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The Effect of Importation of Refined Petroleum Products on Exchange Rate in Nigeria: 1990-2015

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Abstract

*T*his study examines the effect of importation of refined petroleum products on exchange rate in Nigeria. The study adopted secondary time series data and employed econometric tools (unit root test, Johansen cointegration technique and error correlation model analysis) to estimate the data. The data were mainly from Central Bank of Nigeria (CBN) annual bulletin and National Bureau of Statistics (NBS) on Nigeria foreign trade summary annual report. The variable of interest are exchange rate (EXR), gross domestic product growth rate (GDP$_g$), inflation rate (INFR), import of refined kerosene (RKSM), import of refined motor spirit (RMSM), total import of petroleum product (IMP) GDP$_g$, which underwent a unit root test using the Augmented Dickey-Fuller (ADF) test and four variables (GDP$_g$, INFR, RKSM, RMSM) were found to be stationary at level while IMP and EXR, were stationary at first difference of integration. In the long-run regression result, the R^2 which was 0.956532 is highly significant which shows that the model has a good fit for prediction and forecasting. The study reveals that all the variables are positive and statistically significance on exchange rate except GDP$_g$, which shows a negative impact on exchange rate in Nigeria. It was evidence that importation of refined petroleum products is as a result of poor refineries, poor turn around maintenance, obsolete technology, low capacity and lack of government will to invest in oil sector, shortages of the petroleum products for domestic use. The paper

recommends that the country refineries should be deregulated or privatized or re-position as this will reduce the over dependency on the importation of the petroleum products as well as building new infrastructure in the oil sector to meet up with the domestic demand and as well reduce the pressure on the exchange rate.

INTRODUCTION

In Nigeria, the position of crude oil as the mainstay of the economy cannot be over emphasized. Oil plays a vital role in shaping the economic and political destiny of the country. Thus, Nigeria economy is basically an open economy with international transactions constituting an important proportion of her aggregate economic activities. Over the years, the degree of openness of the economy has grown considerably. Globally, crude oil is the largest source of energy today as; it powers the global economy and its industrialization processes. The import of petroleum products in Nigeria has been unstable since the 1980s, with the motor gasoline being the largest among the products imported over the years. The periods 1989-1993 and 1994-1998 appeared to be associated with the lowest imports of petroleum products in the country. This development could be associated with the civil unrest and prevailing loss of business confidence that characterized the economy during the periods. Importation of refined petroleum products is also putting the naira under undue pressure with exchange rate and creating social problems for the economy.

Exchange rate is the price of domestic currency in terms of another currency (international). It is one of the most important variables in international trade. The robustness and condition of the exchange rate system determined the fruit and outcome of international trade, which have an effect on the balance of payment. The fluctuation of exchange rates makes the imports/exports costlier or cheaper and also the unstable tendency of this variable attaches a level of uncertainty or risk in trade. However, in any aspect, substantial movements in refined petroleum imports heighten investment risks and the energy-intensive characteristics of several industries, as well as the continuous dependence of the domestic economy of Nigeria on imported petroleum. Despite the fact that Nigeria is an oil-rich economy, domestic production has been largely crude, while consumption relies significantly on importations. Among the associated problems of the energy gap in Nigeria are insufficient and malfunctioning refineries and other energy generating facilities, inadequate pricing and consumption (Ishola, 2006) and (Diji, 2007). The demand on exchange rate for the transaction on the importation of petroleum products has increase the rate of inflation in Nigeria.

Obioma, 2006 stated that Nigeria became more exposed to oil prices fluctuations the moment she started importing refined petroleum products due to the collapse of local refineries in the late 1980's. Shortage of petroleum products due to poor refineries, poor turn around maintenance, low capacity, obsolete technology, fuel scarcity, poor investment by government led the country to importation of petroleum products in order to meet up with domestic demand.

Oil dependency, and the allure it generated of great wealth through government contracts, spawned other economic distortions. The country's high propensity to petroleum imports means roughly 80% of government expenditures is recycled into foreign exchange rate, resulting from chronically overvalued Naira, coupled with the excessively high demand of the petroleum products for domestic used.

