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Estimating Aggregate Import-Demand Function for Nigeria Revisited

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Abstract: *This study estimates the aggregate import demand function for Nigeria for the period of 1980 - 2010. Cointegration approach was implemented. While the error correction term in the estimated VEC model was evaluated for long run causal relationship, the short term coefficients were gauged for short term causal relationship between the explained and the explanatory variables. Results indicate: (i) the existence of an underlying long-run stationary steady state relationship between import demand and real exchange rates, world price index and disposable in Nigeria. (ii) Real exchange rates, world price index, disposable income and the structural adjustment policy, jointly significantly cause import demand on the long run in Nigeria with causality running from the explanatory variables to imports. (iii) In the short run, all the explanatory variables of interest, real exchange rate, world price index and disposable income, severally do not significantly cause import demand in Nigeria. These suggest that these variables may not be effective instruments for the management of developments in import demand index in the short run, rater, a long term comprehensive policy options may be more efficient and effective in the management of import demands in Nigeria.*
Keywords: *Co-integration, disposable income, Imports, Nigeria, Real exchange rates Trade liberalization*

I. Introduction

Stable nominal exchange rates are perhaps the single most important condition for transmission of domestic productivity improvements to gains in international competitiveness.The study by [1] (1975) investigate the behavour of Nigeria aggregate imports and argued that real income, relative prices and foreign exchange were the major determinant of total imports in Nigeria during the period 1960 to 1970. In this paper the aggregate import demand function in Nigeria is estimated using data for the period 1980 to 2010 and expanding the variables used by [1].

Specifically, the objective of this paper is to investigate the short run and long run causal relationship between aggregate imports and it's determinants on the basis of annual data for the period of 1980 to 2010. To determine whether there exists a long-run relationship between Nigeria's aggregate import value and its major determinants within the period under review. The hypothesis of the existence of a co-integration relationship between aggregate import and its major determinants is tested using co-integration technique developed by [2] to investigate the effects of Nigeria's exchange rate liberalization policy, occasioned by the structural adjustment programme of 1986, on its import demand function.

This paper at the end has exposed us to the fact that in Nigeria, short term policy measures are ineffective in the administration and regulation of import demands, but rather, it is advisable that comprehensive and strategic long term policy measures may be more appropriate for effective import control programme.For the purpose of this study, determinants of imports include: real exchange rate, disposable income and world price index for the period of 1980 - 2010. The choice of these variables was moderated by availability of the data.

Brief Review Of Related Literature

[3], estimated the import demand elasticities for 28 countries to investigate import responsiveness and its relation to three country characteristics: Per capita income, population and openness of trade as measured by the share of imports plus exports in gross national product (GNP). The empirical relationships are established by cross-country regression of income and price elasticities on per capital income. The result shows that the price elasticity of import demand increases significantly with a higher trade share for a given per capita income and population size. With respect to income elasticity they find that income elasticities of imports increase with income up to about $2,800 per capita and then decrease.

This pattern is explained by the modified Engel's Law which states that at a very low income levels, imports may consist of food and necessary intermediates which have less than unity elasticity, whereas at a higher income levels, more sophisticated investment goods and intermediate inputs are imported, that is, goods with higher income elasticities.[4], examined the determinants of aggregate imports and its major components

