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The transmission of monetary policy in Nigeria

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THE TRANSMISSION OF MONETARY POLICY IN NIGERIA

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This paper investigates the transmission channels and mechanisms through which monetary policy affect economic activities with particular focus on the Nigerian economy. Even though there is no consensus on how monetary policy affects the economy, the liquidity or interest rate, credit (including bank loan) and exchange rate channels of monetary transmissions were identified in the literature. The propagation of monetary policy through the various channels were explained broadly under the monetarist and Keynesian theoretical frameworks. The monetarist transmission mechanism relies mainly on portfolio adjustment of the assets and liabilities in the balance sheets of banks, firms and households for the transmission of monetary policy changes to the rest of the economy, while the keynesian transmission mechanism is centered on the ability of changes in money supply to affect the cost of capital (through interest rate movements). The various channels and mechanisms reinforce each other but may vary in importance from country to country and over time; and are applicable in the Nigerian case. In addition, the informal credit market forms an important avenue for the transmission of monetary policy in Nigeria. In order to establish the existence of the credit channel, the composition of manufacturing firms' sources of finance data from Central Bank of Nigeria Annual Business Survey was analyzed. The results indicated that the portion of the firms' financing from banks was responsive to the stance of monetary policy during the review period. A further examination of the Lagos area component of the data revealed that banks lend more to larger manufacturing firms than to smaller ones in conformity with the generally held views on the subject and results of previous studies. The smaller firms, unlike their larger counterparts, relied more on their internal funds for fixed investment than from other sources. The transmission of monetary policy in Nigeria could be further improved if capital flows are liberalised; open market operation (omo) instruments are made more attractive; and the activities in the informal financial market are better understood.

1. INTRODUCTION

The present study is the third in the series aimed at a better understanding of how monetary policy works in Nigeria[1]. An in-depth knowledge on how monetary policy affects the economy is very vital in improving the overall performance of the economy in that the correct doses and measures of policy would be applied at the appropriate times. Monetary policy involves the adjustment of the money stock (through various means)[2], interest rates and exchange rates as well as expectations to influence the levels of economic activity and

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inflation in a desired direction. By implication, this means that there are transmission channels and mechanisms by which monetary policy influence the desired targets. Generally, monetary policy is initiated through various actions which change the quantity (money supply) and/or prices (interest and exchange rates) of monetary assets/liabilities. The quantity of money stock can be increased by the injection of primary money (for example, through cash advances or open market operations). The former mainly affects banks' balance sheets, while the later, in addition, influences those of firms and households. A central bank can also decide to fix the interest and exchange rates at pre-determined levels or allow the rates to be market determined through open market operations and foreign exchange market interventions, respectively. In both cases there would be liquidity changes which would also affect banks' reserves and their lending operations. Firms and households analyze their balance sheet positions and consider the trade offs between the use of bank funds, internal funds, equity funds and other sources of funds and adjust their savings, consumption, investment, import and export behaviours to match the monetary action. In this way, the initial monetary impulse is transmitted to the rest of the economy.

There is a broad consensus that monetary policy affects the economy but the transmission channels and mechanisms are not yet clearly understood and have been under debate over time, probably because of the complexity of the medium of transmission. A monetary impulse, for instance, triggered by a contractionary open market operations, would result in portfolio adjustment in the balance sheets of banks, firms and households. How the ensuing reaction affects economic activities depends on many factors related to the characteristics and interests of the banks, firms and households.

In order to bring the problem of the complexity of the transmission of monetary policy to a proper focus, we can compare it with those of physical systems (mechanical, electrical and communication). Mechanical and electrical systems have well known transmission mechanisms governing their operations. For example, the impact of an object on a pool of water is transmitted via wave action. In many mechanical systems, the application of force on a brake pedal or switch compresses a servo-mechanism which reduces or even stops the forward motion of the device. In another analogous system, the application of electrical voltage to an electrical network transmits electrical current through the network. Similarly, communication signals are transmitted through cables or space. In all these physical systems, the characteristics of the operating medium and the mechanics of the transmission systems are known and do remain within certain tolerances. Thus, they can be replicated under the laws governing their operations. When compared to the case of the transmission of monetary policy, it would be understood why the theories of monetary mechanism are in constant debate. The position taken by each author depends much on his or her assumptions.

The objective of this study is to contribute to the on-going enquiry into the channels and mechanisms of the transmission of monetary policy and specifically extend it to the Nigerian case. The rest of the paper is organized into four sections. Section II discusses the channels and mechanisms of transmission of monetary policy, while Section III relates these channels and mechanisms to the case of monetary policy in Nigeria. The main findings of the study and policy implications are summarized in Section IV where the paper is also concluded.

II CHANNELS AND MECHANISMS OF MONETARY POLICY

This section discusses the channels and mechanisms through which monetary policy influences the economy.

II.1 Channels of Monetary Policy

There are three main channels (liquidity, credit and exchange rate) 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 the economy. The basic characteristics 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, households 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 market, interest rate and exchange rate differentials stimulate foreign exchange flows between countries and induce monetary adjustment. In effect, the exchange rate channel exists through the substitution of an external asset for a domestic one. In the process, the effects of monetary 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.

