ANALYSIS OF EXCHANGE RATE REGIME CHANGE AND NON-OIL EXPORT IN NIGERIA: A MARKOV-REGIME SWITCHING APPROACH

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Abstract

This study investigates the Impact of Exchange Rate Regime Change on Non-oil Export in Nigeria from 1985Q1 – 2018Q4. The paper employs Markov Regime-Switching Approach to capture the exchange rate regime change. Results of the study reveal that exchange rate regimes have a positive and statistically significant impact on the non-oil export in Nigeria. The results also show that the degree of the impact in the two regimes are not the same, it is higher in regime 2. This is as a result of the fact that prior to the 1980s; Nigeria adopted the fixed exchange rate regime which does not allow for domestic currency devaluation hence, the relatively low non-oil export. However, in the 1980s, especially at the introduction of the structural adjustment programme of the 1986 which saw most economies of the world switch over to the floating exchange rates regime, the Naira is often time devalued and hence the higher increase in the non-oil exports. Therefore, the study recommends that there is need to

achieve a stable exchange rate that when combined with the export-oriented policy will promote non-oil exports in Nigeria.

Keywords: Exchange Rate, Regime Change, Nonoil Exports, Economic Growth

JEL Classification: D51, F31, F43, O24

1. INTRODUCTION

Over the past decades, Nigeria has implemented various policy initiatives and measures in the management of its exchange rate, these policy initiatives is as a result of changing pattern of international trade, institutional changes in the economy and structural changes in productions (Central Bank of Nigeria, 2016, Ogbuabor, et al 2018 and Orji et al 2021). Basically, Nigeria witnessed several different types of exchange rate; this include fixed, flexible as well as some other form of exchange rate regime system. These regimes had been practiced at different occasions, depending on what the Central Bank want to achieve or base on the current economic situation and the overall development objectives of the federal government. Due to the nature of the economy, the changing pattern of the Foreign exchange have been largely influenced by the nation's varying pattern of shift in production, international trade and various institutional changes. The periods of the fixed exchange rate system made the exchange to be stable but the fixed exchange rate induced an over-valuation of the domestic currency which created distortions in the economy, subsequently led to the massive importation of finished commodities with adverse effects on the domestic industries, external reserves and the countries balance of payment. These problems led to the adoption of the floating exchange rate system through the Structural Adjustment Programme (SAP) in 1986 (CBN 2018).

The programme was to stabilize the economy, increases exports and investment, and promote economic growth. Several policies measures have been taken in removing administrative control and introducing greater autonomy and competition into production, the policies include exchange rate deregulations (CBN 2018). One of the most important components of the reform was exchange rate liberalization, this policy measure entails allowing the forces of demand and supply to determine the ruling exchange rate in the economy. Several other measures have been undertaken to make the exchange rate more market-based. As an example, there was a unification of official and market exchange rates in 1987. Also, government evolved a system whereby the exchange rate is determined daily in an interbank system under the control of the Central Bank of Nigeria. This exchange rate policy assumed might enhance access to foreign exchange for production, thereby increasing manufacturing output and employment while reducing inflation. Guided by the intervention of the Central Bank of Nigeria, the exchange rate is determined in the Autonomous Foreign Exchange Market, which reduces the pressure on the Central Bank (Eze and Okpala, 2014, Ogbuabor, et al 2019, Orji,et al 2020). The strong need to diversify the economy, increase foreign exchange earnings and reduce the excessive dependence of the domestic economy on the export of crude oil, also

triggered the decision to establish the Second Tier Foreign Exchange Market (SFEM).

