EXAMINING THE IMPACT OF EXCHANGE RATE REGIMES ON INFLATION IN NIGERIA

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ABSTRACT
This study empirically examining the impact of exchange rate regimes on inflation in Nigeria. Using quarterly secondary data, it was structured from 1981 to 1986 for fixed exchange rate and also 1987 to 2023 for managed flexible exchange rate. The variables used were Consumer price index (cpi) that captured inflation as dependent variable while Nominal exchange rate (nexrt), fixed and managed flexible exchange rate, and real gross domestic product (rgdp) as an independent variable. The variables were tested for the unit root test, both the ADF and PP unit root tests established that all the variables were stationary at both level (I(0)) for CPI and first differencing (I(1)) for nexrt and rgdp. The ARDL Bounds indicated test that there exists a long run relationship among the variables, they were co-integrated. The result of the open economy fixed exchange rate model shows that the co-efficient of output gap is -0.1146 and it was found to be statistically significant, it means that there is a trade-off between inflation and Unemployment during the fixed exchange rate regime while the result also showed that the managed flexible exchange rate regime is characterized by an output gap of 1.2920, which was found to be statistical insignificant, it means that there is absence of trade-off between inflation and unemployment during manage flexible exchange rate regime because a stronger positive relationship between inflation and unemployment may indicate stagflation pressure, where both inflation and unemployment rise simultaneously. In conclusion, managed flexible exchange rate regime is more impacted positively than fixed exchange rate regime. The study recommends that the Monetary authority should put more effort to control Nominal Exchange rate so that it would not cause inflation in Nigeria by supplying adequate US$ into Nigeria foreign exchange market when necessary.

Introduction

According to CBN (2017), the CBN shifted from a fixed exchange rate regime to a managed flexible exchange rate regime due to fact that of Economic reasons i.e inability to sustain fixed rate, and currency misalignment making Nigeria exports uncompetitive in the global market. Mândricelu (2012) viewed Inflation as one of the most dangerous economic phenomena manifested in contemporary economies. Inflation appears in a nation when there is excess supply of money compared to the volume of goods and services in the economy. Both developed and underdeveloped nations attempt to increase household income thereby increase the purchasing power of the household as a result of this lead to inflation through price increase of goods and services. To Control inflation is difficult in less developed nations compared to the advanced nations, the main reason is that advanced nations have faced relatively little, passing periods of inflation.

Exchange rate policy, given an open economy framework, is very crucial in the monetary transmission mechanism. Mthuli and Ndou, (2011) Exchange rate affect aggregate demand channel of the monetary transmission of monetary policy. It affects the relative prices between domestic and foreign goods and foreign demand for domestic goods. The direct exchange rate channel for monetary policy transmission affects inflation through the domestic price of imported goods and intermediate inputs, which are components of consumer price inflation. In addition, it affects nominal wages via the effect on inflation on wage setting, the foreign demand for domestic goods which impact on the aggregate demand for domestic goods.

Statement of Problem

Zubair, George, and Aliyu (2013), exchange rate stability remains an important issue that usually dominates the policy-making agendas of governments both in the developed and developing countries. This is so because it has broad implications not only for international trade and balance of payments but also for the general price level, for the conduct of monetary policy and macroeconomic stability". In spite all the efforts of the monetary authority to stabilize exchange rate in the fixed exchange rate regime, inability to sustain fixed rate, currency misalignment, and Dutch disease were associate problems of fixed exchange rate regimes. These problems call for managed flexible rate regimes to replace the fixed exchange rate regime.

