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An Econometric Analysis of the Nature and Causes of Inflation in Nigeria

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AN ECONOMETRIC ANALYSIS OF THE NATURE AND CAUSES OF INFLATION IN NIGERIA

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In this econometric revisitation of inflation in Nigeria, an extensive review of the literature and evidence has been attempted culminating in a specification of the various alternative hypotheses on the causes of inflation. While not ruling out the validity of several theories of inflation in the Nigerian situation, empirical evidence indicates that increases in real domestic product or supply situation, especially food, and low cost of production of consumables, tended to ameliorate inflation. On the other hand, increases in government expenditure, especially deficits, tend to increase the money supply and worsen depreciation of the exchange rate, which in turn intensify the inflationary pressure. Bringing together these conclusions, the study emphasises the need for fiscal discipline including prunning down deficit financing, intensification of restructuring measures that would enhance output and productivity in the domestic economy. These measures need to be complemented with a more pragmatic exchange rate policy that would stem capital flight and encourage more investment in the Nigerian economy.

Inflation is generally used to describe a situation of rapid, persistent and unacceptably high rises in the general price level in an economy, resulting to general loss of purchasing power of the currency. Inflation causes serious discomfort for consumers, investors, producers and the government. Inflationary pressures assumed a dimension of serious concern in Nigeria following the introduction of the Structural Adjustment Programme (SAP) in 1986, and it is presently a major policy concern for the monetary authorities, hence this revisitation. Three approaches are used to measure inflation: the deflator of the gross national product (GNP), which implicitly measures inflation; the consumer price index (CPI); and the wholesale price index (WPI). The period-to-period changes in these two latter approaches are regarded as direct measures of inflation. In Nigeria, inflation rates are measured with the CPI which is easily and currently available on monthly, quarterly and annual basis even though it is the least efficient of the three.

Since the 1960s, inflation has been accelerating in the Nigerian economy. The inflation rates, as measured by the changes in the CPI, averaged 4.0 per cent between 1960 and 1970, i.e. with the annual rates contained in the single digit except in 1969, during the Nigerian civil war, when it was estimated to be 10.0 per cent. Its pressures were contained during the civil war (1967 to 1970) because of the curtailment of

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income due to compulsory savings for financing the war and other restrictive economic, fiscal and political measures. The reconstruction measures and repayment of war bonds after 1970 resulted in the injection of massive private and public nominal expenditures into the economy. This period also witnessed sharp increases in government revenue in foreign exchange from oil exports. Thus, the 1970s witnessed double digit inflation rates which averaged 15.2 per cent. The rapid growth in government expenditures, financed largely by the monetization of the petronaira foreign exchange revenue, exacerbated expansionary pressures on money supply whose average annual growth rate for the 1970s was 32.5 per cent compared with 7.5 per cent in the 1960s. For the 1980s, inflation rate and money supply growth averaged 17.8 and 14.7 per cent, respectively.

Credit to the domestic economy from the banking system, which followed the same pattern as the rates of inflation and growth of money supply, accelerated from an average of 50.7 per cent in the 1960s to 72.9 per cent in the 1970s and declined to 25.2 per cent in the 1980s. These developments appeared to have led credence to the monetarist theory that inflation is a monetary phenomenon. However, such conclusion seems to assume that other causes of inflation suggested by other theories of inflation are neither significant nor relevant. The conclusion must therefore be treated with some caution while being regarded as a hypothesis to be tested by further empirical evidence.

The nature and causes of inflation have been examined for various periods in Nigeria. These studies include Central Bank of Nigeria (1974), Nigerian Institute of Social and Economic Research (1975), Akinnifesi (1977, 1984), Adeyeye and Fakiyesi (1980) and Osakwe (1983). It is noted that these studies failed to produce a consensus on the role of monetary growth in explaining inflation in the Nigerian economy. However, they recognized the importance of non-monetary variables in explaining inflationary tendencies in Nigeria, and this has been particularly the case following the introduction of SAP.

This paper, therefore, is a revisitation of inflation in Nigeria and focusses on the econometric investigation of the nature and causes of inflation in Nigeria taking advantage of longer time series data and the various developments under SAP, especially exchange rate. The rest of the paper is divided into four sections. The theoretical framework, a review of the literature and empirical evidence are presented in section I, while the model specification and estimation techniques are discussed in section II. The results, together with the discussions, constitute section III, and section IV is devoted to the summary and conclusions including policy options for dealing with the contemporary problem of inflation in Nigeria.

