official secrecy act.
2. Secondary data on the subject was stale and scanty in most of the libraries visited including the state library.

## 1.9 DEFEINITION OF TERMS

INFLATION: It is a persist tendency for prices and money wages to increase. The dictionary of economics said "inflation is measured by the proportional changes over time in some appropriate price index, commonly a consumer price index or a GDP deflator" inflation occurs when the general price level is rising.

MANUFACTURING SECTOR: Is s sub-set of the industrial sector (others being processing draft and mixing sub-set)

Manufacturing involves the conversion of raw materials into finished consumer goods or intermediate or producer goods.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.1 CHARACTERISTICS OF MANUFACTURING SECTOR IN NIGERIA

Manufacturing is defined as the "production of goods by industrial processes" raw (2004). Though Nigeria is blessed with abundant raw materials still Nigeria is nowhere in world market in terms of manufacturing products. While some industrialized countries that are poorly endowed with natural resources have become affluent societies through the execution of sound manufacturing production development through the application of science and technology.

Despite the various national development plans put in place in Nigeria to enhance industrialization the country still remain a mono-resource (crude oil) based economy. Growth in manufacturing sector is also in a down ward trend and industrial capacity utilization is below 37%. The poor performance of the sector has been attributed to a number of the factors which include amongst others: inflation high cost of production due to high exchange rate

and the epileptically nature of power weak demand for manufactures (products) due to declining purchases power of the populace high expenditure on spare parts repairs/maintenance legal and illegal influx of cheap imported goods (globalization of trade) and political instability, especially during the military regimes (Burda 1997).

For the country to improve its manufacturing sector to evolve to a manufacturing based economy and be relevant in the globalization of production and trade, it should pursue a combination of those approaches and moves be able to monitor and manage its inflationary trend well, generation and application of science and technology knowledge relevant to manufacturing through in country research and development science and technology and innovation efforts encouragement of foreign direct investment adoption of continuous improvements and innovations programmes and a better and steadier power supply.

This is only possible in a national innovation system with the following enabling environments: a well founded

education system good and well maintained physical infrastructural; favorable environment for research and development and innovations and stable and favorable economic, legal and political conditions.

## 2.2 THEORETICAL FRAME WORK

### 2.2.1 CONCEPT OF INFLATION

In economics "inflation is a rise in the general level , of prices of goods and services in an economy over a period of time" (Blanchard 2000). Inflation means a sharp upward movement in the price level

Inflation means "too much changing too few goods". Keynes says "any rise in the price level after the level of full employment has been achieved". When output is unresponsive to change in money supply then we know that inflation has set in inflation generally \associated with the abnormal increase in the quality of money resulting in the abnormal rise in the prices.

Other Concepts Relating To Inflation

### 2.2.2 DEFLATION

In economics deflation is a decrease in the general price level of goods and services. We could .say that deflation is just the opposite of inflation. It is said to exist when there is persistent downward movement in the price level. Deflation occurs when the annual inflation rate falls below zero percent (a negative inflation rate) resulting in an increase in the real value of money allowing one to buy more goods with this same amount of money. Deflation increases the real value of money. The functional currency (And monetary unit of account) in a national or regional economy).

Deflation is a problem to the modern economy because it is linked with recession and with the great depression as banks defaulted on depositors. Additionally deflation also prevents monetary policy from stabilizing the economy because of liquidity trap. However historically not all episodes of deflation correspond with period of poor economic growth. During deflation, economic activities investment falls to its lowest levels bringing about reductions in aggregate demand. In

modern economics deflation is caused by a collapse in demand 9usually brought about by high interest rates) and its association with recession and long term economic depression.

### 2.2.3 REFLATION

Reflation is the moderate degree of controlled inflation. It is the act of stimulating the economy by increasing the money supply or by reducing taxes. It is the opposite of disinflation. It can refer to an economic policy whereby a government uses fiscal or monetary stimulus in order to expand a country's output. This can possibly be achieved by methods that include tax, charging the money supply or even adjusting interest rates, just as disinflation considered an acceptable antidote to high inflation.

Originally it was used to describe a recovery of price to an previous desirable level after a fall caused by a recession today it also describes the first phase in the recovery of an economy which is beginning to experience increasing prices at the end of a slump. With

rising prices employment output and income also increase till the economy reaches the level of full employment.

### 2.2.4 STAGFLATION

Stagflation is derived from two words; stagnant and inflation. Stagflation occurs when a country's inflation rate is high and unemployment rate is high. It is an economic condition in which inflation and economic stagnation are occurring simultaneously and have remained unchecked for a significant period of time. Blanchard (2000).

Economist offers two principal explanations for why stagflation occurs. First stagflation can result when an economy is showed by an unfavourable supply shock such as an increase in the price of oil in an oil importing country which trends to rise prices at the same time that it shows the economy by making off production less profitable. Burda and Wyplosz (1997). This type of stagflation presents a policy dilemma because actions that are meant to assist with fighting inflation might worsen economic stagnation and vice versa. Second both stagnation and inflation can result from inappropriate macroeconomic policies. For example central banks can

cause inflation by "permitting excessive growth of the money supply (Blandchard 2000) and the government can cause stagnation by excessive regulation of goods markets and labour markets.

### 2.2.5 AGFLATION

Agflation is a term coined in the late 2000, describes generalized inflation led by rises in Agricultural commodity prices. The term describes a situation in which "external" (i.e. Agricultural) price rises drive up core inflation rates.