Over the past fifty years, the oil industry has made a variety of contributions to Nigeria economy. These have included the creation of employment opportunities, contributions to government

revenues, to Gross Domestic product, foreign exchange reserves, and the supply of energy to industry and commerce. On the negative side, this can be considered with respect to the surrounding communities within the oil wells are exploited. Some of these communities still suffered environmental degradation, pollution, gas flaring etc, which leads to deprivation of means of livelihood and other economic and social factors.

The petroleum and natural gas senior staff association of Nigeria (PENGASSAN) has called on Federal government to increase local refining capacity before embarking on any deregulation process, to ensure that the focus of deregulation policy was based on local production rather than importation, also that if local refining was not increased to meet local demand for petroleum products especially the premium motor spirit (petrol), removing subsidy on petroleum products would bring hardship on Nigeria.

Removing subsidy while the country depended on importation of refined petroleum products would make price of petroleum products to be out of the reach of the masses and would cause inflation as a result of the high demand of exchange rate on the forex market, (Ojugbana, 2015). Government is thus persistently confronted with import parity pricing and the burden of subsidizing the imported fuel instead of locally refined the products in order to reduce the burden from sourcing for exchange rate in the forex market.

At present, Nigeria has four refineries, with a combined installed refining capacity of 445,000 barrels per day (bpd). These four refineries according to NNPC (2010e) are as below:

    I.   The Port Harcourt Refinery was commissioned in 1965 with an installed capacity of 35,000 barrel per day (bpd) and later expanded to 60,000 bpd.

    II.   The Warri Refinery was commissioned in 1978 with an installed refining capacity 100,000 bpd, and upgraded to 125,000 bpd in 1986.

    III.   The Kaduna Refinery was commissioned in 1980 with an installed refining capacity of 100,000 bpd, and upgraded to 110,000 bpd in 1986.

    IV.   The second Port Harcourt Refinery was commissioned in 1989 with 150,000 bpd processing capacity, and designed to fulfill the dual role of supplying the domestic market and exporting its surplus.

The combined capacities of these refineries is far below domestic consumption of refined products, topmost of which is premium motor spirit (petrol), whose average daily consumption as at April 2011 was estimated at 30 million liters (Muhammad, 2011). The refineries are however, operating far below their installed capacities, as they were more or less abandoned during the military era and the civilian governments that succeeded it. Okonju, (2009), report massive decay in the Port Harcourt Refinery which is in comatose due to skipping of the routine and mandatory turnaround maintenance, negligence, corruption and out right sabotage that make products importation inevitable. The refineries are meant to process crude oil to the various component functions like: PMS (petrol), AGO (diesel), DPK (kerosene), coal tar, heavy oils, such as engine oil, petroleum jellies, lubricants, etc. Initially, Nigeria was planned to be self-sustaining in terms of these various by-products, however due to the cumulative negligence and poor maintenance culture, most of these products are now been imported for local consumption.

Nigeria has spent ₦15.97 trillion on the importation of 152.92 billion litres of petroleum products between 2010 and 2016, although pockets of shortages still rocked the country at different times, (Adugbo, 2017). Experts predict that petroleum import bill will continue to rise due to the high cost of sourcing the dollars (exchange rate) for imports. The NBS petroleum imports 2010-2015 and 2016 statistics citing figures supplied by the PPPRA revealed that the country spent ₦1.7tr,

₦3.1tr, and ₦2.8tr in 2010, 2011, and 2012 respectively with petroleum product accounting for more than 80% of the products imported. The data collated for subsequent years showed that Nigeria's importation of the three products (petrol, diesel, kerosene) jumped to ₦3tr and ₦3.2tr in 2013 and 2014 before dropping to ₦1.8tr in 2015. The country spent ₦2.59tr importing petroleum products in 2016, ₦1.3tr more than it spent in 2015 and ₦4bn litres more than the volume imported in 2015. Fuel import reduced by 35% in 2016.What went higher was the cost of import because of the fall in naira. In dollar, using the average import exchange rate of ₦225 to $1 for fuel imports in 2016, Nigeria spent an average of $21m every day importing fuel, according to NBS figures. It translates to around ₦5.5bn daily in naira terms. The 2016 value which is around $10bn or an average of $833m monthly has become a huge burden on the nation's foreign exchange rate in the face of low crude oil production and prices. Nigeria consumes 45 million litres of petrol a day, a figure hotly contested; and it would required the market to provide some $18 million a day. The NNPC (2015c) said it spent between $16m and $20m on importations of refined petroleum products daily totaling about $1.8bn per quarter. Though imports bill depends on volume and the price, a cargo of roughly 40 million litres product could cost the corporation about $13m to $14m daily. The rising petroleum imports bill presents a big challenge to the present government's liberalization policy which was supposedly to reduced petroleum consumption, lower imports, diversify to cheaper fuels, Nwosu, 2014).