II. 2 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 characteristics equivalent to the ones sold to the 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 rise in prices of financial assets relative to nonfinancial assets would increase the demand for such assets, increase their prices, raise wealth of owners and increase demand and supply further. Through this mechanism, the initial increase in money supply, involving the open market operations, stimulates activities in the real sector.

On the other hand, the Keynesian view of monetary transmission 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; p. 526). For instance, a rise in money supply increases liquidity in the inter bank system which in turn depresses overnight interbank rates, and eventual reduction in long term interest rates which is the main stimulant of investment and hence income[3]. The Keynesian and monetarist transmission mechanisms were faulted by Campbell on three grounds. Firstly, interest rates can reach a floor where it can not affect investment decisions (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[4]. Finally, investments may not be sensitive to fluctuations in interest rates.

Commenting on the Friedman and Schwartz's study, Minsky (1963) observes the possibility of a slip in the transmission mechanism as was also stated in Keynes General Theory of Employment, Interest and Money due to the implied long transmission lag[5]. Instead, he describes two channels - open market operation (OMO) and commercial loan-in which an increase in money supply affects real variables. The OMO channel works through changes in banks' portfolios in favour of income earning assets. He envisages a situation where private sector demand is stimulated by changes in relative prices of assets, thus leading to increase in consumption demand or a rise in the prices of second hand financial assets relative to the price of new assets, thereby encouraging investment demand. Besides, he emphasizes the importance of both interest rate and consumer disposable income on the transmission mechanism. The commercial loan channel, on the other hand, is more direct to income. According to Minsky, "The units which generate the newly created liabilities acquired by the monetary system will do so because they wish to purchase either financial or real assets. The portfolio adjustment portion of the connection between a monetary change and a change in income is not operative in the initial stages of the adjustment following a commercial loan operation", (Minsky, p. 70).

In his own comments, Okun (1963) emphasizes the view that changes in money supply affect economic activities just as changes in economic activities affect money supply. While supporting Friedman and Schwartz's monetary transmission mechanism, he introduces the concept of credit availability in which some firms and households are unable to acquire real assets because of their limited ability to borrow. During a period of expansionary policy more funds are channeled "into the hands of these eager spenders" which could have a large and direct impact on aggregate economic activity.

The credit availability doctrine was further analyzed by Modigliani (1963). The proponents of the availability doctrine argue that "interest rates charged to borrowers by financial intermediaries are largely controlled by institutional forces and should adjust slowly at best; and that the demand for funds is accordingly limited not by the borrower's willingness to borrow at the given rate but by lenders' willingness to lend - or more precisely, by the funds available to them to be rationed out among would-be borrowers"[6]. Thus, monetary expansion would induce banks to relax credit rationing and increase lending. As a result, income increases under less than full employment from increased investment and consumption, while savings could rise sustaining further investment through increasing the availability of loanable funds. However, under full employment the increase in lending,

which would also increase aggregate demand would lead to inflationary pressures. Arguing in support of the importance of money in affecting income and prices, he presents a reduced form equation for income, Y, given by f(M,F,r;W,p)

where M = money stock
F and r are fiscal policy parameters;
W = rigid money wage, and
p = parameters of the structural equations for factors such as technology, tastes and initial conditions. The transmission mechanism acts through increase in M which in turn increases effective demand (mainly investment) partly because of short term reduction in the cost of capital and partly because of reduction in credit rationing and subsequently through flow of financial savings.

Swoboda (1973), following Mundell (1962) and Flemming (1962) relaxes the closed economy analysis and introduces the external sector argument into the transmission discussion[7]. Under the small country assumption, he considers the case of an economy with three goods: traded or international, non-traded or domestic and money that are substitutes. Starting from a position of equilibrium with a fixed price of the traded good (fixed exchange rate), he postulates that an increase in money supply will create excess supply of money which would result in excess demand for domestic and international goods. When the monetary authorities intervene in the foreign exchange market (by increasing the supply of foreign exchange) the money supply reduces leaving the exchange rate unchanged. The balance of payments (bop) equilibrium and income would rise temporarily but could be maintained for a longer period depending on the ratio of traded to non-traded goods in the economy.

Tobin (1978) expands the interest rate concept to include those of equity and securities. Tobin's first transmission mechanism involves portfolio adjustment similar to that of the monetarists but which influences the cost of capital. He argues that an increase in money supply leads to asset substitution between corporate bonds, equities, bank deposits, short-term treasury or commercial paper. The substitution affects the rates on short term instruments and those on other assets. He expresses the possibility of external shocks and non-monetary policy issues such as low retained earnings and increased uncertainties, affecting the cost of capital and the transmission process.

Tobin also indicates that monetary policy affects the economy through liquidity constraints and credit control. He distinguishes between money as a liability from credit which is an asset and focuses on the effect of credit availability on the expenditures of illiquid households and firms[8]. As he puts it, many firms and households can borrow to the limit that lending institutions can advance, irrespective of the prevailing interest rates. During periods of tight monetary policy characterized by high and rising interest rates which also reduce banks' ability to lend, loan administration favours prime customers and business firms who in the process displace mortgage and consumer applicants. This development he says is strong enough to reduce investment and consumer expenditures.