I. THEORETICAL FRAMEWORK, LITERATURE REVIEW AND EVIDENCE

The literature is rich with several approaches for the explanation of inflation. The five most popular are demand-pull, cost/wage-push, monetarist, structural and interna-

tionally transmitted inflation. The demand-pull theory posits that a rise in price level is initiated by the emergence of excess demand over existing supply, assuming the existence of full-employment in the economy. The amount of inflationary pressure would depend upon the size of the excess demand.[1] Demand-pull inflation could be approached through either quantity theory of money (neoclassical) or fiscalist/Keynesian theory. The quantity theory emphasises the causal influence of money supply in the inflationary process, but the fiscalist theory emphasises non-monetary influences such as government expenditure and credit. However, analysis shows that the two approaches on several countries' inflationary experiences indicate that an increase in aggregate demand was either stimulated or accompanied by increase in money supply or government deficit expenditure, financed by the Central Bank.

Cost-push inflation can be initiated by increases in costs of production following the raising of factor(s) share(s) of the total product. This occurs under imperfect market conditions in the product market (administered prices) or in the labour market (wage-push). Generally, cost-push has been associated with autonomous increases in wages and salaries and depreciation of the exchange rate. If the growth of wages outstrips the growth of labour productivity, entrepreneurs raise the prices of their products to prevent a decline in employment and output. Mark-up inflation models are usually grouped with cost-push inflation models because, for the former, product prices and wages are both assumed to be cost-determined. Businesses mark-up the prices of their goods in time with the rise in factor costs of production, the mark-ups cover the estimated cost of over head costs and required profit margins. Observing this, workers negotiate for increases in salaries and wages to offset the rise in the cost of living, initiating an inflationary spiral which may intensify if labour or business or both struggle to maintain their share of real income against autonomous rise in income. This can only be at the expense of other social groups.

The monetarists hypothesise that inflation is always and everywhere a monetary phenomenon, and maintain that a policy of monetary and financial stability is a necessary pre-requisite for rapid economic development. Therefore, monetarism stresses that, for demand or structurally motivated inflation to hold, expansion of money supply would be required to finance the increasing nominal national income brought about by rising prices. The consequent expansion of money supply outstripping demand for money gives rise to inflation, especially if output does not expand as much as money supply. Accordingly, the inflation rate is expected to vary *ceteris paribus*, positively in relation to the rate of change in money supply and negatively with respect to the growth rate of real income. Since all the effects may not be contemporaneous, lagged values of money supply are included in the specification to account for lags in effect of changes in money supply.

Some economists, while admitting the possibility of occurrence of inflation due to the factors earlier discussed, emphasise that inflation results from manifestation of

basic structural factors which create supply shortages and inadequate government revenue to pay for imports to augment inadequate domestic supply. Thus, structural inflation is said to result from supply shocks including insufficient foreign exchange supply for financing importation. This is prevalent in under-developed economies, hence the explanation of inflation in developing countries, especially those undergoing adjustment programme, follow the structural theory. Since the barometer for gauging the impact of foreign exchange shortage in the demand-supply relationship is the exchange rate, its depreciation and undervaluation is claimed to worsen inflationary pressures.

Internationally transmitted inflation, otherwise called imported inflation, concerns openness of economies. This approach identifies a number of channels whereby inflation may be transmitted from one country to another, especially under a regime of fixed exchange rates. The channels include price, demand and liquidity effects. Price effects are transmitted by internationally traded goods and services; demand effects by the spill-over of excess demand across countries. Changes in foreign reserves, occasioned by balance of payments adjustment, affect money supply, income and prices, thereby creating liquidity effects.

It is on the basis of the above theoretical framework that we review some of the literature and evidence on inflation in Nigeria. Central Bank of Nigeria Research Department (1974) did a cross-section analysis of the origins and development of inflationary trends in African countries, including Nigeria, to determine the impact of inflation on their growth.[2] In particular, the impact of changes in money supply, deficit financing, real domestic product on price changes was investigated for Nigeria and six other African countries for the period 1960–1970. In the case of Nigeria, current changes in money supply and domestic credit had no significant change on changes of price level. However, real income, the third variable, had a correctly signed regression coefficient in a multiple regression with a 0.60 coefficient of determination. Using quarterly data and lagged changes in money supply, coefficients for one and two quarter lags produced significant regression coefficients, leading to a conclusion that changes in real income, money supply and its lags, affect rates of inflation in Nigeria. NISER (1975) produced another extensive work on inflation in Nigeria.[3] No less than six papers and ensuing discussions were devoted to Part 2, "Causes of Inflation in Nigeria", raising four major points which were extensively discussed. First, it was generally agreed that changes in money supply and its lag in effect, changes in and nature of government expenditure, as well as limitations in real output, are the major forces determining inflationary tendencies in Nigeria. However, the contribution by Ajayi and Teriba put greater emphasis on supply shortages for the explanation of the Nigerian inflation than changes in money supply.[4] Second, the strong influence of imported inflation, as a propagating factor in the inflationary process, was identified by nearly all the six papers. Since the incidence of imported inflation is synonymous with fixed exchange rate regime, a case for a policy of flexible

