

LAGS IN THE EFFECT OF MONETARY POLICY IN NIGERIA

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Abstract. One important aim of monetary policy is that of stabilizing the economy, that is, it should stimulate the economy in recession and dampen it in periods of inflation. The existence of a long lag can mean that monetary policy does the opposite of what it is expected to do, that is, it may stimulate the economy when it is over heated and dampen it when it is recession, in effect making things worse rather than better. The problem of lag is further made difficult by the fact that the lag can be variable meaning that it can be of uncertain length.

It is in this respect that this study empirically evaluates the lags in the effect of monetary policy in Nigeria using monetary growth model of aggregate demand. Secondary (quarterly) data covering the period 1986 to 1998 were used. The results of the study confirmed the notion that monetary policy affects its ultimate target after a lag, which is both long and variable.

The existence of a long and variable lag suggests that government monetary policy should not attempt to be actively anti-cyclical but should behave in a manner that is cyclically neutral, also since monetary transmission mechanism plays a major role as far as the timing of monetary policy is concerned and so because of its important role, government should put in place more efficient financial structures to ensure that the transmission mechanisms is hitch free.

1. INTRODUCTION

Monetary policy in Nigeria has often been adopted with the particular objectives of ensuring domestic price stability, attaining a high rate of

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employment, sustaining a high rate of economic growth and maintaining a balance of payment equilibrium. The monetary measures contained in the economic stabilization measures of 1982, popularly referred to as "austerity measures", were generally restrictive. Interest rates were revised upwards while, in 1983, the rates of aggregate credit expansion by the commercial banks were set at 25 percent for "Big Banks" and 35 percent for "Small Banks". The minimum rediscount rate (MRR) was fixed at 3 percent in 1983 and revised upward by 2 percent in 1984 and 1985. In these circumstances, the macroeconomic disequilibrium not only persisted but also deepened. The Central Bank of Nigeria (CBN) reported that the economy went into deeper and wide spread recession in 1983, 1984 and 1985 respectively. Gross Domestic Product cum capacity utilization declined, the balance of payment position remained critical with falling foreign exchange reserves, trade arrears accumulation worsened, inflation rates soared and unemployment increased. The crisis deepened with the 1982 debt crisis. Debt statistics show that the value of Nigerian external debt rose from US \$ 567 million in 1970 to US \$ 12,954 million in 1982, and by 1985 the figure had reached \$ 19,551 million representing 4.3 percent, 14 percent and 22.2 percent of Gross Domestic Product respectively.

When it became obvious by 1985 that the earlier policy measures were inadequate to tackle Nigeria's macroeconomic problems, the government adopted in the second half of 1986 the Structural Adjustment Programme (SAP), which was guided strictly by the IMF/World Bank. Although SAP embodied both the orthodox demand side macroeconomic and supply side policies, the ascendancy of monetarism became obvious. Indeed, it explicitly assumes that economic disequilibrium are caused by excessive government spending in the economy. Evidently, monetary policies under SAP, except in 1988, were largely restrictive and designed to mop up what was claimed as excess liquidity in the economy. Besides, there was frequent resort to qualitative controls. Typical among these were the compulsory transfer of government funds from the Commercial and Merchant Banks to Central Bank in 1989, the special deposit requirement for outstanding external payment arrears, and the abolition of foreign currency deposit as collateral for Naira loans, and the increase in the minimum paid up capital for banks imposed in 1990 (Bogunjoko, 1997).

Whereas the manipulation of monetary policy has really been emphasized yet macroeconomic problem persists. The efficacy of monetary policy remains questionable, if not controversial in Nigeria, just as it is in other less developed countries (LDCs). This is due to the time lag that exists between when monetary policy is formulated and when its impact is felt in

the economy. The early monetarist first raised the problem of lag and uncertainty in the conduct of monetary policy. The problem concerns the basic instability of a system characterized by lags. It is argued that monetary policy could be procyclical instead of being anticyclical. Monetarists link the ineffectiveness of monetary policy to the problem of lags (Ajayi and Ojo, 1981).