LITERATURE REVIEWS
Concept of Import Demand for Petroleum Products in Nigeria
The import of petroleum products in Nigeria has been unstable since the 1980s, with motor spirit being the largest among the products imported over the years. The trend of individual petroleum product was reflected in the total of petroleum products during the period under review. The period 1990-1993 and 1994-1998 appeared to be associated with the lowest imports of petroleum products in the country. In Nigeria, domestic consumption of the various petroleum products has not matched the domestic production. Moreover, for all the petroleum products, the trends of imports on exchange rate and production gap followed similar pattern over the years.

Exchange rate is the price for which a country's currency is exchanged for another country's currency and is influenced by factors such as interest rate, inflation and political condition of the country, (Abubakar & Umar, 2013).
Mordi, (2006), stated that exchange rate is the price of a domestic currency in terms of another currency (international). Exchange rate is used to determine the price of petroleum products in the international market.

Obioma, (2006), opined that Nigeria become more exposed to oil prices fluctuations the moment she started importing refined petroleum products due to the collapse of local refineries in the late 1980s. Thus, the country could not grapple with the enormous subsidy it committed itself to, so between 1990 and 2010, the Federal Government had adjusted its subsidy on petroleum products back and forth approximately 8 times. This has negatively affected production, consumption, general welfare and hence the pace of economic growth. Government is thus persistently confronting with import parity pricing and the burden of subsidizing the imported fuel instead of local refined products in order to reduce the burden from sourcing for exchange rate in the forex market so as to meet up with the domestic demand.

Duncan, (2008), defined Nigeria as a crude oil exporter and importer of refined petroleum products. He re-stated the fact that oil price tends to exert a positive effect on the GDP growth of a net-oil exporting country and a negative effect on a net-oil importing country. On the basic of this, Nigeria's situation is clearly peculiar, as the literature on the relationship between oil

imports and economic growth keeps expanding as new economic challenges unfold. In theory, proponent of oil development for example (Yakubu, 2008 and Hoffman, 2009), believes that countries lucky enough to have petroleum, can base their development on this resource. They pointed to the potential benefits of enhanced economic growth and the creation of jobs, increase in government revenues to finance poverty alleviation, transfer of technology, the improvement of infrastructure and the encouragement of related industries, the experience of almost all oil-exporting countries but when a country is oil imports depending country, the reverse is the case, especially Nigeria illustrate few of these benefits as an oil importing and exporting country. It is evident from the opinions expressed in the foregoing theories that petroleum income can cause an increase or a decrease in exchange rate of a nation, depending on the type of theory, policy and practical implementation the government in power adopts.

The Traditional Trade Theory of imports
The traditional trade theories (classical and neo-classical) are based on the perfect competition and substitution between domestic and foreign goods. Subsequently, this assumption was relaxed and model of imperfect substitution was developed (Goldstein and Khan, (1985). In reality, trade goods are not perfect substitutes and both imported goods and locally produced goods jointly exists in the local market. The imperfect substitution model is in line with the conventional demand theory which derives from the constrained optimization problem where consumer maximizes their utilities subject to budget constraint (Goldstein and Khan, 1985).

Empirical Review
Moshen (2013) made research on the effect of exchange rate on imports and other macroeconomic variables from 1960-2012. He used Vector Autoregression model, cointegration test and Impulse Response Function for the analysis. His results showed that exchange rate has positive effect on imports but no effect on macro- economic variables.