Laidler (1978) conducts an extensive review of how money affects money income on what he terms the transmission mechanism. Starting from a review of the traditional IS -

LM model for the transmission of monetary policy, he sketches the normal portfolio adjustment mechanism in which money affects expenditures through its property as an asset in the portfolio of consumers. He cites studies by Friedman and Meiselmam (1963), Anderson and Jordan (1968), Friedman and Schwartz (1963, 1970) and Sims (1972) as empirical evidence in support of a money to money income causation.[9] The three main shortcomings of the IS - LM model, according to him, are the (1) inability of the model to deal with the breakdown of the effects of changes in money into changes in real income and prices; (ii) absence of the linkage between the government budget and the behaviour of money supply; and (iii) the exclusion of the external sector. Elaborating on these, Laidler describes a price and output transmission mechanism between money and money income thus: "A higher than equilibrium quantity of money in the economy leads to attempts to substitute other assets, and current consumption, for money. Such behaviour on the part of households must lead to an increase in firms' sales, and, if output does not respond immediately to meet this increase, to a rise in their holdings of money (and perhaps of such liquid assets as trade credit) and a diminution of their inventories. The act of increasing prices is an integral part of firms' response to the asset disequilibrium".

A further argument in support of the money income breakdown into real output-price changes involves the recognition of the role of endogenous inflation expectations. In the first instance, an increase in the rate of money supply above that anticipated would lead to build up of real balances and a possible fall in its rate relative to other assets. The portfolio substitution into current consumption and other assets would eventually lower interest rates (observable and unobservable) and increases production. A second round effect is for firms to increase their prices and for money wages to increase above their initial equilibrium expected levels, thus leading to an acceleration of the actual inflation rate. As a result, nominal interest rates and opportunity cost of holding money increase, fueling inflation further. The effect of inflation expectations on nominal interest rates and the tendency for nominal interest rates to fall before rising above the original level during a monetary expansion were observed by Laidler to have been proven empirically. Since the success of the expectations hypothesis depends on the behaviour of the actual inflation rate, it is argued that if economic agents form further expectations rationally, the effect of expectations would not affect real income and prices. However, because of the effect of information asymmetry, long contracts on wages and prices and the associated cost of acquiring data, as had been proved empirically, the effect of expectations still influence the transmission mechanism so that increases in money supply affects outputs and prices directly and indirectly through the portfolio adjustment mechanism.

On the assumption of exogenous money supply, Laidler notes that the government budget constraint and the exchange rate regime it pursues affect the transmission process and the endogeneity of money supply. For instance, where the central bank sets nominal interest rates and allow the money supply to adjust to any level to achieve the target, the money supply becomes endogenous. Similarly, when government finances its expenditure through the banking system, the money supply becomes endogenous as long as the deficit and money creation persist. Consequently, private sector portfolio composition is affected, leading to the crowding out effect usually associated with expansionary fiscal policy. The

implication of an endogenous money supply linked to government deficit leads to the division of the growth of money supply into two-the expected part affecting inflation directly and the unexpected part influencing output and inflation indirectly through portfolio disequilibrium mechanism.

The final issue raised by Laidler on the IS-LM model, which recently attracted considerable analysis is the effect of openness of an economy to monetary disturbance. He notes that "how the openness of an economy impacts upon monetary policy and its transmission mechanism depends upon the exchange rate regime in force." Under fixed exchange rate regime, money supply fluctuates through movements in the balance of payments to maintain the value of the domestic currency. In contrast, the exchange rate is adjusted in a flexible regime in order to maintain external balance. Also, import prices in production (import cost-push mechanism) provide another channel through which world inflation is transmitted to domestic prices. He concludes that there is no unique transmission mechanism for monetary policy as the outcome depends on the way it is implemented, the structure of the economy and the interaction with other policies.

Kashyap, Stein and Wilcox (1993) investigate the loan - supply channel of transmission of monetary policy. They find that firms substitute commercial paper for bank loans as a means of external finance during periods of tight monetary policy. This substitution, they observe, affects investment even when the effect of interest rates have been isolated. For a separate loan supply channel to exist that affects aggregate demand, bank loans and commercial paper must be imperfect substitutes as bank assets and corporate liabilities, they argue. This implies that substitution may not be costless. The lending view of monetary transmission was reviewed by Hall and Thomson (1992). Their main argument is that imperfect substitution between corporate liabilities and bank loans is necessary for the existence of the lending channel of monetary transmission. In addition, they argue that a spread has to exist between the bank lending rate and bond rate for the bank loan channel to be effective. Under these conditions, monetary policy influences real economic activities mainly through changes in bank lending to firms. Thus, the loan channel augments the liquidity (interest rate) channel and increases the potency of monetary policy. The observed effect, according to the study, was more pronounced for small than large firms.

Gertler and Gilchrist (1991) established the existence of the lending channel by studying the response of small manufacturing firms to changes in monetary policy. The results of their analysis indicated that, in periods of contractionary monetary policy, (i) lending to small firms declines; and (ii) small firms react more to changes in bank - related aggregates (such as broad money, M2, and the ratio of bank loans to commercial paper-mix variable) than large firms. On the other hand, movements in commercial paper and treasury bill rates predict better the borrowing behaviour of large firms. Their analysis, as that of Hall and Thomson, implies that the lending channel of monetary transmission exists with greatest effect on small firms.