Non-oil sector consists of economic activities that are outside the oil and gas industry, it comprises those sectors such as agriculture, tourism, constructions, telecommunications, and manufacturing sector of the economy. The agricultural sector which comprises commodities such as: cocoa, palm oil, coffee, hides and skin used to be the main stay of the economy as well as the export of the country during the 1970s. Since then, the Nigerian government shifted their interest to the oil sector which made the non-oil export to decline (Olawale 2018). Nigeria witness several exchange rate regime with a view to enhanced non-oil export, this is because exchange rate regime have a significant impact on the volume of international trade more especially non-oil export and have been the subjects of both theoretical and empirical investigations (Obadan, 2006, Orji, et al 2018 and Orji et al, 2019). The Nigerian government has been designing different exchange rate regime to promote the non-oil export ranging from fixed exchange rate to floating exchange rate regime, but the effect of these exchange rate regime has remained unascertained, because the performance the non-oil export has been very slow. Specifically, in 1980, the non-oil export recorded a negative growth and it continues to fluctuate for some decades (Mieiro and Ramos, 2010). The economic challenges currently facing Nigeria are related to the unfavorable exchange rate regime and this has necessitated the Central Bank of Nigeria to continuously defend the naira against the dollar in order to achieve a stable exchange rate (Olajide, 2016). The achievement of stable exchange rate has become a major macroeconomic issue facing Nigeria and over the years; this instability has not really helped the non-oil export sector to become more productive (Opaluwa,Umeh & Abu, 2010 and Oladapo & Oloyede, 2014). These challenges facing the macro environment include low industrial base, import overdependence, high exchange rate volatility and high debt service. All these hinder the development of the non-oil sector (International Monetary Fund, 2017)

Interestingly, several exchange rate regimes and policies introduced by successive governments to stabilize the rate and improve non-oil exports seem not to have yielded much result. Some of these include the independent exchange rate policy of 1975; the floating exchange rate policy of 1986, the Autonomous Foreign Exchange Market (AFEM) of 1988, and the fixed exchange rate regime of 1994 up to the deregulation of the foreign exchange market of 1996 and beyond (Musibau et al, 2017). The ineffectiveness of such foreign exchange policies might be seen from the fact that non-oil exports that accounted for 60% in 1960 declined to 3.0% in 1990 (Mieiro and Ramos, 2010). Although it stood at 17% recently in 2016 (CBN, 2018), this, according to Musibau et al. (2017), is not favorable. It's against this background; this study seeks to examine the impact of exchange rate regime change and non-oil export in Nigeria. The following sections are organized as follows; section 2 reviews some related literature, while the methodology is presented in section 3, section 4 presents the results and analysis, and lastly the paper concludes with section 6.

2. BRIEF REVIEW OF LITERATURE

Several studies have been conducted to ascertain the impact of exchange rate regime change on non-oil export. However, the exchange regime change has been modelled using different techniques, as such has been a subject of intense debate in modern literature. Ansari Nasab and Pas (2020) examined the asymmetric effects of exchange rate on non-oil exports of Iran during the period of 1978-2017 using non-linear Markov-switching and Smooth Transition Regression models. The results showed that a sudden change of Markov-switching model on the effect of exchange rate in the first regime is about 8.6 times the second regime, both of which have a positive effect on non-oil exports in Iran. But, in the Smooth Transition Regression Model (STR), different exchange rate coefficients in two regimes show that the non-oil export responses to the exchange rate in the first regime has a negative effect on non-oil exports, and the exchange rate in the second regime has a positive and significant effect on non-oil exports. In their study Stephane and Benteng (2013) analyzed daily foreign exchange rates where all parameter values depend on the value of continuous time using Markov regime-switching framework, they also applied the generalized expectation maximization algorithm switching models. The results showed that regime switching outcomes match much better to reality than the others without Markov-switching; and two regimes in most of the cases are better than more regimes.

Stephane (2014) studied regime-switching models built on mean-reverting and local volatility process combined with two Markov-regime switching process by applying foreign exchange and Brent oil Price. The results clearly identified both mean reverting and volatility regime switches. It also allowed economic interpretations of the regime classifications as in some financial crises or some economic policies. Hsiu-Yun and Show-Lin (2006) analyzed the use of Markov-switching model in exchange rate prediction. They stated that this kind of time series process is consistent with most popular exchange rate regime in the world and conclude that the theoretical implication of exchange rate determination indicates that a higher probability of central bank's future interventions raises the rational expectations discrepancy between the exchange rate and it's fundamental.

Nikolsko-Rzhevskyy & Prodan (2012) examined the recent success of modern macroeconomic models in forecasting nominal exchange rates by evaluating the Clark and West (2006) inference procedure. They model the drift term using the two-state Markov-switching stochastic segmented trend. The result showed that there is evidence of both short-run and long-run predictability for monthly exchange rates over the post-Bretton Woods period. Jing-Tung (2015) examined the exchange rates of the Asia-Pacific countries from 2000-2011 using Markov Switching model (MSM). The real interest differential (RID) model is tested first. The result showed that by using MSM-RID model, evidence of two regime exist and persist which is consistent with the earlier literature indicating that there are complex influences in exchange rate determinations.