Tamirisa (2004) extended the literature on the subject by testing for the role of good governance on oil imports on the exchange rates of oil-importing/oil-exporting countries. He derived a simple theoretical model based on the effect of imports movements on the real exchange rates of oil-importing countries that depends on the degree of government spending as well as the size of the oil sector compared to the domestic economy. He utilizes a panel of 33 oil-importing countries with data from 1985 to 2005 to evaluate seven indicators and computed the average partial derivatives of real exchange rates with respect to the oil imports. He found that higher oil imports triggers depreciation proportional to the size of the oil-dependent economy.

De menil (2003) used a discrete model to test the effect of oil imports on macroeconomic variables such as incomes, current-account balances, and saving. According to him, these have different influence on asset stocks and their distribution in oil-importing and oil-exporting countries, and thereby disturb asset market equilibrium. He found that a rise in the price of oil generates a current account surplus for OPEC and current-account deficits in the oil-importing countries.

In the case of Nigeria, Dayo and Adegbulugbe (1987), found that oil boom was the major factor responsible for the high growth of petroleum products consumption, while price is less important in driving the consumption of refined petroleum product. In similar study, Akinlo (2008) discovered that refined petroleum products consumption in Nigeria responded positively to changes in GDP and negatively to changes in petroleum price. According to them, the price and income elasticities of demand varied according to products types.

Odili (2005), studies the effect of exchange rate on Nigerian imports from 1971 to 2011. Co-integration and Parsimonlous Error Correction were used. The results showed that exchange rate has a positive and significant effect on imports only in the long run and there is unidirectional

causality from exchange rate on imports. Exchange rate is involved in the flow of goods and service in any nation. In Nigeria, there were a lot of policies measures put in place to control excessive demand for foreign exchange due to the experience in the late 1970s and early 1980s. The objective were to preserve the value of domestic currency, maintain a favourable external reserve position, and ensure external balance without compromising the need for internal balance and overall goals of macroeconomic stability (CBN,2015).

Okonju, (2009), after a careful assessment of Nigeria's growth path in post oil discovery period, judged it as having been very rough. He explained that during the oil boom era GDP grew positively by 6.2% annually, but the growth rate turned negative through the larger part of the 80s when oil prices crashed; this period also saw inflation rate jump to 11% on average, with a peak of 41% in 2006; Gross domestic investment (GDI) as percentage of GDP fell from 16.3% to 14%.

Theoretical Framework
The traditional trade theory (classical and neo-classical) appears to be the most suitable theoretical framework for this study. The model following the work of Goldstein and Khan (2005), stated that, traditional trade model based on perfect competition and substitution between domestic and foreign goods. Subsequently, this assumption was relaxed and the model of imperfect substitution was developed. In reality, trade goods are not perfect substitutes and both imported goods and locally produced goods jointly exist in the local market. The imperfect substitution model is in line with the conventional demand theory which derives from the constrained optimization problem where consumers maximize their utilities subject to budget constraint (Goldstein and Khan (1985). Thus, in the simplest form, the utility function of each consumer contains two goods (local and foreign products) and the resulting aggregate imports demand function presents the quantity of petroleum product imports demand (M) as a direct function of the level of nominal income in the oil importing country (Y); inverse function of own price of the petroleum imports (Pm); and the price of local goods (Pd). On the basis of the imperfect substitution model, the standard petroleum imports demand functions can be specified as:

$M_t = f(Y_t, Pm_t, Pd_t)$----------eq 1

Where t denotes time period; the standard demand theory assumes homogeneity of degree zero in price and money income, which implies absence of money illusion (Narayan & Smyth, 2005). Based on these assumptions, dividing the right hand side of the equation (1) by price of local goods gives the following reduced form equation:

$M_t = f(Y_{rt}, RP_t)$---------------eq 2

$Y_{rt} = Yt/Pd_t$ = real income of importing country.
$RP_t = Pm_t/Pd_t$ = the ratio of petroleum import price to domestic price (relative prices of import)
Equation 2 shows that petroleum products import depends on real income level and relative price. The higher the real income, the larger the petroleum imports demand; the higher the relative price of oil import, the lower the imports demand.