Monetary policy is a package of actions designed to manage the growth of money supply during a period to its optimal target. It is relevant irrespective of the economic framework in place. It consists of discretionary measures designed by the monetary authorities to regulate and influence the supply, cost and direction of money and credit provided to the economy. The measures are undertaken in such a way that monetary expansion is kept at a pace consistent with the level of economic activity and in consonance with general macroeconomic stability (Ojo, 1994).

The success or failure of monetary policy can be assessed on the basis of its impact on economic growth as well as on the domestic and external stability of the economy. One important aim of monetary policy is that of stabilizing the economy, that is, it should stimulate the economy in recession and dampen it in periods of inflation. The existence of a long lag can mean that monetary policy does the opposite of what it is expected to do, that is, it may stimulate the economy when it is over heated and dampen it when it is recession, in effect making things worse rather than better. The problem of lag is further made difficult by the fact that the lag can be variable meaning that it can be of uncertain length. The problem is not whether it takes six or twelve months but the length of the lag is uncertain. In that wise, the problem of lag cannot be settled by economic forecasts alone, as economic conditions twelve months may be different from conditions six months from now (Ajayi and Ojo, 1981).

The problem then is how to determine the length of these lags, and the relationship between these lags and policy effectiveness. It is in this respect that this study empirically evaluates the lag in the effect of monetary policy in Nigeria using monetary growth model of aggregate demand. Secondary (quarterly) data covering the period 1986 to 1998 will be used. The choice of these periods is due to the fact that these periods witnessed a deregulation of the economy, economic liberalization as well as sectoral credit guidelines reformation.

The remainder of the study is divided into five sections. Section II is the background of the study. Section III contains a review of the literature and

theoretical framework, while section IV is the methodology and section V is the empirical analysis. Section VI concludes the study.

II. BACKGROUND OF THE STUDY

THE MONETARY TRANSMISSION MECHANISM IN NIGERIA

There are three main channels (liquidity, credit and exchange rates) through which changes in monetary policy affect economic activities. The liquidity channel, sometimes called money or interest rate channel, exists when nominal short-term interest rates react to changes in liquidity conditions to influence the operations of an economy. The basic characteristic is that the effect is felt economy wide. On the other hand, the credit or loan channel works mainly through banks. In this mode of transmission, household and firms receive fewer credits especially from banks during periods of liquidity squeeze. In particular, bank-dependent borrowers are more vulnerable in such periods. Besides the existence of spread between interest rates on external finance and opportunity cost of the use of internal finance, imperfect asset substitutability and information asymmetry between lenders and borrowers are essential elements for the existence of the credit channel. The exchange rate channel propagates monetary policy through the foreign exchange market. In an open economy, with relatively developed financial markets interest rate and exchange rate differentials stimulate foreign exchange flows between countries and induce monetary adjustments. In effect, the exchange rate channel exists through the substitution of the external assets for a domestic asset. In the process, the effects of policy are transmitted within and to the external economy as should be expected. The three transmission channels do not necessarily work independently of each other but operate in such a way as to reinforce each other in propagating monetary stimuli to the economy (Uchendu, 1996).

The observed channels of monetary transmission (liquidity, credit and exchange rate) are also applicable in Nigeria though the strength and significance of the channel may have varied over the years.

1. Liquidity or Interest Rate Channel

During the era of direct monetary management (pre-1986) in Nigeria, interest rates were administratively determined such that economic activities were influenced principally through variation in the volume of credit granted to borrowers. When economic controls were relaxed as part of Structural Adjustment Programme (SAP) launched in mid 1986, the inter-bank market and the emerging rates became an important means for the transmission of