Conceptual Literature

i) Exchange rate

According to CBN (2017), the rate of exchange is the price of one currency in terms of another currency, in other words, it is the current market price for which one domestic currency can be exchanged for foreign once. It is usually expressed as some units of a domestic currency that will buy one unit of a foreign currency and vice versa. For instance, the Nigeria naira per the United States (US) dollar (N/US$) or US dollars per Nigeria Naira (US$/N). If one US Dollar can be exchanged for N570, then one Nigeria naira can be exchanged for US$0.002. The role of the exchange rate in an economy cannot be overlooked because imports and exports also play a major role in the economy. Exchange rate instability affects the prices of imports, exports of commodities and services. If the value of money, for instance, Nigeria naira decreases, imported commodities become high-priced, and this would result in a reduction of the volume of imports in Nigeria.

ii) Managed flexible rate regime

Chung and Yang, (2000), described a freely floating exchange rate system or flexible exchange rate system is one in which the exchange rate, at any time, is determined by the interaction of the market forces of supply and demand for foreign exchange. CBN (2017) indicated that, the degree of flexibility of the exchange rate depends on the nature of government intervention in which event a clean float or managed float can result. A clean float or independent float results where the government does not intervene in exchange rate determination to establish its level. A managed float results where the government intervenes in the foreign exchange market to manipulate the exchange rate to the desired rate because the authorities have views about where the exchange rate ought to be or not. In addition, CBN (2017) stated the monetary authority may also attempt to influence the exchange rate without having a specific exchange rate path or target. The government worries if the exchange rate depreciates a lot or appreciates so much as to threaten trade competitiveness and so intervenes directly or indirectly. Indicators for managing the rate are broadly judgmental (i.e balance of payment position, international

reserves, parallel market development), and adjustments may not be automatic.

iii) Fixed rate regime

Fajgenbaum & Quirk, (1991), described a fixed exchange rate system is one in which exchange rates are maintained at fixed levels. Each country has its currency fixed against another currency. It may seldom be changed (hard peg) or changed occasionally (adjustable peg). Step devaluations against a major currency are the least ambiguous examples of fixed exchange rate policies. Obadan (2009), gave some numbers of reasons why the fixed exchange rate is influential: (a) To reduce transactions costs (b) certainty in international transactions arising from reduction of exchange rate risk which can discourage trade and investment (c) To promote orderliness in foreign exchange markets; and (d) To provide a credible nominal anchor for monetary policy. Fixed exchange rates may take the form of (i) firmly fixed exchange rate regimes such as currency boards, monetary union and dollarization (the three are also known as hard pegs) and (ii) other conventional fixed peg arrangements such as single currency peg and pegging to a basket of currencies. Hard pegs tended to become increasingly popular in the aftermath of the East Asian financial crises. The main argument in favour of a hard peg is the need to make monetary policy credible. Related to this is the alleged ability of hard pegs to induce discipline, whether fiscal or monetary.

iv) Inflation

Inflation could be defined as a continuing rise in prices as measured by an index such as the implicit price deflator for Gross National Product (GNP) or by the consumer price index (CPI)". CBN (2017), view that Inflation is often be described as a state when "too money is chasing too few goods. When inflation is present in a country, the money loses purchasing power. The purchasing power of a given amount of Nigeria naira will be smaller over some time if there is inflation in the economy. For example, supposing that N100.00 can purchase 100 shirts in the current year if the price of shirts is twice next year, the same N100.00 can only afford 50 shirts".

CBN (2017) further added that there are two key words must be borne in mind when defining inflation, i) General or aggregate, which indicate that the increase in prices that make-up inflation must cover the whole basket of goods and services in the economy as distinct from an isolated increase in the prices of a single goods or group of goods. However, changes in the individual prices or any combination of the prices cannot be considered as the occurrence of inflation because a situation may arise such that a change in an individual price could cause the other prices to increase. For instance, petroleum product prices in Nigeria, this again does not signal inflation unless the price adjustment in the basket is such that the general price level is induced to increase and ii) increase in the general level of prices must be persistent for inflation to be said to have happened or occurred. The general price level must show a tendency of a sustained and continuous increase over different periods and this must be disjunctive from a situation of a one-off rise in the price level.