in Nigeria, using annual data covering the period between 1953 and 1989. Quantitative evidence indicates that short-run changes in the availability of foreign exchange earnings, relative price and real output significantly explain the growth of total imports during the period under investigation. Particularly striking is the short-run impact of foreign exchange availability, which is tied to long-run effect through a feedback mechanism. With respect to the components of imports, regression results show that the import of raw materials responded significantly to foreign exchange earnings, relative prices and industrial output through an error correction mechanism. Thus from the results, it is evidenced that in the absence of an increased domestic supply of raw materials, the growth of the industrial sector is expected to raise the demand for imported raw material. Findings also demonstrate that changes in raw material imports show a higher degree of responsiveness to the trade liberalization in the period under review.[5], possibly motivated by the result of earlier studies, decided to investigate the same phenomenon using a monetarist import demand model, thus incorporating excess supply of real money balance into the traditional import demand model. For him, the omission of monetary variables in the aggregate import demand model could lead to biased estimates. The empirical results of this estimate show that the relative prices and money supply significantly influenced imports demand in Nigeria for the period under consideration. The coefficients of real income in the alternative models attempted were not statistically significant even at 10% level.[6], use aggregate import demand function to investigate the behaviour of India during the period, 1971-1995. Johansen (1988) cointegration tests are employed to obtain the relevant cointegrating vectors. One cointegrating vector is detected and incorporated in the ECM. The aggregate import volume is rather price elastic with coefficient estimate being -0.47. The value of income elasticity of demand for import of two-year lag is greater than unity at 1.48, implying that the import demand changes more than proportionately to the charge in real GDP. Moreover, the estimated coefficient of the one-year lagged error correction term (ECT) is -0.12 which is of correct sign for adjustment in the short-run while disequilibrium occurs in the long-run. All the key estimated coefficients in the study are statistically significant at 5% level. [7], examined the long-run relationship between Malaysian real imports and the underlying components of final demand expenditure proxied by real final consumption expenditure, investment expenditure and exports-and relative prices during 1970-1988 via Johansen multivariate cointegration analysis. An ECM is estimated to evaluate the short-run responses of imports to its determinants. The result shows that only one cointegrating vector is found, which means that the partial elasticities of import demand with respect to consumption expenditure, investment expenditure and exports are 0.72, 0.78 and 0.385 respectively. The import price is fairly inelastic at -0.69. In the ECM estimation, it is discovered that the speed of adjustment implied by the one-period lagged ECT is -0.637, which is quite fast. The specification of ECM, dropped out the effect of final consumption expenditure as its effect is statistically insignificant to import.

[8], using a cointegration analysis estimated the aggregate demand function for Indian economy during the period 1971-1995. In the empirical analysis of the aggregate import demand function for India, cointegration and error correction modeling approaches are used. The results indicate that import volume cointegrate with relative import prices and real GDP. The econometric estimates of import-demand function for India suggest that import-demand is largely explained by real GDP, and is generally less sensitive to import price changes. Equally, import liberalization is found to have little impact on import demand in Indian context. Given that very few empirical investigations specifically examining the determinants of imports demand in Nigeria has been done, this current study is aimed at generating new information in this regard using a cointegration and error correction model approach. We employ Dutta et al (2006) methodology in their study of the import demand function for India with the extension of the variables to include nominal exchange rate.

Import Liberalization In Nigeria.

Prior to the Structural Adjustment Programme, the import regime of Nigeria was dominated by both quantitative restrictions on import and a highly protectionist import tariff structure. The anomalous import regime, among other factors, has been a major stumbling block for the sustained growth for an efficient industrial structure in Nigeria. The tariff structure was characterized by a very high or prohibitive tariff on final goods and a lower tariff on intermediate and manufacturing inputs. According to [9], a major premise of the World Bank/IMF oriented structural adjustment programme introduced in 1986 was that, when a country's access to international credit financing has binding limits exogenously determined by foreign sources of credit, a reform strategy that restructures the fundamentals of absorption become the way to sustainable economic growth.

In 1986, just before introducing the Structural Adjustment Programme (SAP), the Federal government reviewed existing import taxes and introduced new ones. Of particular significance was the import levy of 30% imposed on all imports with the exceptions of items of raw material and other related manufacturing inputs that are basics for export production. But at the wake of SAP, the 30% import duty introduced year ago was abolished; duties on imported items (except for capital goods) were reduced considerably, generally by between

5% and 60% points. But for imported capital goods, the reverse was the case as taxes on them were reviewed upward of 5-10% – 10-20%.

Furthermore, items in import prohibition list were reduced from 26 to 16 numbers [4]. More specifically, the following import policy reforms have been introduced in Nigeria from the inception of SAP.

- Excepting for a small list of negative items, import licensing has virtually been abolished.
- Import restrictions have become more of tariff based rather, than quantitative restrictions.
- Tariffs have been reduced in stages.