monetary policy in Nigeria. Money market conditions generally dictated interest rate developments. From the early 1990s, the effectiveness of inter-bank market weakened as distress borrowing by illiquid banks contributed to interest rate movements. As part of the final phase of change over to the indirect method of monetary management, the open market operations (OMO) was introduced in 30th June 1993 as the main instrument of monetary policy. Under OMO authorized dealers through discount houses traded government securities. This exercise is expected to impact on the level of liquidity in the economy as well as the cost of funds, which would influence activities in the real sector. However, because of the peculiar nature of open market operations in Nigeria, namely, one way sale of securities by the Central Bank to authorized dealers liberal rediscount policy, limited participation of non-bank public and perceived unattractive interest rate on OMO instruments, the effectiveness of this mode of transmission of monetary policy has been limited when compared to those in advanced countries. In particular, it is generally known that rates emerging from the market do not influence the actual rate of interest in the money market as well as the cost of fund as it should be expected. This notwithstanding, the interest in OMO instruments, among money market operators is rising, especially now that other investment opportunities seem to be dwindling in view of the present low level of economic activities.

2. Credit Channel

The credit channel of monetary transmission works through banks and the informal credit market in Nigeria. The importance of the bank channel for the transmission mechanism of monetary policy has been recognized by successive government in Nigeria because of the perceived developmental role it plays in the economy. In line with this, the monetary and credit circular periodically released by the Central Bank of Nigeria, usually stipulates sectoral loan targets for banks for the preferred sectors of the economy such as manufacturing and agriculture. The availability of credit and the discretion of the lenders in rationing the credit determine the effectiveness and importance of the channel in propagating monetary policy decisions.

3. Exchange Rate Channel

In Nigeria, the exchange rate channel of monetary transmission does not operate as in advanced economies where interest rate and exchange rate differentials mainly act as signal for foreign and domestic asset transactions. Instead, exchange rate changes influence import demand, a process that

transmits monetary development to the external sector. During most of the review period, exchange control and foreign investment laws restricted capital flows such that only import demand was mainly responsive to exchange rate changes. In addition, residents in Nigeria hold foreign currencies as a hedge against inflation and currency depreciation. However, the extent of this practice (currency substitution) has not been adequately investigated and articulated.

III. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

THE TRANSMISSION MECHANISMS OF MONETARY POLICY

The transmission mechanisms of monetary policy through the various channels to the rest of the economy have been broadly examined under the Monetarist and Keynesian theoretical frameworks. The Monetarist transmission mechanism is anchored on portfolio adjustment process in which changes in money supply lead to substitution of assets and changes in their prices, which ultimately impact on investment, consumption, income and inflation. This monetarist transmission process is clearly described by Friedman and Schwartz (1963) as follows: Suppose the money supply increases as a result of open market operations by the Central Bank (purchase of securities), the stock of money increases, which for a commercial bank also means increase in reserves and ability to create credit and hence increase the money supply through the multiplier effect. In order to reduce the quantity of money in their portfolios, the bank and non-bank seller would in the initial stance purchase securities with characteristic equivalent to the ones sold to Central Bank. The increase in demand would bid up the price of such securities thereby making other more risky securities attractive. Assuming that the financial and goods markets are not segmented, the risk in prices of financial assets relative to non-financial assets would increase the demand for such assets, increase their prices, raise wealth of owners and increase demand and supply further. Through the mechanism, the initial increase in money supply, involving the open market operations, stimulates activities in the real sector. Based on the transmission mechanism of monetary policy, monetarists conclude that an increase in money supply leads to a significant increase in aggregate demand. In the short run, an increase in money supply results in increases in both output and price level. In the long run, an increase in money supply affects mainly the price level. Milton Friedman believes that the long run growth rate of output is

determined by real factors such as savings rate and the structure of industry. Thus in the long run, more rapid increases in money supply result in higher rates of inflation not higher growth rates of output (Friedman, 1970, 1971, 1973).

Keynesian view of monetary transmission on the other hand, is centered on the ability of changes in money supply to influence the cost of capital through changes in short term interest rates (Campbell, 1982). For instance, a rise in money supply increases liquidity in the inter-bank system, which in turn depresses overnight inter-bank rates, and eventual reduction in long-term interest rates, which is the main stimulant of investment and income (Cottarelli and Kourelis, 1994).