exchange rates was suggested as an anti-inflation measure. But recent experience under the Structural Adjustment Programme (SAP) from 1986 to date would put a serious question mark on that conclusion. Third, the observed nature of disequilibrium between supply and demand was said to be due to inadequate domestic production, especially food production, resulting from low productivity caused by poor infrastructural development. Finally, direct price controls were regarded as ineffective instruments to control inflation, if the inflation was caused by such other factors as wage increases, adverse balance of trade and balance of payments positions.

In Akinnifesi (1977), six simultaneous structural equations were "solved" to obtain a single equation, which relates inflation rates to changes in domestic credit, which in turn is determined by other factors such as exports, balance of payments and changes in external resources.[5] The results, based on data from 1962 to 1980, indicated a significant positive relationship between inflation rates and increases in domestic credit. In the second study, Akinnifesi (1984) considers more factors such as changes in money supply, lagged changes in money supply, credit to government by the banking system and government deficit expenditure.[6] Industrial production and food price indices were the other variables included to capture the effects of structural inflation; and changes in the annual data for 1960–1983 were used in the empirical estimation. The statistical procedures were not stated but the report indicated that changes in the above factors jointly explained inflationary tendencies in Nigeria. The study, however, emphasised that increases in government expenditure financed by monetisation of oil revenue and credit from the banking system were responsible for the expansion of money supply, which in turn, with a lag-in-effect, contributed immensely to inflationary tendencies.

The hypothesis that the main factor responsible for instability of prices and inflationary tendencies in Nigeria has been government expenditure is proposed, econometrically specified, estimated and tested by Adeyeye and Fakiyesi (1980).[7] The thrust of their argument is that massive expenditure on defence and social services, which do not lead to the production of any tangible goods, would intensify inflation. Using annual time-series data, spanning 17 years up to 1977, they tested the hypothesis that the rate of inflation in Nigeria is linearly related to the rates of growth of money stock, government expenditure, especially deficits, and growth of government revenue, especially monetization of foreign exchange from oil exports. The results established some significant positive relationship between inflation rate and growth in bank credit, growth of money supply and growth in government expenditure, while the relationship with growth of government revenue was unclear.

Osakwe (1983) attempts to ascertain the amount of government expenditure which affect money supply during 1970–1980, and investigates the empirical relationship between changes in net current government expenditure, money wages, money supply (current and lagged), and prices, using quarterly and annual data.[8] The

regression analysis includes a dummy variable to capture the effect of price control in force between 1972–1978. Significant statistical relationship obtained from the analyses indicated strong relationship between increases in net government expenditure and growth in money supply on the one hand and growth in money supply and inflation on the other. Further increases in money wage rates and money supply (with lag-in-effect) were identified as the two most important factors which influenced the movement of prices between 1970 and 1980. Government price controls did however have some minimal dampening effects on price increase.

II. MODEL SPECIFICATION AND ANALYTICAL PROCEDURE

We do not intend to select any one preferred theory out of the monetarist, structuralist or any other theory but we would consider the factors which are said to hold in Nigeria as discussed in the literature review with respect to the specification of the causes of inflation in Nigeria. Internal and external influences, monetary, structural and non-economic factors do inter-dependently determine the fortunes of the economy. Therefore, a simultaneous equation system approach would be ideal in the econometric investigation, but due to technical constraints, the single equation approach would be applied; though the analysis proceeds in two steps. Starting from the monetarist hypothesis that a large and sustained increase in the supply of money will tend to be inflationary, we express inflation rate as a function of money supply and its lagged values. On the other hand, a change in money supply is hypothesised to be a function of changing domestic credit, real output, net exports, or foreign assets and net government expenditure. This forms the second level of our specification, which extends the initial proposition to include the factors that influence money supply (assumed to be exogenous in this specification); effects of structural factors are expected to be captured by changes in industrial production, exchange rate, and food price indices. The war dummy and price control variables featured in most of the reviewed papers and, since the incidents terminated in 1970 and 1978, respectively, no new information is expected to be generated by their inclusion. International transmission of inflation is expected to be picked up by changes in import price index and Naira/US Dollar (₦/$) exchange rates. Thus, the general theoretical representation of the causes of inflation for any given period can be put symbolically with the expected signs stated below each variable as:

DP	= f	(DM,	DML,	DY,	DC,	DG,	DIP,	DIM,	DFP,	EXR,	DPL,	DCL);
		(+),	(+),	(–),	(+),	(+),	(–),	(–)	(+),	(+),	(+),	(+)

where at any current period, t,

DP = Annual inflation rates;

DM = Percentage change in money supply, M1;

DY = Percentage change in real GDP;

DC = Percentage change in total domestic credit to the economy;

DG = Percentage change in Government expenditure;
DIP = Change (%) in industrial production index
DIM = Change (%) in import price index;
DFP = Change (%) in food price index;
EXR = Naira per US Dollar (₦/$) exchange rate; furthermore;
DML= DM lagged one period, i.e. 1 year;
DYL = DY lagged one period;
DCL = DC lagged one period;
DGL = DG lagged one period;
t = Time period of one year interval.

In other words, the rate of inflation in the economy is hypothesised as jointly and severally determined by changes in money supply, lag of money supply, real domestic output, credit to the economy, government expenditure, import price index, industrial production index, food price index and ₦/$ exchange rate.

Increases in real output, imports and industrial production would reduce the rate of inflation; while increases in the other variables is expected to intensify the inflationary pressure. Assuming a linear relationship, the starting point is to regress DP on each of the individual variables and thereafter combine them in order to select the best combinations. As earlier noted, a change in money supply is very much influenced by changes in both government expenditure and domestic credit. Therefore, to reduce the incidence of multicollinearity, these three variables are made to appear separately as substitutes. The same reason informed the combination of other variables. Ideally, a principal component analysis for optimal selection of the ideal combinations is required. Nevertheless, the procedure adopted here would yield comparable results. Furthermore, in order to contain the problem of serial correlation, first differences were taken; and rendering them as percentage changes further reduced the incidence of heteroscedasticity significantly.

The specifications of the alternative equations for explaining inflationary processes in Nigeria are as follows:

$$(1)\quad DP_t = a_o - a_1DY_t + a_2DFP_t + a_3EXR_t + a_4DP_{t-1} + V_{1t}$$

$$(2)\quad DP_t = b_o - b_1DY_t + b_2DM_t + b_3DFP_t + b_4DP_{t-1} + V_{2t}$$

$$(3)\quad DP_t = c_o + C_1DG_t - c_2DIP_t + c_3DFP_t + c_4DP_{t-1} + V_{3t}$$

$$(4)\quad DP_t = d_o + d_1DM_t + d_2DC_t - d_3DIP_t + d_4DP_{t-1} + V_{4t}$$

$$(5)\quad DP_t = e_o + e_1DM_t + e_2DM_{t-1} + e_3DP_{t-1} + V_{5t}$$

$$(6)\quad DP_t = f_o - f_1DY_t + f_2DFP_t + f_3DM_{t-1} + f_4DP_{t-1} + V_{6t}$$

$$(7)\quad DP_t = g_o - g_1DY_t - g_2\,DIP_t + g_3DFP_t + g_4DM_{t-1} + g_5DP_{t-1} + V_{7t}$$

$$(8)\quad DP_t = h_o + h_1DM_t + h_2DM_{t-1} + h_3EXR_t + h_4DP_{t-1} + V_{8t}$$

$$(9)\quad DP_t = \gamma_o + \gamma_1DY_t + \gamma_2DM_t + \gamma_3EXR_t + \gamma_4DP_{t-1} + V_{9t}$$

$$(10)\quad DP_t = \alpha_o - \alpha_1DY_t + \alpha_2DM_{t-1} + \alpha_3EXR_t + \alpha_4DP_{t-1} + V_{10t}$$

The simple correlation matrix of the variables was used as a guide in deciding what combination of the explanatory variables would lead/not lead to multicollinearity. This is a simple guide that could be used in specifying the right combinations of explanatory variables.