It has been claimed that the term was invented by analyst at Merrill lyrich in early 2007.

### 2.2.6 DISINFLATION

Disinflation is a decrease in the rate of inflation a slowdown in the rate of increase of the general price level of goods and services in a nation's gross domestic products over time. It is the opposite of reflation.

If the inflation rate is not very high to start with, disinflation can lead to deflation for example if the annual inflation rate lone month is 5% and it is 4% the following month prices dis-inflated by 1% but are still increasing at a 4% annual rate. If the current rate is 1% and it is 2%

the following month, prices disinflated by 3% and are decreasing at 2% annual rate.

## 2.3 TYPES OF INFLATION

There are three major types of inflation as part of what Robert J. Gordon calls the **'triangle model.** These types are classified based on their causes;

Demand pull inflation: Inflation caused by increase in aggregate demand due to increased private and government spending etc. demand inflation is constructive to a faster rate of economic growth since the excess demand and favourable market conditions will stimulate investment and expansion. The failing value of money however, may encourage spending rather than saving and so reduce the funds available for investment.

Cast-push inflation: presently termed "supply shock inflation" caused by drops in aggregate supply due to increased prices of inputs for example. Take for instance a sudden decrease in the supply of oil which would increase oil prices production for which oil is a part of their costs could then pass this on to consumers in the form of increased prices.

Built-in inflation: Induced by adaptive expectations often linked to the "price/wage spiral because it involves workers trying to keep their wages up (gross wage have to increase above the CPI rate to net CPI after tax) with prices and then employers passing higher cost on to consumers as higher prices as part of a "vicious cycle" built –in inflation reflects events in the past and so might be seen as hangover inflation.

A major demand-pull theory centres on the supply of money. Inflation may be caused by an increase in the quantity of money in circulation relative to the ability of the economy to supply (its potential output). This is most obvious when government finance spending in a crises such as civil war by printing money excessively often leading to hyper inflation a conduction where prices can double in a month or less. Another cause can be a rapid decline in the demand for money. As happened in Europe during the black plague.

We have some other types of inflation which are classified based on their behaviour.

Hyper inflation: Hyper-inflation is also known as runaway inflation or galloping inflation. This can usually lead to the complete breakdown of a country's monetary system. However, this type of inflation is short lived. In 1923, in Germany, inflation rate touched approximately 32 percent per month with October being the month of height inflation (Blanchard 2000).

Creeping inflation: This is the type of inflation that proceeds for a long time at a moderate and fairly steady rate of price. It can be explained as slow but unalterable continuing inflation that, however it appears tolerable in the short run, never the less leads to important long-run cost increases.

Sectoral inflation: The sectoral inflation takes place when there is an increase in the price of goods and services produced by a certain sector of the industry usually primary goods or services. For instance an increase in the cost of crude oil would directly affect all other sectors which are directly related to the oil industry. Thus the ever increasing price of fuel has become an important issue related to the economy all over the world.

Take the example of aviation industry. When the price of oil increase the flight ticket fares would also go up. This would lead to a wide spread inflation throughout the economy even through it had originated in one basic sector of this situation occurs when there is a recession in the offs and it would adversely affect the work force and the entire economy (Pillai 2002).

## 2.4 THEORIES AND DETERMINANTS OF INFLATION

In this sector we look at some of the causes of inflation and consider how it may be looked to other economic variables. The theories considered are:

- Cost of inflation who pays?
- Demand-pull inflation – demanding inflation
- Cost-push inflation; what pushes inflation up?
- Philips curve – is unemployment inflation?
- Inflation and money – the role of money supply

### 2.4.2 COST OF INFLATION

Inflation will not only affect individuals but will also cause problems for the whole economy. The cost of inflation includes:

i. Uncertainty: If inflation keeps varying then firms may be reluctant to invest in new plant and equipment as they may be unsure of what the government will do in future. People may also be uncertain and reluctant to spend. Both of these factors could reduce the long term level of economic growth.

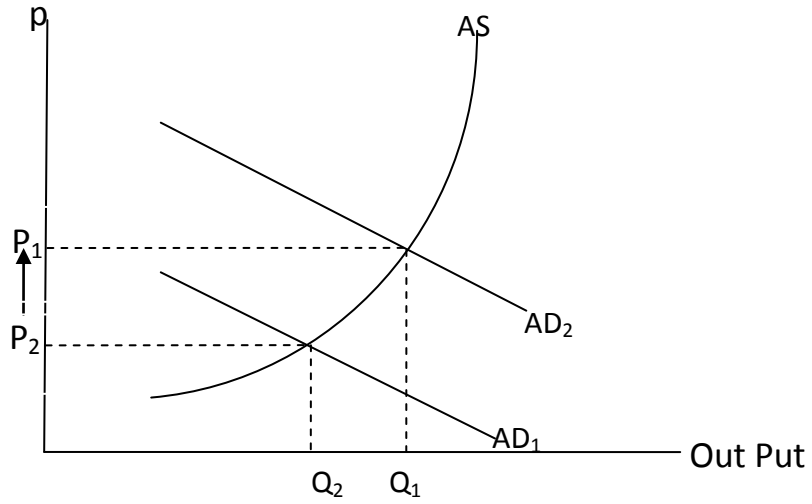
ii. Income distribution: Many people have to live off fixed income particularly those on pension. The higher the level of inflation the less their income will be worth. This effect can also happen among people who are working as their incomes go up either faster or slower than inflation. These effects can arbitrarily redistributive income.

iii. Menu costs: This is a general term for all the inconvenient cost that business and individuals face. As prices increase they have re-do their price list, change prices, labels reprint menus and so on. If inflation is constant these cost can mount up.

iv. Competitiveness: if our prices are increasing faster than those in other countries then our goods will be less competitive and less in demand. This will have a negative effect on the balance of payments.