Idowu (2016) examined the long swings hypothesis in exchange rates using a two-state Markov-switching model from the period of 2004-2016. The result from the study showed that the choice of the number of states k for exchange rate is currency-specific. The results conclude that the choice depends largely on the exchange rate regime adopted in each country, whether floating, fixed, or mixed. Obi, Oniore, and Nnadi (2016) examine the impact of exchange rate regimes on economic growth in Nigeria. The study employs a Generalized Method of Moments (GMM) to estimate the economic growth equation as a result of the endogeneity problem. The study reveals that exchange rate regimes indeed matters in terms of real economic performance in Nigeria, therefore, deregulated exchange rate regime spur economic growth in Nigeria as against the whole period and fixed exchange rate regime.

Akpan and Atan (2011) analyze the effect of exchange rate regime on real output growth in Nigeria, based on quarterly time series data for the period 1986:1 to 2010:4. Generalized Method of Moments (GMM) technique was adopted. The results obtained suggest that there is no evidence of a strong direct relationship between changes in exchange rate management and output growth. Rather, monetary variables have directly affected Nigeria's economic growth. Chinweuba and Sunday (2014) studied the effect of exchange rate regime on economic growth in Nigeria using chow test procedure to determine the structural stability of the relationship between exchange rate and output of goods and services during the two regimes. They adopted OLS method to estimate the long run equation; the results showed that exchange rate regime is highly significant determinant of economic growth performance in Nigeria.

From the studies reviewed above, we have seen that a various number of literature have investigated the impact of exchange rate regime change on non-oil export. However, this study adopts a Markov Regime-Switching model to investigate the impact of exchange rate regime change on non-oil export in Nigeria.

3. METHODOLOGY

3.1. THEORETICAL FRAMEWORK

Capital Account Openness Hypothesis and Mundell Fleming Model is adopted as the theoretical framework underpinning this study. The theories explained how the exchange rate regime change affects the non-oil export.

Several studies looked at capital market factors as potential determinants of the exchange rate regime choice. According to the hypothesis of these studies is that increased capital mobility, for instance; countries with an open capital account, prompts these countries to move toward either pure floats or hard pegs (Obastfeld and Rogoff, 1995; Eichengreen, 1994; Fischer, 2001). This can be seen as predicated on the implied consequences, in terms of the more stringent policy requirements to maintaining exchange rate pegs. To test this hypothesis, common measures of capital

account openness that have been proposed as explanatory variables of the exchange rate regime choice are the de-facto capital control. However, while capital controls might make it easier to sustain a fixed exchange rate regime, they may not be needed by countries with hard pegs.

However, the Mundell Fleming theory is based on a small open economy. The theory assumes that, in a floating exchange rate regime, when there is an increase in the money supply, the domestic interest rate tends to fall; this will cause the investors to find it more attractive to invest abroad. This will lead to a fall in the demand for domestic currency in the foreign exchange market, whereas an increase in the value will consequently lead to a high exchange rate and decrease in export. While in the fixed exchange rate regime the central monetary authority stands ready to buy or sell the domestic currency so as to maintain the foreign exchange rate.

The Mundell Fleming is an extension of IS-LM model of an open economy. The theory revealed that policies of central bank affect the economy under the floating and fixed exchange rate. The fixed exchange rate regime operates differently from the floating exchange rate, whereas in a floating exchange rate regime any increase in the supply of money will lead to an increase in real money balances. When there is an increase in the money supply, the domestic interest rate will fall below the world interest rate, thus leading to an outflow of capital because of the fall of domestic interest rate. Exchange rate will be required before the investors move their capital abroad; this will result in low demand of local currency in the world market. When this happened the price of the domestic currency will fall, and export will rise. In a fixed exchange rate regime, the monetary authority buys and sells domestic currency in order to maintain the announced exchange rate.