Campbell (1982) on three grounds faulted the Keynesian and monetarist transmission mechanisms. Firstly, interest rates can reach a floor where it cannot affect investment decision (the liquidity-trap criticism of the Keynesian interest rate theory). Secondly, there is the possibility of the segmentation of interest rates in the different markets (short and long term), which could hamper the transmission process. Finally, investments may not be sensitive to fluctuations in interest rates.

The transmission of monetary policy has varied across countries and over time, depending on the peculiarities of the countries. Duguay (1994) discusses the interest and exchange rate channels of monetary mechanism in Canada. In view of the openness of the Canadian economy, a monetary disturbance affecting the overnight rate lead to adjustment of financial institutions portfolio of domestic and foreign assets as interest rate differential develops. The change in interest rates is transmitted to aggregate demand and supply through its effect on the cost of capital and labour. On its part, the exchange rate changes influence the demand and supply of traded and non-traded goods, the terms of trade and the valuation of foreign currency denominated assets. Duguay (1994) also describes a transmission mechanism, which works through the gradual adjustment of prices, allowing temporary deviation between demand and supply of traded and non-traded goods in the economy. Using a form of the St. Louis model, he finds that growth in Canadian real GDP is affected significantly and positively by economic growth in the United States, changes in real exchange rate of the Canadian to US dollar and changes in real commodity prices, while real short term interest rate and fiscal stance (ratio of government surplus and potential output) have negative and significant effect on the variation in Canadian GDP.

Suzuki (1984) describes the transmission mechanism of monetary policy up to the early 1980s in Japan. Prior to 1971, the Bank of Japan relied on credit allocation to banks as the main instrument of monetary policy. By varying the volume of credit available to banks, the Bank influenced the level of inter-bank funds and their interest rates. As the business sector depended highly on borrowing from the banking sector during the period, the changes in Japan's financial system in the 1970s, the transmission mechanism shifted in favour of developments in the daily open market operations as business internal funds improved. During the period, interest rate differentials between the regulated money market instruments and the interest rates in the open market acted as signals for flow of funds between the two markets. In this way, economic activities were regulated. Firms with low assets base had difficulties raising funds in tight monetary times. In addition, the open market interest rates acted also as the measure of the opportunity cost of capital as to determine when to use internal funds and/or when to curtail spending entirely.

Friedman and Schwartz (1963) have argued that the money supply and its rate of growth have a significant impact on nominal income and its rate of growth. They have amassed a wide range of statistical and other evidence to support this argument. They believe that a causal relationship exists between the money supply and economic activity over the business cycle. They note that the money supply increased steadily over the business cycle with only a few exceptions. The money supply did fall appreciably during six periods, with decreases ranging from 2.4 percent to 35.2 percent. These periods corresponded to economic contractions (depressions), which were more severe than any of the other contractions experienced by some countries during the period. In other contractions, the money supply increased. If the trend effect is eliminated, however, there appear to be a relationship between the cyclical behaviour of the money supply and the business cycle. Peaks in the growth rate of the money supply precede peaks in the business cycle; similarly, troughs in the growth rate of the money supply precede business cycle troughs.

Friedman and Schwartz (1963) found that peaks (troughs) in the growth rate of money supply precede peaks (troughs) in the business cycle by an average of 18 (12) months. There is, however, considerable variability, with ranges of 13 to 29 months at the peaks and 4 to 21 months at the troughs. Based on these results, Friedman and Schwartz have argued that the lag associated with monetary policy is long and variable. Culbertson (1960) and Ando, Brown, Solow and Kareken (1963) have criticized their view.

Culbertson (1960) raised three issues relating to the empirical evidence cited by Friedman and Schwartz. First, he noted that Friedman and Schwartz compared the peaks (troughs) of the growth rate of the money supply with peaks (troughs) in the absolute level of business activity. He believes that this procedure is invalid. Secondly, Culbertson disagreed with Friedman and Schwartz definition of the lag. Culbertson argued that the appropriate definition is the period between the time of the change in monetary policy and the time at which the behaviour of the economy is altered. If a different definition is used, Friedman and Schwartz's results are likely to be modified. Third, Culbertson raised the question of reverse causation. He argued that although increase in the money supply cause increase in economic activity, an increase in economic activity also causes an increase in money supply. Because of the interaction between the money supply and economic activity, Culbertson contended that it was very difficult to estimate the lags accurately. Although he cited no empirical evidence to support his views, Culbertson (1961) claimed that the predominant direct effects of monetary policy occur within three to six months that suggest to him that monetary policy is not destabilized provided that it is pursued rather early in the business expansion or contraction.