Theoretical Review

i) The New Keynesian Phillips Curve (NKPC) Theory

The New Keynesian Phillips Curve (NKPC) theory has been influential in shaping modern monetary policy and inflation targeting frameworks. The NKPC theory is a macroeconomic model that combines elements of Keynesian and neoclassical economics to explain the relationship between inflation and unemployment. It was developed in the 1990s by economists such as Joseph Stiglitz, George Akerlof, and Julio Rotemberg. The NKPC theory implies that Inflation is determined by expected future inflation, current output, and potential output. Monetary policy can influence inflation through expectations and output. The Phillips curve is downward-sloping, but not necessarily linear.

The NKPC equation:

$$\pi t = \beta E\pi t+1 + \kappa(yt - y^*)$$

Where:

πt = inflation

$E\pi t+1$ = expected future inflation

yt = current output

y^* = potential output

β = the discount factor

κ = the slope of the Phillips curve

The key features of the NKPC theory are i) Micro-foundations: The model is based on individual firms' pricing decisions, rather than aggregate demand and supply curves. ii) Sticky prices: Firms adjust prices infrequently due to menu costs, information costs, or other imperfections. iii) Calvo pricing: Firms set prices for a random duration, leading to a distribution of prices across the economy. iv) Forward-looking expectations: Firms set prices based on expected future inflation and marginal costs and v) Monopolistic competition: Firms have some market power, allowing them to set prices above marginal cost.

Empirical Review

Several researchers have empirically examined the impact of exchange rate on inflation in both developed and underdeveloped countries including Nigeria. More or less empirical studies focus on the speed of adjustment of inflation in each exchange rate regimes. The study shall thus consider a few of these studies in greater detail to enhance our idea about their methods and findings.

Musa, (2021) examined the effect of exchange rate volatility on inflation in Nigeria using annual time series data covering the period 1986-2019. The study employed the vector error correction model (VECM) and the generalized autoregressive conditional heteroskedasticity (GARCH) to ascertain the long-run effect of exchange rate volatility on inflation. Using the Consumer price index to capture inflation being the dependent variable while nominal exchange rate (NER), money supply (MS), import (IMP) and export (EPT) were used as the explanatory variables. Findings indicate that nominal exchange rate (NER) and money supply (MS) had a positive and 5% significant impact on the consumer price index. It was recommended that "growth of money supply should be controlled by the central bank to reduce inflation to the barest minimum".

Eneh, and Amakor, (2021), examine the implications of foreign exchange regimes on selected macro-economic indicators in Nigeria from 1999 to 2020. The study adopts Ex-Post Facto and time-series research design. Secondary data retrieved from the CBN statistical bulletin, Federal Inland Revenue Service (FIRS) and National Bureau of Statistics for various years were used. The data analysis technique that was utilized was multiple regression analysis. The relationship between exchange regimes and inflation was positive though not significant at 5%. The relationship between exchange regimes and current account balance (CAB) was positive but not significant at 5%. The study recommends that the CBN continues to critically examine the exchange rate system in Nigeria especially because of the potential devaluation of the Naira in the community of other currencies.

Altunoz (2020) examined Pass-through effects of exchange rate on Inflation in Turkey. ARDL Boundary Test is preferred for the 2010-2018 period. Domestic producer price index (PPI) were used as an independent variable and weighted nominal exchange rate (EXC), world crude oil prices (OIL), domestic money supply (M3) and the capacity utilization rate (CUR) were used as dependent variables. The results indicate that, 1% increase in nominal exchange rate, 0.11% increase in domestic producer price index and 1% increase in world oil prices increase the producer price index by 0.07%. Similarly, a 1% increase in M3 money supply, a 0.28% increase in the producer price index and a 1% increase in the capacity utilization rate lead to a 0.31% increase in the producer price index. It is also understood that all variables in the model increase inflation. However, findings shows that, the long-term effects of the exchange rate effect on domestic prices remain low. In addition, the lowest transition effect on producer prices is attributable to crude oil prices. The other two variables M3 and the capacity utilization rate have a stronger effect on domestic prices than the exchange rate effect. The other two variables M3 and the capacity utilization rate have a stronger effect on domestic prices than the exchange rate effect.