3.2. THE MODEL SPECIFICATION

Model Specification

The specification of Markov switching, which allows for Autoregressive Dynamic Structures with switching intercept is specified in a more general form as below:

$$g_t = \alpha + \beta S_t + \gamma_k \sum_{t-1}^{k} g_{t-1} + \varepsilon_t \dots\dots\dots\dots\dots.\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots. eqn\ 1$$

The term, g_t is a series which is composed of two autoregressive (AR (1)) and is given as:

$$g_t = \begin{cases} \alpha_0 + \gamma g_{t-1} + \epsilon_t & S_t = 0 \\ \alpha_0 + \alpha_1 + \gamma g_{t-1} + \epsilon_t & S_t = 1 \end{cases} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots eqn\ 2$$

The g_t term is jointly determined by the random characteristics of the innovations ε_t and the state variable S_t. $\gamma < 1$ and ε_t are independent and identical random variables with zero mean and constant variance (δ^2). g_t is a stationary AR (1) process with mean $\alpha_0/1-\gamma$ when $S_t = 0$, and it switches to another stationary

AR (1) process with mean $(\alpha_0 + \alpha_1)/1 - \gamma$ when S_t changes from 0 to 1. As long as $\alpha_1 \neq 0$, this model admits two dynamic structures at different levels, depending on the value of the state variable S_t. In this case, g_t is governed by two distributions with distinct means, and S_t determines the switching between these two regimes. Hence,$S_t = 0, 1$ depicts the Markovian state variables.

While the Markov-Switching Model presented in equation (2) is capable of characterizing the time series behaviors in two regimes, it is very restrictive because only one change is allowed. According to Bai and Perron (1998) and Bai (1999), it is easy to extend this model to allow for multiple changes, but estimation and hypothesis testing could be cumbersome. Also, changes in model represented in equation (2) are determined by exogenous time. One way of solving the above challenge is to specify a different model for S_t by assuming that S_t follows a first-order Markov chain with the transition matrix as follows:

$$P = \begin{bmatrix} p(S_t = 0)/S_{t-1} = 0 & p(S_t = 1)/S_{t-1} = 0 \\ p(S_t = 0)/S_{t-1} = 1 & p(S_t = 0)/S_{t-1} = 1 \end{bmatrix} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots eqn\ 3$$

The transition probabilities from the two states can be represented as:

$$P = \begin{bmatrix} p_{00} & p_{01} \\ p_{10} & p_{11} \end{bmatrix} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots eqn\ 4$$

Where $p_{ij}\ i; j = 0; 1$ denote the transition probabilities of $S_t = j$ given that $S_{t-1} = i$. It is important to note that the transition probabilities satisfy $p_{io} + p_{i1} = 1$. The transition matrix contains only two parameters (p_{00} and p_{11}) which can explain the random behaviour of the state variable. That is, the possible two states in equation 4 are state of low values of the selected variables, state 1 and state of high values of the selected variables state 2. In terms of transition probabilities represented in equation 3, there are probabilities of transiting to low price level for instance in the next period given that the past state is in low level (p_{00}), probabilities of transiting to low level in the next period given that the current state is in high level (p_{01}), probabilities of transiting to high level in the current period given that the past state is in low level (p_{10}) and probabilities of transiting to high level in the next period given that the current state is in high price level (p_{11}).

3.3. MODEL JUSTIFICATION

There are various econometric models in literature that may help to decompose economic variables into a trend component and deviations from the trend, that is, transitory component. These models include Autoregressive Integrated Moving Average (ARIMA) models, the model due to Clark's (1987) on unobserved components, threshold models, and the Hamilton (1989) and Lam (1990) Markov Switching Models. However, the ARIMA and Clark's (1987) unobserved components models only explains economic fluctuations as symmetric movements around a stochastic trend but do not account for asymmetry. Similarly, threshold models are not suitable for decomposition. Hence, this research work utilizes the

Markov-Switching Models of Hamilton (1989) and Lam (1990). This model possesses the characteristics of time series behaviors in different regimes and permits switching between regimes and is thus capable to capture more complex dynamic patterns.

In addition, the Markov-switching model is a potentially useful approach that accounts for non-linearity in time series by assuming different behaviour such as structural break in one subsample or regime to another.

3.4 ESTIMATION PROCEDURE

The study uses the Markov Regime-Switching model due to Hamilton (1989) and Lam (1990) which possesses the characteristics of time series behaviors in different regimes and permits switching between regimes and is capable to capture more complex dynamic patterns. Furthermore, the result from the model will be confirmed using the Constant Markov Transition Probabilities and expected durations, and Markov Switching Smoothed and Filtered Regime Probabilities. The AR stability graph and AR autocorrelation test will as well be consulted to ascertain the stability of the model and that the model free from serial correlation.

