EXCHANGE RATE PASS THROUGH TO DOMESTIC PRICES IN NIGERIA (1982 – 2010)

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Abstract

The persistent double-digit inflationary rate in Nigeria prompted the research which investigated the impact of Exchange rate-pass-through to domestic prices in Nigeria between 1982 and 2010 using time series data generated from the CBN and NBS. Using the ADF, Johansen Cointegration and Vector Error Model as the methodology, the empirical evidence arising from the various econometrics tests found that exchange rate is significant in explaining prices in Nigeria during the period of the analysis. Taming exchange rate fluctuations and sustained domestic production were recommended.

Keywords: Effect, Exchange Rate, Pass Through, Domestic Prices, Nigeria

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Introduction

The basic objectives of exchange rate policy in Nigeria are to preserve the international value of the Naira; maintain a favourable external reserves position; and ensure external balance without compromising the need for internal balance and the overall goal of macroeconomic stability. It is this goal of internal balance that underscores the relationship between exchange rate and inflation. This is even so because it seeks to maintain stability in domestic prices (Ojo, 1998). Inflation models of international linkages take into account the nature of the prevailing system of exchange rate.

Perhaps, in line with the argument above, the period since 1986 when the second–tier foreign exchange market was established has witnessed progressive attempts towards greater liberalization and deregulation of foreign exchange rate determination in Nigeria. In spite of these policy measures, the tidal rise in the general level of prices has not been curtailed. Between 1985 and 1989, the Consumer Price Index increased at an annual average of about 78 percent; it recorded 72 percent in the year on year increase for 1995. These events occurred in line with the period of large depreciation of the Naira exchange rate. Sadly, the trend has not abated. Could Exchange Rate Pass-Through in Nigeria be responsible for price instability both in the short and long run? Theory suggests that exchange rate pass-through is complete. Could this be confirmed by Nigerian data?

Again, the CBN in 2007 announced plans to move from monetary targeting to inflation targeting (Ochendu, 2009). But a successful policy of inflation targeting requires precise knowledge of the magnitude and nature of factors that define the character of prices in Nigeria. Such knowledge however seems not to be very evident. A formal framework for analyzing the influence of exchange rate on the rate of inflation is thus, thought to be very necessary. The main objective of this study is to investigate exchange rate pass-through to domestic prices in Nigeria. Specifically, the study is set to: (i) investigate whether exchange rate pass through is a short-run or long-run phenomenon. (ii) examine the magnitude of exchange rate pass-through in Nigeria.

The study is divided into sections. The foregoing is introduction, followed by conceptual framework, theoretical framework, empirical evidence, methodology, data analysis, conclusion and recommendations.

Conceptual Framework

Exchange Rate Determination: The exchange rate is a term used to refer to the price of a foreign currency in units of a local currency or, conversely, the price of a local currency in units of a foreign currency. It is the price of one unit of the foreign currency in terms of the domestic currency (Jhingan, 2003). To Ojo (1998), the objective of exchange rate determination is to arrive at a stable and realistic figure that is in consonance with other macroeconomic fundamentals. A realistic exchange rate reflects the strength of foreign exchange inflow and outflow, stock of reserves and also ensures balance of payments equilibrium consistent with cost and price levels of trading partners.

Exchange Rate Regimes: The literatures have been consistent. Two major regimes are the fixed and floating exchange rate systems. Along the continuum, variants of exchange rate systems have been developed as a result of past attempts at achieving realistic and sustainable currency prices. According to Dumoyi (2002), early literatures on optimum currency areas have tried to identify some key features thought to be decisive in the choice between fixed and flexible exchange rate regimes. Some of those given prominence included: factor mobility, openness, capital mobility, and diversification of the external sector, geographical concentration of trade, degree of economic development and degree of divergence in the inflation rate.

Subsequent literature raised serious doubts about the theoretical relationship between the country's characteristic and the assumed case for a fixed or a flexible exchange rate regime. These doubts about the characteristics especially the openness of the economy and the divergences of the rate of inflation led to a focus on three broad characteristics in modern literature. These include: the nature of disturbance, reputation consideration and real wage flexibility. These broad characteristics are often beset with theoretical ambiguities. Most countries are exposed to different mixes of disturbance both in the domestic and in the external economy, some of which favour fixed while others favour free floating exchange rates which are characteristically unrealistic.