David, Koye, and Adebowale, (2019), examined the effect of exchange rate regimes on inflation in Nigeria from 1970 to 2015. Using Autoregressive Distributed Lag (ARDL) approach to estimate the parameters, the result shows that "the past one-year value of exchange rate has a negative and significant impact on the current inflation rate. The inflation rate increased more during the fixed exchange regime compared to the floating exchange rate regime. They recommend that the government of Nigeria must continue to ensure that it

achieves exchange and interest rates stability to stem inflationary tendencies".

Musibau (2018), examine the influence of different exchange rate regimes on Nigeria's inflation performance between 1970 and 2012. Estimates of the co-integrating regression were employed. He finds deeds to be "the relevant dimension for inflation in the context of crawling pegs, only hard pegs seem to be important in the context of words. The results hold even after controlling for the growth in money supply and interest rate. The hollowing out the hypothesis in the case of Nigeria is therefore not confirmed. The results show that pegged exchange rate regime plays a significant role in anchoring expectation, improve credibility and consequently reduce inflation when it is backed by de facto consistent behaviour".

Ndubuisi Marcellinus Nwaru (2017), examine the "effect of exchange rate on inflation in Nigeria using annual data from 1970 to 2014, the multiple regression method was adopted. The unit root and Johansen co-integration tests were used to test for the stationarity and co-integration respectively of the variables (inflation, money supply, exchange rate, and real gross domestic product and import prices). The findings show that inflation was responsive to lagged inflation, exchange rate, money supply and import prices at a 5% significance level. Thus, the study concludes that the exchange rate is a veritable tool to manage inflation in the country; therefore, the Central Bank of Nigeria should use policies that have a direct effect on inflation as policy measures in combination with an exchange rate policy to check inflation movement in the country, especially policies on monetary growth and import management to manage inflation. In addition, exchange rate management policies can also be used to support other macroeconomic policies".

Sanam and Fetullah (2017), discussed the relationship between inflation and Exchange rate based on time series data, using the Vector Autoregression (VAR) model and Hendry General to Specific Modeling method. They used annual data for the period 1976-2012 for the Hendry method using inflation and Exchange rate as variables. Quarterly data were also used from 1997: 3 - 2011: 4 to estimate the VAR model, using money supply, exchange rate, and inflation rate as variables. The result of the Hendry model obtained that there was a direct relationship between Exchange rate and inflation. An expansion in foreign exchange rates makes the inflation also expand. When the money supply variable was included in the VAR model, the effects of exchange rate and money supply on inflation has been investigated as well. According to the results, both the exchange rate and money supply affect inflation positively. In conclusion, the contribution of the exchange rate on inflation was lesser than the money supply.

Aham & Emeka (2016), investigated "the relationship between exchange rate and inflation volatility and stock prices volatility in Nigeria, using time series quarterly data from 1986Q1 2012Q4. The volatilities of exchange rate and inflation in their study were calculated using standard GARCH (1,1) models. The relationship between exchange rate, inflation volatility and stock prices volatility were examined using GARCH (1,1)-S models of an extended GARCH-X model. The findings of the study show that there was a negative relationship between stock market prices volatility and exchange rate and inflation volatility in Nigeria".

Abiodun Bada et al (2016), examine the "exchange rate pass-through effect at the aggregate level into import and consumer prices in Nigeria for the period 1995Q1 – 2015Q1.Variables used were Consumer price index, Nominal Exchange rate, Oil price, Real Gross domestic product, and effective Nominal exchange rate. Utilizing the Johansen approach to cointegration and a vector error correction methodology, the paper found the exchange rate pass-through into Nigeria's CPI inflation to be incomplete. The long-run pass-through elasticities were found to be 0.24 and 0.30 for the baseline and alternative models. The effect was discovered to be higher in import than in consumer prices, which implies that the pass-through effect declines along the pricing chain. These findings were useful in the design and implementation of monetary and exchange rate policies by the Central Bank of Nigeria".