Ando, Brown, Solow and Kareken (1963) have also criticized Friedman and Schwartz's conclusions. They raised some of the same objections as Culbertson and claimed that the lag is shorter and less variable than Friedman and Schwartz found. Ando *et al.*, in particular, asserted that a change in monetary policy has some effect quickly; the effects build over time, so that a change in monetary policy has a significant impact upon the economy within six to nine months.

Mayer (1967) has countered that the conclusions of Ando *et al.* do not follow from their results and, thus, are misleading. According to Mayer, Ando *et al.* fail, in general, to present data, which permit calculation of the total lag on the response of inventories, they do present sufficient data, but this lag is much longer than Friedman and Schwartz's lag. On the response of producers' durable equipment, the data are insufficient, but even the data available suggest that the lag is longer than Friedman and Schwartz's lag. Mayer claimed that Ando *et al.* (1963) should have criticized Friedman and Schwartz for underestimating the lag, not overestimating it. He concluded that Ando *et al.* estimates are correct, monetary policy is probably destabilizing rather than stabilizing.

IV. METHODOLOGY

MODEL SPECIFICATION

Following Papademos and Modigliani (1990) a Monetary Aggregate Demand Model is specified and summarized by equations (1) to (3).

$$IS: y^d = \bar{y} + c(y - \bar{y}) + d(r - \bar{r}) + u_d, 0 < c < 1, d < 0 \quad (1)$$

$$LM: m = p + \bar{k} + ki + by + u_m, \bar{k} > 0, k \leq 0, b > 0 \quad (2)$$

$$F: i = r + \hat{\pi}, \hat{\pi} = \hat{p}_{+1} - p \quad (3)$$

A stylized specification of the determinants of price adjustment is given by equation (4)

$$PC: (p - p_{-1}) = \alpha(y - \bar{y}) + (\hat{p} - p_{-1}) + u_p, \alpha > 0 \quad (4)$$

or alternatively a specification of the determinants of the supply of aggregate output in the short run, as shown by equation (5).

$$AS: y - \bar{y} = \alpha'(p - \hat{p}) + \varepsilon_t, \varepsilon_t = -u_p / \alpha \quad (5)$$

Various literatures have it that changes in the money stock will affect both real output and price level in the short run. Both equations are reduced forms of more complete structural representations of wage-price interactions which, however, abstract from the effects of other factors that may influence the trade-off, that such as permanent or cyclical changes in productivity growth and, more importantly, ignore the existence of rigidities such as may result from long term contracts. These two aggregate specifications of the trade-off are obviously equivalent but they are derived from alternative microeconomic theories. Equation (4) can be related to a Neo-Keynesian framework of the market clearing mechanism, where excess demand affects wage adjustments and according to Oligopolistic pricing models, also price adjustments. Equation (5) can be derived from the Friedman-Lucas classical model of competitive markets, where erroneous price expectations are reasonable for transitory output fluctuations.

It is instructive to examine the implications of the aggregate supply specification in equation (4) on the income-money velocity relation independently of the effects introduced by alternative hypothesis on the nature of inflationary expectations. To this end we obtain first, from equation (1) to (3), what may be called an "aggregate demand" relation between real output and the money supply:

$$y = \bar{y} + \mu(m - \bar{m}) - \mu(p - \bar{p}) - \mu k(\hat{p}_{t+1} - p) + \epsilon_d \quad (6)$$

Where $\epsilon_d = \mu(ku_d / d - u_n)$ and $\mu = a(ab + k)^{-1} > 0$.