While a fixed regime guarantees stability in the decision making process, a flexible system tends to be volatile and transmits external shocks across boarders. A floating rate does

not on its own guarantee the prevention of external shocks to the domestic economy. Also, a floating exchange rate is not necessarily self–equilibrating as recent experiences have shown that reserves are needed for desirable adjustments. The problems associated with fixed and flexible regimes usually prompt currency managers to adopt a combination of the two (Tokunbo and Ahamefule, 2002). This defines a hybrid system.

Exchange Rate Pass-Through (ERPT): The concept of exchange rate pass-through was originally seen to refer to the effects on import prices, of changes in the exchange rate. Goldberg and Knetter (1997) define exchange rate pass-through as "the percentage change in local currency import prices resulting from a one percentage change in the exchange rate between the exporting and the importing countries". To Menon (1994), exchange rate pass-through is the degree to which exchange rate changes are reflected in the domestic currency prices of traded goods. Alper (2003) looked at exchange rate pass-through as the effects of exchange rate changes on domestic inflation.

While exchange rate pass-through has long been of interest, the focus of this interest has evolved considerably over time. After a long period of debate over the law of one price and convergence across countries, beginning in the late 1980s exchange rate pass-through studies emphasized industrial organization and the role of segmentation and price discrimination across geographically distinct product markets. More recently pass-through issues play a central role in heated debates over appropriate monetary policies and exchange rate regime optimality. These debates hinge on the issue of the prevalence of producer currency-pricing (PCP) versus local currency pricing (LCP) of imports, and on whether exchange rate pass-through rates are endogenous to a country's inflation performance. Low import price pass-through means that nominal exchange rate fluctuations may lead to lower expenditure switching effects of domestic monetary policy, thereby leaving monetary policy more effective for dealing with real shocks. If pass-through rates are endogenous to a country's relative monetary stability, the extent of this monetary policy effectiveness may be fragile and regime-specific.

Ca'Zorzi *et al.* (2007) and Aliyu *et al.* (2009) both opined that the need for appropriate adjustment mechanisms to structural imbalances in many developed countries, especially after the Great Depression of 1929-1933, culminated in extensive researches on exchange rate pass-through with the primary objective of determining a nominal anchor for inflation and inflation

expectations. The prominence of the exchange rate pass-through theory in economic literature was stressed further since the collapse of the Bretton Woods Agreement. As has been said somewhere in the study, the period beginning from 1971 experienced major movements in exchange rates of world economies. There really has been an upsurge of studies in this direction since then. This fact is underscored by the widely held believe that an understanding of the impact of exchange rate movements on prices would help to gauge the appropriate monetary policy response to currency movements. The rate of ERPT is recognized among monetary managers to have germane implications on the effectiveness of monetary policy in addressing issues relating to domestic prices as well as the transmission of macroeconomic shocks and the volatility of real exchange rate. According to Aliyu *et al.* (2009) the understanding of ERPT is of extreme importance for three key reasons: firstly, the knowledge of the degree and timing of pass-through are essential for the proper assessment of monetary policy transmission to prices as well as for inflation forecasting. Secondly, the adoption of inflation targeting requires knowledge of the size and speed of exchange rate pass-through into inflation. Finally, the degree of exchange rate pass-through has important implication for "expenditure switching" effects from the exchange rate.

Along its continuum, exchange rate pass-through has been described as unlimited, full or complete; and partial, limited or incomplete. One–to-one response of domestic prices to exchange rate changes is referred to as full or complete exchange rate pass-through while less than one-to-one response of domestic prices to exchange rate changes is referred to as partial, incomplete or limited exchange rate pass-through (Kiptui *et al*. 2005). Traditional thinking in Economics and balance of payment models make the simplifying assumption that the prices of tradable goods once expressed in the same currency are equalized across countries, that is, the purchasing power parity condition (PPP) holds. Empirically, however, this assumption has found in general, little support at least in the case of small samples and in the short to medium run. In line with this evidence, the theoretical literature developed over the past two decades has provided different explanations on why the ERPT is incomplete. In summary, the determinants of ERPT are not such that allow complete transfer of shocks in currency movement to prices across countries.

The Concept of Inflation: The inflation concept originally concerned the debasement of money, particularly during the 17th and 18th centuries when precious metals were still being used as coins in continental Europe and North America (Ochendu, 2009). Of all the metals used as currency, gold was the most precious. Governments or monarchs combined gold coins with less valued metals and re-issued them at the same face value. This practice was capable of increasing the total quantity of coins issued (money supply) without necessarily increasing the gold content. In this way, the cost of each coin was lowered, and government or the monarchs made some profit from an increase in seignorage. This act as could be inferred increased the supply of money, as public awareness of this debasement lowered the relative value of each metallic coin.