The equilibrium credit rationing hypothesis was investigated by King (1986). The hypothesis states that when bank reserves increase as a result of monetary policy, previously cash strapped customers could obtain loans. As a result, aggregate demand for and supply of goods and services could rise. Using a model of bank lending behaviour, King finds

limited empirical support for the equilibrium rationing hypothesis and concludes that the evidence does not support the hypothesis as an explanation for the transmission of monetary impulse to output in the United States.

In a renewed search for a better understanding of how monetary policy affects the economy, the Federal Reserve Bank of St. Louis devoted its Nineteenth Annual Economic Policy Conference to the issue under the theme "Channels of Monetary Policy". The main conclusions of the conference, summarized by Thornton and Wheelock (1995), show that the theoretical basis for the liquidity channel of the monetary mechanism is under dispute, while empirical evidence on the existence of that channel is deemed to be weak and short-lived. Similarly, the bank lending channel was found to be theoretically weak and devoid of empirical support. Overall, there was no consensus on how changes in monetary policy affect the performance of an economy.

Oliner and Rudebush (1995) examine the bank lending channel of monetary transmission. By categorizing firms into small and large, they analyze the use of bank and non-bank debt instruments in response to monetary policy contraction and find that there was little change in the use of either. In other words, monetary contractions do not reduce the supply of bank debt instruments relative to other sources of business funds. Rather, they find that large firms crowd out small firms from the credit market during periods of contractions in monetary policy.

Dimsdale surveys the literature on the influence of information asymmetry in financial markets on the monetary transmission mechanism. On the basis of the review, Dimsdale concludes that (i) reduction in a firm's net worth limits its ability to borrow especially when there is capital rationing; (ii) the bank lending channel of monetary transmission exists provided that (a) bank loans and open market instruments are imperfect substitutes, and (b) central bank can influence the volume of bank credit through its impact on commercial banks portfolio; (iii) small firms and a portion of households are very sensitive to credit conditions and are therefore more likely to suffer from credit rationing than bigger firms and well to do households; and (iv) short term interest rates provide strong channel for the transmission of monetary policy. Dimsdale, therefore, advises central banks to monitor financial structure and fragility (measured by the degree of credit rationing, the segmentation of the capital market, asset prices, spread between the yields on risky and riskless securities of the same maturity), quality of bank assets and the efficiency of intermediation in the overall financial system for effective monetary policy.

Preliminary work done by de Kock and Deleire (1994) focused on the role of the exchange rate in the monetary transmission mechanism in the United States. Using time series analysis, they investigated the extent to which the exchange rate has influenced the transmission of monetary policy in the U.S. As a result of increased influence of monetary policy on the dollar exchange rate after 1982, they found that movements in exchange rate were responsible for about one-third of monetary policy transmission to output. More importantly, their analysis show that after 1982, the effect of changes in the Federal funds rate on economic activities weakened.

Cottarelli and Kourelis (1994) analyse the effect of the structure[10] of the financial market on the transmission process and find that

(i) non-competitive markets, characterized by entry barriers and state dominated banks, increase the stickiness of lending rate response to monetary stimuli;

(ii) capital controls are impediment to an efficient banking system;

(iii) the development of short term money market instruments, particularly certificate of deposits and treasury bills, increases the effectiveness of the lending rate, while money market interest rate volatility is detrimental to the mechanism; and

(iv) discount rates reduce the effectiveness of lending rates response to money market developments.

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 transimission 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 also describes a transmission mechanism which works through the gradual adjustment of prices, allowing temporary deviation between demand and supply of 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.

The transmission mechanism of monetary policy up to the early 1980s in Japan has been clearly described in Suzuki (1994). 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 the volume of loans had direct impact on economic activity. As a result of changes in Japan's financial system in the 70s, 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 asset 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.

Wasserfallen and Kursteiner (1994) jointly investigate the interest and exchange rate channels of monetary transmission using Swiss data. They find that there is short-run

effects of monetary actions on interest rates, while there is systematic effect of monetary policy on exchange rates.

Montiel (1991) reviews the transmission mechanism of monetary policy in developing countries, generally believed to be financially repressed. Identifying controlled interest rates, the reserve ratio, central bank credit to the banking system and foreign exchange market intervention as the main instruments of monetary policy in such economies, he finds that wealth effects and exchange rate arbitrage are additional channels to interest rate changes in the transmission mechanism of monetary policy[11].

McCallum (1991) provides an empirical support to Allan Blinder's proposition that a "tightening of monetary policy may have strong effects on the real sector when credit is already tight but weak effects when credit is initially plentiful". Using a modified form of the St. Louis Equation and US data, he confirmed the credit rationing channel of monetary transmission and its strong effect on output fluctuations.

Fahrer and Rohling (1990) investigate the influence of financial sector deregulation on the transmission mechanism of monetary policy in Australia. Using vector autoregression (VAR) model, they conclude that deregulation has minimal effect on the way monetary policy impact on the real sector. However, their analysis show that interest rate channel, unlike the credit channel, is an important avenue for the transmission of monetary policy to the economy before and after deregulation.

