

**AN ASSESSMENT OF THE EFFECT OF
MONEY SUPPLY IN NIGERIAN
INFLATIONARY TRENDS, 1970-1993**

BY

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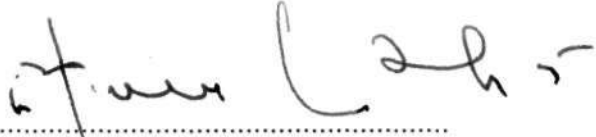
DECLARATION

I hereby declare that this Thesis is a product of my own research. It has not been accepted anywhere for the purpose of awarding a higher degree. All references have been acknowledged by a way of bibliography at the end of the thesis.

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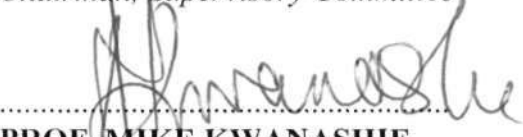
CERTIFICATION

This thesis, entitled "An Assessment of the Effect of Money Supply on Nigerian Inflationary Trends; 1970-1993" by Omofa, Moses Niyi Gbenga, meets the regulations governing the award of the degree of Masters of Science of Ahmadu Bello University, Zaria and is approved for its contribution to knowledge and literary presentation.



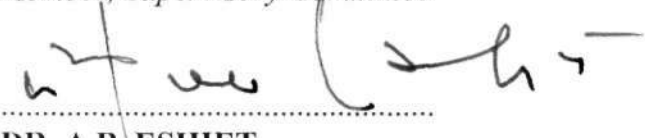
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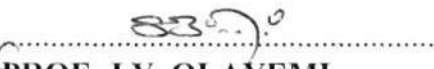
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DEDICATION

This thesis is dedicated to all who are genuinely born again and my wife (to be) Sister Deborah Modupe Funmilola Ibihunwa.

ACKNOWLEDGEMENT

I have incurred many intellectual debts while writing this thesis and received considerable financial assistance from various individuals and organisations to make the whole gamut of this project feasible. No acknowledgement can adequately express my gratitude for the help I have received in the process of this research work.

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OMOFA MOSES NIYI GBENGA

ABSTRACT

A lot of contentions and debate have been generated in Economics as regards the relative importance of the monetary Policy vis-a-vis the fiscal policy in controlling the economic variables of a nation. Of recent again, is the debate between the monetarists and structuralists about the best way to tame price level movements in an economy. The monetarist have declared that the best way to control price level is to manipulate the monetary variables and inflation will cease or at worse reduce. On the other hand, the structuralists hold the opinion that inflation is mainly caused by structural bottlenecks, which even go a step further in hampering the effectiveness and efficiency of the monetary variables manipulation.

A number of works on the monetrist approach to inflation, have been carried out with emphasis on the money supply as it affects inflation, and it has been found out that controlling the money supply will to a large extent dampen the rate of inflation in Nigeria.

This thesis employed a reduced form of a model to provide an empirical insight into the relationship between money supply, gross domestic product, budget deficit, exchange rate, foreign prices and inflation using Nigerian data for the period 1970-1993.

The thesis has shown that although money supply, budget deficit, output level and exchange rate affect the movements of the price level, of significance among them is the impact of exchange rate on inflation in Nigeria for the period under study. When the impact of all the variables on the price level where tested, their impact seemed to be swallowed up by exchange rate alone indicating that the impact of exchange rate on the inflationary process is very significant when combined with all the variables and under the period in view. This

is because the exchange rate played prominent role in pushing up the inflation rate in Nigeria from the last half of the 1980s.

However, also of significance is the price level lagged suggesting that price mark-up is a very important factor in price determination in Nigeria. Hence the thesis is concluded on the note that although money supply and price level are positively related, the relationship is not very strong and it could therefore not best explain the rising prices in the face of the stringest economic and monetary measures of today. Government efforts should be geared towards determining the main causal factors for correct policy formulation.

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CHAPTER ONE:

1.0 INTRODUCTION

Nigeria's weak economic base become problematic as from the late 1970s. There were some sorts of disequilibria in the economy either as imbalance between spending power and availability of supplies (i.e from both domestic and external sources), and or imbalance between spending power and productive capacity of the economy. These forms of disequilibria caused by rapid depletion of the external reserves i.e disequilibrium in the balance of payment, and rapid expansion of overall monetary expenditure in the economy, helped to drive up prices.

As reflected by the composite consumer price index (CPI), it is obvious that Nigeria has been undergoing periods of inflationary pressures right from 1970 to 1993. For example, "Nigeria's inflation rate which was 13.8% in 1970 rose to 33.9% in 1975 and further escalated to 40.9% in 1989. By 1992 it had jumped to 46%"¹. Infact, price are said to have risen continuously over the entire period by well over a thousand percent.²

Because of the devastating effects of inflation on the economy, many attempts have been made to formulate policies aimed at reducing or cushioning its shocks as well as restructuring the economy for diversification and self-sustenance. As evidenced by the various annual budgets of Nigeria, policies have been directed at reducing inflation by regulating money supply through bank credit and cuts in government spending. For example the growth in money supply M1 which was 12% in 1981 reduced to 11.8% in 1987. Aggregate bank credit to the economy was halved over the same period. Expansion of credit to

government was also reduced by 1%. The essence of these measures were to reduce the rate of inflation and stimulate the economy. (See Egwakhide O.F (1990) in “Nigeria’s Monetarism in Crisis: An Overview”).

Among other significant measures put in place to curb inflationary pressures and strengthen Nigeria’s economic base was the Structural Adjustment Programme of 1986. One of its strategies was the second-tier Foreign Exchange Market (SFEM) to determine the “just” exchange rate of naira. Naira became devalued compared to other major international currencies like pounds sterling and United State dollar. Consequently of this naira devaluation was the fuelling of the already high inflation rate, as prices of imported intermediate outputs required for domestic production rose very sharply. Concomitantly, the huge deficit budget operated by the government affects the monetary base of the economy thus aggravating the monetary supply in the economy. As would be expected, price level increased accordingly.

The failure of the so far implemented policies could be attributed to the misunderstanding of and the complexity surrounding, the roots or causes of inflation in Nigeria. This research work therefore shall identify the causes of inflation in Nigeria and assess quantitatively the effect of money supply on Nigerian inflationary process. This is based on the opinion that money supply re-enforce the working factors of inflation in Nigeria.

1.1 STATEMENT OF PROBLEM

The quantitists established a direct relationship between money supply and price level. Monetarism therefore has its root in the Fisherine equatin thus:

$$MV = PY \dots\dots\dots(1)$$

Meaning that, total money spend on output equals the value of transaction where:

M = Money stock which is taken to be exogenous, and influenced by the decision of the monetary authority

V = Velocity of circulation of money assumed to be constant

Y = Volume of transaction which was further widened to take into consideration inter-firm sales, purchases of property and financial assets, and second-hand goods sold.

P = Average Price Level

From the above assumption of Fisher's equation, economists and even politicians have been tempted to buy the idea of equi-proportional relationship between price and money supply based on the supposition that V and Y are constant. So that

$$P = f(Ms) \dots\dots\dots (2)$$

$$P = \& Ms \dots\dots\dots (3)$$

where $\& = V/Y$

(See Hume 1955 and Fisher 1930).

Taking the time derivative of equation 1, the rate of inflation thus becomes:

$$dp/dt.1/p = dm/dt.1/m + dv/dt.1/v - dy/dt.1/y..... (4)$$

From the above, the equation of identity is transformed into a theory explaining the variations in price by the variation in money supply. From this abstract transformation, it becomes imperative to address some central issues concerning the underlying assumptions and the applicability of the monetarists' contention in explaining the Nigeria inflationary process.

- i. it has to be ascertained whether the relationship between money supply and price is direct and proportionate.
- ii. the validity of the constance of V and Y as rooted in the underlying assumption above has been questioned.
- iii. that even in a situation where V and Y are fairly stable, it is not clear whether there is a direct relationship between price and money stock.

There are many other issues in addition to the above that have been raised by many economists and opinions are divided amongst the various schools of thought as indicated in the Literature Review (See Herberger 1978, Adejugbagbe 1974).

1.2 OBJECTIVES OF THE STUDY

The aim of this work is to undertake an assessment of the effect of money supply on inflation in Nigeria and it will specifically require one to:

1. investigate the relationship between the money supply and inflation in the face of other price disturbing factors.

2. analyse what happens to the price level when the assumption of constant V and Y is violated.
3. show the relevance of this model to the Nigeria's contemporary economic reality
4. draw policy implications of the findings and identify which of the variable(s) need(s) to be addressed for policy formulation.

1.3 JUSTIFICATION

The effects of inflation on the material existence of man cannot be over-emphasised. It has effects on cost of living cum standard of living of a nation as well as socio-economic advancement of any society. Inflation may not be a relevant issue if it does not alter in any way social progress. Also if the policies adopted so far have yielded tangible results in terms of reducing or cushioning the effects of inflation there certainly would have been no need for this study.

The importance of this study is therefore to investigate the nature of relationship between inflation and money supply amongst other price disturbing factors, so that the result can be useful in policy formulation. A broad perspective of monetary explanation is very relevant in the face of the adopted policy of structural adjustment programme which had put upward pressures on prices (Ajakaiye 1987). As argued by Egwakhide (1991), inflation has discredited Keynesianism and monetary orthodoxy as demand management policy have not yielded the desired result. It therefore becomes imperative to provide a macro analysis of inflation to be able to reduce the effect of inflation on the economy following the correct

implementation of the policy prescriptions.

1.4.0 METHODOLOGY

This work shall use an ordinary least square to regress the price level or inflation rate on the specified explanatory variables. Various tests of hypothesis shall be conducted to determine the impact of the variables on the price level and their changes on the inflation rate.

1.4.1 SOURCES OF DATA

Data and related information shall be obtained mainly from secondary source for this research work. Use shall be made of various journals, magazines and reports. The composite consumer price index and money supply figures are obtained from the Economic and Financial Review, Annual Reports and Accounts of the CBN: for various years. The exchange rate, budget deficit and interest rate are compiled from CBN Annual Reports and Bulletin: while foreign prices with the United States of America's CPI as proxy, is obtained from the International Financial Statistics of the IMF, and many other unpublished thesis are made use of.

1.5.0 SCOPE OF THE STUDY

The focal point of the study is to investigate the relationship between inflation and money supply in the face of other price disturbing factors.

This research work shall cover the period 1970 to 1993 (a period of twenty-three years). This is a period considered long enough to enable one to be able to see the time trend

of the rate of inflation on one side, the money supply and their relationship on the other side.

Also the period (1970 to 1993) transcends over the major economic historical developments of Nigeria and it will therefore enable one to be able to see the impact of change in policy measures over the years on the economic variables to be considered.

1.5.1 LIMITATION OF THE STUDY

Before arriving at any conclusion from the model it is important to specify some of its limitations. Every model has to make certain simplifying assumptions because there is no model that can be a perfect representation of reality.

Some variables are qualitative rather than quantitative. So there is the likelihood of the omission of explanators of some importance in the model since they cannot be quantified especially some of the explanators from the structuralists's theory of inflation.