As the relative value of the coins decreased consumers would need more coins to exchange for the same quantities of goods and services. The inflation of the quantity of money which lowered its value was the real issue. Price inflation was therefore, a fallout of monetary inflation (Okpanachi, 2008). By the 19th century, economists broadly recognized three factors causing changes in the prices of goods and services, namely: a change in the value of resource cost, a change in the price of money arising mainly from fluctuations in the metallic content of the currency, and currency depreciation as a result of increased supply relative to the quantity of metal backing for the currency (Ochendu, 2009). As a result of the proliferation of private bank note currency printed during the American Civil War (1861–1865), the inflation concept started to appear as a direct reference to currency depreciation-a fall in the value of money. Within this setting, the term inflation referred more specifically to the depreciation of the currency and not to a rise in the prices of goods and services. Given the modern definition of inflation as the persistent increase in available currency, and credit beyond the proportion of goods and services, it follows that the core concept was originally that of monetary inflation – the increase in the amount of money in circulation.

Theoretical Framework

The Purchasing Power Parity Theory: The purchasing power parity theory was developed by Gustav Cassel in 1920 to form the basis for the determination of the relative values of paper currencies. The theory states that equilibrium exchange rate between two inconvertible currencies is determined by the equality of the relative change in relative prices in

the two countries. It is the number of units of one country's currency (e.g the naira) which endows the holder with the same purchasing power (i.e command over goods and services) as one unit of the other country's currency (e.g U.S dollar). PPP can be between two countries, in which case it is a bilateral comparison, or parity between the country and a group of trading partners, in which case it is a multilateral comparison. Two types of the PPP could be distinguished; absolute PPP and relative PPP.

Balance of Payments Theory: This theory states that under a floating exchange rate regime, the price of a country's currency depends upon its balance of payments. A favourable balance of payment raises the exchange rate and vice versa. Thus, the theory implies that the exchange rate is determined by the demand and supply of foreign exchange (Jhingan, 2003).

Demand–oriented Theories of Inflation: The fundamental argument of demand–oriented theories of inflation is that inflation arises in an economy when aggregate demand exceeds aggregate supply. One variant of the demand–pull explanation is based on the Keynesian analysis, and it posits that it is the level of aggregate national expenditure that determines the level of prices. Thus, if for some reason, aggregate demand is greater than the full employment level of income, an inflationary gap will crop up, and this will trigger up the prices of goods and services in the economy.

Supply–oriented Theories of Inflation: The supply–side in economic analysis generally refers to production and its influences. In explaining inflation, supply–side theories assume that inflation is caused by increases in the cost of production that are independent of the state of aggregate demand. If there is a sustained increase in the prices of inputs, producers for whom such inputs are useful will pass on the increase in the cost of production to consumers by way of higher prices in order to maintain their profit levels.

Empirical Evidence

A number of authors have empirically investigated the sensitivity of domestic prices to exchange rate movements. In their study, Oyinlola and Babatunde (2009) used the bounds test which is based on the unrestricted error correction model (UECM) to estimate the exchange

rate pass-through to aggregate import prices in Nigeria. They concluded that world export price greatly influence the movement of import prices in Nigeria in the long-run. However, in the face of mounting arguments in the literatures that the degree of openness of an economy speaks a great deal about the size of exchange rate pass-through to domestic prices (Menon, 1994 and Aliyu *et al.*,2009), the glaring failure of there model to include a variable relating to this fact makes their model inadequate.

Campa and Goldberg (2006) observed that exchange rate shows higher pass-through to import prices than to consumer prices. Other empirical inquisitions into the relationship find varying degrees of pass-through estimates; the diversity comes from the use of different methodologies and measures of domestic prices and exchange rate.

Another strand of literature situated in the context of new open economy macroeconomics, deals with the responsiveness of consumer prices to exchange rates. These studies arise from the recent empirical evidence implying that consumer prices are not much affected by nominal exchange rates. Engel (2002) argues that intermediate firms substitute between domestic and foreign goods based on relative price changes, but set prices for consumers in a way that is unresponsive to exchange rate changes.

Taylor (2000) argued that the recent decline in pass-through or pricing power is due to the low inflation environment that has recently been achieved in exchange rate and prices in terms of a model of a firm's behaviour based on staggered price setting and monopolistic competition. According to him, the response of the firm's price to an increase in the costs (either due to depreciation or some other cause) is highly related with persistence of the increase in cost. Regimes with higher inflation tend to have more persistent costs. Hence, the degree of pass-through tends to increase in an inflationary environment.