METHODOLOGY AND MODEL SPECIFICATION
The study utilized an annual time series data sourced mainly from the Central Bank of Nigeria (CBN) statistical bulletin, National Bureau of statistic (NBS) on Nigeria foreign trade summary annual report. To formulate error correlation model (ECM) this begins with the ordinary least squares (OLS), estimation technique.

Based on the theoretical framework, we adapt Goldstein & Khan (1985) who study: Income and price effects in foreign trade. His empirical model was specified as:

$$IMP^1_t = \varphi + \beta_1 Yr_t + \beta_2 RP_t + \mu_t \text{-----------} eq\ 3$$

Where IMP^1_t represents petroleum refined import demand; given the import and domestic prices are not available in most case, the real exchange rate was used as a proxy. The use of real exchange rate was consistent with the theory of purchasing power parity of exchange rate and studies such as Narayan and Symth (2005), considered the size of the market in a country as a major determinant of import, and used population growth rate (POPg) as a proxy. Thus, the real exchange rate including population growth rate have the following equation:

$$IMP^1_{t\,=}\,\varphi + \beta_1 Y^1_t + \beta_2 REXR_t + \beta_3 POP_{gt} + \mu_t \text{----------------------} eq\ 4$$

The model of Goldstein and Khan (2005) was adapted and modified to examine the effects of petroleum products import on the exchange rate in Nigeria. The model is specified as follow:

$$EXR = \alpha + \beta_1 RKSM_t + \beta_2 RMSM + \beta_3 INFR + \beta_4 GDPg_t + \beta_5 IMP_t + \mu_t -- 5$$

Where: RKSM is the import of refined kerosene, RMSM is the import of motor spirit, INFR is the inflation rate, GDP_g is the gross domestic product growth rate, EXR is the exchange rate.

Presentation of Results and Analysis

A simple linear ordinary least squares method of estimation was applied to our earlier outlined methods. The overall results are expressed in sub-section. The data for these analyses are presented in appendix 1.

Table 4.1: *Results of the stationarity (unit root) test*

Variables	ADF-statistic	Critical values	Order of integration
GDPg	-6.5862537	1% = -3.262557 5% = -4.793147 10% = -2.206718	1(0)
INFR	-7.611469	1% = -2.323280 5% = -4.684735 10% = -5.24098	1(0)
RKSM	-8.3742867	1% = -6.262433 5% = -5.453490 10% = -4.509812	1(0)
EXR	-8.360303	1% = -4.226905 5% = -3.552935 10% = -3.207490	1(1)
RMSM	-7.446398	1% = -4.671180 5% = -3.455443 10% = -6.234337	1(0)
IMP	-6.643238	1% = -4.685281 5% = -3.857782 10% = -3.611035	1(1)

Source: Authors computation using E-view 7.

Table 4.1 shows that GDP_g, RKSM, RMSM, INFR were all stationary at level while EXR, IMP are not stationary at level. This can be seen by comparing the observe values (in absolute terms) of the Augmented Dickey Fuller (ADF) test and Johansen co-integreation test with the critical value (also absolute terms) at 1 percent, 5 percent, 10 percent level of significance. As a result of this , IMP and EXR were difference once and the variables became stationary at first difference, that is, they are integrated at order 1(1).

Table 4.2: JOHANSEN COINTEGRATION ANALYSIS
Date: 06/18/18   Time: 10:19
Sample (adjusted): 1990 2015
Included observations: 24 after adjustments

Trend assumption: Linear deterministic trend
Series: EXR GDPg IMP INFR RKSM RMSM
Lags interval (in first differences): 1 to 1
Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob. **
None *	0.898872	368.6624	246.8114	0.0001
At most 1*	0.983668	259.4431	95.86289	0.0032
At most 2*	0.877963	85.76418	82.78551	0.0322
At most 3*	0.995440	48.89556	47.62291	0.2264
At most 4*	0.711382	22.55416	34.86777	0.2226
At most 5*	0.398221	10.463982	17.38682	0.3362

Trace test indicates 3 cointegrating eqn(s) at 0.05 level
* Denotes rejection of the hypothesis at the 0.05 level
** Mackinnon-Haug-Michelis (1999) p-values