3.5. DIAGNOSTIC TEST

The AR stability test was done to determine that if the dots inside the circle which represent the eigenvalues (roots of the companion matrix) do not lie outside the circle, with some test such as; Constant Markov Transition Probabilities and Expected Durations, Serial Correction Test and the Markov Switching Filtered and Smoothed Regime Probabilities.

4. PRESENTATION AND ANALYSIS OF RESULTS

4.1 DIAGNOSTICS TEST

4.1.1. AR STABILITY TEST

Figure 1 below presents AR stability graph. The dots inside the circle represent the eigenvalues (roots of the companion matrix). From the figure, it is obvious that the eigenvalues do not lie outside the circle thus; the Markov Switching AR model satisfies stability condition. The model is stable because the roots of the companion matrix (eigenvalues) are all inside the unit circle.

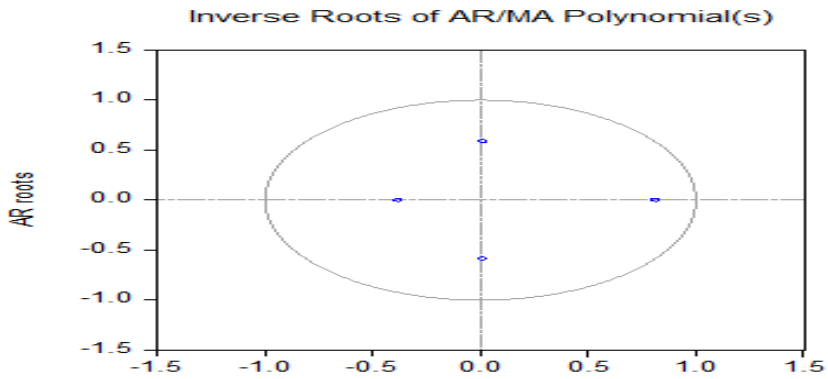

Figure 4.1
Source: EViews output

4.1.2. SERIAL CORRECTION TESTS

Table 1 below reports the diagnostic test on the residuals of the model. The test on the residuals reveals that the null hypothesis cannot be rejected as indicated by the *p*-values of the Q-statistics which are not significant at almost all the lags used for the test. Hence, the model can be deemed statistically adequate.

Table 1: *Serial Correction Tests*

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob*
. |. |	. |. |	1	0.036	0.036	0.0736	0.786
. |. |	. |. |	2	0.017	0.016	0.0907	0.956
.*|. |	.*|. |	3	-0.066	-0.068	0.3511	0.950
.*|. |	.*|. |	4	-0.117	-0.113	1.1786	0.882
.*|. |	.*|. |	5	-0.092	-0.084	1.7019	0.889
.*|. |	.*|. |	6	-0.070	-0.068	2.0149	0.918
.*|. |	.*|. |	7	-0.142	-0.156	3.3138	0.855
. |*** |	. |*** |	8	0.361	0.361	11.905	0.156
. |. |	. |. |	9	0.050	0.000	12.076	0.209
. |. |	. |. |	10	0.059	0.009	12.317	0.264
. |*. |	. |*. |	11	0.145	0.175	13.789	0.245
. |. |	. |*. |	12	0.047	0.095	13.950	0.304
.*|. |	.*|. |	13	-0.098	-0.088	14.661	0.329
. |. |	. |. |	14	-0.012	0.067	14.672	0.401
.*|. |	. |. |	15	-0.132	0.027	16.019	0.381

.*| . |	**| . |	16	-0.091	-0.254	16.685	0.406
.*| . |	.*| . |	17	-0.125	-0.138	17.968	0.391
.*| . |	.*| . |	18	-0.112	-0.097	19.031	0.390
. |*. |	. | . |	19	0.097	-0.064	19.851	0.404
. |*. |	. | . |	20	0.153	0.019	21.937	0.344
.*| . |	.*| . |	21	-0.066	-0.081	22.338	0.380
. | . |	. | . |	22	0.045	-0.056	22.528	0.429
. | . |	. | . |	23	-0.019	-0.028	22.562	0.487
. | . |	. |*. |	24	-0.046	0.079	22.777	0.533