Theoretical framework

The theoretical framework of this research work is tied to the New Keynesian Phillips Curve (NKPC). NKPC has set up a framework on the trade-off between the potential (efficient) output, inflation (gap), and the difference between the real outputs under the assumption of real wage rigidities.

Phillips (1958), from the Simplest Phillips Curve model, firstly examined "the relationship between unemployment and inflation". According to Karanassou et al. (2010), **"**the original equation is given such as:

$$\pi_t = c - bu_t + \epsilon_t \text{ ----------(1.1)}$$

Equation (i) states that, *c* and *b* are positive constants. π_t is a rate of inflation, u_t is a rate of unemployment and $\epsilon_t$is the error term. In the static nature of the Equation (i), the steady-state and rate of long-run unemployment are identical". Phelps (1967; 1968) and Friedman (1968), in the seminal contributions, stated that "a dynamic extension of the Equation (i) is the so-called traditional Keynesian Phillips curve can be written as follows:

$$\pi_t = c + a\pi_{t-1} - bu_t \text{ ----------(1.2)}$$

Equation (ii) state that, the autoregressive parameter is $|a| <1$. Similarly, to the static case in equation (i), there is a long-run trade-off and no natural rate of unemployment. The hypothesis of a natural rate of unemployment (u^n) gave rise to the Expectations Augmented Phillips Curve that can be shown as follows:

$$\pi_t = \pi_{t-1} - b(u_t - u^n) \text{ ----------(1.3)}$$

In the equation (iii), adaptive expectations are identical to the Expectations Augmented Phillips Curve under the random walk/rational expectations assumption". Karanassou et al. (2010) argued that "the main difference between two frameworks is that the random walk/rational expectations can separate the short and the long-run". Blanchard and Gali, (2007), mentioned that "the standard NKPC has some fractions such as staggered price equilibrium, firms, efficient allocation (first best), people, and flexible price equilibrium (second best). The standard NKPC can also be written as follows:

$$\pi_t = \beta E\pi_{t+1} + K(y_t - y_t^*) \text{ ----------(1.4)}$$

In the equation (iv), inflation (π_t) is a function of expected future inflation ($E\pi_{t-1}$), of the deviation from actual (y_t) and potential output (y_t^*) known as output gap". Blanchard and Gali (2007), also "introduced real wage rigidities into the standard NKPC framework, and re-examined flexible price equilibrium (second-best) and staggered price equilibrium". Blanchard and Gali, (2007), the framework "allow policy trade-offs and implications for the output cost of disinflation. They also discussed some alternative approaches, such as distortion shocks, different structures of wage and price setting and the behaviour of inflation. They derived the relationship between inflation and unemployment. In addition, they firstly and explicitly introduced unemployment". Blanchard and Gali, (2007), "Secondly, rewrote the inflation equation in terms of unemployment that can be written as follows:

$$\pi_t = \frac{1}{(1+\beta)}\pi(-1) + \frac{\beta}{(1+\beta)}E\pi(+1) - \frac{\lambda(1-\alpha)(1-\gamma)\theta}{\gamma(1+\beta)}u + \frac{\alpha\pi}{(1+\beta)}\Delta V + \epsilon \text{ ----------(1.5)}$$

In Equation (v), inflation is a function of past and expected future inflation, of the unemployment rate (*u*), and the change in the real price of the non-produced input (ΔV). The term (ϵ) is proportional to (π-Ɛ(π-1) so it is white noise, and orthogonal to all variables at *t* -1, on the other hand, $\underline{\lambda}$ is the price rigidity and γ is the wage rigidity".

Blanchard and Gali (2007), added that "terms of trade volatility on the open economy is indirectly described within the real price of the non-produced input. In the equation (v), it is important to note that there are also different open-economy frameworks for the NKPC in the literature, such as those examined by Batini et al. (2005), Rumler (2007), Kuttner and Robinson (2010) and Mihailov et al. (2011). The framework of the NKPC in equation (v) can be estimated by using Generalized Method of Moments (GMM) or Instrumental Variables (IV) that parameters have certain constraints".