Although agricultural bottlenecks could be measured by food prices, yet as food prices is known to be the dominant component of the consumer price index in Nigeria, it is removed from the model. This is because there will be a clear case of co-linearity between agriculture and consumer price index.

Also unemployment is not included. Unemployment measures only unemployment of labour and is not adequate as it leaves out the unemployment of other factors. Even in a situation where y/p is used as a better specification for measuring level of economic activity it is important to note that it has price built into it and therefore will co-linear with price reality.

The assumptions of full employment and non-government interference in the

economy are also over-simplification of economic reality.

In all, there is the error of inexactitude, high probability of errors of measurement in the proxies of CPI, P_f and the likelihood of the omission of some explanators that are of importance to this model. This may be as a result of simplifying economic reality by making some assumptions.

1.6 DEFINITION OF CONCEPTS

There are many definitions of inflation as there are causes. The disagreement over a generally acceptable definition is symptomatic of the confusion of, or controversy over the theory of inflation.

Webster Seventh Collegiate dictionary defines inflation as “an increase in the volume of money and credit relative to available goods resulting in a substantial and continuing rise in the general price level”³A.P. Learner also defines inflation as “a rise of the money stock or money income either total or per capita”⁴The Keynesians believe in the excess of aggregate demand over aggregate supply at full employment level as its cause. To Turvey, inflation is a “process resulting from competition in attempting to maintain total real income, total real expenditures and or total output, at a level which has become physically impossible or in attempting to increase any of them to a level which is physically impossible”⁵Parkin in his view described inflation as “a process of continuously rising prices or deflation as a process of continuously falling prices”.⁶

However, the so far general and acceptable definition of inflation has been “situation in which there is a persistent upward movement in the general price level”⁷In this sense, a

sporadic rise or an imperceptible rise in prices cannot be considered as inflation. Thus, an economy is said to be bedevilled with pressures of inflation if such an economy is “experiencing a period of persistent and sustained rise in the general price level”.³

This definition of inflation as a rising trend in general price level seems to be neutral without depending on contingent proposition like ‘too much money chasing too few goods which raises subjective issues as to the magnitude of the two variables; money and goods’. This definition also makes room for relative price to change and at times such change may even cancel out each other but the general price level must continue to rise.

There are many price indices by which inflation rate can be measured. These include the wholesale price index, the implicit price index, and the consumer price index. The composite consumer price index (CPI) is chosen in this work as a proxy for measuring price level. This is because from the standpoint of consumers’ welfare, the index provides some indications as to extent to which consumers are being affected by price change therefore permitting the measuring of the changes in the real income of consumers.

Money supply is defined differently in different countries. While it includes currency in circulation and demand deposits in almost all cases which is M1, some countries add time and saving deposit to M1 which is M2. Whether a narrower or broader definition should be adopted in the analysis of inflationary - deflationary pressure depends on the institutional characteristics of the economy. Due to the low level of development of the financial system in Nigeria and for the fact that saving and time deposits do not include the use of cheques which could have made it a good medium of exchange in Nigeria, the official definition of money supply in Nigeria which comprises of notes and coins in circulation, demand deposits

in commercial and central banks shall be adopted.⁹ Other wider definition of money supply merely adds to M1, time and other deposits with other financial institutions including post offices.

1.7 ORGANISATION OF WORK

The study is divided into five chapters. Chapter one introduces the main issues involved and gives a general direction and goals of the research. Chapter two reviews the relevant literature on the subject matter. It also contains the theoretical framework and an analytical model of inflation in Nigeria. Chapter three gives an overview of money supply and inflation in Nigeria. The major findings are contained in Chapter four while chapter five summaries recommends and conclude.

CHAPTER TWO

2.0 LITERATURE REVIEW

The inflationary process assumes so many different complexions at different times and in different countries that it is doubtful whether we can ever have an all-embracing theory of inflation equally applicable in all circumstances. This is because the generating mechanism of inflation may differ even within the same country at different times.

To this end, different theories have been propounded to take into consideration some variables at different times, according to how dominant those variable were. Some of these theories include cost-push theory, demand pull theory, the supply side theory also known as the structuralists theory; and the quantity theory.

While this section reviews some of the relevant literature on the theories, the next section presents a theoretical framework (model) of inflation embodying those variables that are dominantly prevalent in the causes of inflation in Nigeria.

2.1 COST PUSH INFLATION

The cost push theory explains the cause of inflation from the supply side of the markets. According to this view, prices are determined by the cost of inputs and inflation is caused by increases in the costs of inputs irrespective of the state of aggregate demand.¹⁰

The increase in cost of inputs may be in the form of increase costs of labour. The increase in cost of labour may in its own be as a result of the conflict of interests between the workers and the capitalists. As real income is assumed fixed, wage demand induces increases

in prices which fuels further wage demand thus generating a wage-price-wage spiral. The question is why do trade unions insist on wage and salary settlement beyond the capacity of industry without raising prices and why do employers grants them? Trade Unions want bigger wages because they want to increase their share of the national income going to wage and salary earners.¹¹The excessive power of this monopolistic trade union is a derivation from the assumption that the economy is at full employment hence they become more aggressive in their demand i.e. strong resistance to wage reduction.¹²(Awosika 1981).

Also on the part of the employer, increasing prosperity and profitability enhance their willingness to grant union demand since it will be very costly to risk a strike at the period of business profitability. Therefore, economic expansion provides the business environments in which the monopoly power can be used to pass wage increase on to customers in the form of higher prices,¹³(see McConnel 1973 p.70). Lawrence and Wishart (1967) argued in support that “If monopolistic companies can push up prices to restore profit margin after a wage increase, i.e. if demand is simply ignored then they must also be able to push up prices to increases profits.¹⁴(A mirror image of the profit push idea). This made McVaish (1981) to conclude that cost push inflation is derived from “strong union resistance to reductions in wages and cost-plus pricing policies of firm typically selling in monopolistic or oligopolistic markets whose prices are determined by production costs rather than by the state of demand!¹⁵

2.2 DEMAND PULL INFLATION

Keynes' explanation of the cause of inflation is rooted in excessive demand. From the most elementary stand point, the keynesian explained the cause of inflation from the most

elementary stand point that P is determined by the interaction of demand and supply. An inflationary process to Keynes, is therefore described as a process in which demand is continuously in excess of supply. The resulting competition therefore generates price increases since supply cannot adjust to fill in the gap of excess created by demand through

- (i) running down or depleting the existing stock
- (ii) increasing import
- (iii) post-poning demand
- (iv) diverting supplies from export market to the domestic market and
- (v) that the economy is at full employment (see Ojameruaye 1968).

Therefore to Keynes, inflation is predicated on the price elasticity of supply. The impact of the excess of aggregate demand over supply is minimal when supply is highly price elastic. Price elasticity of supply itself depends on the employment level of the economy. The economy is therefore prone to demand type of inflation, the nearer it is to full capacity utilisation of resources.

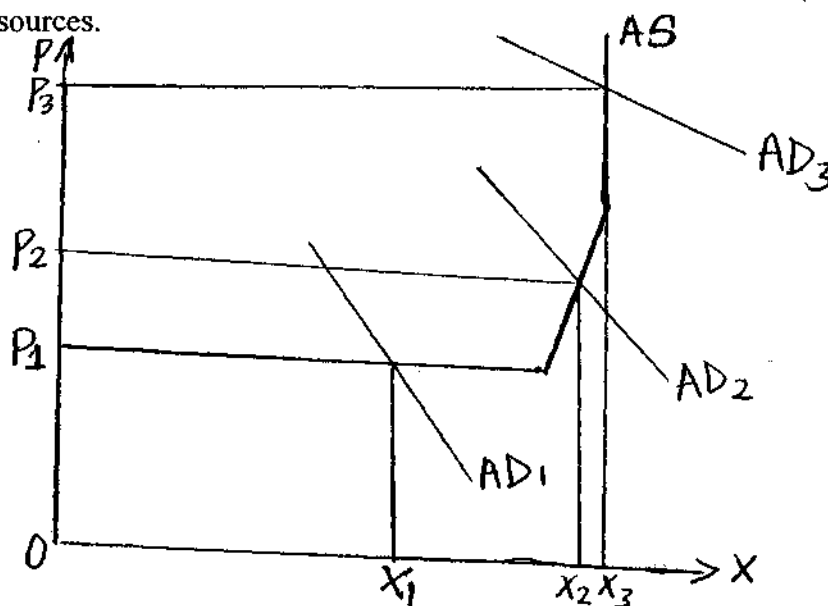


Figure 1.0 A graph of Demand Pull Inflation

The shift of aggregate demand (AD) from AD1 to AD2 increases price slightly because of high elasticity of supply 'AS' as AD moves from the horizontal segment to the upward sloping from left to right segment. When compared with the shift from AD2 to AD3 the increase in price is very high because elasticity of AS is zero (near full employment level).

The increase in demand is explained through increase in money supply either by government deficit spending, an expansion of bank credit to private investment or rising demand from abroad (see Papi 1962, Harberler 1962, Ojameruaiye 1968).

2.3 STRUCTURALIST THEORY OF INFLATION

The proponents of mixed theory (cost push and demand pull) are also referred to as the structuralists. They emphasise rigidities in supply as the major factors. These structural rigidities are reflected in the limitations of some sectors to adjust to changes in the level and composition of aggregate demand. These structural limitations include, inadequate food supply in the face of expanding demand of the rapidly growing population, instability and inelasticity of the purchasing power; bottlenecks in the supply of social overhead capital and skilled labour, structural deficiencies in the tax system - mainly inflexibility of revenues. This theory seems to explain to some extent, the economy of less developed countries.

The flexibility of the capitalist economy is a much debated issue since the Great depression (Keynes 1936). Further evidences of other price formation processes unexplained by neoclassical price theory are common in less developed countries (see Gordon 1976).

Onimode (1985) opined that in these economies (Nigeria in particular), are noticeable several disarticulated modes indicative of untegrated and unflexible economies as the structuralists emphasised. Thus different price formation processes may be noticeable in the unorganised parts (probably predominantly haggling), the organised sector (administered prices probably based on mark up pricing), the public good sector (fixed prices based on several criteria), (see Bade Onimode 1985).

In the structuralists view, inflation cannot be stopped if these structural limitations are not eliminated since upward price movement is not due to output exhaustion but structural imbalances.

In as much as this theory gives insight to causes of inflation, the reconciliation done by the theory have not yielded the desired results as opinion still remains divided on what determined the change in consumer price index in recent years, whether it is due to government deficit financing, or too much of private investment, whether it is because of the profits motive as encouraged by monopoly or oligopoly power of the firms, or the excessive power wielded by the labour union (R.J. Ball and T. Burns (1976).

2.4 QUANTITIST THEORY OF INFLATION

This theory sees inflation as a situation where too much money is chasing too few goods. Monetarism has its root in the fisherine equation sometimes referred to as the crude monetarist equation of exchange.

$$MV = PT \dots\dots\dots (5)$$

i.e total money spent on output is equal to the value of transaction where:

M = Money stock taken to be exogenous and influenced by the decision of Central Banks.

V = Velocity of circulation which is assumed to be constant since it depends on the spending pattern which is at least stable over time.

T = Volume of transaction or total output of goods and services which is assumed to be constant since the economy also is assumed to be at full employment level.