McCarthy (1999) using vector autoregressive model stated that for small economies, exchange rate pass-through is expected to be higher when compared to the large economies. In his study covering nine industrialized countries, McCarthy found that the pass-through was larger in countries with a higher import share of domestic demand as well as in countries with more persistent exchange rates and import prices. McCarthy also asserted that, for most of the industrialized countries, exchange rate shocks have modest effects on domestic inflation while import price shocks appear to have a larger effect.

Methodology

Data for this study was collated from secondary sources. Specifically they were obtained from the CBN Statistical Bulletin and annual publications of the National Bureau of Statistics (NBS) of various years. The deterministic model was stated as;

$P = f(EXR,OG,EXTP,MOP,TRP)$ 3.1

Where; P = Domestic Price, EXR = Exchange rate of the domestic currency, OG = Output Gap, EXTP = External Pressure, MOP = Monetary policy, TX = Taxation, TRP = Trade Policy.

But external pressure, monetary policy and trade policy cannot be quantified as expressed. Proxies were thus, introduced to represent them as appropriate. Therefore, world export price is a proxy of external pressure; money supply for monetary policy; and degree of openness and tariff rate for trade policy and taxation respectively. The output gap is represented by the GDP. By substituting these proxies into Equation 3.1, the new equation becomes; $P = f(EXR,GDP,WEXP,MS,TRF,DO)$ 3.2

The econometric form of the above equation with its stochastic term is therefore represented as;

$$P = \alpha_0 + \alpha_1 EXR_t + \alpha_2 GDP_t + \alpha_3 WEXP_t + \alpha_4 MS_t + \alpha_5 TRF_t + \alpha_6 DO_t + \varepsilon_t \quad 3.3$$

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$P = f(GDP, WEXP, EXR, TRF, MS, DO)$ is the *a priori* expectation for the model

Data Analysis

Table 4.1: Descriptive Statistics

	CPI	WEXP	EXR	GDP	MS	TRF	DO
Mean	22.12828	6.981034	60.08034	4.026207	56.78207	25.10138	21.07345
Median	12.90000	7.180000	21.88000	5.310000	21.88000	21.47000	14.81000
Maximum	72.90000	9.100000	177.0000	21.18000	150.8800	112.5700	71.10000
Minimum	4.700000	4.840000	0.670000	-10.75000	0.760000	8.900000	-7.800000
Std. Dev.	19.74143	1.141291	61.46604	6.460340	59.30324	20.12722	22.48230
Skewness	1.201941	-0.318114	0.475216	-0.012316	0.410834	3.165710	0.686102
Kurtosis	3.068591	3.584914	2.505125	3.859023	2.329917	13.85867	2.435976
Jarque-Bera	6.988215	0.697307	3.791716	0.892387	4.186048	190.9137	2.659626
Probability	0.630376	0.705637	0.650189	0.640060	0.123314	0.450000	0.564527
Sum	641.7200	202.4500	1742.330	116.7600	1646.680	727.9400	611.1300
Sum Sq. Dev.	10912.28	36.47127	105786.1	1168.608	98472.49	11342.93	14152.70
Observations	29	29	29	29	29	29	29

Source: Regression output using Eview 7.0

Table 4.1 displayed the summary statistics for the data set used. Skewness in the table tended towards zero with three variables having negative signs showing that the distribution was skewed to the left while the other three with positive signs showed skewness to the right. The kurtosis on the other hand revealed that only GDP, CPI and WEXP fully satisfy its condition of expected value of three. The probability of all the variables was shown to be high. This gives way to the acceptance of the null hypothesis of normal distribution of the variables. Furthermore, the mean to median ratio of all the data was within the unit proximity. Again the standard deviations were quite low even with this large sample.