This expression determines the quantity of aggregate output demanded for a given stock of money, which is consistent with equilibrium in the money and final goods markets. Simultaneous solution of equations (6) and (4) yields the relations in equations (7) and (8) between price level, real output and money supply.

$$P = \beta [\alpha\mu(m + \bar{u} - \bar{y}) + \hat{p} - \alpha\mu k\hat{p}_{t+1} + \alpha(\epsilon_d - \epsilon_s)] \quad (7)$$

$$y = \bar{y} + \beta\mu[(m + \bar{u} - \bar{y}) - \hat{p} - k(\hat{p}_{t+1} - \hat{p})] + \beta\epsilon_d + (1 - \beta)\epsilon_s \quad (8)$$

where

$$\beta = [1 + \alpha\mu(1 - k)]^{-1}, \quad 0 \leq \beta \leq 1, \alpha \geq 0$$

$$\mu = a(ab + k)^{-1} > 0, \quad a = d(1 - c)^{-1} < 0$$

$$\epsilon_d = \mu(ku_d / d - u_n)$$

and where y is defined as the real output, $\bar{y} = \frac{\Delta y}{y}$, which is defined as the

variation in real output, m is defined as the real money supply, $\bar{m} = \frac{\Delta m}{m}$,

which is defined as the variation in real money supply, p is defined as the

current price level $\bar{p} = \frac{\Delta p}{p}$, which is defined as the variation in current price

level. \hat{p}_{t+1} is defined as expectation in future price level or the forecast price level.

Data Source

The study made use of quarterly time series data for the period 1986 (i) to 1998 (iv). The data for the study was sourced secondarily from the publications of the Central Bank of Nigeria (Annual Reports and Statement of Account, Economic and Financial Review, Statistical Bulletin, Monthly and Half-yearly Reports) and Federal Office of Statistics (Digest of Statistics and Annual Abstract of Statistics).

V. EMPIRICAL ANALYSIS

EMPIRICAL RESULTS

TABLE 1

ADF TEST: No Deterministic Trend

Variables	ADF (0) 1% Critical value -3.565	ADF (1) 1% Critical value -3.565	ADF (2) 1% Critical value -3.565
(y)	-2.662466	-3.793583*	-6.309598
$(m - \bar{m})$	1.637350	-4.759989*	-8.394580
$(p - \bar{p})$	-4.796154*	-8.110072	-10.62255
Forecast price level $(\hat{p}_{t-1} - p)$	-2.620075	-5.362307*	-6.575316

Source: Author's Computation

We employed the Augmented Dicker fuller (ADF) test to test the time series of our data and to verify whether they are stationary over the sample period. The ADF test of the null of a unit root on the levels of the variables show that the null hypothesis may be accepted for real output (y), variation in real money supply $(m - \bar{m})$, and forecast price level which are not stationary in levels as depicted on the table above. However, differencing it once resulted in its stationarity. This implies that the null hypothesis of a unit root can be rejected for change in price level $(\hat{p}_{t-1} - p)$, this variable appeared at level. The stationary test for the variables used for the conventional lags in the effect of monetary policy analysis showed that while three variables were stationary at first differencing, the remaining one was stationary at level.

Having estimated the parameters of the model, it is necessary that we proceed to determine the reliability of the result obtained so as to decide whether the estimated variables are theoretically meaningful and statistically significant. The explanatory variables in the results are CH for variation in real output, EX for forecast value of price level, INF for variation in the price level and MY for variation in money supply while RT is the dependent variable denoting real output. The R-squared explains over 91% variation of the dependent variable on the explanatory variables; the remaining 9% is

accounted for by the error term and this has to do with variables, which are not included in the model.