Source: EViews output *** significant at 1%, **5%, *10%

4.2. MODEL ESTIMATION AND INTERPRETATION

Table 2: *Effect of Different Exchange Rate Regime on Non-oil Export*

Dependent Variable: NOE

Method: Markov Switching Regression (BFGS / Marquardt steps)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
		Regime 1		
EXR	0.055612	0.015887	3.500***	0.0005
		Regime 2		
EXR	1.134319	0.208066	5.451***	0.0000
		Common		
AR (1)	0.461712	0.148961	3.099***	0.0019
AR (2)	-0.045880	0.162476	-0.282383	0.7776
AR (3)	0.140380	0.162829	0.862130	0.3886
AR (4)	0.106485	0.141466	0.752726	0.4516
LOG(SIGMA)	1.606084	0.105710	15.19***	0.0000
		Transition Matrix Parameters		
P11-C	3.283866	1.118526	2.9358**	0.0033
P21-C	0.057965	1.504356	0.038531	0.9693

Mean dependent var	7.105333	S.D. dependent var	7.279550
S.E. of regression	8.113881	Sum squared resid	3094.248
Durbin-Watson stat	1.414223	Log likelihood	-169.0806
Akaike info criterion	6.595577	Schwarz criterion	6.927075
Hannan-Quinn criter.	6.723423		

Source: EViews output
*** significant at 1%, **5%, *10%

Table 2 reports the results for the estimated Markov regime-switching model. The upper panel of the table shows the coefficients of exchange rate in the two regimes while the lower panel reports the common coefficients for the two regimes. From the Table, it can be observed that the coefficients, 0.055612 and 1.134319 of the exchange rates in regimes 1 and 2 respectively are positively signed and statistically significant at 5% level of significance. This is in line with the findings of Ismail and Isa (2008) in the Malaysian economy, this implies that on the average, the non-oil export increases by 0.05% for a 1% percent increase in exchange rate in regime 1, while in regime 2, the non-oil export increases by 1.1% for a 1% increase in exchange rate.

This outcome is in line with economic principles which suggest that a country's export becomes more attractive to foreigners as domestic currency falls in values. This could be the justification for the increase in non-oil export as naira may have depreciated in the two regimes. It can be observed that the degree of the impact in the two regimes are not the same, it is higher in regime 2. This may not be unconnected to the fact that prior to the 1980s; Nigeria used more the fixed exchange rate regime which does not allow for domestic currency devaluation hence, the relatively low non-oil export. However, in the 1980s, especially at the introduction of the structural adjustment programme of the 1986 which saw most economies of the world switch over to the floating exchange rates regime, the naira is often time devalued and hence the higher increase in the non-oil exports.

The log standard deviations, LOG (SIGMA) is statistically significant at 5% level of significance with the corresponding coefficient of 1.606084. This value further reinforces the existence of a movement from low volatility in regime 1 to high volatility in regime 2. However, as mentioned earlier, the regime specific coefficients are reported in the upper panel of the Table while the common coefficients associated with the non-switching regressors are reported in the lower panel and in each case, common error variance is assumed. It can be observed from the results that up to AR (4), the autoregressive terms used as non-switching regressors to check for serial correlation in the residuals, their coefficients are not statistically significant with the exception of AR (1) implying that the model is free from the problem of serial correlation. Moreover, as reported in the Table 3 below:

Table 3: *Constant Markov Transition Probabilities and Expected Durations*

	1	2
1	0.963871	0.036129
2	0.514487	0.485513
Constant expected durations:		
	1	2
	27.67872	1.943683

Source: EViews output

Table 3 reports the probabilities of being in a regime. It shows that the probability of being in regime 1 is 0.96 and that of being in regime 2 is 0.49. The magnitude of these probabilities (P11 and P22) suggests that the low volatility regime, that is, regime 1 could be more persistent than the high volatility regime, that is, regime 2. However, the expected durations for being in each regime, looking at the mean is shorter in regime 2 while the expected duration for being in regime is longer. Therefore, we can conclude that the exchange rate may have a more lasting impact on non-oil export in the first regime which has low volatility. However, it may take an extreme event to switch the exchange rate from regime 2 to regime 1. The findings here are consistent with Aikaterini (2016) who reported that the transition probabilities from regime 2 to regime 1 and vice versa are very slim and as a consequence, the probabilities of staying at the same regime are large.