ADF Stationarity Test: In Table 4.2 below, the results of the ADF test shows that the variables – CPI, GDP, WEXP, EXR, TRF, MS, DO were not stationary at levels but all integrated of order one I(1). All the data set was transformed to their log form. This implies that the series after first difference were all stationary at 5% level of significance. The null hypothesis of non-stationarity was rejected and the alternative hypothesis of stationarity has been accepted. Thus, with all the variables integrated of the same order as shown in the result of ADF unit root test shows that cointegration is justified (See Johansen, 1995)

Table 4.2 ADF Unit Root Test

	ADF Test Statistic	0.05 **Critical value** for ADF Statistic	Order of Integration
CPI	-2.838585		
D(CPI)	-4.379326	-2.976263	I (1)
GDP	-3.352677		
D(GDP)	-3.352677	-2.971853	I (1)
WEXP	-1.041227		
D(WEXP)	-4.016365	-3.574446	I (1)
EXR	-0.280310		
D(EXR)	-5.871591	-3.574446	I (1)
TRF	-3.155205		

D(TRF)	-3.155205	-2.971853	I (1)
MS	0.035898		
D(MS)	-5.036473	-2.976263	I (1)
DO	-2.096437		
D(DO)	-4.104680	-2.976263	I(1)

***** Significant at 1% level**

Source: Regression output using Eview 7.0

Cointegration Test: Cointegration analysis establishes the long-run relationship between EXR and CPI and hence the rest of the variables that entered in the model. The result of the unrestricted cointegration test is presented in Table 4.3.

Table 4.3 Johansen Cointegration Test for Long-run equilibrium

Null	*Eigenvalue*	*Trace*	*0.05*	*Prob.***
Hypothesized		***Statistic***	***Critical Value***	
None**	**0.867984**	**158.1811**	**125.6154**	**0.0001**
At most1**	**0.783124**	**103.5107**	**95.75366**	**0.0131**
At most 2	0.617407	62.24310	69.81889	0.1730
At most 3	0.497543	36.30192	47.85613	0.3813
At most 4	0.335331	17.71932	29.79707	0.5869
At most 5	0.210232	6.690727	15.49471	0.6139
At most 6	0.011720	0.318302	3.841466	0.5726

Significant at 10% (*); 5% (**); 1% (***) levels

Source: Regression output using Eview 7.

Table 4.3 above shows the results of the Johansen cointegration test. The standard statistics used in the interpretations of the test are the likelihood ratio, trace statistic and maximum eigenvalue statistic discussed in Johansen (1995). Both the trace statistic and maximum eigenvalue statistic clearly agree to suggest the existence of two cointegrating equations at 5% level. These results implied the incidence of a long run equilibrium relationship between domestic prices (measured by CPI) and the fundamentals used in the model. Johansen

and Juselius (1990) supported the maximum eigenvalue test to prevail for inferences in the event of conflicting results. This case does not arise here as both results have converged.

Analysis of Vector Error Correction Mechanism

To examine the long run effect of exchange rate on domestic price, Vector Error Correction Mechanism (VECM) which incorporates both the long run and short run effect simultaneously is estimated. The beauty of VECM is that once variables are non stationary but cointegrated, the estimates from VECM are more efficient than either the Ordinary least Square or orthodox VAR estimates. The VECM also saves one from the agony of endogeneity problem and the inherent spurious inferences associated with OLS estimates.

Table 4.4, all the variables except exchange rate, have positive and significant effects on the fluctuation of price level in the long run. The long-run equilibrium price equation is therefore, written as follows:

CPI = 36.20969Ct + 6.557035WEXPt - 0.341121EXRt + 0.337148GDPt + 0.230660MSt + 0.705820TRFt + 0.061133Dot

R-Squared	0.717993	Akaike AIC	-2.838034
Adj. R-Squared	0.630909	Schwarz SC	-3.269980
S.E equation	0.62781	F-Statistic	28.109813

The results from the long run equilibrium equation show that all the parameters; World Export Price (WEXP), Exchange rate (EXR), Output (GDP), Money supply (MS), Tariff (TRF) and Openness of the economy (DO) were signed as theory suggests. Apart from exchange rate which had a negative sign, all the other variables indicated that they were positively related to domestic price. Using their coefficients, it could be inferred therefore that holding all other influences constant, a percentage increase in WEXP, GDP, MS, TRF, and DO would push domestic prices to surge by 6.56, 0.34, 0.23, 0.71 and 0.06 percent respectively. However, a percentage depreciation, fall or decrease in the value of the Naira will cause prices to increase by 0.34 percentage points. Again the coefficients of world export price, Exchange rate and tariff were not only rightly signed but also statistically significant. For the other parameter estimates, it

was confirmed that they were not statistically significant in explaining variations in domestic price within the period of study at the 5% level of significance.

From the coefficient of determination (R^2), it could be concluded that the six independent variables in the equation explained about 71 percent of the variations in domestic price (Consumer Price Index) in Nigeria during the 1982-2010 period. The results from the Akaike AIC and Schwarz SIC tests showed very low figures, indicating that the selection of lags in the model was adequate. The F-statistic of 28.109813 was highly significant, easily passing the significance test at 1% level.