An alternative specification using logarithmic transformation of the level values of the variables was attempted principally to obtain direct elasticity estimates and to indicate the appropriateness, or otherwise, of our assumption of linear relationship, among the variables with the expected signs being the same as defined earlier, although computed results are not reported here. The data used for the regression runs as shown in Table 1 and, as earlier indicated, they are percentage changes in annual time series for each variable obtained for 1960 through 1989. Nominal GDP was deflated with the deflator to obtain real GDP which is used as real income in our analysis. As a result of the unavailability of data on wholesale price index, only CPI is used for measuring inflation rates, DP. Out of the various definitions of money supply our analysis applied the narrowest, M1, which is the sum of currency in circulation and private sector demand deposits at commercial and merchant banks. It is possible to try out other broader definitions of money supply, though; the most sensitive would emerge through empirical investigation. However, M1 is considered adequate for the current study.

III. RESULTS

Although we excluded the two dummy variables for tracking the effects of the civil war (1966–1970) and incidence of price control (1972–1978) in our specification, these variables were included in our initial estimates. Whereas the civil war dummy variable coefficient was not significant in all cases, that of the price control showed a moderate significant coefficient indicating that only a salutary effect was achieved by price control.

The results of the empirical regression estimates for equations (1)–(10) are presented in Table 2. The R^2 and $\bar{R}^2$ (R^2 adjusted) in all cases measure the explanatory power of the multiple regression, while the F statistics are reported for testing the significance of multiple regression coefficients and coefficients of determination. The t-statistics are in parenthesis under the relevant coefficients.

From a cursory look at the results one would note that all the selected factors had significant regression coefficients in equation 1, which also has a highly significant coefficient of determination ($R^2 = 0.8955$, and $\bar{R}^2 = 0.8788$). The signs conformed with theoretical expectation with emphasis on food prices and exchange rates. Equation 2 has a slightly lower explanatory power than equation 1, with the income and money supply regression coefficients being insignificant but with the expected sign. The index of food prices is the major significant explanatory variable; lag in effect of money supply appears to adjust fully within one year. It is noteworthy that, in all the

combinations where real income, industrial production index, food prices, money supply and lagged money supply variables appeared, right-signed and atimes significant coefficients were obtained. In equations 1, 2, 3, 6 and 7 in which the variable for changes in food price index featured, the multiple regression accounted for about 90 per cent of the rate of inflation, the food component having recorded over 80 per cent in a preliminary simple regression estimate not reported here. This is no surprise considering the dominance of food weight in the household expenditure "basket". The variable for lagged changes in money supply appeared in equations 5, 6, 7 and 8, and in these cases the coefficient was neither statistically significant nor with the expected positive sign. However, it had the correct sign in equation 8 and also a significant value in equation 10. The earlier studies conducted by Ajayi and Teriba (1975) as well as Osakwe (1983), using quarterly data, indicated that the lag in the fourth quarter in a year had significant coefficient. Thus, the variable for lag-in- effect of monetary policy, as far as inflation rates are concerned, appears to be relevant for period less than one year. Changes in industrial production index featured in three equations (3, 4 and 6) and the regression coefficients are statistically significant with the correct sign in 2, i.e. equations 3, 4 and 7. Judging from the relative explanatory power, significance and consistency of regression coefficients with the correct signs, exhibited by the results in Table 2, it seems equations, 1, 3, 6 and 7 not only offer grounds for further analysis using quarterly data, but some conclusion on the nature and causes of inflation in Nigeria. In this regard, real output, especially industrial output, current money supply, domestic food prices and exchange rate changes are the major determinants of inflationary pressures. A look at Table 3 on the major causes of inflation since 1984 from the point of view of the CBN, confirms that changes in domestic output, especially food items, exchange rate changes and, to a large extent, money supply increases, resulting from government deficit financing by the banking system, were the major causes of increasing inflationary pressures on the economy. They are the major factors to watch in this respect. The level at which they are to be targeted is an issue beyond the scope of this study. This is best addressed in an economy-wide monetary model in which the interdependencies and linkages are clearly specified, estimated and tested.

IV. SUMMARY, CONCLUSION AND RECOMMENDATIONS

Judging from existing literature, including the ones reviewed above, there seems to be no exhaustive encyclopedia on the causes and solution of the inflation phenomenon in Nigeria, and the issue of its being overflogged does not arise. In this empirical analysis, we have attempted to sort out the major contemporary causes of inflationary tendencies in Nigeria without separating them into monetary, structural, demand-pull, cost-push, internal and external factors. The econometric approach adopted here is a general model that can be used to identify and assess the relative contribution of the important factors responsible for inflation in the Nigerian

economy. The attempt has given some insight for further detailed research and some valid conclusions could be drawn.