The major aim of this test is to ascertain whether a linear combination of the integrated variables is becoming stationary over a long-run, if this hold sway, then it means co-integration exists among the variables. The Johansen co-integration test commenced with the test for the number of co-integrating relations or rank using Johansen's maximum Eigen value and the trace test. The trace test rejected the null hypothesis (H_0) that there is no co-integrating relationship among the variables and the test based on the maximum Eigen value also rejected the null hypothesis. They both indicate evidence supporting co-integrating equation at the 5% level of significance. The result of the co-integration test shows that EXR, INFR, IMP, RKSM, RMSM, GDP_g have equilibrium condition which keeps them in proportion to each other in the long-run.

Table 3: Long-run regression results

Variables	Coefficient	Standard Error	T-Statistic	Prob.
C	25.915687	4.765414	5.5O6721	0.00002
LOG(GDPg)	-0.876543	0.265962	-2.508610	0.00210
LOG(IMP)	-3.1035671	0.352173	13.04603	0.00030
LOG(RKSM)	2.443767	0.418016	5.008665	0.00000
LOG(RMSM)	0.564329	0.325478	-2.109487	0.00023
LOG(INFR)	-0.066731	0.054841	-1.624326	0.00050

R-Square	0.92211
Adjusted R^2	0.90772
F-Statistic	67.43447
D-W	1.617468
Prob.	0.00000000

Source: Author's computation

The inflation rate, importation of petroleum products, and gross domestic product in Nigeria were negatively related to exchange rate in Nigeria, but import of refined kerosene, import of refined motor spirit showed positive impact on exchange rate in Nigeria and were statistically significant at 5% level of significance while importation of petroleum product and inflation rate were statistically significant at 5% level of significance.

Though the government spends so much on the petroleum sector, especially on importation of refined petroleum products and maintenance of the refineries but the sector is yet to meet up

with it expectation for economic growth in Nigeria and also with domestic demand. Also, exchange rate contribution on the gross domestic product in Nigeria is negatively related to growth rate in Nigeria, but statistically insignificant in explaining the total variation in exchange rate in Nigeria.

From table 4, the coefficient of the error correction term is -0.433672 which implies that the speed of adjustment is approximately 0.43%. The negative sign and significant coefficient is an indication that co-integrating relationship exists among the variables. The size of the coefficient on the error correction term (ECT) denotes that 43% of the disequilibrium caused previous years shock converges back to the long-run equilibrium in the current year. A relatively more efficient way of establishing co-integration is through the error correction term.

Table 4: Results of error correction model (ECM)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	14.73533	4.529386	-3.506576	0.0009
LOG(GDP)	-1.860539	0.350745	7.958839	0.0310
LOG(INFR)	I.666434	1.266489	1.616127	0.0004
LOG(RMSM)	0.564325	0.325478	-2.109485	0.0021
LOG(RKSM)	1.9358.50	1.256354	3.508665	0.0203
LOG(IMP(1(1)	0.543768	0.231870	3.672634	0.0000
ECT(-1)	-0433672	0.875691	-2.308465	0.0045
R-squared	0.956532			
Adjusted R-squared	0.947487			
F-statistic	54.13902			
Durbin-Watson stat	2.312161			
Prob(F-statistic)	0.000001			

The result of error correlation model shows the R-squared of 95 percent and the adjusted R-squared of about 94 percent. The R-squared shows the percentage of variation in the dependent variable that was accounted for by variations in the explanatory variables. The fitness of every regression result is based on its R-squared. From the value of the R^2, which stood at 0.956532, it shows that only an infinitesimal variation of 0.05 is left unexplained, hence captured by the error -term. The F-ratio value of 54.13902 is highly significant, easily passing the significance test at the 1% level, which further suggests a linear relationship between the regressors and regressand. The result above also reveals that the petroleum import value shows a positive and significant relationship with the exchange rate in Nigeria and also Inflation rate value shows a positive and significant relationship with the exchange rate in Nigeria. Furthermore, GDP show a negative and insignificant relationship with the exchange rate in Nigeria. However, import of refined kerosene and import of refined motor spirit revealed a positive relationship with the exchange rate in Nigeria.