### 2.4.3 DEMAND-PULL INFLATION – DEMANDING INFLATION

One of the principal causes of inflation is excessive demand - too much money chasing few goods, if demand is growing faster than the level of supply then prices will increase. Output will increase as well as there is a shift along the aggregate supply curve but because supply cannot keep up with demand prices go up as well. This is shown in the diagram below.



Demand – pull inflation will therefore usually occur along with a booming economy. To avoid demand-pill inflation you need to try to keep the economy growing at a steady but not excessive rate.

### 2.4.4 Cost-push – what pushes inflation up?

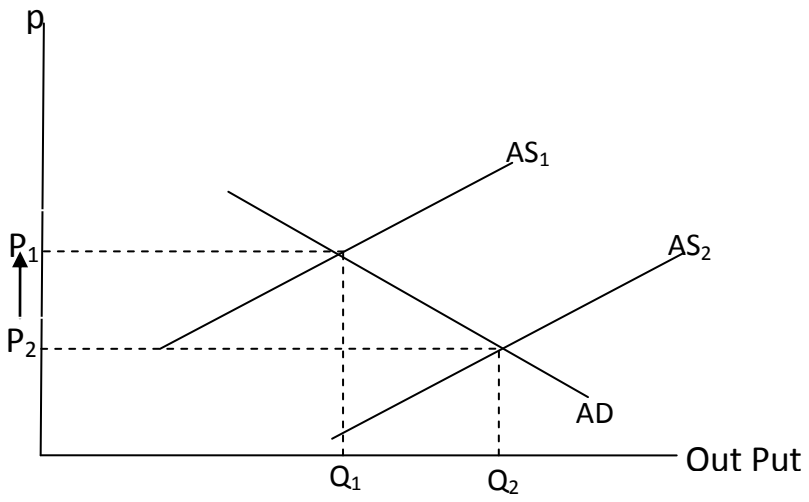
Cost-push inflation happens when firm's cost go up. To maintain their project margins firms then need to put their prices up. In other words costs increases have pushed inflation up. Cost-push inflation may arise from various sources.

i. Wages increase: Wage is a major proportion of costs for many firms and so if wages are increasing this may cause cost-push inflation.

ii. Government: if the government changes trances this may push up firm's costs. This fuel and oil changes in interest rates can also affect firms costs if they borrowed significant amount.

iii. Abroad: Exchange rate changes can affect firms cost particularly if they import many of their raw materials. Exchange rate depreciation will increase import prices and may therefore

increase firms' cost. The effect of cost increases is to shift the aggregate supply to the left. As we can see the diagram this pushes up prices (Boarmol 1970).

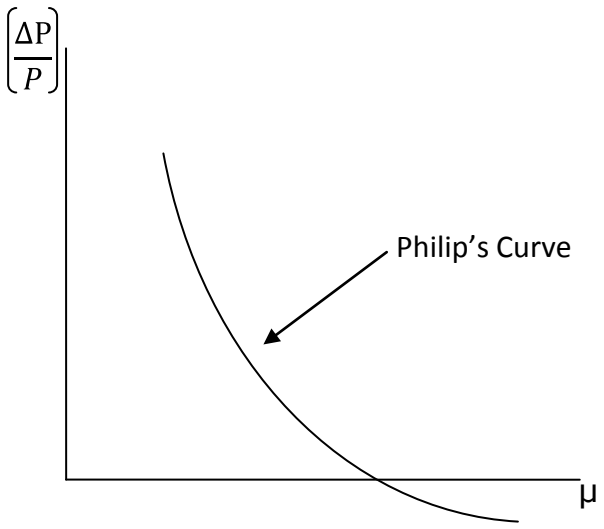



### 2.4.5 Philips Curve – Is unemployment inflation?

The Philips curve is a relationship between unemployment and inflation discovered by Professor A.N Philips. The relationship was based on observation he made of unemployment and changes in wages level from 1861 to 1967. He found out that there was a trade off between unemployment and inflation, so that any attempt by government to reduce unemployment was likely to lead

to increased inflation. The relationship was seen by Keynesians as a justification of their policies.

The curve sloped from left to right and seemed to offer policy makers a simple choice you have to accept inflation or unemployment




However in the 1970's the curve began to breakdown as the economy suffered from unemployment and inflation rising together (stagflation). This caused the government many problems and economists struggled to explain the situation. One of the most convincing explanations came from Milton Friedman a monetarist economist. He developed a variation on the original Philips curve. He incorporated peoples price expectations and said that there would be a number of short run Philips curve one for

each level of price expectations. However in the long there would be trade off between unemployment and inflation and any attempt to reduce unemployment to below its natural rate would be simply be inflationary (Robert 1994).

### 2.4.6 Inflation and money – the role of the money supply

Many economist argue that one of the main causes of inflation is excessive money supply growth. The origins of this theory lie with monetarist economist. Perhaps the best known monetarist is Milton Friedman and much research on this theory was done by him at Chicago University.