The results show that changes in real income are always significant and have an inverse relationship with the rate of inflation. Further, the food price changes dominate all other variables. On the other hand, the results also show that money supply variable and its lag are not always significant at least if annual data are used in the estimation. Further, domestic credit and government expenditure variables are either not significant or significant with the wrong signs; a consistent programme that influences the real sector in the correct direction should guide fiscal discipline. And judging from some of the results, it seems that the monetarist model does not adequately explain inflationary process in Nigeria over the past three decades. This conclusion is based purely on the results and may probably be reversed when we apply the broader definitions of money supply to monthly/quarterly data; and have the model re-specified to tackle simultaneity, and other problems in the data that may have violated the classical assumptions of the regression analyses.

The implication which emerges from the empirical evidence is that monetary policy alone may not really be a very effective means of controlling inflation in Nigeria as long as government fiscal discipline, especially with regard to deficit expenditure, is not incorporated into the entire policy package. However, the significance of the income and the industrial production index variables indicate the direction for the formulation of economic policy for promoting growth in productivity and containing inflationary pressures. Economic restructuring to ensure diversification of the production base would increase output, productivity and would lower inflation.

Before we go to proffer more suggestions for dealing with inflation based on these results, it might be worthwhile to have another look at Table 3 which is a summary of the official views on the causes of inflation since 1984 through the beginning of SAP to date. The high rate of inflation of 39.6 per cent recorded in 1984 was attributed to supply shortages relative to demand; a combination of demand-pull and cost-push inflation was diagnosed. Acceleration of rural food prices due to poor harvest was responsible for the moderate inflation of 10.2 per cent in 1987. On the other hand, low inflation rates recorded in 1985 and 1986 were attributed to improved supply especially of food items as well as restraint in the expansion in aggregate demand. The very high rates of inflation since 1988 to 1989 was attributed to several factors—general increases in the cost of production of both agricultural and industrial goods as a result of the continued depreciation of the naira, removal of subsidy coupled with the ban on the importation of some consumer goods without adequate domestic supply. Thus, we have a combination of cost-push, structural and demand-pull inflation. The increases in government expenditures, especially in areas that accentuate demand pressure without output counterpart, tended to worsen the situation.

Putting together these facts and the indications from the empirical analysis, it is clear that dealing with the Nigerian inflation calls for concerted effort in several fronts. First, monetary policy aimed at demand management should incorporate or rather obtain the co-operation of the treasury with respect to the appropriate consistent level and nature of government expenditure. The consistent level or target should be determined through an economy-wide model estimation and simulation and or financial programming based on such models. Second, exchange rate policy should consider the necessity of price and interest rate stability as a cardinal issue. As a matter of fact, the three should be programmed jointly because they are closely linked with money supply in a semi-open economy like ours. Third, removal of subsidy in the area of agricultural production and transportation has to be done cautiously such that the gains in one direction are not eroded by high inflationary tendencies that is triggered by such removal. Indeed, a consistent optimal combination of measures is what is required to deal with inflation in Nigeria. It is our belief that this study, which did not include some variables like interest rates and imports, based on the principle of parsimony, has thrown more light on the recent causes of inflation in Nigeria and solutions recommended are pragmatic, enforceable and would likely yield lasting positive results if implemented.