The position of non-financial institutions balance sheets has been mentioned as contributory to the monetary transmission mechanism in that it influences the ability of agents to react to monetary conditions. In other words, agents' balance sheet positions could enhance or retard their investment and or consumption decisions during periods of liquidity/credit squeeze. This concept was analyzed by Kneeshaw (1995) in the study of the balance sheets of non-financial firms in a group of industrialized countries.[12] Kneeshaw finds that the composition of household portfolio of tangible (housing, etc) and financial assets explain the response of their expenditure plans to monetary policy changes and the variation in country responses to similar monetary policy stimuli. In particular, the analysis shows the possibility of different components of the households portfolio counteracting the influence of monetary policy and the transmission process. Also, changes in asset prices (especially, home equity and debt) were found to constitute an important channel for the effects of monetary policy to impact on the real sector. For instance, households with substantial interest-denominated debts such as mortgage payments would be susceptible to interest rate changes which would also influence their expenditure plans. The results of the analysis of the portfolio of non-financial sector enterprises followed the same pattern as those of households.

Borio (1995) investigates the credit channel of monetary policy by examining the structure of credit to the non-government sector in fourteen industrialised countries and factors influencing it.[13] He finds that the structure of credit was largely determined by interest rates and factors affecting the availability of credit such as collateral value and rationing, defined as "refusal to grant as much credit as is demanded on the observed interest and non-interest terms". Borio observes further that changes in domestic interest rates do not directly affect credits denominated in foreign currency as they are influenced by foreign monetary policy. Rather, the outstanding debt are affected by exchange rate fluctuations.

III THE MONETARY TRANSMISSION MECHANISM IN NIGERIA

The observed channels of monetary transmission (liquidity, credit and exchange rate) are applicable in the Nigeria case though the strength and importance of the channels may have varied over the years. The details of the various channels are discussed below.

III.1 Liquidity or Interest Rate Channel

During the era of direct monetary management (pre - 1986), 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 the 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 the interbank market weakened as distress borrowing by illiquid banks contributed to interest rate movements.

As part of the final phase of the change over to the indirect method of monetary management, the Open Market Operations (OMO) was introduced on 30th June, 1993 as the main instrument of monetary policy. Under the OMO, government securities are traded by authorized dealers through discount houses. The 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 rates 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 is 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.

III. 2 Credit Channel

The credit channel of monetary transmission works through the banks and the informal credit markets in Nigeria. The importance of the bank channel for the transmission mechanism of monetary policy has been recognized by successive governments 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.

Evidence on the credit channel of monetary policy in Nigeria has been investigated here by analysing data on the composition of manufacturing firms' sources of finance, compiled from the CBN's Annual Business Surveys. The idea is that changes in monetary policy (volume of credit allocation and level of interest rates) affect the firms to the extent of their

exposure to bank funds. Table 1 shows the breakdown of the sources of manufacturing finance into domestic bank loans, internal funds, equity capital and foreign source between 1982 and 1995. During the period, manufacturing firms relied mainly on their internal funds, followed by domestic bank borrowing for the finance of fixed investments, made up of machinery and equipment, spare parts, repairs and maintenance.

Manufacturing firms' use of domestic bank credit was generally sensitive to domestic credit conditions. As the prime lending rate fluctuated upwards from 1982 to 1987, they gradually reduced their exposure to the banks and relied more on their internal funds and complementary financing from equity capital and foreign sources. The easing of liquidity condition in 1988 (prime lending rate declined from 17.5 per cent in 1987 to 16.5 per cent) enabled the firms to increase bank financing from 25.2 to 26.9 per cent. The acute credit shortage that affected lending institutions in 1989, as a result of the transfer of Federal Government deposits to the Central Bank of Nigeria, reflected in a sharp rise in the prime lending interest rate to 26.8 per cent from 16.5 per cent in 1988. Consequently, manufacturing firms borrowing from the banks contracted from 26.9 to 14.2 per cent. As usual, the firms resorted to the use of internal funds. While the level of interest rates did not accurately reflect genuine demand for credit in the early 1990s as distressed borrowing intensified, credit availability could have influenced their lending behaviour during the period. The percentage of their financing from banks declined from 14.4 in 1990 to 6.1 in 1991

TABLE 1

NATIONWIDE SOURCES OF MANUFACTURING FINANCE IN NIGERIA
(in per cent)

Year	Prime Lending Rate	Domestic Bank Loans	Internal Funds	Equity Capital	Foreign Sources
1982	10.2	34.2	61.5	2.1	2.2
1983	10.0	31.8	63.2	1.9	3.1
1984	12.5	26.3	49.3	21.6	2.8
1985	13.0	16.4	76.6	4.7	2.3
1986	10.5	8.5	80.8	9.6	1.1
1987	17.5	25.2	63.5	5.2	6.1
1988	16.5	26.9	59.5	4.6	9
1989	26.8	14.2	72.5	11.9	1.4
1990	25.5	14.4	52.2	32.4	1
1991	20.1	6.1	53.9	39	1
1992	29.8	35.1	58.3	4.9	1.7
1993	36.1	46.4	43.5	6.1	4
1994	21.0	35.9	51.7	9.3	3.1
1995	20.2	33.2	59.9	4.0	2.8

Sources

1. CBN Annual Business Surveys
2. CBN Statistical Bulletin Vol. 5, No. 2 1994 & Annual Report.

and rose sharply to 46.4 in 1993. In 1994 and 1995, they moderated to 35.9 and 33.2 per cent, respectively.