This theory of inflation draws on the quantity theory of money to suggest that if the economy grows faster than the growth in the level of potential output, then this will feed through prices. In other words of the money supply grows too fast there will be inflation.

## EMPIRICAL REVIEW

## 2.5 DETERMINANTS OF INFALTION IN NIGERIA

This empirical was carried out in Nigeria between 1981 and 2003. The Nigerian economy had faced inflationary trends over the years and the various government policies to deal with its eluded long term solution needed to bring out increased living standard of the Nigerian citizenry. Hence the need for an investigation into the multi-dimensional and dynamic factors that affect inflation with the view to make appropriate recommendations to curbing it.

In an inflationary economy it is difficult for the national currency to act as medium of exchange and a store of value without having and adverse effect on income distribution output and employment (sulieman). Inflation is characterized by a fall in the value of the country's currency and a rise in her exchange rate with other nation's currencies. This is quite obvious in the case of the value of naira (₦) which was ₦1 to $1 (one Dollar) on 1981, average of ₦100 to $1 in year 2000 and over ₦128 to $1 in 2003. This decline in the value of the Naira

coincides with the period of inflationary growth in Nigeria and is an unwholesome development that has led to a drastic decline in the living standard of the average Nigerian.

Existence of excess aggregate demand can cause inflation (demand pull inflation). Cost-push inflation arises from upward pressure of production costs, while structural inflation arises from constraints such as inefficient production marketing and distribution system in the productivities sectors of the economy (Suleiman, 1998), inflation has been apparent in Nigeria from the outset of our national life. This was propelled in the 1960's through the "cheap money policy" adopted by the government to stimulate development after independence. Interest rate was lowered and targeted the preferred sectors of the economy and was meant to facilitate the implementation of the first nation's development plan and subsequently the prosecution of the civil war. This led to rapid monetary expansion with the narrow and broad measures of money stock rising at annual rates.

The oil boom era of the 1979s was also characterized by fiscal dominance and severe macroeconomic misbalances as the period witnessed a sharp increase of government revenue in foreign exchange from oil exports. In 1971, the revenue rose from six hundred and three million naira (603.0m ) to ten million, four hundred and thirty three million, one hundred thousand naira (10,433.1m) with a share in the total revenue of 52.46% (1971 and 88.89%) (Sulieman 1998). Reluctantly the government infected massive private and public expenditure into the economy through the post war reconstruction of the early 1970s and expenditure on the gigantic capital embarked upon by all the government under the third national development plan (Sulieman 1998). This increased the entire currency in circulation with businessmen calling and withdrawing money from the bank. As a result the annual growth rate in money supply escalated from 56.6% to 91.3% in January and April 1975 (Sulieman 1978).

## 2.6 TRADE OPENNESS AND MANUFACCTURING SECTOR GROWTH

This studies the impact of trade openness on manufacturing sector performance using a time series data from 1975 to 2010. The effects of stochastic shocks of each of the endogenous variables are explored using error correction model (ECM). The analysis shows that trade openness has a positive impact on the manufacturing sector performance while exchange rate inflation rate have a negative impact on the sector performance. The error correction coefficient also indicates rate of adjustment for disequilibrium of the variables shows that growth in the manufacturing sector adjust slowly in the economy.

Trade of a country is a key determinant for the improvement of a country's industrialization. Moreover development experienced by a country .brings some changes in trade structure on the basis of endowments and comparative advantage. Trade is considered an integral part of Nigerian's economic condition of Nigeria has advanced over the years as a result of the rapid pace

of industrialization. The economy of Nigeria has also improved tremendously with foreign investment aided by high quality research and development Nigeria was under the British colonial rule for a considerable period of time.

The impact of trade liberalization on the output growth of domestic firms in an economy. One can argue that there would be a negative relationship between import penetration and manufacturing sector performance as foreign competition should restrain the exercise of market power by domestic firms in the domestic.

In conclusion the study has been preoccupied with the impact of trade liberalization on the manufacturing sector of the Nigerian economy. The development of manufacturing sector and effective promotion have not been approached seriously in Nigerian; hence the lack of serious in economy important findings were discovered during the course of this research one is the relatively low productivity in the Nigerian manufacturing sector.

This could be attributed to a plethora of factors, including a weak technology base and low level of capacity utilization. Also another major finding from this study is

that there are significant pay offs from the policy of trade liberalization. The current policy of trade liberalization which emphasizes lower tariffs and increasing openness of the economy was found to be growth enhancing. The manufacturing sector as a very important sector in the economy requiring efficient and effective management to increase the level of growth and development it is therefore important to consider conditions that would ensure sustained growth in this sector.