Model Specification.

The impact of exchange rate regimes on inflation rate in Nigeria, this study estimates both long-run and short-run models to determine the likely impact of both the fixed and flexible exchange rates on inflation in Nigeria during the period of study.

The model could be expressed in a functional form for a fixed exchange regime, Econometrics model I.

$$\boldsymbol{logcpi = \beta_1 logcpi_gap_t(-1) + \beta_2 logcpi_gap_t(1) + \beta_3 logrgdp_gap_t + \beta_4 fxex_t + \beta_0 + \varepsilon_t} \quad \text{(3.1)}$$

The model for a Managed flexible exchange regime could be expressed in a linear form, Econometrics model II.

$$\boldsymbol{logcpi = \beta_1 logcpi_gap_t(-1) + \beta_2 logcpi_gap_t(1) + \beta_3 logrgdp_gap_t + \beta_5 logflex_t + \beta_0 + \varepsilon_t} \quad \text{(3.2)}$$

Where:		fxex =	Fixed exchange rate
cpi =	consumer price index (inflation)	Log =	logarithmic function
rgdp =	Real gross domestic product	β_0-β_5 =	Parameter to be estimated
flex =	Flexible exchange rate	ε_t =	Disturbance Error term.

Result and Discussion

i) Unit Root Test

The result of the Unit root test is captured in the table 1.

Table 1 below indicate the result of the unit root test (Summary of Unit root test)

Variable	**ADF**			**PP**			**KPSS**		
	level	***First Diff***	***I(d)***	***level***	***First Diff***	***I(d)***	***level***	***First Diff***	***I(d)***
Log(rgdp)	0.136[a]	-4.212[a**]	I(1)	0.657[a]	-13.642[a**]	I(1)	1.438[a]	0.307[a**]	I(1)

Log(nexrt)	-2.205[a]	-6.858[a**]	I(1)	-2.418[a]	-17.094[a**]	I(1)	1.065[a]	0.042[a**]	I(1)
Logcpi	-3.023[a**]		I(0)	-3.055[a**]		I(0)	0.427[a**]		I(0)

Source: Analysed by the Author (E-views 10)

To assess the impact of fixed exchange rate regime on inflation in Nigeria, stationarity of the time series data (Fixed exchange rate, Real Gross domestic product, Consumer price index,) used in this research work was examined using the Augmented Dickey-Fuller (ADF) Unit Root Test and Phillip Peron (PP) unit root test while Kwiatkowski-Phillips-Schmidt-Shin (KPSS) is employed to authenticate the correctness of ADF and PP unit root test. In this study, 5% critical value is used.

Table1 shows that having tested for the unit root test, both the ADF and PP unit root test established that all the variables are stationary at both levels (I(0)) and after first differencing(I(1)). Similarly, the KPSS unit root test confirms the result found under the ADF and PP indicating that the variables are the combination of I(0) and I(1).

ii) Correlation matrix

The result of the correlation matrix is presented in table 2

Table 2: Correlation matrix

Correlation	**logcpi**	**Log(rgdp)**	**Log(nexrt)**
Logcpi	1.000000		
Log(rgdp)	-0.424204	1.000000	
Log(nexrt)	-0.263127	0.728030	1.000000

Source: Analysed by the Author (E-views 10)

It is imperative to determine whether the model is suffering from a serial correlation problems. From table 2 above shows that rgdp and cpi are inversely related and have a weak correlation (-0.424204), nexrt and cpi also have inverse relationship with weak correlation

(-0.263 127), nexrt and rgdp have positive and direst relationship with strong correction (0.728030). It implies the absence of correlation among the variables. Therefore, our model is free from serial correlation problems.

iii) Optimal lag length selection

This section presents the result of the optimal lag length selection.