In exploring further the bank loan channel of the transmission of monetary policy to the real sector through manufacturing firms, the Lagos area segment of the National Business Survey data for 1994 and 1995 were aggregated into three categories (small, medium and large) based on the value of the annual sales figure for the firms in those years. Theoretically, large, medium and small firms are favoured by banks, in that order, in their lending operations. Thus, changes in bank reserves which limits banks ability to lend would adversely affect the operations of small firms more than the large ones. Manufacturing firms with sales value less than ₦100 million were classified as small, while those with sales ranging from ₦100 million to ₦1,000 million formed the second category (medium scale). The final category is made up of large manufacturing firms with sales over ₦1,000 million. The sources of business investment for the Lagos area manufacturing firms are presented in Table 2. Analysis of the data reveals that small manufacturing firms sourced 28.2 and 23.8 per cent of their financing from the domestic banking sector in 1994 and 1995, respectively. In those years, they utilised internal funds to finance 62.6 and 67.2 per cent, respectively, of their investment demands. Foreign and equity sources were marginal. Thus, small manufacturing firms relied more on their internal funds than other sources of financing. At 62.6 and 67.2 per cent, the demand on their internal funds was above the national average, while their borrowing from the banking system was below the national average for those years, respectively.

On the other hand, those manufacturing firms classified as medium with value of sales ranging from ₦100 million to ₦1,000 million obtained a substantial (42.7 and 51.6 per cent in 1994 and 1995) part of their financing from domestic banks. This class of manufacturing firms also used their internal funds (44.9 and 35.5 per cent) as another major source of capital. Foreign and equity capital were used minimally by the firms. Similarly, large manufacturing firms significantly patronized the banks, while internal funds, at 59.0 and 55.6 per cent in 1994 and

TABLE 2

LAGOS AREA SOURCES OF MANUFACTURING FINANCE

FIRM	DOMESTIC BANK LOANS		INTERNAL FUNDS		EQUITY CAPITAL		FOREIGN SOURCES	
	1994 - 1995		1994 - 1995		1994 - 1995		1994 - 1995	
SMALL	28.2	23.8	62.6	67.2	3.6	1.9	5.6	7.1
MEDIUM	42.7	51.6	44.9	35.5	9.7	9.8	2.7	3.1
LARGE	40.8	42.4	59.0	55.6	0	1.0	0	0.2

SOURCE

CBN Annual Business Surveys.

1995, were their main source of financing. The composition of internal funds in the financing portfolio of large firms was within the national average (see Table 1).

From the transmission of monetary policy point of view, the results are quite revealing. The result suggests that larger manufacturing firms have greater access to bank financing than the smaller firms since all the three categories of firms faced the same monetary policy stance in 1994 and 1995. This result is consistent with other results cited in this paper and the general belief that larger firms are favoured bank customers. Besides, the analysis provides significant evidence suggesting the existence of the bank loan channel of the transmission of monetary policy to the real sector.

Monetary policy is also transmitted through the informal credit market, defined here as the unregulated segment of the financial market. This includes rotating savings and credit associations and contributory agencies such as town meetings, moneylenders, trade and market associations. Others are unregistered finance houses and credit unions. As financial members of the various associations and town meetings, individuals borrow money at fixed interest rates, normally below market rates and without collateral. During periods of high credit demands, available funds are rationed by varying the amount of the loans extended to individuals. However, when non-members want to borrow from the associations, the credit requirements may be made more stringent. On the other hand, most of the unregistered finance houses tend to charge interest rates above those of the associations and formal banking institutions. The volume of transactions passing through the informal sector is substantial and has monetary policy implications. Consequently, Government recognised this fact and prompted policy responses (including the establishment of Peoples Bank of Nigeria and Community Banks) to formalise their operations. The details of the operations of the informal finance markets are outside the limits of the present paper, but interested readers are referred to Oladeji and Ogunrinola (1992), and Ojo (1995).

A form of the credit channel which straddles the formal and informal financial markets is the mortgage finance market. Nigerians substitute real assets for monetary assets, primarily in the forms of real estate and foreign currencies. Government treasury securities which is relatively abundant is not very attractive to investors because of their low yield under a high inflationary environment. Thus, substitution is restricted mainly to money and real estate, depending on their expectations on inflation, traditionally triggered by excess liquidity. This helps to transmit changes in monetary conditions to the real sector. Since the mortgage finance industry is not yet well organized and documented, there is limited information available on this mode of the transmission of monetary policy in Nigeria.

III. 3 Exchange Rate Channel

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 which transmits monetary developments 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.

IV SUMMARY AND CONCLUSION

The paper reviewed various ways in which monetary policy is propagated in an economy. The review found that there was no consensus on exactly how monetary policy influences economic activities. However, the liquidity or interest rate, credit and exchange rate channels were strongly discussed as the avenues in which monetary policy affects the economy. The study identified portfolio adjustment (in which asset substitution translates into price changes and subsequent fluctuations in aggregate demand and supply) and interest rate changes as the mechanisms for the transmission of monetary policy. The first process represents the monetarist view of monetary transmission, while the other is the Kenyesian view which relies on the ability of monetary policy to influence cost of capital through changes in short and long-term interest rates.