Conclusion

The empirical evidence arising from our various econometrics tests found that exchange rate is significant in explaining prices in Nigeria. One percent depreciation in exchange rate results to price increase by about 0.34%. We conclude by virtue of this finding that exchange rate pass through is not complete and relatively low.

Recommendations

In view of our findings, therefore, the following were recommended:

1. Supply side policies especially those targeting increased domestic production must be pursued with greater determination to reduce the current volume of import.
2. Exchange rate volatility is consequential to explaining the size of exchange rate pass through estimates. Taming exchange rate fluctuations will therefore be necessary to curb the transmission of exchange rate shocks to domestic prices.
3. Monetary expansion is long recognized to be a major explanatory factor for inflation. This requires the use of monetary policies such as reduce the level of volatility in liquidity.
4. Efforts aimed at promoting and enhancing access to capital should be made by the capital and money markets managers.
5. There is the need to attract foreign direct investment. Policies must be evolved to enhance the country's national competitiveness as a foreign direct investment destination.

REFERENCES

Aliyu, S.U.R., Yakub, M.U. Sanni, G.K. and Duke, O.O. (2009) "Exchange Rate Pass-Through to prices in Nigeria: Evidence from Vector Error correction Model", MPRA paper, No 25053

Alper, Koray (2003) "Exchange Rate Pass-Through to Domestic Prices in Turkish Economy" Unpublished M.Sc thesis in the Department of Economics and business, Middle East Central University, Turkey, Istanbul

Campa, J. and Goldberg L. S. (2005) "Exchange rate Pass–Through to Import Prices". Review of Economics and Statistics vol, 87, No.4

Ca'Zorzi, M., Hahn, E. and Sanchez, M. (2007) "Exchange rate Pass-Through in Emerging Markets". European Central Bank Working Paper Series, No 739/March, 2007

Dumoyi, N. (2002) "Issues in money, Finance and Economic management" CBN economic and financial Review, Vol. 53, No. 5

Engle, R. F., Hendry, D. F. and Richard, J. F. (2002) Exogeneity. *Econometrica*, 51, 277(304). Reprinted in Hendry, D. F., *Econometrics: Alchemy or Science?* Oxford: Blackwell Publishers, 1993; and in Ericsson, N. R. and Irons, J. S. (eds.) *Testing Exogeneity*, Oxford: Oxford University Press, 1994.

Goldberg, P. K. and Knether, M. (1997) "Good prices Exchange rate; what Have we learned". Journal of Economic Literature. Vol 35, No. 3

Jeselius, K. (1990) "Model and Relations in Economics and Econometrics". *Journal of Economics Methodology*, 6(2): 259-290.

Jinghan, M.L (2003) Advanced Macroeconomics: Delhi, Vrinda Publications.

Kiptui, M.,Ndolo, D.,and Kiminchia, S.(2005) "Exchange rate Pass-Through: To What Extent Do Exchange Rate Fluctuations Affect Import Prices and Inflation in Kenya?" Central Bank of Kenya working papers, No. 1

McCarthy, J. (1999) "Pass-Through from Exchange Rates and Import Prices to Domestic Inflation in some industrialized economies", Bank for International Settlements working paper No. 79.

Menon, Jayant (1994) "Flexible Exchange Rates and Traded Goods Prices: A Theory of the Short Run", Centre for Policy Studies. Monash University General paper No G-108

Ochendu, O. A (2009) "Inflation Targeting in Nigeria: Conceptual Issues, Challenges and Prospects", CBN Bullion Vol. 33, No. 1

Ojo M.O (1998) "The Management of Foreign Exchange Resources in Nigeria", CBN Economic and Financial review. Vol 29. No 2.

Okpanachi, R.A (2008) "The Foreign Exchange Market in Nigeria" Chartered Institute of Bankers of Nigeria, Yaba, Lagos; Nigeria.

Oyinlola, M. A (2009) "Exchange Rate Pass-through to Domestic prices:The case of Nigeria" African journal of Economic Policy. Vol.16, No.2.

Taylor, M.P (2000). "Low Inflation, Pass–Through and the Pricing power of firms", Europe Economic Review, 44 (7)

Tokumbo, A. and Ahamefule, D (2002) "The Impact of exchange Rate volatility on Economic Growth in Nigeria", CBN Economic and Financial review Vol. 42, No 3