4.2.1 MARKOV SWITCHING FILTERED AND SMOOTHED REGIME PROBABILITIES

Figure 2 below shows the Markov Switching Filtered and Smoothed Regime Probabilities. Smoothing entails making an inference about the regimes using future information, while filtering entails the process by which the probability estimates are updated. The inference is usually drawn from the probabilities associated with the regimes. The smoothed estimates for the probabilities of the regimes in each period avail the information set in the final period, while the filtered estimates use only the contemporaneous information about the estimates. The Figure 2 below is plots of the smoothed and filtered probabilities. Looking at both the smoothed and filtered probabilities, there seems to be a clear pattern of inverse correlations in the two regimes. Evidently when the probability of regime 1 is close to one; while the probability of regime 2 is close to zero and vice versa. The finding indicates that our model performs quite well in getting the direction of change in the series either in regime 1 or regime 2.

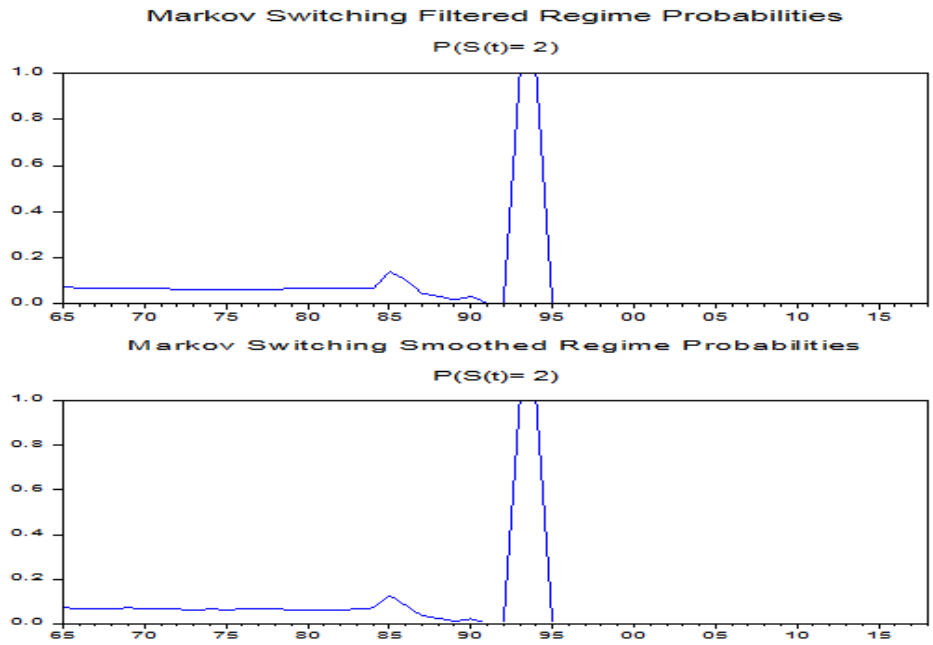

Figure 2
Source: EViews output

5. POLICY RECOMMENDATIONS

Given that Nigeria has not taken the desirable advantage of exchange rate regime, it is to the country's best interest that the following recommendations are considered and possibly implemented; firstly the country has not improved its non-oil sector for over decade; they have not been productive to boost export and import reduced even though the country continue to devalue its currency, the study recommends that the policy makers should adopt a floating exchange rate regime in Nigeria, this is because the fixed exchange rate regime over the years have not produced the desired results of enhancing non-oil exports. Secondly, exchange rate has a more lasting impact on non-oil export; there is need for the policy makers to ensure that the exchange rate is not volatile. Finally, there is need for the government to should revisit its so-called export-oriented policy to ensure that the non-oil sectors are well provided for.

6. CONCLUSION

This paper investigates the impact of exchange rate regime change and non-oil export in Nigeria in the framework of Markov Regime-Switching approach. Results of the research reveal that exchange rate regimes have a positive and statistically significant impact on the non-oil export in Nigeria. The outcome is believed to be in line with economic principle which suggests that a country's export

becomes more attractive to foreigners as domestic currency falls in values. It can also be observed that the degree of the impact in the two regimes are not the same, it is higher in regime 2. This may not be unconnected to the fact that prior to the 1980s; Nigeria used more the fixed exchange rate regime which does not allow for domestic currency devaluation hence, the relatively low non-oil export. However, in the 1980s, especially at the introduction of the structural adjustment programme of the 1986 which saw most economies of the world switch over to the floating exchange rates regime, the naira is often time devalued and hence the higher increase in the non-oil exports.

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