From equation (5) above Fisher's equation thus makes price level a function of money stock.

$$P = F(ms) \dots\dots\dots (6)$$

And from equation (6) above

$$P = k(ms) \dots\dots\dots (7) \text{ where } k = v/y.$$

This implies that there is an equiproportional relationship between money stock and price level. Thus, inflation is a direct relationship between money supply and prices.

Also from equation (5) we can take time derivative of equation to give

$$dp/dt \cdot 1/p = dm/dt \cdot 1/m + dv/dt \cdot 1/v - dy/dt \cdot 1/y \dots\dots\dots (8)$$

If the classicals believed prices to be determined by the forces of demand and supply, through what mechanism then will an increase in money supply lead to an increase in price level? The mechanism is this: an increase in money supply changes asset holdings which produces portfolio adjustment in terms of expenditure. With the assumption of full employment, price level is thereby increased.

Cambridge reformulation of the model came under the leadership of Marshall and Pigou.

$$M = KPQ \dots\dots\dots (9)$$

Where $k = 1/v$; it is the fraction of income held in cash. At equilibrium money supply was equated to the demand for money by this school of thought:

$$MS = Md = P_i \& Y^B \dots\dots\dots (10)$$

Money demanded in real terms becomes, $md/p = 1 \& Y^B \dots\dots\dots (11)$

and from equation 11 above the rate of inflation becomes

$$dp/dt.1/p = dm/dt.1/m - Bdy/dt.1/y \dots\dots\dots (12)$$

Which is equal to the rate of growth of the demand for money balances that is due to the growth of real income. This in essence means that if money supply increases due to the action of Central Bank, excess cash balance is accumulated increasing the purchasing power of the people and more spending resulting in the increase in price level at full employment.

Both Fishers and Marshall led group agreed therefore on the one-to-one relationship between money supply and price level as output cannot physically be raised beyond full employment level.

Studies by M. Parkin (1986) came out with a conclusion that substantiates the monetarist argument that price and output movement are not the consequence of institutional rigidities. Rather the market institution of the economy and the co-movement in output and prices each depends on characteristics of the money supply growth process.

From the above discussion it is obvious that either within the analytical framework of Fisherine equation of exchange or the Cambridge demand for money, increases in money supply is seen as the casual factor in inflationary pressure.

Several questions have arisen over the relevance of the assumption underpinning the

monetarists contention of inflationary pressure.¹⁶ Empirical evidence made Philip (1935) to introduce the famous curve to show the trade-off between inflation and unemployment. In other words it was the monetarist contention that inflation is only possible when there is full employment. However cases have shown that it is possible to experience inflation even in the face of excess capacity. Therefore, Palmer and Fasheku (1982) contended that the increase in price when there is substantial excess capacity would be excluded from the monetarist type of inflation.

The assumption that the velocity of circulation of money is constant has also been questioned (see Okunrintemi, J.S. (1989). Adejugbe (1982) found out that there are factors which influence velocity of circulation. Among the factors identified are expectation of price (particularly in a hyper-inflation) and the stage of economic growth. It was contended by both authors that as V changes the line of causation becomes indeterminate.

Herbergers (1978) study on the equiproportional relationship between rate of increase in prices and money supply reveals that the increase in money supply tends to be more than the rate of increase in inflation. This made Adejugbe (1983) to conclude that "the exchange equation in which the explanation of price movement is placed upon quantity of money supply, output and income velocity is inadequate".¹⁷

It is therefore in light of the above that it becomes necessary to review models on inflationary pressure.

Ajayi and Teriba (1974) developed a general quarterly model of about eight equations to evaluate the relative contributions of the different factors that affected inflation during the period 1960 - 1972. Among the equations are:

$$P = F(M_s) \dots\dots\dots (13)$$

$$P = F(M_{st}, M_{st-1}, y/p, A) \dots\dots\dots (14)$$

$$P = F(M_{st}, M_{st-1}, y/p, A, \text{Exp/GDP}) \dots\dots\dots (15)$$

$$P = F(M_{st}, (M_{st-1} y/p, a, \text{imp/GDP}) \dots\dots\dots (16)$$

Where P = Price change
Mst = Money Supply at time
y = Income
A = Past changes in the rate of inflation
Exp/GDP = Export - income ratio
imp/GDP = Import - income ratio

Their results revealed that money supply is not always a significant determination of inflation and that the adjustment process is rather low. Ajayi (1978) later obtained a strong relationship between money supply and inflation in another study.

Adeyokunmu and Ladipo (1978) conducted a quantitative assessment of the impact of money supply, import duties, and GDP on inflation rate using the following model:

$$y = F(X_1, X_2, X_3, U) \dots\dots\dots (17) \text{ linear form}$$

$$y = a_0 + a_1 \text{Log } x_1 + a_2 \text{Log } x_2 + a_3 \text{Log } x_3 \dots\dots\dots (18)$$

Logarithmic function.

Where y = CPI for Ibadan
X1 = Money supply
X2 = Import
X3 = GDP
U = Residuals

The results of both linear and logarithmic functions showed that money supply contributed significantly to the inflationary process in the city during the period 1960-1973. Adejugbe (1974) conducted an inquiry into the causes of inflation in Nigeria for the period 1962 to 1972. He used both static and dynamic equation in his studies. In the static equation

he examined the impact of the variables generally and in the dynamic equation attempt was made to measure the influence of these variables over time.

(a) Static equation:

$$P = A_0 + A_1M + A_2y + A_3TrV + U \text{ (Linear) (19)}$$

$$\text{Log } P = A_0 + A_1\text{Log } M + A_2 \text{Log } y + A_3$$

$$\text{Log } TrV + A_4\text{Log } W + U \text{ (20) Logarithmic}$$

where P = average price level

M = money supply

TrV = Trade restriction variable taken as the percentage of import duty to the value of imported goods.

W = average wage level

(b) Dynamic equation:

$$P_t = a_0 + a_1m_t + a_2m_{t-1} + a_3m_{t-2} + a_4y + U \text{ (21) linear}$$

$$\text{Log } P_t = A_0 + A_1\text{Log } M_t + A_2 \text{Log } M_{t-1} + A_3 \text{Log } M_{t-2} + a_4 \text{Log } y + U \text{ (22)}$$

Semi - Log transformation

$$\text{Log } P_t = A_0 + A_1M_t + A_2 M_{t-1} + A_3 M_{t-2} + a_4 + U \text{ (23)}$$

inverse semi log function

Where Y = value of Nigeria's export used as proxy for GDP. Both quarterly and annual data employed and the results were that both money supply and real output contributed significantly to price movement. He recommended that the domestic money supply be regulated while the output should be expanded in order to effectively control inflation.

Ojameruaiye (1985) conducted an analysis of the determinants of the general price level between 1960 and 1984 on a model of ten equations among which five of the equations are stated below:

$$\text{CPI} = F(\text{ms}, \text{u}) \dots\dots\dots(24)$$

$$\text{CPI} = F(\text{ms}, \text{ms}-1, \text{u}) \dots\dots\dots(25)$$

$$\text{CPI} = F(\text{GBD}, \text{GBD}-1, \text{u}) \dots\dots\dots(26)$$

$$\text{CPI} = F(\text{Ms}, \text{GBD}, \text{DSCPS}, \text{DSCGS}, \text{U}) \dots\dots\dots(27)$$

$$\text{CPI} = F(\text{ER}, \text{FER}, \text{MR}, \text{IM}, \text{IOE}, \text{U}) \dots\dots\dots(28)$$

$$\text{CPI} = F(\text{Ms}, \text{IAP}, \text{SA}, \text{PM}, \text{MBLR}, \text{PCI}, \text{U}) \dots\dots\dots(29)$$

- where
- CPI = Consumer Price Index
 - Ms = Money Supply Index
 - GB = Government Budget Deficit
 - BSCGS = Banking system credit to the government sector up
 - ER = average exchange rate
 - FER = external reserves of the CBN
 - IAP = index of agricultural product
 - SA = salary dummy
 - PM = Nigeria's import prices
 - MBLR = maximum bank lending rate
 - PCI = Nigeria's per capital income
 - IM = Merchandise import
 - IOE = index of openness defined as the import current GDP ratio

The results show that money supply is a significant variable in explaining the price movements. He also discovered that the lagged money supply is not significant at any reasonable level. The regression of CPI on the budget deficit in the current year (t), is significant at 1% while its lag is significant at 10% level. His result on the co-efficient of the exchange rate and import restrictions show signs contrary to the apriori expectation, yet he could not offer useful explanation for the behaviour of the co-efficient of the exchange rate in his regression result.

Adebisi, S.D. (1991) conducted an investigation on the monetary factors in the inflationary process in Nigeria for the period 1969-1989. He predicated price determination on monetary developments in the economy, output, development in the external sector, exchange rates and foreign prices.

He made use of thirteen equations which though would have been better to solve simultaneously but he went ahead to reduce them to a single equation. This, he claimed is due to inadequate data. The single equation is thus given below

$$I = F(Ms, Y, BD, Ms-1, BD-1, Pt-1, Pt, e) \dots\dots (30)$$

where I = percentage change in CPI and the explanatory variables are also percentage change.

Ms = money supply index

Y = output or GDP

BD = budget deficit

Ms-1 = lagged money supply

BD-1 = budget deficit lagged

Pt-1 = foreign prices

e = exchange rate

The overall fit shows a very high relationship between the price level and explanatory variables. His result, showed that above 99% of the variations in the price is explained by the variations in the independent variables. This he argued tends to support the monetarists position of price determination. However, the co-efficients of the money supply and the previous year price level are the only variables which are highly significant at 0.2% level. He agreed that the co-efficient of the foreign price and the lagged money supply carried the wrong signs.¹⁶ The co-efficient of the budget deficit is also wrongly signed and insignificant.¹⁹ No adequate explanations were offered for these wrongly signed co-efficients.

In a nutshell, the review of these model provides an insight into the importance of money supply in the price determination and policy advocacy has been to be favour of monetarism, yet, there has not been success in controlling inflation. This is because most of the papers so far in this area have either left out one or two of the variables. Also in Nigeria most of these works stopped in 1991. It therefore became imperative to aggregate these segregated variables and models as well as updating the previous works in this area since many research works have already been conducted in this field.

2.5 THEORETICAL FRAMEWORK

As earlier discussed, inflation is viewed as a persistent rise in the general price level and it is measured ordinarily by some index numbers of prices. Price determinants or causes of increase in prices have already been dealt with in section 2.1 through section 2.4. Different

types of argument have been put in place as to the causal factors of persistent price rise. Various schools of thought declared boldly how each of other proposed factors could lead to inflation.

This research work adopts the pure monetarist approach which has argued that money matters in determining economic activities of a country and the price level. The model to be used therefore draw analysis from the monetarist approach using the quantity theory of money because it will help in testing the effects of money supply on inflationary process.