## 2.7 GLOBAL ECONOMIC DOWNTURN AND THE MANUFACTURING SECTOR PERFORMANCE ON THE NIGERIAN ECONONMY

This research analysis the position of the manufacturing sector of the Nigerian economy both the descriptively and empirically before the global met down and during the period of the global melt down. It was discovered that before the melt down, all indicators of performance used shows a down reward trend. The period during the melt down shows some little insignificant improvement on some of the performance indicators such as manufacturing GPP, Capacity authorization. Generally

speaking, the manufacturing sector plays a catalytic role in a modern economy and has many dynamic benefits crucial for economic transformation. In any advanced economy or even growing economy the manufacturing sector as a leading sector in many respect. It is an avenue for increasing productivity in relation to import replacement and export expansion, creating foreign exchange earning capacity rising employment and per capital income, which causes unique consumption patterns. Furthermore it creates investment capital at a faster rate than any other sector of the economy while promoting wider and more effective linkages among different sectors (Ogwuma 1986). Early efforts in the manufacturing sector were oriented towards the adoption of an import substitution strategy in which light industry are assemble related manufacturing as ventures were embarked upon by the formal trading companies. Up to about 1970s to prime mover of the manufacturing activities was the private sector which establish some agro-based light manufacturing units such as vegetable oil extraction plants tobacco etc. the import dependent

industrialization strategy virtually came to a halt in the late 1970s and early 1980s when liberal importation policy expanded the import of finished goods to the detriment of the domestic production. This led to relative decline in manufacturing production of exportable and thus little diversification in production and products processes was achieved.

The world global melt down affected the world economy. The degree of the of the impact varied form economy. This impact depends on the movement of what incomes, prices inflation and the terms of trade. The global economy without any doubt experience serious turmoil especially in the year 2007, 2008, 2009 and even now. World inflation rates was on the increase caused by the surge in food and fuel prices. Global decline in 2008 while the foreign exchange market experience instability as major currencies experienced weakness (Ogwuma 1986).

## 2.8 THE DYNAMICS OF MONEY SUPPLY AND INFLATION IN NIGERIA

The result carried out from the research carried out, that includes the money supply will lead to increase inflation rate in short run but an insignificant effect in the short run. Therefore it implies that monetary expansion has remained the main causal factor of the persistent increase in price level in Nigeria. There is controversy on whether inflation in developing countries like Nigeria could be explained from monetarist perspective in view of the enormous bottle neck in the supply chain in food and material resources flow in Nigeria. The excessive monetary expansion in Nigeria where endemic corruption and conspicuous spending is a general trait of government makes the monetary argument more potent the supply side argument where inflation is seemed to be caused by supply rigidity. Therefore to tame inflationary pressure in Nigerian, the excessive fiscal has to be curtailed the banks credit approach lead tailored in line with monetary objective, of the government. Since the bank on their the liquidity of the economy through their money creation

capacity, then banks must be involved articulating and implementing monetary policy. The era where the monetary policy guidelines where just passed down to financial should be a thing of the past. To probably and effectively curtail inflation in Nigeria, all stalk holders must be made impute into monetary policy and be convince about the sincerity ,of the government. The evidence from the study that exchange rate does not significantly influence inflation may explain the current observation in Nigeria were exchange rate is appreciating both imported and domestically produced goods continue price in prices. It means that exchange rate fluctuation have little or no influence on the inflationary pressure in Nigeria foreign price seems not to be crucial factor on inflation dynamism while real output growth seems to play more or less a little role in price fluctuation in Nigerian (Ajakaiye 1994).

# CHAPTER THREE

# RESEARCH METHODOLOGY

## 3.1 RESEARCH DESIGN

The research design that is used for the data analysis of this study is the time series analysis. The data to be used in the analysis include manufacturing index, Government expenditure, inflation rate, money supply consumer price index (CPI) interest rate and exchange rate.

## 3.2 MODEL SPECIFICATION

For this study we have two models as follows:

Model 1:

$$MF1 = b_0 + b_1 GEP + b_2 IFL + b_3 MSP + U$$

Where;

MFI = Index of the manufacturing sector

GOVEX = Government expenditure

INF = Inflation rate

MSP = Money supply

$b_0$ = Intercept

$b_1$, $b_2$, $b_3$ are unknown parameters

U = error term or stochastic disturbance

$b_1>0$, $b_2>0$, $b_3>0$

In the model above Government expenditure and money supply should have positive influence on the manufacturing index while inflation rate exhibits a negative influence

Model 2:

$$MF1= b_0 + b_1 CPI + b_2NIR + b_3FR + U$$

Where;

MFI = Index of the manufacturing sector

CPI = Consumer price Index

NIR = Interest rate (nominal)

EXR = Exchange rate

b0 = Intercept

b1, b2, and b3 are unknown parameters

U = Error term

B1>0, b2>0, b3>0

In the model above exchange rate should have a positive influence on the index of the manufacturing sector while CPI and interest rate should have a negative inflation on the manufacturing index.

## 3.3 ESTIMATION PROCEDURE

The secondary data collected were classified and tabulated after which the multiple regression technique was used to estimate the respective relationships. This showed to what extent the dependent variable is related to the independent variables.

## 3.4 SOURCE OF DATA

The data used in this research were all secondary on nature. They were obtained from the Central Bank Statistical Bulletin and the National Bureaus of statistics. The data was collected on annual bases.

## 3.5 STATISTICAL TOOL AND EVALUATION TECHNIQUES

To test the validity of the hypothesis formulated for the study multiple regression was used.

The research used the following test and coefficients to measure the magnitude of relationship between the variables.