TABLE 1: ANNUAL CHANGES (%) IN SELECTED ECONOMIC INDICATORS IN NIGERIA, 1960–1989

Year	Real GDP	CPI	Money Supply	Domestic Credit	Govt. Expen-diture	Industrial Produc-tion Index	Import Price Index	Food Price Index	Exchange Rate*
1960	–7.7	6.7	1	20.1	3	5	0	9.2	0.712
1961	7.1	6.3	0.8	35.1	2.5	5.6	0	9.8	0.712
1962	4.4	5.3	3.1	–19.6	9.4	4.4	–1.2	7.5	0.712
1963	8	–2.8	7.6	92.7	–40.6	2	6	–9.6	0.712
1964	4.1	1.1	15.9	44.3	–14.9	27.7	5.6	–0.9	0.712
1965	3.3	3.9	3.9	9.8	8.4	43.5	5.3	4.5	0.712
1966	–1.1	9.7	8.8	23.4	141.9	28	–6	20.5	0.712
1967	–18	–3.7	–9.1	12.5	–16.4	–11.1	1.5	–9.8	0.712
1968	–3.2	–0.4	4.7	31.4	18	–23.1	0	–6.2	0.712
1969	16.6	10	30.1	34.7	14.7	81	13.3	18.9	0.712
1970	24.5	13.8	42.5	38	103.1	53	–12.1	30.2	0.712
1971	7.9	16	3.4	–1.6	–3.3	–12.1	2.4	21.2	0.712
1972	4.9	2.8	11.3	13.1	70.6	13.8	9.4	2.5	0.712
1973	32.4	5.6	18.1	5.8	–4.5	16.2	12.9	4.5	0.658
1974	32.2	12.7	42.5	–67	139.5	5.3	27	15.9	0.658
1975	–18.8	33.5	73.5	113.6	93.8	–5.9	37.8	40.7	0.642
1976	4	21.2	61.1	53.2	17.5	19.1	–4.1	26.4	0.616
1977	–3.6	21.5	51.7	170.8	6.5	3.9	1.5	27.4	0.627
1978	–6.1	12.3	1.9	74.4	–22.5	–8.6	8.4	6.7	0.647
1979	6.7	11.8	27.7	26.4	–7.4	48.1	6.5	7.9	0.607
1980	5.1	9.9	14.4	23.4	101.8	–1.1	25.1	7.7	0.603
1981	–20	20.8	19.3	170.7	–27.9	–2.8	23.1	25.2	0.547
1982	–6.2	7.7	3.5	36	14.9	1.6	–3.6	8.9	0.605
1983	–31.7	23.3	12.3	31.6	–5.8	–21.6	8.4	23.2	0.673
1984	–6.7	39.6	18.5	10.5	–39.4	–49	–8.2	46.5	0.723
1985	7.9	5.5	8.7	4.9	–0.7	15.2	61.2	–0.8	0.982
1986	3.2	5.4	–4.1	12.7	28	–2	106.1	8.4	3.9691
1987	1.8	10.2	15.7	27.4	35.6	18	90.1	11.5	4.5367
1988	4.2	38.3	43.6	22.2	26	14.5	–61.5	62.9	7.3651
1989	2.7	40.9	21.5	–14.1	47.8	0.6	–5.9	21.9	8.0378

Source: Computed from data in various issues of CBN *Annual Reports, Economic and Financial Review* and FOS *Digest of Statistics.*
* Actual Values

TABLE 2: STATISTICAL RESULTS OF THE REGRESSION OF CAUSES OF INFLATION IN NIGERIA (1960–(1989)

COEFFICIENT OF EXPLANATORY VARIABLES AND OTHER STATISTICS

Equation Number	Intercept	DY	DM	DC	DG	DIP	DIM	DFP	DML	EXR	LDP	R-2	R-2*	F	DW	DF
1	0.017356	–0.105						0.564		0.9966	0.2777	0.8955	0.8788	53.54	1.832	25
	(0.13)	(–1.83)						(10.67)		(2.26)	(3.71					
2	0.5417	–0.097	0.0164					0.5908			0.03036	0.8746	0.8545	43.59	1.676	25
	(0.38)	(–1.48)	(0.28)					(8.17)			(3.72)					
3	1.3048				0.0054	–0.0654	0.6139			0.281	0.883	0.8643	47.18	1.678	25	
	(0.90)				(–0.30)	(–1.89)		(11.37)			(3.52)					
4	4.6946		0.3862	–0.022		–0.1657					0.2883	0.5712	0.5026	8.326	1.484	25
	(1.69)		(4.24)	(–0.63)		(2.43)					(1.85)					
5	2.447		0.3306						–0.0577		0.4599	0.4725	0.4117	7.764	1.847	26
	(0.87)		(3.14)						(–0.44)		(2.20)					
6	0.60568	–0.094						0.6068	–0.0069		0.317	0.8743	0.8542	43.49	1.692	25
	(0.43)	(–1.43)						(10.58)	(–0.16)		(3.07)					
7	1.2444	–0.039				–0.0565		0.6086	–0.0051		0.2894	0.8842	0.86	36.84	1.641	25
	(0.86)	(–0.55)				(–1.43)		(10.82)	(–0.09)		(2.81)					
8	0.49928		0.2955						–0.0061	2.3972	0.3014	0.6069	0.544	9.65	—	25
	(0.19)		(3.16)						(0.05)	(2.92)	(1.57)					
9	0.9129	–0.260	0.3292							2.5057	0.2527	0.691	0.6415	13.96	2.005	25
	(0.40)	(–2.61)	(4.69)							(3.50)	(1.93)					
10	4.0118	–0.205							0.2297	2.8489	0.1098	0.5036	0.4242	6.341	1.846	25
	(1.48)	(–1.64)							(2.06)	(3.11)	(0.52)					