Therefore, the model for this research work is derived from the theoretical settings of the monetarists with their stern conclusion that “only money matters” in an economy. According to Glahe (1973).It must be noted that the monetary conclusion is based on the joint validity of particular assumptions about the demand for and the supply of money. They are both assumed to be perfectly interest inelastic what we refer to as the exogeneity of money.²⁰

The monetarists contention hence goes thus: given a level of real money supply and the level of demand for money at certain income levels, money demand and supply do not change along with changes in the level of interest rate. For the derivation of the general equilibrium, the equilibrium in the real (good) market is needed which together with the money market equilibrium, yield the general equilibrium level referred to as the aggregate demand in the economy, while the full employment level yield what is referred to as the aggregate supply level. Therefore national income and price level are determined by the equilibrium of aggregate demand and supply.

An increase in the equilibrium in the goods market will only lead to an increase in

rate of interest with little or no impact on income and price level. It can thus be said that the impact of the fiscal policy is not necessary since it may not yield the desired results.

If on the other hand, nominal money supply is increased through federal reserves, it will result in an increase in the money market equilibrium. This now meets the original equilibrium in the goods market at full employment which results in a higher aggregate demand than when the fiscal policy was embarked upon. As a result of this decision, aggregate demand meets aggregate supply at a higher level of national income and price level.

Argument has arisen from the Keynesians that money supply is perfectly endogenous or interest elastic as opposed directly to the monetarists' assertion that money matters (see Glahe 1973, p. 279). The Neo-Keynesians on the other hand recognised that the two extreme positions of Keynesianism and monetarism are dangerous so they maintain a mid-way between the two extreme positions (see Glahe 1973 p. 286).

However, to further buttress the argument of the monetarists on the exogeneity of the demand for and the supply of money, several studies were conducted by various authors and they have used both the broad and narrow definitions of money in their analysis. Short and long term interest rates were also used.

TABLE 1.0 The interest Elasticity of the Demand for money
A summary of Empirical Findings

Author	Data used	Definition of Money	Interest Rate	Interest Elasticity
Bronfenbrenner & Maye	Annual, US 1991 - 1956	M1	Short	-0.33
Chow	Annual, US 1897 - 1988	M1	Long	-0.73
Meltzer	Annual, US 1900 - 1958	M1	Long	-0.92
		M2	Long	-0.48
Brunner and Meltzer	Annual, US 1930 - 1959	M1	Long	-1.09
		M2	Long	-0.72
Laidler	Annual, US 1919 - 1960	M1	Short	-0.16
		M2	Long	-0.25
Lee	Annual, US 1951 - 1965	M1	Short	-0.41
		M2	Short	-0.67
Bank of England	Quarterly U.K. 1955 - 69	M1	Short	-1.05
		M1	Long	-0.80
		M2	Short	-0.09
		M2	Long	-0.35

SOURCES: Adapted from Sam Dave Adesisi's. "The monetary factors in the inflationary process in Nigeria 1969 - 1989". Nov. 1991 Page 61.

**TABLE 1.1 The interest Elasticity of the Supply of money
A summary of Empirical Findings**

Author	Data used	Definition of Money	Interest Rate	Interest Elasticity
Deleeuw	Quarterly U.S. 1948 - 1962	M1	Short	0.25
Deleeuw & Turek	Quarterly U.S. 1948 - 1962	M1	Short	0.22
Goldfield	Quarterly U.S. 1950 - 1962	M1	Short	0.22
Goldfield & Kaere	Weekly, US 1955 - 1959	M1	Short	0.21
Telgan	Quarterly U.S. 1953 - 1964	DD	Short	0.14
Brunner & Meltzer	Annual, US 1949 - 1962	M1 M2	Short Short	0.66 0.72
Rasche	Quarterly U.S. 1965 - 1969	M1	Short	0.24

SOURCES: Adapted from Sam Dave Adesisi's. "The monetary factors in the inflationary process in Nigeria 1969 - 1989". Nov. 1991 Page 62.

There is general consensus that there is a negative relationship between the demand for money and interest rates and that the elasticity of demand to interest rates is rather low.²⁴ Limiting the definition of money to the one in this research work and also using the short term interest rates since they are relevant to Keynesian liquidity preference theory on apriori grounds, we would obtain from Table 1.0 an average interest elasticity to be -0.33. This result neither supports the Keynesians nor the monetarists' view. The estimated interest elasticities also appeared to be too low to support Keynesians view of a perfect interest

elasticity of demand for money.

If we consider that of elasticity of supply of money to interest rate as in table J.1 it ranges within 0.72 and 0.14 with an average of 0.22. This results falsified the Keynesians claims of perfectly endogenous money supply. However, it does not perfectly agree with the perfect exogeneity of money supply as contended by the monetarists. Integrating the two results on the supply of and the demand for money, it yields the hypothesized type of LM curve by the monetarists. Thus, these empirical research tend to validate the monetarists position.

It is in the light of the above (relative importance of money discussed) that we will want to situate the heart of this research within the monetary framework and most importantly build the model to be used on the restated quantity theory of money. The traditional and the cambridge approaches have already been discussed in the literature review.

Modern research work have come to admit that the quantity theory of money is a study of the demand for money. Professor Milton Fredman built on the cambridge cash balance approach and agreed with Irving Fisher quantity theory that in the long run, the price level depends on the quantity of money. The quantity theory in the first instance should be noted not to be a theory of output or of money income or of the price level but a theory of demand for money. Any statement therefore about these variables requires combining the quantity theory with some specifications about conditions of money and perhaps other variables as well.²² Fredman in his work (1969) explained the demand for money in the Framework of portfolio composition. He identified the variables affecting it as income,

wealth, rate of returns on a variety of assets like bonds, physical goods (representing the opportunity cost of holding money).²³

$$M_d = F(P, r_b, r_e, 1/P, dp/dt, W, y/p, U) \dots \dots \dots 32$$

This is an expression of the demand for real balances as function of real variables independent of the monetary values. As $r_b, r_e, 1/p, dp/dt = r$ cost of holding money, and ignoring U because of the difficulty of measuring wealth, the equation becomes:

$$m/p = F(r, y, u) \dots \dots \dots 33$$

Where $U =$ random disturbances like tastes, preferences and any other factors affecting them.

Taking the logarithm of equation 33 above we have $\log m/p = a + b_1 \log r + b_2 \log y \dots \dots \dots 34$. This expression explains the demand for cash balances in real

terms. Where $M =$ Index of money supply

$p =$ Price index

$r =$ Opportunity cost of holding money or rate of interest

$y =$ Real income

Differentiating equation 33 with respect to time we have $d(\log m) / dt - d(\log p) / dt = a + b_1 dr/dt + b_2 d(\log y) / dt \dots \dots \dots 35$. Hence $d \log p / dt = d \log m / dt - a - b_1 dr/dt - b_2 d(\log y) / dt \dots \dots \dots 36$.

This was the theoretical modelling Herberger used when he conducted an inflation model and a test for the inflationary situation of Brazil and India.²⁴ The model he used in his empirical work is obtained by substituting dA/dt for dr/dt .

$$d \log p / dt = a + b_1 \log y / dt + b_2 d \log m / dt + b_3 d \log m / dt - 1 + b_4 dA / dt + b_5 d \log$$

w/dt 37

Due to the insignificant role of W, a residual explanatory variable was assigned to it. He also claimed that m_t and m_{t-1} captures all the lagged explanatory power of changes in the money supply and variations p_t .

In a study conducted by O'mte Diahavbe, M. Rabiou and F. Oshilim (1989) on the output and price effect of money supply in Nigeria, pure monetarist approach was adopted in their model specification:

$$\text{Log } P_t = \alpha + B_1 \log H_t + B_2 \log RD_t + B_3 \log CD + C_t \dots\dots\dots 38 \text{ and}$$

$$\text{Log } Q_t = \alpha + B_1 \log H_t + B_2 \log RD_t + B_3 \log LD_t + e_t \dots\dots\dots 39$$

- where P_t = consumer price index
- Q_t = GDP
- H_t = high powered money
- RD_t = reserve deposit ratio
- CD_t = currency deposit ratio
- u = stochastic term and
- Subscript t = time

While government budget deficit was outlined as part of the causes of inflationary process in Nigeria, yet the model did not capture this variable.

In Owosekun A and Odama J.S. on the causes of inflation in Nigeria,²⁵ they applied the pure monetarist model of Herberger already discussed in section 2 as written below:

$$P_t = \alpha + \beta_1 M_t + \beta_2 M_{t-1} + \beta_3 y_t + \beta_4 A + U \dots\dots\dots 40$$

Dr. Kazi's model²⁶ of the forecast of money supply and inflation rate in Nigeria was

also written in Herberger style.

$$\dot{P} = S_0 + S_1H + S_2y + S_3p_{t-1} + E_t \dots\dots\dots 41$$

where $\dot{P} = \frac{P_t - P_{t-1}}{P_t} =$ Inflation bills.

due to the fact \dot{P} is not a good dependent variable according to his experiment, it was re-written thus.

$$P = S_0 + S_1H + S_2y + S_3p_{t-1} + E_t \dots\dots\dots 42$$

In another study by Adeyokunmu T and Ladipo O.O. on the causes of inflation in Nigeria: Quantitative Assessment,²⁷ a functional relationship was postulated between price level, Y and the factors that seem to affect it like money supply (X1), GDP (X2), and export duties (X3).

$$y = f(X_1, X_2, X_3, U) \dots\dots\dots (43)$$

where U = residuals

The wanted to incorporate unemployment and wages variables but due to inadequate data of nine series they were not incorporated. In a linear function, the functional relationship becomes:

$$y = a_0 + a_1 x_1 + a_2 x_2 + a_3 x_3 + U \dots\dots\dots 44$$

model 40 and 44 take the same form because of the theoretical foundations which stemmed from the monetarists' philosophy.

Adebisi S.D.'s study on the monetary factors in the inflationary process in Nigeria, 1969 - 1989, gives a functional relationship of:

$$P = f(M_s, Y, BD, M_{s-1}, BD_{-1}, p_{t-1}, pf, e) \dots\dots\dots 45$$

His price equation was accounted for by monetary development in the external sector. Also important are exchange rate and foreign prices. He could not solve the macro model he built

due to inadequate data.

From the above review it is clear that most of these models do not actually capture all the explanatory variables of inflation in Nigeria. Besides, in these various models some of the incorporated variables have been segregated. This research work therefore attempts to aggregate these segregated variables models to incorporate some of the variables that have not already been captured and to as well update various research work that have been conducted in this field.

2.6 AN ANALYTICAL MODEL OF INFLATION

The conceptual linkage between the stock of money and the general price level has been explained in the literature review. Its relationship with exchange rate, budget deficit and between each of these explanatory variables will be discussed. Other monetary development that affect inflation includes expectation of inflation for which cost of holding money is a proxy, and other parts of money supply which are not subject to control by CBN.

For exchange rate, the argument is premised on the pass-through effects to the domestic prices. This is predicated on the assumption that induced increases in prices of import following a devaluation will lead to increase in the domestic price level. Therefore devaluation of a domestic currency raises the domestic prices of imported inputs hence production costs are affected accordingly. Profits and indirect tax are usually mark-up on producers prices to arrive at ex-factory prices, and ex-factory price plus distributed margins equal market prices.

Consequently upon this, devaluation that results in inflation causes real wage rate to

fall and because of the increase in cost of living, labour must agitate for increases in wages and benefits. When granted, wages and cost of production are further pushed up directly. In less Developed Economies, Nigeria in particular, where government is the major employer of labour, increases in wages result in increase public outlay hence resulting to fiscal deficit as revenue cannot match expansion in government expenditure.