Table 3: Lag length criteria selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-304.6075	NA	39.64848	20.70717	20.98741	20.79682
1	-159.1686	223.0063	0.028340	13.41124	15.37292	14.03880
2	-89.89129	78.51430*	0.004226*	11.19275*	14.83587*	12.35822*

Source: Analysed by the Author (E-views 10)

It becomes pertinent to determine the optimal lag length. The Optimal lag length is determined by both the Akaike Information Criterion (AIC) and the Schwarz Information Criterion (SC). The table below shows the lag length structure.

The result in table 3 portrays different lag length criterions and the respective lag length chosen. From the results, LR test statistics, the Final Prediction error, Akaike Information Criterion, Schwarz information criterion, and Hannan-Quinn information criterion obtained lag length structure for INTRT, LOGRGDP, LOGNEXRT and LOGCPI. According to the econometrics analysis/techniques, AIC and SC is always the main focus in the lag length criteria, but in a situation whereby the two possess the same lag length or a situation whereby the SC is greater than the AIC, it's always advisable to go for the SC. This study made use of the SC as the lag order selected by the criterion. After establishing the lag order length, which is Lag 2, the Co-integration and long-run equation results have to be estimated.

iv) ARDL Bounds Co-integration Test

The result of ARDL Bound Co-integration test been captured in table 4

Table 4: Cointegration test (ARDL Bounds test)

Test Statistic	**Value**	**K**	**Significant**	**I0(Lower Bound)**	**I1(Upper Bound)**
F-Statistic	5.153619	5	10%	2.08	3
			5%	2.39	3.38
			2.5%	2.7	3.73
			1%	3.06	4.15

Source: Analysed by the Author (E-views 10)

Having established that the variables are integrated of a different order, it is very important to determine whether there exists a long-run equilibrium relationship amongst them. Co-integration describes the existence of an equilibrium or stationarity relationship between two or more times series each of which is individually non-stationary. Therefore, since our variables are of I(0) and I(1) respectively, to test for the co-integration, the ARDL Bounds test will be employed to determine the existence of a long-run relationship among the variables. From table 4, the F-Statistic value (5.15) is greater than both the lower and the upper bound, it implies that there exists a long-run relationship among the variables. This result means that in Nigeria's

case, the hypothesis of no co-Integration among the variables should be rejected. It, therefore, necessitated the estimation of both the short run and long-run model.

v) Result of Impact of exchange rate regimes on inflation in Nigeria.

The result of inflation dynamics across the two exchange rate regimes in Nigeria for the period under study. The result is presented in table 5

Table 5: Results of Open Economy NKPC for Fixed and Manage flexible Exchange rate

Dependent Variable: logcpi					
Fixed Exchange rate Regime			**Managed Flexible Exchange rate Regime**		
Variable	Coefficient	Prob	Variable	Coefficient	Prob
Logcpi_gap(-1)	1.3742	0.9016	**Logcpi_gap(-1)**	0.3462	0.9195
Logcpi_gap(1)	-0.0349	0.0001**	**Logcpi_gap(1)**	0.6490	0.8408
Logrgdp_gap	-0.1146	0.0001**	**Logrgdp_gap**	1.2920	0.7856
Logfxex	0.0789	0.2102	**logflex**	0.0657	0.0000**
C	-1.1530	0.0000	**C**	-2.0690	0.0000
R^2: 0.9965			**R^2: 0.6340**		
Adjusted R^2: 0.9960	-		**Adjusted R^2: 0.6222**		

Source: Analysed by the Author 2023 (E-views 10)

Diagnostic tests

To check the adequacy of the model, this study carried out a series of a diagnostic tests to get a valid result and inference.

i) Linearity test (Ramsey Reset Test)

The result of the linearity test (Ramsey Reset Test) is presented in table 6

Table 6 Linearity test

	Value	**Df**	**Probability**
t-statistic	1.553237	102	0.1235
F-statistic	2.412547	(1,102)	0.1235

Source: Analysed by the Author (E-views 10)

Table 6 shows the output from the Ramsey reset test reports the test regression, the F-statistic and t-statistic for testing the hypothesis that the coefficients on the powers of fitted values from the regression are jointly zero, that is, the model is correctly specified. The null cannot be rejected since the p-value is more than 0.1. Hence, the model is correctly specified.

ii) Stability test

It is said to be stable if the green line lies within the red line using the CUSUM residual test. The CUSUM test satisfies the stability condition because the line falls within the graph. The graph is shown in Figures 2.