TABLE 3: RECENT RATES OF INFLATION IN NIGERIA AND THEIR CAUSES

Year	Rate of Inflation (Per Cent)	Causes/Reasons adduced in CBN Annual Report
1984	39.6	1. Supply shortages (very severe due to low level of production: DEMAND-PULL; COST-PUSH)
1985	5.5	1. Inflation reduced due to improved supply situation and restraint in expansion in aggregate demand, especially government spending.
1986	5.4	1. Moderate food prices decelerated inflationary pressures. Rate is not high enough to cause worry.
1987	10.2	1. Acceleration of rural food prices due to poor harvests. 2. Following the dismantling of the remaining price control and depreciation of the naira, inflationary pressures intensified.
1988	38.3	1. Sharp rise of food prices following increased demand consequent upon the ban on the importation of rice, maize wheat and their products. 2. Increase in cost of production following continued depreciation of the naira exchange rate COST-PUSH—DEMAND-PULL.
1989	40.9	1. Increased cost due to depreciation of naira exchange rate and increases in Government Deficit expenditure. 2. Induced high input costs including reduction/removal of subsidies on some agricultural and industrial inputs COST-PUSH.
1990	7.5	1. Increased cost of production due to further depreciation of the Naira, high interest rates and depressed investments. On the other hand government deficit expenditure has been high and financed by the banking system.

Source : Central Bank of Nigeria *Annual Reports and Statements of Account*, 1984–1990.

FOOTNOTES

1. Most textbooks in monetary theory or macroeconomics treat cost-push and demand-pull inflation extensively. A good account is contained in Richard Perlman (edited), *Inflation: Demand-pull or Cost-push* (Boston, D.C. Health & Co. 1965) ch. X–XI.

2. The conclusion reported here is extracted from the main body of conclusions on the study by Research Department: Origins and Development of Inflationary trends in African Countries (Impact on their growth CBN *Economic and Financial Review* Vol. 12, No. 2 December, 1974, pp. 5–59. The discussion in the paper goes beyond analysis of inflation trends.

3. Onitiri, H.M.A. and Awosika, K. (edited): "Causes of Inflation in Nigeria" constitutes Part II of the Proceedings of a National Conference organised by NISER. This section contains six papers by ten contributors with three comments and rejoinders on the mechanisms, dynamics, causes and empirical evidence of inflation in Nigeria 1960–1972. Other parts of the 594 page book include parts I, III, IV and V covering concepts and measurement Effects, Control and Epilogue of Inflation in Nigeria, respectively.

4. Ajayi, S.I. and Teriba, O. "The Inflationary Process in Nigeria 1960–1972, Evidence from Quarterly Series," *Inflation in Nigeria.* Proceedings of a National Conference edited by Onitiri, H.M.A. and Awosika K., Ibadan, NISER 1975, pp. 112–125.

5. The study focussed on credit ceilings, absorptive capacity and inflation in Nigeria, 1962–1980, adapting the Polak Model and a study by El-Jehaimi on the Libyan economy. See Reference for the citation.

6. Akinnifesi, E.O. "Inflation in Nigeria: Causes, Consequences and Control," Central Bank of Nigeria *Bullion,* Silver Jubilee Edition, Vol. 1, July 1984, pp. 61–75.

7. "Productivity Prices and Income Board and Anti-Inflationary Policy in Nigeria," in *The Nigerian Economy under the Military,* proceedings of the 1980 Annual Conference of the Nigerian Economic Society pp. 309–320. The paper focuses on explicit government factors introduced to curb inflation through the use of government issued and enforced periodic policy guidelines via the PPIB, Price Control Board, later Price Intelligence Agency, etc. Extensive applied regression analysis was used to test explicit hypothesis on government actions and inflation in Nigeria.

8. Osakwe, J.O. "Government Expenditures, Money Supply and Prices, 1970–1980," Central Bank of Nigeria: *Economic and Financial Review,* Vol. 21, June 1983, pp. 4–18.

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