If the fiscal deficit is financed through CBN credit to the government, it can either increase aggregate demand and because of inelasticity of supply it cannot meet the excess aggregate demand resulting into a demand type of inflation or an increase in bank credits results in increase money supply through the money base and hence leads to inflation.

Also as government compete with the private sector for scarce loanable funds, it raises the rate of interest. Under this condition, the tendency is for the CBN to increase money supply (to reduce the interest rate) in which case deficit spending ultimately stimulate monetary expansion hence inflation.

The announcement effects of increase in wages and salaries in Nigeria also affect peoples expectation of inflation. When individual or groups of participants have bouyant expectation such as expectation of income arrears from increased wages and salaries, relief packages such as the Adebayo (1970), Udoji (1975), IBB's SAP relief package (1989) and Abacha relief package (1994), then the demand for goods and services will rise more rapidly than the economy can expand output. This made Falegan to conclude that "If Udoji appears in the paper of the market women five times (5ice), her prices will go up five times (5ice)".²³ Therefore the cost of holding real cash balances variable is important to be able to capture the effect of changes in velocity caused by changes in the expected cost of holding money.

Other variables of importance to this model are lagged money supply and price level. Successive lagged values of money supply is important in tracing the effect of money supply. Current price level should be seen not only as a function of current money supply but also lagged money supply. However, its impact may decline over time.

Price level lagged is significant because of price mark-up. Mixed inflation theory postulate that there is inter-connection or interaction between the current and lagged price level. Adejugbe (1982) collected the effect of M_{t-1} in P_{t-1} . This is not adequate. The influence of P_{t-1} should therefore not be seen as generated commulative series of the influence of M_{t-1} only but also by the economic realities of the system. For example, goods gap existence, lack of adequate competition to promote efficiency of operating, erection of high protective tariff wall, sub-optimal utilisation of resources occasional by existence of inputs in unsuitable proportions, under - utilisation of installed infrastructures etc induced inflationary pressures.

Based on this conceptual and theoretical links explained above, some relationship is built on a block model as below:

$$P = f(M, Y, e, Pf, Pt-1, Mt-1, ED, GD, A, U) \dots\dots\dots (3.1)$$

$$\text{But ED} = \log(ms/p) - \log(md/p) \dots\dots\dots (3.2)$$

$$Ms = f(H,A,GB, Y, E) \dots\dots\dots (3.3)$$

$$H = f(Y + R + GD) \dots\dots\dots (3.4)$$

$$Md = f(Y, A, Pt-1, mt - 1) \dots\dots\dots (3.5)$$

$$GD = GE - GR \dots\dots\dots (3.6)$$

$$GR = PR + OR + MR \dots\dots\dots (3.7)$$

$$MR = f(M.Q, Pf, E, TR) \dots\dots\dots (3.8)$$

$$PR = GR - Mr - OR \dots\dots\dots (3.9)$$

	OR	=	f(y) (4.0)
Where	P	=	Price
	M	=	money supply
	Mt-1	=	lagged money supply
	Pt-1	=	lagged price level
	Md	=	demand for money
	H	=	high powered money
	Y	=	income represented by GDP
	GB	=	government bills
	GD	=	government deficit
	Pf	=	foreign prices
	A	=	cost of holding money (interest rate)
	E	=	exchange rate
	R	=	reserves
	GE	=	government expenditure
	GR	=	government revenue
	ED	=	excess demand
	PR	=	revenue from oil
	OR	=	non oil revenue other than import duties
	MR	=	revenue from import duties
	GC	=	government deposits with Central Bank
	MQ	=	quantity of import
	Tr	=	tarrif rate
	U	=	residual or stochastic term of error

Note that the specification of equation 3.2 is based on walras law that equate excess demand in the goods market with excess supply in the money market. Using Chibler (1989) excess supply of money, is the logarithmic difference of real money supply to real money demand.

The major difference between this model and the Adebisi's model is based on the fact that his money supply model did not take into account interest rate, government bills and income level. He also omitted the equation of money demand yet he went ahead to take the logarithmic difference to arrive at excess demand using walras law.

In Nigeria, treasury bills held by banks are a component of high powered money though they may not consistute a good medium of exchange when held outside the banking system, yet it cannot be neglected since it affects the monetary base of a country hence the money supply.

As a follow up of this discussion so far in the reviews of literature, we have been able on apriori expectation to link up the relationship that exists between money supply and inflation rate to be a direct one that is, positive. Based on the theoretical construct of the quantitists, it is expected that an increase in the level of money stock without a corresponding increase in the level of output either due to structural inefficiencies (rigidities) or full employment level will lead to an increase in the general price level. This will be tantamount to what the quantitists refer to as a situation where too much money is chasing too few goods.

The influence of money supply lagged on current money supply cannot be neglected. The total amount of money that will be supplied into the economy takes into cognisance the level of money supply last year. The point one is driving home here is that both money supply in time t and $t-1$ are positively related to the general price level.

Government deficit is another variable that is expected to be positively related to the price level. The apriori expectation is based on the theory that if the fiscal deficit is financed

through CBN credit to government, it increase aggregate demand and due to inelasticity of supply it can result into a demand pull inflation. Also as government compete with private sector for scarce loanable funds, interest rate is raised. The tendency is for CBN to increase money supply to reduce interest rate hence monetary expansion is enhanced causing inflation.

Foreign prices (using U.S. CPI as proxy) is on apriori expectation positively related to domestic prices, considering the degree of openness and of development of Nigerian economy (see London 1989).

Also expected to be positive co-efficient is that of price level lagged. This is based on the structuralists arguement of price mark-up. The downward rigidity of prices of goods and services in Nigeria has been the order of the day.

Interest rate, a proxy of opportunity cost of holding real cash balances is expected to be positively related to the general price. When interest rate is high, there is the tendency of CBN to increae money supply to lower rate of interest. The resultant effect is an overall monetary expansion of the economy.

The level of output of the economy is, based on apriori expectation negatively related to the price level. According to the demand pull inflation theory, it is argued that inflation exists when demand is in excess of supply. If supply or output is highly price elastic it is expected that the impact of the excess of aggregate demand over price will be minimal.

Also exchange rate is negatively related to price level. This is predicated on the pass-through effects to the domestic prices. Induced increases in prices of imports following a devaluation will lead to increase in the domestic price level. A fall in exchange rate therefore

raises prices of imported inputs and production costs affected accordingly. As would be profit and indirect tax plus costs are usually mark-up on prices.

Therefore the equations are reduced to the below single equation:

$$P = \alpha_0 + \alpha_1 m_t + \alpha_2 m_{t-1} + \alpha_3 p_{t-1} + \alpha_4 GD + \alpha_5 p_t + \alpha_6 A + \alpha_7 Y + \alpha_8 E + U \dots \dots \dots (4.1)$$

- Where
- P = general price level
 - M_t = current money supply
 - M_{t - 1} = lagged money supply
 - P_{t-1} = lagged price level
 - GD = government fiscal deficit
 - P_t = foreign prices
 - A = interest rate (opportunity cost of holding real cash)
 - Y = level of output (GDP)
 - E = exchange rate
 - U = stochastic term.

CHAPTER THREE

3.0 AN OVERVIEW OF MONEY SUPPLY AND INFLATION IN NIGERIA

The economy of Nigeria has experienced significant change in money supply and inflation since 1970. The trend in money is measured by the annual percentage change in money supply while that of inflation is measured by annual percentage change in consumer price index (CPI). The section that follows highlights the general trend of money supply in Nigeria. Also discussed in the section is the components that contribute to the observed figures of money supply. Section 3.2 brings to light the inflationary trend in Nigeria and the various factors that led to the inflationary situations. Also highlighted are the several anti-inflationary measures embarked upon during the period: (1970-1993).

3.1 THE TREND OF MONEY SUPPLY IN NIGERIA

As evidenced in table 2.0, the growth rate of money supply since the first decade of independence in Nigeria has been quite moderate with average annual growth rate of 4.5% (see Adebisi S.D. (1989). At the end of 1970, money supply figure was put at N608.4million showing that the trend continue to grow to about 42.5% above that of the preceeding year. The trend fell sharply in 1971 to about 3.4%. Even though the total money supply has increased, the percentage change has fallen. It picked up in 1972 and 1973 to about 11.3 and 18.1 percents respectively. For these period of four years (1970-1973) the annual average percentage change was 18.6%. Both components (currency outside bank and demand deposit) of the total money supply were responsible for the high level of annual average

percentage in money supply for they increased proportionately. The general rise in money supply over this period of time was accounted for by the increase in government expenditure which was financed through bank credit. The dramatic increase in government expenditure was brought about by the civil war. The war affected zone became heavily monetised as a result of the execution of the war. The factor that slowed down the rate of money supply in 1971, was the drastic fall in bank credit to the government as the net increase was about N134million. The credit to the private sector declined also by about 25.5% between 1970 and 1971. Another factor that was expansionary on the money supply was the monetisation of the foreign reserves.

By 1974, the percentage change in money supply shot up to about 42.5%. This situation continued upto 1971, even though the rate has started to decline. The average annual percentage was about 54.7%. The figure is more than double that of 1970-1973.

The major expansionary factors included, the substantial increase in credit to the government necessitated by the huge post - war commitments for reconstruction and rehabilitation, the rapid monetisation of the foreign exchange from foreign earnings. The Udoji award of 1974/1975 aggravated the monetisation of the economy as there were sharp increase in salaries and wages accompanied by the payment of substantial arrears in both the public and private sectors.

Aggregate demand expanded as money supply was increased. Infact, during the oil boom, the government of Nigeria pursued the keynesian public expenditure-led growth. The effect of expansion in credit to the government on the economy was the same. It leads to expansion in aggregate demand and money supply. Since demand could not be met by the

domestic output level, the total import bills accelerated. This is one of the ways through which budget deficit generate deficit in the current account in Nigeria. Available statistics showed that the government outlay which was about N839 million in 1970 climbed to N4.9million in 1975 and by 1980, had shot up beyond N314.0billion. The inability of the revenue to meet up with the expenditure created persistent deficits. Between 1975 and 1978, the cummulative budget deficit was about N4.8billion.

The pattern of increase in growth rate of money supply was interrupted in 1978 because of a fall in the total credit that goes to the government. It dropped by about 33.7%. This was due to a reduction, by policy, of aggregate banking system credit to the government. The private sector also followed suit. In 1979, the monthly average rate of monetary expansion was about 1.7% against 0.5% in 1978. This further increased in 1980 to 4.2%. The factors that were responsible for the increase were the increase in the credit to the government and the continuing monetisation of the oil revenue. 1980 especially, price of crude oil increased thrice from \$4.21 per barrel through \$34.18 to \$36.18 per barrel. All these increase affect the monetisation of the revenue which further led to an expansion in the money supply.