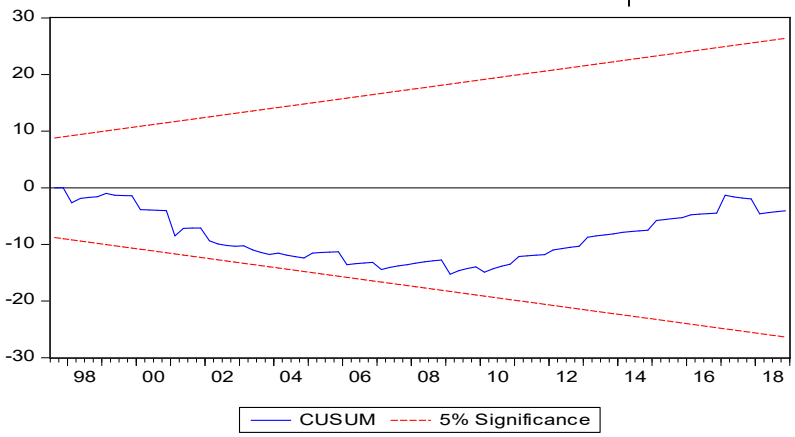


Figure 2: CUSUM Residual Test

Discussion of Results

Table 5 shows the result of the open economy fixed exchange rate model shows that the co-efficient of output gap is -0.1146 and it was found to be statistically significant. This means that there is a trade-off between inflation and Unemployment during the fixed exchange rate regime. The trade-off indicates that a 1% reduction in output gap or unemployment will be sacrifice with about 11.5% rise in inflation during fixed exchange rate regime in Nigeria. However, the co-efficient of exchange rate was statically insignificant (P-value 0.2102). This suggests the absent of exchange rate pass-through for the period under fixed exchange rate. Therefore, the findings indicate that inflation dynamics under fixed exchange rate regime approximated the open economy NKPC into a closed economy because exchange rate pass-through to domestic inflation has no impact. The R squared (R^2) is 0.9965, this indicate that the explanatory variables best explained the behaviour of the dependent variable (CPI) by 100%.

In addition the result also showed that the managed flexible exchange rate regime is charaterised by an output gap of 1.2920, which was found to be statistical insignificant. This means that there is absence of trade-off between inflation and unemployment during manage flexible exchange rate regime because a stronger positive relationship between inflation and unemployment may indicate stagflation pressure, where both inflation and unemployment rise simultaneously. Thus, the result impulse LR-NKPC (Long-run new Keynesian Phillip Curve) that exhibits Stagflation behavoiur during monetary expansion. However, the co-efficient of exchange rate was found to be 0.0657, which was statistically significant. This means there is presence of exchange rate pass-through during managed flexible rate regime. The size of the exchange parameter indicates about 6.6% of domestic inflation measured due to exchange depreciation by this means that 1% rate of managed depreciation pass-through to domestic inflation as a 6.6 % rise, which is in line with the findings of Ohemeng, Agyapong, and Ofori-Boateng (2021). The R squared (R^2) is 0.6340, this indicate that the explanatory variables best explained the behaviour of the dependent variable (CPI) by 63% while the remaining 37% explanatory variables were not captured in the model.

Conclusion

In conclusion, it has been observed from the study that i) to assess the impact of exchange rate regimes on inflation in Nigeria, findings indicate, the Managed flexible exchange rate has more impact on inflation than during the fixed exchange rate regime, the study recommends that

Monetary authorities aggravate the effort to make sure that the exchange rate is kept stable. A stable exchange rate makes the domestic price of goods to be stable. Hence, CBN should maintain a stable exchange rate by allowing it to be determined competitively.

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