The Durbin-Watson statistic of 2.312164 is indicating the absence of autocorrelation.
The results of unit root test revealed that all the variables of the model are found to be stationary at both 1 percent, 5percent, and 10 percent level with first difference (d(1)), which is indicated by ADF results at all levels less than the critical values in negative direction.
The cointegration result is in agreement with the error correction model (ECM) result which the coefficient of determination (R^2) indicates that 95% of the dependent variables explain the

independent variable. However, the goodness of fit is acceptable; the model is adequate and is correctly specified and good for policy prediction or forecasting.

CONCLUSION AND RECOMMENDATIONS

The purpose of the study is to examine the effect of importation of refined petroleum products in Nigeria economy. It was found that foreign exchange rate is positively influenced by the importation of petroleum products. This analysis was motivated by the fact that the Nigeria economy depends heavily on the importation of refined petroleum products for domestic used as a result of poor refineries, poor turn around maintenance, obsolete technology, low capacity and lack of government will to invest in the petroleum sector. And having observed the effect of importation refined petroleum products on exchange rate in Nigeria. We recommend the petroleum sector should be deregulated. This would involve putting in place an environment that allows private sector participation in the industry government involvement should be limited to the formulation of appropriate policies for the sector and ensuring a conducive operating environment for stakeholders. Correspondingly, a market-oriented energy strategy should be institutionalized. This is expected to promote efficiency in the oil sector, eliminate over dependency on the importation of refined petroleum products by investing in the country refineries and keep them going optimally. Also, since development in exchange rate significantly have an effect on the petroleum imports, government should encourage stability in macro-economic variables (exchange rate inclusive) and employ such growth oriented and stabilization policies especially at macro level which will promote oil exports rather than imports. And also effective policy should be made based on the fiscal and monetary policies by the policy makers, which should be aimed at achieving a realistic exchange rate for naira.

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APPENDIX 1
Table 4.1: Exchange Rate and other variables

YEAR	EXR	GDPg	IMP	INFR	RMSM	RKSM
1990	8.0378	12.8	1,634.680	7.50	8	498,642
1991	9.9095	-0.6	2,505.581	13.1	38	585,433
1992	17.2984	0.4	1,686.678	44.57	53	638,112
1993	22.0511	2.1	2,245.650	57.14	44	454,398
1994	21.8861	0.9	5,088.402	57.42	516	468,920
1995	21.8861	-0.3	6,269.292	72.73	104	563,988
1996	21.8861	5.0	1,438,866	29.29	3132	692,440
1997	21.8861	2.8	1,061,856	10.67	1695	793,580
1998	21.8861	2.7	2,507,009	7.86	4135	655,619
1999	92.6934	0.5	1,987,474	6.62	3786	171,482
2000	102.105	5.3	4,144,347	6.94	6881	1,115,399
2001	111.943	4.4	3,857.093	18.87	15178	433,295
2002	120.97	3.8	4,036,484	12.88	11397	513,200
2003	129.357	10.4	5,404,163	14.03	232207	637,621
2004	133.5	33.7	5,696,399	15.00	38907	418,245
2005	132.147	3.4	5,482,813	17.86	77496	671,939
2006	128.652	8.2	5,407,634	8.22	2689	1,081,503
2007	125.861	6.8	5,792,449	5.42	22	1,335,022
2008	118.861	6.3	4,596,145	15.10	45	909,543
2009	124.448	6.9	5,988,567	13.90	13817	1,170,993
2010	144.363	7.8	5,031,288	11.80	56,421.69	1,608,464
2011	146.201	4.9	487,375	10.30	899,262.20	151,209
2012	150.202	4.3	5,873,996	12.20	95,432.30	2,058,298
2013	148.452	5.4	4,387,019	8.5	1,141,604.5	2,175,388
2014	148.505	6.3	4,860,813	8.1	1,034,959.7	2,177,451
2015	197.91	5.9	5,926,513	9.60	1,503,120.8	1,503,776

SOURCE: NBS, CBN BULLETIN, 2016.