This trend was interrupted in 1981 when the percentage increase became 5.6% from 50.1% in 1989. The main contractionary factor was the sharp fall in the foreign assets (net) of the banking system. It fell from a tune of N5,607 million to N2,556 million, which represents over 50% fall. This decline was due to a heavy outflow and a reduced inflow of foreign exchange. The decline in inflow of foreign exchange arose from the glut in the world petroleum market and it adversely affected government revenue and expenditure. Other

factors were the decline in other assets (net) of the banking system and an increase in quasi money. The little expansion was made possible by the increase in bank credit. This same trend continued in 1982 when the annual change fell to 3.15%. The same factors still explained the behaviour of the money in 1982 as it was in 1981.

Between 1983 and 1985 money supply increased but at a decreasing rate. The government has to take about N5.2billion for deficit financing as credit from the banking system. Thus, the sharp fall of N3.3 billion in oil revenue from N8.6 billion in 1982 to N5.3billion in 1983 resulted in budget deficit of about N4.9 billion, while that of 1982 was N3.7 billion. The mean annual percentage change in money supply was 9.7% for the period 1983 to 1985. The only factors that accounted for the increase are expansion in the bank credit to the government, increase in the net foreign assets, and other assets (net) of the banking system.

Following the moderate expansion of money supply since 1981, it was further dipped in 1986 as money supply in that year fell by about 1.2%. The fall can be attributable to the fall of N6.6 billion in the other assets (net) of the banking system and the N936.9 million accretion to quasi-money. The fall in the other assets could be accounted for by the rapid build up of the other liabilities of the CBN following the call on authorised dealers in foreign exchange in August and October, 1986 to transfer to the CBN naira lodgements in respect of foreign payments arrears which could not be affected because of the foreign exchange shortage. Withdrawals from banks on this account amounted to N4.2 billion by the end of the year. In addition, the fall in the naira exchange rate lead to the revaluation of the CBN's medium and long-term liabilities, which bankers deposit in their SFEM accounts with the

CBN rose. The contractionary impacts of these factors was, however, partly offset by the expansionary effect of the N4509 million increase in bank credit to the economy.

This moderate trend recorded in the past few years was interrupted in 1987 when the percentage increased to 13.7%; 41.9% in 1988 and 21.5% in 1989 respectively. These three years recorded a mean annual percentage increase of 25.8%.

Between 1991 and 1993, the annual growth rate of money supply continued to be on the increase. The annual average percentage for the three years was 46.7%. The factors that were expansionary included, the increase in the bank credit to the economy and the net accretion to foreign assets of the banking system.

From the foregoing review of the trend of money supply in Nigeria, certain factors which affect money supply can be highlighted. Table 2.2 is an extraction by B.A. Oke and T. Nwade (1977) with which the effect of those factors on the money supply is established. Among these factors are the bank credit to the government and private sector, the change in the foreign asset, and change in quasi money. As these variables increase money supply would respond also by increasing especially when they are monetised, that is, when the increase is spent.

TABLE 2.0 ANNUAL CHANGE IN MONEY SUPPLY IN NIGERIA.

YEAR	MONEY SUPPLY	CHANGE IN MONEY MILLION SUPPLY MILLION	CHANGE IN MONEY SUPPLY %
1970	608.4	178.6	41.6
1971	628.9	20.5	3.4
1972	700.1	71.2	11.3
1973	827.1	127.0	18.1
1974	1,178.3	351.2	42.5
1975	2,044.0	865.7	73.5
1976	3,293.0	1,249.0	61.1
1977	4,794.4	1,501.4	41.6
1978	5,089.7	295.3	6.2
1979	6,146.8	1,057.1	20.8
1980	9,226.8	3,080.0	50.1
1981	9,744.9	518.1	5.6
1982	10,048.6	303.7	3.1
1983	11,282.4	1,233.8	12.3
1984	12,204.1	921.7	8.2
1985	13,267.8	1,063.7	8.7
1986	13,105.0	-162.8	-1.2
1987	14,905.9	1,800.9	13.7
1988	21,148.6	6,242.7	41.9
1989	25,697.6	4,549.0	21.5
1990	37,233.7	11,536.1	44.9
1991	49,364.5	12,130.8	32.6
1992	75,172.5	25,808.0	52.3
1993	116,593.4	41,420.9	55.1

SOURCE: Computed from CBN Statistical Bulletin Dec. 1994.

TABLE 2.1 ANNUAL CHANGE IN CONSUMER PRICE INDEX AS PROXY FOR CHANGE IN INFLATION

YEAR	CPI	CHANGE IN CPI	% CHANGE IN CPI
1970	10.8	1.3	13.7
1971	12.5	1.7	15.7
1972	12.9	0.4	3.2
1973	13.6	0.7	5.4
1974	15.4	1.8	13.2
1975	20.7	5.3	34.4
1976	25.6	4.9	23.7
1977	29.6	4.0	15.6
1978	34.5	4.9	16.6
1979	38.5	4.0	11.6
1980	42.3	3.8	9.9
1981	51.2	8.9	21.0
1982	55.1	3.9	7.6
1983	67.9	12.8	23.2
1984	94.8	26.9	39.6
1985	100.0	5.2	5.5
1986	105.4	5.4	5.4
1987	116.1	10.7	10.2
1988	181.2	65.1	56.1
1989	272.7	91.5	50.5
1990	293.2	20.5	7.5
1991	330.9	37.7	12.9
1992	478.4	147.5	44.6
1993	853.0	374.6	78.3
		41,420.9	

SOURCE: Computed from CBN Statistical Bulletin Dec. 1994.

TABLE 2.2 GOVERNMENT SPENDING AND MONEY SUPPLY

End of year	Total Financial Asset at the end of year (1)	Increase in Bank Credit in the year (2)	Net Foreign Exchange inflow (3)	1 + 2 + 3 + Expected level of Total financial (4)	Observed level of Total Financial Asset (5)	Estimated Govt spending which affected money supply (4) - (5)
1973	489.7	-31.3	196.9	655.3	568.2	87.1
1974	2,581.9	30.6	617.5	3,230.0	3,034.8	195.2
1975	2,321.3	241	521.6	3,083.9	2,377.5	706.4
1976	2,113.0	261	488	2,862	2,544	608

SOURCE: CBN, Economic and Financial Review 1977 December, P 5.

3.2 THE TREND OF INFLATION IN NIGERIA

There has been a moderation in the movements of the price level from 1970 to 1980 in Nigeria as indicated by table 2.1. It became noticeable in 1970 with 13.7% and in 1971 had become 15.7%. Infact for the first ten years the mean average of inflation stood at 15.3%. The CPI which measures the price level is computed in table 2.1. This increase in inflation rate was basically due to expanded demand above supply. There was a restriction on the importation of many consumer goods which was partly responsible for the rise in prices. The inflation rate of growth increased up to about 15.3% in 1971.

The rise in the price level was attributable mainly to the upward movement in food prices, although large increases were also recorded in the price of some of the non-food items e.g. fuel and light and clothing etc. The increase in food prices and others was mainly a reflection of increased demand pressures following the integration and consolidation of the war ravaged areas. In addition, the relaxation of import controls, while it could expand supplies, could not be effective in influencing downwards and upward pressure on the manufactured goods. Added to this was the excess demand created by the Adebo salary awards of 1970.

In attempt to curb the widespread inflation, the price control decree of 1970 was promulgated. This decree established a board which was empowered to impose prices on a wide - range of essential commodities e.g. textiles, tinned meat and fish. Though they were successful to some extent, a large proportion of these items could still not be easily controlled.

To appease the populace again, the Federal Government set up a Wages and Salaries Review Commission. Its assignment was to review the existing wages and salaries at all

levels in the public services, statutory corporations and state-owned companies and determine the areas in which salaries, wages and other remunerations in the private sector can be rationalised and harmonised with those in the public sector. As it could be expected that once the wages and salary reviews were announced, the prices of consumer items would have been raised by sellers in the market.

Inflation declined in 1972 to 3.2%. The rate of inflation in food items was 2.4%. Tobacco and kolanut ranked second at 4.0% after fuel and light. The low rate of inflation in the year is traceable to a moderation in the increases in the prices of clothing, especially of locally produced foodstuffs. This was further augmented by supply from external sources, which helped to balance off the demand for and supply of goods and services.

The price level rose up in 1973 at 5.4% and increased through to 1978. Over these years, the clothing and food components of the price level have been very high. The main cause of the inflation at this period is the excess demand over supply. All efforts to supplement domestic production with imports were frustrated by the persistent port congestion. In addition was the growing money supply, the boost in the disposable income which emanated from the Udoji award. All these helped to skyrocket the price level to the highest peak since independence.

Following this high rate of inflation, the government of Nigeria set up the Anti-inflationary Task Force to examine the current inflationary tendencies in the economy and identify their causes, recommend solutions that will go in the same way with the economic and social objectives of the society. The Force came out with the recommendation that a price Intelligence Agency should replace the price control Board, to monitor the price movements, except for petroleum. It was also recommended that only the National Supply Company should play the role of supplementing existing sources of commodity supply. The monopolistic and restrictive trade practices should be legislated against, and stop the practice whereby the same firms are the producers, wholesalers and retailers of certain commodities.

By 1981 inflation rate had jumped to 21.0%. This was reflected majorly in the price of food component that rose sharply.

As an anti-inflationary measure, government stopped the issue of import licenses to individuals for importation of rice. These licences were to be issued only to government agencies, considered to be competent to import and sell the commodity at controlled price. The government also decided to take steps to prevent the importation of stock fish under monopolistic conditions as was the case in 1980.

The rate of inflation dropped in 1982 again but picked up in 1983 and 1984. This could be due to the general scarcity of consumer goods as a result of hoarding and sharp increase in money supply. The rise in inflation is too evident in the food and household items, and the prices in the rural areas was higher than those of the urban centres because of bad weather conditions, bush fires, crops and livestock diseases. Increased reliance on the imported food items by the rural dwellers and scarcity of locally manufactured items which are urban based.

This trend of upward movement in the price level fell in 1985 again to as low as 5.5%. It further declined to 5.4% in 1986. This could be explained by improved domestic supply situation and the restraint on the expansion of aggregate demand especially in the areas of government spending and a moderate rate of monetary expansion. These were supplemented by the rise in domestic production of manufactured goods. There were also increases in food production and the reduction in personal income through the tight monetary and fiscal policies in the year which were embedded in the structural adjustment package (see SAP policy objectives and measures). However, the dismantling of the price control measures and the sharp depreciation of the naira exchange rate helped to soar the prices of manufactured and import items.

Inflation continued its upward move in 1987 through 1989. Infact the mean average of inflation from 1980 to 1989 was 22.9% almost doubling that of the first ten years. The

major factors accountable for this were probably the money supply, shortage of foodstuffs, increase in the cost of production stimulated by the devaluation of the naira exchange rate and high rate of interest rate, aggravated by the removal of subsidies on some agricultural and industrial outputs.

1990 witnessed a fall in the trend but picked up in 1991 through to 1993. Infact by 1993, the rate of inflation was put at 78.3%. The main factors responsible for this included increase money supply, shortage of foodstuffs, increase in the cost of production stimulated by the devaluation of naira exchange rate, high rate of interest, and removal of subsidies on petrochemicals, petroleum and industrial outputs.