### 3.5.1 THE MULTIPLE COEFFICIENT OF DETERMINATION

This is used to measure the proportion of variation in explained by the condition of X's

$$R^2 = \frac{RSS}{TSS}$$

Where

RSS = Regression Sum of Squares

TSS = Total Sum of Squares

$R^2$ = Adjusted multiple coefficient of determination

Corrected from the degree of freedom

$$R^2 = \frac{1\ 1-R\ n-1}{n-k}$$

where;

n = No of observation

k = No of parameters

### 3.5.2 Multicollinearity

In every regression equation there exists some level of multicollinearity between its independent variables. It shows the presence of linear relationship among independent variables

### 3.5.3 JOINT TEST

(Using F-table)

This is to test the hypothesis that the entire regression coefficient are equal to Zero entire regression coefficient are equal to Zero except the interest

i.e. $H_0$: $b_1 = b_2 = b_3 = 0$

$H_1$: $b_1 \neq b_2 \neq b_3 \neq 0$

Analysis of variables (ANOVA) is used to calculate this by utilizing a class of continuous probability distribution called F= distribution Decision Rule:

If $F_{cal} > F_{table}$ we reject the null hypothesis but of $F_{cal} < F_{table}$ we reject alternative hypothesis

### 3.5.4 Autocorrelation using Durbin Watson Test

Autocorrelation is a correlation between successive variables. Durbin Watson test is used in the test which is devoted thus,

$$d = \frac{\sum(E_t - E_t - 1)}{\sum Et^2}$$

**Decision rule**

- If d=O, there is perfect auto perfect auto correction between variables
- If d=4, there is a perfect negative auto correction between variables
- If d=2, there is no auto correction between variables.

# CHAPTER FOUR

# PRESENTATION AND ANALYSIS OF RESULT

## 4.1 PRESENTATION OF RESULTS:

The result of our models using the ordinary least square regression method is presented in the tabular form below;

**Table 1a: Modeling MFI by OLS**

| Variable | Coefficient | Std. Error | t-value | t-prob | PartRy |
|---|---|---|---|---|---|
| Constant | 124.47 | 8.3515 | 14.904 | 0.0000 | 0.8952 |
| GOVEX | 2.2746e- 005 | 1.4799e-005 | 1.537 | 0.1364 | 0.0833 |
| INF | 0.22360 | 0.22969 | 0.973 | 0.3393 | 0.0352 |
| MSP | -6.4002e-006 | 5.2310e-006 | -1.224 | 0.2321 | 0.0544 |

Ry = 0.117861 F (3, 26) = 1.1579 [0.0000] DW = 0.591

**Table 1b: Modeling MFI by OLS**

| Variable | Coefficient | Std. Error | t-value | t-prob | PartRy |
|---|---|---|---|---|---|
| Constant | 79.061 | 9.1501 | 8.640 | 0.0000 | 0.7417 |
| CPI | 0.0016035 | 0.0017854 | 0.898 | 0.3774 | 0.0301 |
| NIR | 3.0819 | 0.50628 | 6.087 | 0.0000 | 0.5877 |
| EXR | -0.044050 | 0.11489 | -0.383 | 0.7045 | 0.0056 |

Ry = 0.628472; F (3, 26) = 14.66 [0.0000]; DW = 1.54

## 4.2 INTERPRETATION OF RESULT

### 4.2.1 ANALYSIS OF REGRESSION COEFFICIENTS:

Model 1:

**i.** Government expenditure (GOVEX) has a coefficient of 2.2746. This implies that a unit increase in GOVEX will bring about an increase in the manufacturing index by 2.2746 units.

**ii.** Inflation (INF) is seen to have a coefficient of 0.22360. This shows that a unit change in INF will increase the manufacturing index by 0.22360 units.

**iii.** Money Supply (MSP) has a coefficient of -6.4002, which implies that a unit decrease in MS will result to a decrease of the manufacturing index by -6.4002 units.

**iv.** The coefficient of the constant is 124.47, implying that when all other independent variables are held constant; the value of the dependent variable (MFI) will be 124.47.

MODEL 2:

**i.** Consumer price index (CPI) has a coefficient of 0.0016035. This implies that a unit change in CPI will bring about an increase in the manufacturing index by 0.0016035 units.

**ii.** Nominal interest rate (NIR) is seen to have a coefficient of 3.0819. This shows that a unit change in NIR will increase the manufacturing index by 3.0819 units.

**iii.** Exchange rate (EXR) has a coefficient of -0.044050, which implies that a unit decrease in EXR will result to a decrease of manufacturing index by 0.044050 units.

**iv.** The coefficient of the constant is 79.061, implying that when all other independent variables are held constant; the value of the dependent variable (MFI) will be 79.061.

### 4.2.2 Economic Theory (A Priori Expectation)

**Table 4.2a: A Priori Expectation for model 1**

| Variable | Expected Sign | Obtained Sign | Remark |
|---|---|---|---|
| GOVEX | + | + | Conforms |
| INF | - | + | Does not Conform |
| MSP | + | - | Does not conform |

The above table shows that all the explanatory variables except money supply, conform to our expected economic a priori.

**Table 4.2b: A Priori Expectation for model 2**

| Variable | Expected Sign | Obtained Sign | Remark |
|---|---|---|---|
| CPI | - | + | Does not conform |
| NIR | - | + | Does not conform |
| EXR | + | - | Does not conform |

The above table shows that all the explanatory variables did not conform to our expected economic a priori.

### 4.2.3 EVALUATION BASED ON STATISTICAL CRITERIA

(i) **Evaluation based on the $R^2$.**

From the result of our regression $R^2$ for both models are 0.117861 and 0.628472. This shows that almost 11.79% and 62.85% of the changes in the dependent variables were captured by the independent variables in both models, respectively.