The various channels and mechanisms were found to be applicable in the Nigerian case even though the importance and effectiveness of each of them varied over time. Specifically, it was found that the credit channel of monetary transmission exists as inferred from the composition of the sources of investment financing for manufacturing firms. The study found that banks favoured larger firms in loan administration as is generally believed and cited in the literature. While the study identified substitution between monetary and other assets (real estate, foreign currencies, etc), the dearth of data on the subject limited an in-depth analysis of the mechanism. The study also analysed the informal financial sector mechanisms through which monetary policy is transmitted in Nigeria. This includes credit administration by market associations, trade unions and town meetings. The exchange rate channel was identified to work mainly through import demand as exchange control and foreign investment policies during the period limited interest and exchange rate induced

capital flows.

Thus, to further improve the transmission of monetary policy in Nigeria efforts should be made to implement the liberalization of capital flows stipulated in the 1995 Decree which abrogated the Exchange Control Act of 1962 and the Nigerian Enterprise Decree of 1989 which hitherto inhibited capital flows. Since real estate is generally believed to be the most common type of asset being held by Nigerians as substitute for monetary assets, appropriate and consistent policy capable of unmasking the operations of the mortgage industry in Nigeria should be formulated. This would help in improving an understanding of the industry and the transmission of monetary policy. Furthermore, efforts should be made to study major types and substitution of assets available in the economy that have monetary policy implications. Finally, policy reforms that would enhance the attractiveness of open market instruments and the capture of the operations of informal financial markets would also improve the transmission of monetary policy in Nigeria.

FOOTNOTES

1. The other topics by the author are "Monetary Policy and the Performance of Commercial Banks in Nigeria", EFR Vol. 33, No. 2, 1995 and "Can Money Supply in Nigeria be controlled through Base Money? An Empirical Analysis". EFR Vol. 33 No. 3, 1995.

2. These include Open Market Operations (OMO), changes in credit to the economy, reserve requirements, and deliberate infusion and withdrawal of the stock of money through stabilization securities, and transfer of government deposits to and from commercial banks.

3. Hu (1993) actually showed that there is a relationship between growth in output in Canada, France, Germany, Italy and United States and the yield spread between long term a nd short term government bonds. Similarly, Friedman and Kuttner (1992) proved the relationship existing between the spread between commercial paper rate and Treasury bill rate on the one hand and movements in real income in the United States.

4. Some versions of the theories of the structure of interest rates - Unbiased Expectations Theory, Segmentation Theory and Preferred Habitat Theory - suggest this possibility.

5. Minsky quotes Keynes as saying "if however we are tempted to assert that money is the drink which stimulates the system to activity, we must remind ourselves that there may be several slips between the cup and the lip'"

6. Modigliani (1963, P. 98).

7. See Swoboda (1973) for references on Mundell and Flemming.

8. Illiquidity can result from the nature of the wealth they possess.

9. See Laidler (1978) for references.

10. Cottarelli and Kourelis define financial structure to include such features as:

    (i) the degree of development of money and financial markets;

    (ii) the degree of competition within the banking system, and between banks and other intermediaries;

    (iii) the existence of constraints on capital movements; and

    (iv) the ownership structure of the financial intermediaries.

11. Domestic currency, bank deposits, curb market loans, foreign exchange and bank credit were the assets identified by Montiel in the portfolio of a typical household.

12. This includes United States, Japan, Germany, France, United Kingdom, Italy, Canada, Sweden, Spain, Australia, Belgium and Switzerland.

13. The countries are Australia, Austria, Belgium, Canada, France, Germany, Italy, Japan, Netherlands, Spain, Sweden, Switzerland, United Kingdom and United States.

REFERENCES

Borio, C.E.V., (1995). The Structure of Credit to the Non-government Sector and the Transmission Mechanism of Monetary Policy: A Cross - Country Comparision. Bank for International Settlement Working Paper, Basle, April.

Campbell, T.S., (1982). Financial Institutions, Markets and Economic Activity, Mcgraw Hill Book Company, New York.

Cottarelli C. and A. Kourelis, (1994). "Financial Structure, Bank Lending, and the Transmission Mechanism of Monetary Policy", IMF Staff Papers, Vol. 41, No. 4, December, pp. 587 - 623.

Dimsdale, N., "Banks, Capital Markets and the Monetary Transmission Mechanism". Oxford Review of Economic Policy, Vol. 10, No. 4.

Duguay, P., (1994). "Empirical Evidence on the Strength of the Monetary Transmission Mechanism in Canada: An Aggregate Approach," Journal of Monetary Economics, Vol. 33, pp. 39 - 61.

Fahrer, J. and T. Rohling, (1990). Financial Deregulation and the Monetary Transmission Mechanism, Research Discussion Paper No. 9008, Reserve Bank of Australia, November.

Friedman, B.M. and K.N. Kuttner, (1992). "Money, Income, Prices and Interest Rates", American Economic Review, Vol. 82, No. 3 June, pp. 472 - 492.