CHAPTER FOUR

4.0 EMPIRICAL FINDINGS

Before proceeding to the presentation and analysis of results, it is important to call to memory some issues:-

- (i) although a macro-model was built in chapter two the model cannot be solved simultaneously due to inadequate data hence this study is restricted to the use of the reduced form as expressed later in chapter two (section 2.6)
- (ii) the general price level as measured by the composite consumer price index has been regressed on monetary factors.
- (iii) the result of the co-efficient of government deficit (GD) should not be embarrassing, the reason being that the actual figure, that is, the negative result of the difference between the total expenditure and the total revenue was what was used. If the absolute figure had been used, the co-efficient should have been directly related to price. Therefore, although the co-efficient of the budget deficit is negative as evidenced by the result, it is said to be correctly signed.

$$\begin{aligned}
 P &= -23.0 + 0.00221M_t - 0.000322M_{t-1} + 0.45P_{t-1} - 1 \\
 &\quad (-29.92) \quad (0.001904) \quad -(0.0006649) \quad (0.2012) \\
 &\quad -0.0013GD + 0.590Pf + 0.63A - 0.000152Y + 14.5E \\
 &\quad \quad \quad (-0.2012) \quad (0.4498) \quad (3.761) \quad -(0.0003002) \quad (5.368) \\
 R^2 &= 99.6\% \quad DW = 2.10 \quad F = 533.58
 \end{aligned}$$

The overall fit shows a very high relationship between the price level and the explanatory variables. It shows that about 99.6% of the variations in price level is explained by the variations in the independent variables. This tends to validate the monetarists' contention on price determination that if monetary variables can be brought under control then the price level is simultaneously being controlled. What is said here is that if the

variables included in the equation can be varied to about 99.6%, the price level can be brought under control to that same percentage level. Since the F statistics is very high (533.58) it shows that the data fits into the model and at least one of the co-efficients or parameters of the model is non-zero.

However, the co-efficient of the money supply lagged is the only one wrongly signed. The co-efficient of lagged price level exchange rate and money supply in the previous year are highly significant at 0.05% level.

Current money supply is correctly (positively) signed. It validates the apriori expectation of the positive relationship between price level and money supply as posited by the quantitists. The coefficient is not statistically significant at 0.05%. This is because over the years under review, money supply seems to no longer be the major causal factor of price variation. Infact money supply has lost its credibility to exchange rate which has risen to the pre-eminent position in price determination in Nigeria.

Lagged money supply though is significant at 0.05% test, the coefficient is insignificant and wrongly signed. It is therefore insignificant in explaining the price level.

The above results agrees with the findings of Adebisi S.D. (1990). He divided his work into pre-SAP and post-SAP periods.

In the first period (1969-80) money supply and lagged money supply were correctly signed and money supply was statistically significant. This was the period before the deregulation of the foreign exchange market. In the second period (1981-1990), although money supply was correctly signed, it was not statistically significant while lagged money supply became wrongly signed and statistically significant. This shows that although money supply still contributes, it is not a major causal factor in this Post-SAP period. Other more significant price disturbing factors have taken over from money supply. Lagged money supply cannot explain the variation in price level over the same period (1981-1990). The low value of the coefficient of lagged money supply shows that the adjustment process is rather

low.

Price level lagged is significant at 0.05% level. It is rightly signed and the coefficient is significant in explaining price variation in Nigeria. This predictor variable validate the keynesian arguement that price is inflexible downward price level is therefore usually mark up in Nigeria.

Government deficit is correctly signed but insignificant at 0.05% level. The coefficient is also not significant. This shows that government deficit spending contributes but it is not a major price disturbing factor.

Foreign prices as proxily measured by United States consumer price index, is not significant at 0.05% level. However, it is correctly signed and the coefficient is highly significant in explaining price variation over the years. This is because of the devaluation of naira which was embarked upon by the government in recent years. Nigeria being a dependent economy needs imported inputs (raw materials, capital goods) for her domestic production. Upon devaluation of naira, foreign prices of these inputs rose and domestic prices followed suit. This variable is not yet statistically significant at 0.05% because of the time needed for the manifestation of the effect of this devaluation.

Expectation of inflation as typified by opportunity cost of holding real cash balances and measured by interest rate is rightly signed and has a significan co-efficient. This is accounted for by the payments of awards (allowances, and arears of salary) like Adebo award 1972, Udoji awards 1974, SAP relief package 1987, and Abacha package in 1993. These made aggregate demand to increase over and above the supply level. It is deregulation of interest rate which culminates in its significance. However expectation of inflation is stastically insignificant at 0.05% level. Perhaps due to the fact that interest rate deregulation is a recent phenomenon.

GDP as measured by (Y) income, carries a correct sign. This is because an economy operating at equilibrium below the production possibility frontier will, with an increase in

the output level, exert a deflationary pressure on the price level. However it is not significant in explaining the price level.

Exchange rate is correctly signed and highly significant in explaining price variation in Nigeria. This can be explained in two ways:-

- (1) There was high monetisation of foreign exchange receipts from the sale of crude oil that led to expansion in monetary expenditures and
- (2) The devaluation of naira which took place in the SAP period makes exchange rate coefficient to be significant. Even though some of the other international currencies were/are appreciating, naira fell precipitously and foreign goods (inputs) became more expensive. This has pushed up domestic cost of production and when added to the profit margin has further pushed up price level.

Therefore exchange rate is even highly significant at 0.05% level. It can be said from the result that exchange rate is a major determinant of price level in Nigeria. When compared with Adebisi's result of low coefficient of exchange rate, it becomes clearer that the period (1981-1990) covered by Adebisi is not long enough to have been able to see the impact of exchange rate on inflation in full force. The deregulation of foreign exchange market was then in operation for only three years. This therefore buttresses the fact that exchange rate variable assumed the role (in post SAP years) that money supply had been playing (in pre-SAP years) in determining price level.

4.1 EVALUATION OF THE MODEL

It is necessary at this juncture to evaluate the model that has been estimated in this research work following the discussion above.

The coefficients of almost all the predictor variable have satisfied the apriori expectation. These include money supply, income of the nation, government deficit, price

level lagged, expectation of inflation and exchange rate. Only lagged money supply is wrongly signed.

Looking at the national income from a different perspective one can conclude that it is rightly signed and it validates the contention that an increase in output level of an economy that is operating below the production possibility frontier will have a deflationary effect on the price level. In that case it is not a contradiction to have an inverse relationship between the output and the price level.

The coefficient of money supply also validates the monetarists assertion of a positive relationship between price level and money supply. However, the size or magnitude of the coefficient shows that money supply is not the major causal factor in Nigeria as against the monetarists' argument. It also goes further to invalidate the monetarists argument of equi-proportionality. As 0.05% level, money supply upto unit (one) rather it was too low and insignificant. Money supply lagged (mty) is low so the adjustment process is not instantaneous.

Among the predictor variables only lagged price level, and exchange rate are both correctly signed, highly significant at 0.05% level and highly significant coefficients. The coefficient of the lagged price level supports the keynesian's argument that prices are not flexible downward but rather are usually markup.

Exchange rate becomes a major factor in determining price variation in Nigeria it is correctly signed and highly statistically significant. This tend to validate the contention of the monetarists that only monetary factors such as exchange rate can explain the variation in price level. It becomes clearer that for a dependent economy like Nigeria where domestic production make use of imported raw materials and capital goods, exchange rate upon devaluation would do no less than odd to the cost of production in economy which when added to the profit margin will help to push up further prices.

4.2 THE VALIDITY OF THE ASSUMPTIONS OF CONSTANT VELOCITY AND FULL EMPLOYMENT.

The foundation upon which the monetarist view of inflation is built is premised on the validity of the joint assumptions of constant velocity of circulation of money, and the operation of economy at the production possibility frontier (PPF). From the equation of exchange as discussed in chapter two.

$$PY = MV \quad \text{meaning that}$$

total money spent on output is equal to the value of transactions, fisher made price level a function of money supply. The only conditions under which changes in the money stock can be transmitted into change in price level are:

- (i) When the velocity of circulation of money is constant
- (ii) When the economy is at full employment level and
- (iii) When the change in velocity of circulation of money is greater than the rate of change of Y ($dv > dy$) which implies that $P > M$ for the equation to still hold.

If V is increasing at a rate that is slower than the rate of increase in Y , then an increase in M may not be able to cause P to increase.

It is found in appendix 2 that the assumption of v does not hold over the years under review. For the entire period, it is evidenced from the table that v has been declining in Nigeria. Therefore it is not right to say that v is increasing in Nigeria. Infact, the change in v is much slower than the change in Y and so dangers in M may not be major causal factor for the variation in P .

From the data available on the GDP in appendix 1, it cannot be pointed out that the Nigerian economy is in any way near operating at production possibility frontier. Beside this indicator, the arrays of jobless Nigerians in the labour market is another good indicator that point out that the economy of Nigeria is not operating at near full employment level.

At times, the change in GDP might be so small (marginal) as to make one think that the economy is at full employment. This might be deceiful as there are many factors that may account for the marginal change in GDP even when the economy is operating within the boundary. Reasons behind this may include the slow response of the output level to the policy measures and the inherent structural inflexibilities in the economy as argued by the structuralists which are often not easily quantifiable. These evidences have therefore invalidated the assumption of the quantitist theory.

CHAPTER FIVE

5.0 SUMMARY, CONCLUSION AND RECOMMENDATION

This study had attempted to find out the effect of money supply on Nigeria inflationary process. It adopted the pure monetarist theoretical framework hence monetary factors were posited as price determinants over the entire period under review. The model showed a good fit to the data.

Having established the relationship between money supply and price level, it is discovered that they are positively related but not significant. This showed that although money supply contributes to price determination in Nigeria, it is not a major causal factor. As even evidenced by the co-efficient of the money supply lagged the adjustment process is not instantaneous.

Other variables of significance are price level lagged and exchange rate. They are both positively related to current price level and the coefficient of lagged price level is high. The high coefficient of lagged price level suggests that price mark up is a very important factor in price determination in Nigeria. Also the coefficient of exchange rate is remarkably high and of significance, suggesting that exchange rate is one of the major causal factors of price variations in Nigeria today.

We have also shown that foreign prices and expectation of inflation are important price disturbing factors but are not too significant. They were correctly signed, coefficients high but are not significant at 0.05% level.

Demonstrate in this study is the fact that the economy is not operating at full employment level nor is the velocity of circulation of money in Nigeria constant.

The policy implication of the result is the emphasis on campaign by the monetarist on the relative effectiveness of the monetary policy over fiscal policy in controlling economic

activities may not be the best policy for Nigerian economy. The moderation of the supply of money to control the price level may not be much effective. Although money supply and price level are positively related, the relationship is not very strong and it could therefore not best explain the rising prices in the face of the stringent economic and monetary measures of today. It then means that the control of money supply as a measure of curbing inflation could only marginally reduce inflation.

In view of the above, the following are the policy prescriptions. It has been found that the factors that seems to affect price level are expectation of inflation, price mark-up foreign prices and exchange rate.

When increase in prices is expected, the confidence of people in the currency begins to decline (Habeeb 1985). The usual observation in Nigeria is that whenever there is any announcement of policy goals the economic and social groups will quickly attempt to adjust by integrating such policy in decision making instantly as result of price expectation. This is in order to improve their relative position to other groups. For example in a situation where the government decides to increase interest rate on borrowing, the producers and the sellers will instantly raise their prices. Although the policy may be anti-inflationary, due to price expectation, price will increase even before the implementation of the policy which is aimed at reducing money supply. Therefore if this type of policy is to be productive, government should have to implement the policy without announcing it until it is done and result achieved.