(ii) **Evaluation based on student t-test.**

In this section, the t-test is used to judge the statistical reliability of the estimates of the regression coefficients.

**The hypothesis is thus stated as:**

**$H_0$:** $\beta_1 = 0$

**$H_1$:** $\beta_1 \neq 0$

**Where:** $\beta_1$ is the coefficient of the parameter estimate

**Decision rule:**

Reject $H_o$, if t * > t α/2, otherwise accept i.e. if t* < t α/2

Where t* = Computed or calculated

t α/2 = tabulated value of t

n = number of observation

k = number of parameter estimates

Degree of freedom (df): n – k

**Table 4.3a: t-test for model 1**

| variables | t-cal | t-tab | Conclusion |
|---|---|---|---|
| CONS | 14.904 | ±2.0555 | Significant |
| GOVEX | 1.537 | ±2.0555 | Insignificant |
| INF | 0.973 | ±2.0555 | Insignificant |
| MSP | -1.224 | ±2.0555 | Insignificant |

**Hypothesis testing:**

**$H_0$:** Inflation does not have any significant impact on the manufacturing sector of the Nigerian economy.

**$H_0$:** Inflation has significant impact on the manufacturing sector of the Nigerian economy.

The result from the t-test revealed that inflation has an insignificant impact on the manufacturing index; hence we conclude that inflation does not have any significant impact on the manufacturing sector of the Nigerian economy, thereby accepting the null hypothesis.

**Table 4.3b: t-test for model 2**

| variables | t-cal | t-tab | Conclusion |
|---|---|---|---|
| CONS | 8.640 | ±2.0555 | Significant |
| CPI | 0.898 | ±2.0555 | Insignificant |
| NIR | 6.087 | ±2.0555 | Significant |
| EXR | -0.383 | ±2.0555 | Insignificant |

**Hypothesis testing:**

**$H_0$:** Interest rate does not have any significant impact on the manufacturing sector of the Nigerian economy.

**$H_0$:** Interest rate has significant impact on the manufacturing sector of the Nigerian economy.

The result from the t-test revealed that interest rate has a significant impact on the manufacturing index; hence we conclude that interest rate has a significant impact on the manufacturing sector of the Nigerian economy, thereby rejecting the null hypothesis.

(iii) **Evaluation Based on F-test.**

The f-test statistic is carried out to test for the overall significance of the model.

***Decision Rule:*** Reject $H_O$ if (f-cal > f-tab) otherwise accept where f-tab = F = □/□ = ($V_1$/$V_2$)

Where $V_1$ = K – 1 and $V_2$ = n – K. K is the number of variables including the constant and n = number of observations.

Therefore,

For model 1 and 2:

$$V_1 = K - 1 = 4 - 1 = 3$$

$V_2 = n - k = 30 - 4 = 26$

**Table 4.4a: F-test for model 1**

| $F_{cal}$ | $F_{tab}$ at 0.05 significant level | Decision |
|---|---|---|
| 1.1579 | 2.98 | Reject $H_o$ and accept $H_1$ |

From the result, 1.1579 < 2.98, we accept $H_o$ and reject $H_1$, concluding that the overall regression is not statistically significant.

**Table 4.4b: F-test for model 2**

| $F_{cal}$ | $F_{tab}$ at 0.05 significant level | Decision |
|---|---|---|
| 14.66 | 2.98 | Reject $H_o$ and accept $H_1$ |

From the result, 14.66 > 2.98, we reject $H_o$ and accept $H_1$, concluding that the overall regression is statistically significant.

### 4.2.4 Evaluation Based on Econometrics Criteria

The second order test was carried out to establish the validity of the assumption about the stochastic error terms, under this criterion, test like auto-correlation, heteroscedasticity test, normality test, and multicollinearity.

(1) **Test for Auto-Correlation**

The essence is to ensure that assumption number four of the OLS is not violated thus, Durbin Watson test was applied; the null hypothesis is that the error terms are auto-correlated with the first order. This is $H_O$: P = 0 meaning that μ's were not auto-correlated with the 1st order scheme. This decision was made in guide from the table presented below:

**Table 4.5: Decision rule**

| **Null hypothesis ($H_0$)** | **Decision** | **If** |
|---|---|---|
| No positive autocorrelation | Reject | $0 < d^* < d_L$ |
| No positive autocorrelation | No decision | $d_L \leq d^* \leq d_U$ |
| No negative correlation | Reject | $4 - d_L < d^* < 4$ |
| No negative correlation | No decision | $4 - d_U \leq d^* \leq 4 - d_L$ |
| No autocorrelation, positive or negative | Do not reject | $d_U < d^* < 4 - d_U$ |

Model 1:

$d^* = 0.591$ $d_u = 1.28373$ $d_L = 1.56661$

Since $0 < d^* < d_L$ (i.e. $0 < 0.591 < 1.28373$), therefore we conclude that there is positive serial correlation in the model and thus reject the null hypothesis.

Model 2:

$d^* = 1.54$ $d_u = 1.28373$ $d_L = 1.56661$

Since $d_L \leq d^* \leq d_U$ (i.e. $1.28373 \leq 1.54 \leq 1.56661$), therefore we conclude that there is no positive serial correlation in the model, however no decision can be made on either accepting or rejecting the null hypothesis.