TABLE 2

Regression Result for Model of Aggregate Demand

Dependent Variable is RT (Real Output)

Sample (Adjusted): 1987:2 – 1998:4

Included observations: 47 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CH(-1)	-0.000813	0.000211	-3.851089	0.0005
CH(-2)	0.000568	0.000350	1.623721	0.1134
CH(-3)	-0.000355	0.000343	-1.035380	0.3076
CH(-4)	0.000701	0.000206	3.402364	0.0017
EX(-1)	0.009347	0.001557	6.003965	0.0000
EX(-3)	-0.002843	0.001260	-2.257326	0.0303
EX(-4)	0.001912	0.001016	1.882012	0.0682
EX(-5)	-0.005892	0.001495	-3.940886	0.0004
INF(-4)	-0.014926	0.016961	-0.880035	0.3848
MY(-1)	0.002580	0.001119	2.305908	0.0272
MY(-2)	-0.002266	0.001174	-1.929518	0.0618
MY(-4)	-0.002129	0.000873	-2.440435	0.0199
R-squared	0.911023	Mean dependent var.	-0.299702	
Adjusted R-squared	0.883059	S.D. dependent var.	0.239877	
S.E. of regression	0.082030	Akaike info criterion	-4.785506	
Sum squared resid.	0.235511	Schwarz criterion	-4.313128	
Log likelihood	57.76928	F-statistic	32.57827	
Durbin-Watson stat	1.374649	Prob. (F-statistic)	0.000000	

At 5% level of significance, the coefficient of the lag value of variation in real output (CH-4) implies a positive relationship with the dependent variable with its t-statistic being significant. Also the coefficient and t-statistic of EX (-1) and MY (-1) were also significant implying that our model is a good fit for our a priori expectation, and that the speed at which monetary policy affects its target variable is with a lag which is both long and variable. At 10% significance level, CH (-2) and EX (-4) came out significant both with their coefficient as well as t-statistic. The length might be more than a year that is, five quarters or maybe just three months that is, one quarter or four quarters. Our results show that the speed is not short; it either varies depending on the period or is long.

VI. CONCLUSION

The most promising approach to estimating the lag in the effect of government stabilization policies seems to be an analysis of the channels through which they affect the economy and an appraisal on the basis of experience of the time that it takes for effects to pass through each channel. Undoubtedly, there are lags before the direct effect of policy upon income are felt, lags that vary with the chains of reaction and its surrounding circumstances.

This study was based on examining the timing in the effects of monetary policy in Nigeria, that is, to determine the lag length in monetary policy effectiveness. Accordingly a monetary growth model of 'Aggregate demand' relationship between real output and money supply was specified. The results of the study confirmed the notion that monetary policy affects its ultimate target after a lag, which is both long and variable. This was reflected in the R-squared where over 91 percent variation of the dependent variable was explained by the explanatory variable. The t-statistic test was statistically significant too.

This study has attempted to shed some light in examining the speed of monetary policy on Aggregate demand by looking at the various monetary transmission mechanism capturing the period 1986 to 1998. Specifically, it looked at the transmission effect in the light of the Nigeria economy. The existence of this lag in transmission mechanism of monetary policy is the reason why Central Bank of Nigeria takes action today, and the effects of that action may on some occasion be felt in five months from now, on other occasion two years from now. This explains why it is difficult, as a technical matter in the present state of our knowledge to know what measures one

ought to take at any given time. Currently, we cannot hope to use monetary policy as a precision instrument to offset other short run forces making for instability. The attempt to do so is likely merely to introduce additional instability into that economy making the economy less rather than more stable.

The fact that monetary policy does affect its target variable after a lag which is both long and variable is in line with Friedman and Schwartz's (1963) view that "Monetary policy acts with so long and variable a lag that an attempt to use it actively may aggravate rather than ameliorate, economic fluctuations." They used this allegation to support their prescription for a constant growth in money supply in preference to any actively anti-cyclical monetary policy.

The existence of a long and variable lag suggests that government monetary policy should not attempt to be actively anti-cyclical but should behave in a manner that is cyclically neutral, also since Monetary Transmission mechanism plays a major role as far as the timing of monetary policy is concerned and so because of its important role, government should put in place more efficient financial structures to ensure that the transmission mechanisms is hitch free. Institutions responsible for information flow should ensure that there are good strategies that would make way for policy effectiveness. Government should also pursue sound and more coordinated monetary policy. This is because financial policy environment determines the composition of wealth holders' portfolio. In particular, alternations in relative prices especially inflation has a great impact on portfolio composition.

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