Prices are usually marked-up when high profit margin are added to cost and when there are inflexibilities in the economy. Price mark-up usually succeeds in pushing up further price level. From the economic history of Nigeria, it has been shown that effective price control has been hampered due to structural inflexibilities, over dependence on the external sector with high rate of smuggled and hoarding. When available goods are hoarded because of price control it leads to artificial scarcity. Government may then take another step by

rationing the little goods available resulting in long queue by the populace. Due to this inconvenience, people may prefer buying at higher prices to queuing at the rationing centre and again the aim of the anti inflationary policy is defeated. However one cannot shy away from the fact that in order to curb excess price mark-up, there should be price ceilings. If we have a disciplined and incorrupt government it can be done successfully as it was implemented successfully during Idiagbon/Buhari regime in 1983. A financially disciplined government may not spend on unproductive activities (white elephant projects), may not spend beyond her target of monetary budget and will not allow itself to be dictated to by the international community especially when her own interest is affected. When this type of side tracking is eliminated, structural rigidities will gradually be removed.

Obviously, the inflationary pressure that is being experienced today in Nigeria is mostly as a result of the depreciated naira which had doubled the import bills and transmit through cost of production to high prices. It is clear from the theory that an economy with a low elasticity of supply for export and a low elasticity of demand for import will surely feel the adverse effect of devaluation. Nigeria's supply response is low because her economy is agrarian and the demand response to import is also low because she depends heavily on the imported inputs, and even for food. Hence, any devaluation raises the naira value of the imported items which is transmitted through the production process to increase in price level. Unless something is done to naira value by regulating exchange rate again, the goods whose inputs are foreign will never stop rising in prices and even drawing up prices of others especially in Nigeria where high prices means good quality.

Controlling these laxities on the part of the government, policy formulators and the executioners will help buttress the little effectiveness of the already weak financial sector in controlling monetary factors so as to minimise their effects on price level. As it is on the ground, money supply is losing its credibility to other price disturbing factors as a significant causal factor of inflation. It will therefore be appropriate, in addition to

controlling money supply, to properly address the issue of exchange rate, expectation of inflation, price mark-up, budget deficit and the structural rigidities that tend to cripple any policy put in place in Nigeria if her problem of inflation is to be properly and thoroughly contained.

FOOTNOTES

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APPENDIX 1

PRICE INDEX OF CONSUMER, MONEY SUPPLY, LAGGED PRICES & MONEY SUPPLY, GDP, U.S. CPI, INTEREST RATE, BUDGET DEFICIT AND EXCHANGE RATE

YEAR	Pt ¹	Mt ² (₹ million)	Mt-1 (₹ million) ³	Pt -1 ⁴	GDP ⁵ (₹ million)	Pf ⁶	A ⁷	Y (₹ million) ⁸	E ⁹
1970	10.0	608.4	426.8	9.9	-763.7	41.5	3.00	54,148.9	0.7143
1971	12.5	622.9	508.4	10.8	-234.4	47.1	3.00	53,707.0	0.6955
1972	12.9	700.1	628.9	12.5	-458.4	49.1	3.00	59,301.5	0.6579
1973	13.6	827.1	700.1	12.9	-390.8	50.8	3.00	73,763.1	0.6579
1974	15.4	1,178.3	827.1	13.6	-365.8	53.3	3.00	82,424.8	0.6299
1975	20.7	2,044.0	1,178.3	15.4	-3,723.7	59.8	4.00	79,988.5	0.6159
1976	25.6	3,233.0	2,044.0	20.7	-4,078.4	65.3	4.00	88,854.3	0.6265
1977	29.6	4,794.4	3,233.0	25.6	-5,225.4	69.1	4.00	96,098.5	0.6466
1978	34.5	5,099.7	4,794.4	29.6	-5,205.1	73.6	4.00	89,020.9	1.6060
1979	38.5	6,145.8	5,099.7	34.5	-4,323.0	79.2	5.00	91,190.7	0.5957
1980	42.3	9,226.8	6,145.8	39.5	-11,557.0	88.1	6.00	95,186.6	0.5464
1981	51.2	9,744.9	9,226.8	42.3	-13,969.2	100.0	6.00	70,395.9	0.6100
1982	55.1	10,048.6	9,744.9	51.2	-1,862.2	110.0	7.50	70,157.0	0.6729
1983	67.9	1,282.4	10,048.6	55.1	-5,290.9	117.1	7.50	66,389.5	0.7241

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APPENDIX 1 (Contd.)

YEAR	Pt ¹	Mt ² (₦ million)	Mt-1 (₦ million) ³	Pt -1 ⁴	GD ⁵ (₦ million)	Pf ⁶	A ⁷	Y (₦ million) ⁸	E ⁹
1984	94.8	12,204.1	11,282.4	67.9	-4,690.4	120.9	9.50	63,006.4	0.7649
1985	100.0	13,267.8	12,204.1	94.8	-5,105.4	126.1	9.50	68,016.3	0.8938
1986	105.4	13,105.0	13,267.8	100.0	-8,804.3	130.5	9.50	71,075.8	2.0206
1987	116.1	14,905.9	13,105.0	105.4	-5,889.7	133.1	14.00	70,741.4	4.0179
1988	181.2	21,148.6	14,905.9	116.1	-12,224.5	137.9	14.50	77,760.0	4.5367
1989	272.7	25,697.6	21,148.6	181.2	-15,134.7	141.2	16.40	83,460.0	7.3916
1990	293.2	37,233.7	25,697.6	272.7	-22,116.1	144.5	18.80	90,342.0	8.0378
1991	330.9	49,364.5	37,233.7	293.2	-35,755.2	149.5	14.29	94,614.1	9.9095
1992	478.4	75,172.5	49,364.5	330.9	-57,531.0	155.5	16.10	94,997.2	17.2984
1993	853.0	116,593.4	75,172.5	478.4	-107,126.5	161.5	16.66	100,550.0	21.8861

$$Pt = \&0 + \&1Mt + \&2Mt -1 + \&4GD + \&5Pf + \&6A + \&7Y + \&8E + U$$

NOTES: 1 = Consumer price index (1985 base year),

2 = Current Money Supply,

3 = Lagged Money Supply,

4 = Lagged prices,

5 = Government Deficit

6 = Foreign prices measured by United States Consumer price Index,

7 = Opportunity Cost of holding Money measured by interest rate as proxy for expectation of inflation,

8 = GDP at 1984 factor cost

9 = Average exchange rate.

SOURCE: Compiled from CBN Statistical Bulletin and IMF Financial Statistics.

APPENDIX 2

MONEY SUPPLY, GDP AND VELOCITY OF CIRCULATION OF MONEY

YEAR	MONTHLY SUPPLY NOMINAL ₦ (MILLION)	₦ (MILLION) GDP 1984 FACTOR COST	VELOCITY OF MONEY CIRCULATION
1970	608.4	54.148.9	89.0
1971	628.9	63.707.0	101.3
1972	700.1	69.310.6	99.0
1973	827.1	73.763.1	89.2
1974	1,178.3	82.424.8	70.0
1975	2,044.0	79.988.5	39.1
1976	3,293.0	88.854.3	27.0
1977	4,794.4	96.098.5	20.0
1978	5,089.7	89.020.9	17.0
1979	6,146.8	91.190.7	14.8
1980	9,226.8	96.186.6	10.4
1981	9,744.9	70.395.9	7.2
1982	10,048.6	70.157.0	7.0
1983	11,282.4	66.389.5	5.9
1984	12,204.1	63.006.4	5.2
1985	13,267.8	68.916.3	5.2
1986	13,105.0	71.075.8	5.4
1987	14,905.9	70.741.4	4.8
1988	21,148.6	77.760.0	3.7
1989	25,697.6	83.460.0	3.3
1990	37,233.7	90.432.0	2.4
1991	49,364.5	94.614.1	1.9
1992	75,172.5	97.997.2	1.3
1993	116,593.4	100.550.2	0.9

SOURCE: Computed from CBN Statistical Bulletin.

APPENDIX 3

COMPOSITE CONSUMER PRICE INDEX 1985 - 100

YEAR	All	Food	Drinks -	Tobacco & Kola	Accommodation Fuel & Light	Household goods & Other purchases	Clothing	Transport	Others Service
1970	10.8	9.0	14.5	16.1	-	-	9.2	16.2	11.4
1971	12.5	11.6	15.1	16.3	-	-	9.6	16.3	11.5
1972	12.9	11.8	15.7	17.0	-	-	9.6	16.9	11.9
1973	13.6	12.2	18.6	16.4	-	-	11.0	18.6	13.0
1974	15.4	14.1	18.8	17.6	-	-	12.9	24.3	14.2
1975	20.7	20.1	26.3	18.2	-	-	16.4	28.0	16.3
1976	25.5	24.5	34.7	26.0	42.1	22.3	21.0	32.5	19.3
1977	29.6	29.3	36.9	33.4	49.4	25.3	23.1	39.6	23.8
1978	34.5	34.5	-	33.9	50.9	27.1	28.9	44.3	25.4
1979	38.5	37.3	-	37.0	64.7	28.8	35.9	54.7	29.0
1980	42.3	40.1	-	41.8	68.7	33.5	44.3	55.2	38.4
1981	51.2	50.2	50.8	49.3	67.2	35.9	51.4	55.5	45.2
1982	55.1	54.6	54.5	50.8	69.8	39.4	54.8	62.7	64.7
1983	67.9	67.3	62.0	58.0	92.9	60.5	65.1	75.9	58.4
1984	94.8	96.2	76.4	79.5	104.7	95.2	91.7	83.4	81.1
1985	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1986	105.4	100.1	110.0	122.6	140.6	130.8	115.4	119.2	136.3
1987	115.1	108.7	120.0	132.9	145.6	154.8	129.1	133.8	165.9

APPENDIX 3 (Contd)

YEAR	All items	Food	Drinks Tobacco & Kola	Clothing & Footwear	Accommodation Fuel & Light	Household goods	Med. Care & Health expenditure	Transportation	Rec. Ent. Educ. & Cul services	Other services
1998	181.2	195.3	137.6	162.2	139.7	179.2	154.6	151.2	165.7	142.5
1989	272.7	298.1	312.1	243.2	181.0	290.9	192.5	147.4	228.2	193.9
1990	253.2	308.0	267.4	305.0	217.0	328.3	240.2	291.3	263.1	231.5
1991	330.9	345.9	305.3	376.5	226.3	411.4	290.3	314.5	307.1	287.3
1992	478.4	505.8	450.2	498.4	398.3	617.9	443.6	440.7	405.9	412.2
1993	853.0	883.9	983.8	838.4	598.8	1,114.5	790.8	928.4	844.9	298.8

NOTE: 1. Figures not provided because of the intermittent review of the composition of the items in each component of the consumer price index.

2. 1970 - 1987, data have been rebased using figures from F.O.S.

3. From 1988, Drinks, Tobacco and Kola have been combined.

SOURCE: Financial and Economic Statistical Bulletin Table C:3.1 (Dec. 1994)