(iv) **Test for Heteroscedasticity:**

This test is used for testing whether the error terms in the Regression Model have a common or constant variance. The white heteroscedasticity test (with no cross terms) is adopted for this test.

Ho: Homoscedasticity (the variance of the error term is constant).

Ho: Heteroscedasticity (the variance of the error term is not constant).

***Decision Rule:*** Reject $H_O$ if $X^2$ -cal > $X^2$ -tab at 5% level of significance. Otherwise, accept.

The degrees of freedom = 6

From the result,

Model 1:

$X^2$-cal = 9.3569 while, $X^2$-tab = 12.592 under 6 degrees of freedom

Model 2:

$X^2$-cal = 7.1564 while, $X^2$-tab = 12.592 under 9 degrees of freedom

Since $x^2$-cal < $x^2$-tab in both models, we accept Ho and conclude that the variance error term is homoscedastic.

**(v) Normality Test**

This test is carried out to check whether the error terms follow a normal distribution. The normality test is used for residual test that follows the differential equation adopted and to check for its skewness.

$H_O$: 0 = 0 (the error term does not follow a normal distribution)

$H_I$: 0 ≠ 0 (the error term follows a normal distribution)

If $\chi^2_{cal}$ > it's critical value, (at 2df), we reject the null hypothesis that the residual is not normally distributed.

Model 1

$\chi^2_{cal}$ = 8.1605 @ 2 degrees of freedom

$\chi^2_{tab}$ = 5.991 under 0.05 significance level

Model 2

$\chi^2_{cal}$ = 12.517 @ 2 degrees of freedom

$\chi^2_{tab}$ = 5.991 under 0.05 significance level

From the above results, $\chi^2_{cal} > \chi^2_{tab}$ in both models, therefore, we accept the alternative hypothesis, concluding that the residuals in the error term (in both models) does not follow a normal distributed.

(vi) **Multicollinearity Test:**

The multicollinearity tests of the variables were carried out using correlation matrix. According to Barry and Feldman (1985) Criteria, "Multicollinearity is not a problem if no correlation exceeds 0.80'.

**Table 4.6a: Correlation matrix for model 1**

| | GOVEX | INF | MS |
|---|---|---|---|
| GOVEX | 1.000 | | |
| INF | -0.3329 | 1.000 | |
| MS | 0.9672 | -0.2767 | 1.000 |

From the above correlation matrix table, we can conclude that multicollinearity exists between the pair-wise MS and GOVEX.

**Table 4.6b: Correlation matrix for model 2**

| | CPI | NIR | EXR |
|---|---|---|---|
| CPI | 1.000 | | |
| NIR | 0.1089 | 1.000 | |
| EXR | 0.9211 | 0.2186 | 1.000 |

From the above correlation matrix table, we can conclude that multicollinearity exists between the pair-wise EXR and CPI.

# CHAPTER FIVE

# SUMMARY, CONCLUSION AND RECOMMENDATION

## 5.1 SUMMARY

The study examines the impact of inflation on the manufacturing sector of the Nigeria economy over the period of 1981- 2011, the ordinary least square technique (OLS) was used in examining the variables; government expenditure, inflation rate and money supply which are independent variables and the manufacturing index which is the dependent variable for the first model. The independent variables for the second model are consumer price index, nominal interest rate and exchange rate while the independent variable is the manufacturing index.

In the first model there was a positive relationship between inflation and manufacturing output. The government expenditure was also positive which indicates that an increase in government expenditure will bring about increase in the manufacturing output, while money supply was negative which shows that a decrease in

money supply will bring about a decrease in the manufacturing output.

In the second model the nominal interest rate has a positive relationship with the manufacturing index. A high interest rate or cost of borrowing discourages investment. The producer while trying to reduce his cost to barest minimum will lay off some workers artificially makes his goods scarce and at the same time increase the per unit price in order to maximize profit. The research also established a positive relationship between the consumer price index and manufacturing output. The consumer price index is a measure used in estimating the average price of goods and services purchased by households. The consumer price index can be used to adjust the effect of inflation on the real value of money. The consumer price index can be used to adjust the effect of inflation on the value of money. The cumulative nature of consumer price index is responsible for the relationship between it and the manufacturing index. The findings from the analysis shows that there exists a negative relationship between

the exchange rate and manufacturing index. If Naira should depreciate in relation to other currencies in the in the world market, it will bring about a decrease in the growth of the manufacturing sector, because manufactures will import raw materials and machines expensive. This will increase the cost of production and it will lead to reduction in production

## 5.2 CONCLUSION

The study analyses the impact of information on the manufacturing sector of the Nigeria economy (1981-2011). The research shows that increase in inflation brings about increase in the manufacturing output.

It should be taken into consideration that the manufacturing sector is not only influenced by inflation but by other factors which were also put into consideration in this research such factors are interest rate, consumer price index which were discovered to exert a very significant impact.

## 5.3 **RECOMMENDATION**

a) Interest rate is to be considered for there to be a meaningful economic activity interest rate on investible fund must be brought low either by monetary or fiscal policy measures to encourage output and increase income

b) The monetary authorities should monitor and manage out currency in terms of the exchange rate to avoid further depreciation of our currency in the world market and also serve as an incentive to manufacturers.

c) Inflation significantly affects the manufacturing sector in the economy be it a developing or developed country. For Nigeria to achieve meaningful economy growth and development inflation rate must be monitored and curtailed to a single digit inflation rate so that growth can be sustained.

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