Friedman, M and A. Schwartz, (1963). "Money and Business Cycles". Review of Economics and Statistics, Supplement, February, pp. 32 - 64.

Gertler, M. and S. Gilchrist, (1991). "Monetary Policy, Business Cycles and the Behaviour of Small Manufacturing Firms," WP 3892, National Bureau of Economic Research, Cambridge, November.

Hall, B.J. and J.D.G. Thomson, (1992). The Lending View of the Monetary Transmission Mechanism, Discussion Paper Number 1605, Harvard Institute of Economic Research, Harvard University, Cambridge, August.

Hu, Z, (1993). "The Yield Curve and Real Activity". IMF Staff Papers, Vol. 10, No. 4, December, pp.781 - 806.

Hubbard, R.G., (1995). "Is There a Credit Channel" for Monetary Policy?, Review, Federal Reserve Bank of St. Louis Vol. 77, No. 2, May/June, pp. 63 - 77.

Kashyap, A.K., J.C. Stein and D.W. Wilcox, (1993). "Monetary Policy and Credit Conditions: Evidence from the Composition of External Finance". American Economic Review, Vol. 83, No. I, March, pp. 78 - 98.

King, S.R., (1986). "Monetary Transmission Through Bank or Bank Liabilities", Journal of Money, Credit and Banking, Vol. 18, No. 3, August, pp. 290 - 303.

Kneeshaw, J.T., (1995). A Survey of Non-financial Sector Balance sheets in Industrialised Countries: Implications for the Monetary Policy Transmission Mechanism. Bank for International Settlements Working Paper, Basle, April.

de Kock, G. and T. Deleire, (1994). The Role of the Exchange Rate in the Monetary Transmission Mechanism: A Time Series Analysis, Federal Reserve Bank of new York, Research Paper No. 9412. August.

Laidler, D., (1978). "Money and Money Income: An Essay on the Transmission Mechanism". Journal of Monetary Economics, Vol. 4, April, pp. 151 - 191.

Mauskopf, E., (1990). "The Transmission Channels of Monetary Policy: How have They Changed? Federal Reserve Bulletin, December, pp. 985 - 1008.

McCallum, J., (1991). "Credit Rationing and the Monetary Transmission Mechanism", The American Economic Review, Vol. 81, No. 4, pp. 946 - 951.

Minsky, H.P., (1963). "Comments on Money and Business Cycles". Review of Economics and Statistics, Supplement, February, pp. 64 - 72.

Modigliani, F. (1963). "The Monetary Mechanism and Its Interaction with Real Phenomena", Review of Economics and Statistics, Supplement, February, pp. 79 - 107.

Montiel, P., (1991). "The Transmission Mechanism for Monetary Policy in Developing Countries", IMF Staff Papers, Vol. 38 No. 1, March, pp. 83 - 108.

Ojo, A.T., (1995). "Informal Financial Institutions: Nature, Characteristics and Operations", Paper presented at the Technical Workshop on Conceptual and Methodological Issues in the Informal Finance Sector, NISER, Ibadan, August.

Okun, A.M., (1963). "Comments on Money and Business Cycles". Review of Economics and Statistics, Supplement, February, 72 - 77.

Oladeji, S.I. and I.O. Ogunrinola (1992). "The Demand for Credit in the Informal Financial Sector of South-Western Nigeria." The Nigerian Journal of Economic and Social Studies, Vol. 34, No. 2, pp. 95 - 109.

Oliner, S.D. and G.D. Rudebusch, (1995). "Is There a Bank Lending Channel for Monetary Policy?" Economic Review, Federal Reserve Bank of San Francisco, No. 2 pp. 3 - 20.

Research Department (1994). Statistical Bulletin, Central Bank of Nigeria, Vol. 5, No. 2, 1994.

Suzuki, Y., (1984). "Monetary Policy in Japan: Transmission Mechanism and Effectiveness", BOJ Monetary and Economic Studies, Vol. 2, No. 2, December, pp. 1 - 22.

Swoboda, A.K., (1973). "Monetary Policy Under Fixed Exchange Rates: Effectiveness, the Speed of Adjustment and Proper Use". Economica, Vol. 40, pp. 136 - 154.

Thornton, D.L. and Wheelock, D.C. (1995). "Channels of Monetary Policy, Proceedings of the Nineteenth Annual Economic Policy Conference of the Federal Reserve Bank of St. Louis Review, May/June, Vol. 77, No. 3.

Tobin, J., (1978). "Monetary Policy and the Economy: The Transmission Mechanism", Southern Economic Journal, January, pp. 421 - 431.

Uchendu, O.A., (1995). Monetary Policy and the Performance of Commercial Banks in Nigeria, Economic and Financial Review, Central Bank of Nigeria, Vol. 33, No. 2, pp. 156 - 170.

Uchendu, O.A., (1995). Can Money Supply in Nigeria be Controlled Through Base Money? An Empirical Analysis. Economic and Financial Review, Central Bank of Nigeria, Vol. 33, No. 3, pp. 225 - 239.

Wasserfallen, W. and G. Kurstainer, (1994). "Interest Rates and Exchange Rates Under Money Supply Targets: The Swiss Evidence". Journal of Monetary Economics, Vol. 33, pp. 201 - 230.