In all, there have been frequent changes in import control measures in Nigeria. This could be attributable to the conflicting objectives of raising revenue and maintaining favourable balance of payments, on one hand and the need to protect the import substitution industries, on the other. Import control measures during SAP were generally less restrictive than was the case during pre-SAP.

Import Orientation

To understand the prospects and problems resulting from import liberalization in Nigeria, it may be useful to look into some of the historical trends in terms of the import orientation, proxied by the ratio of aggregate imports of goods and services to the gross domestic products (GDP) and import penetration, proxied by the average aggregate imports to aggregate consumption expenditure. The data relates to six years before SAP (1980-1985) and ten years
of SAP (1986-2006). Import orientation and penetration ratios are as shown in TABLE 1in the appendix. We observed that import orientation declined from 18.23 percent in 1980 to 10.92 percent in 1985 and rose from 4.44 percent in 1986 to 17.35 percent in 1990 and bringing the value to 21.44 percentage point by2006 when SAP was officially abandoned in Nigeria.

Import Penetration

Another outcome measure of the effect of import liberalization policy is the import penetration ratio which reflects the average ratio of aggregate import to aggregate consumption. Import penetration probably presents a more reliable indicator of restrictive trade policy effect than import orientation ratio. This is for the fact that in most developing countries, it is imports of consumer goods that are most stringently restricted [10]. In tracing the trend, it was observed that the penetration ratio dropped from 31.67 in 1980 t0 10.20 percent in 1985 and rose from 12.23percent in 1986 to 29.68 percent in 1990 and bringing the value to 31.90 percentage points by the end of SAP in 2006.

II. Methodology

2.1 Model Specification

In modeling the aggregate import demand function for Nigeria, we follow the imperfect substitute model, in which the key assumption is that neither imports nor exports are perfect substitutes for domestic goods of the country under consideration [11]. Since Nigeria's imports volume aptly represents relatively a small proportion of the total world import demand (ie lacks market power in the global market), it may be quite realistic to presume that world supply of imports to Nigeria is perfectly elastic. This presumption appears to be realistic for Nigeria in the sense that because of its lack of market influence, the rest of the world economy may be able to increase its export supply to Nigeria, even without an increase in prices. This assumption of infinite import supply elasticity reduces our import demand model to a single equation.

Econometric investigations of import demand in general terms postulate that demand for imports is a function of relative prices and income, [11][8][12]. Studies by [13] and [14] suggest that in modeling an aggregate import demand function, the log-linear specification is preferred to the linear specification. On this premise, the long-run import demand function for Nigeria is specified as follows:

$$LM_t = \beta_o + \beta_1 LPW_t + \beta_2 LYD_t + \beta_3 LRER_t + \beta_4 DUMY_t + \varepsilon_t \qquad (1)$$

Where: M = real value of aggregate import demands
PW = world price index, YD = disposable income, RER = real exchange rate, DUMY = Dummy variable with value '1' for 1980 – 85, to indicate the era of quantitative restrictions through import licenses and tariff, and value '0' for 1986 – 2006, to represent the era of trade liberalization associated with SAP, ε = random disturbance term and L = natural logarithm.

The imports prices and disposable income are important variable in the above import demand model, reason being that the effectiveness of an import trade policy is a function of the degree of price and income elasticity. The quantity of import demanded has direct functional relationship with the import prices expressed in domestic currency and the prices of domestically produced import substitute. Owing to the fact that data on

the prices of domestically produced substitute are simply not available, researchers use a more general price index ie, the
wholesale price, the consumer price index, the GDP deflator etc; which by implication means that the bundle of goods covered in the domestic price index could differ substantially from those covered in the import unit value index [8]. The dummy variable has been introduced in the model to capture the effect of the structural break resulting from the introduction of Structural Adjustment Programme in 1986 on import demand. If the time series variables of LM_t, LPW_t, LYD_t and $LRER_t$ have unit roots, then we need to take the first difference of the variables as expressed in (2) in order to obtain the stationary series:

$$\Delta LM_t = \beta_o + \beta_1 \Delta LPW_t + \beta_2 \Delta LYD_t + \beta_3 \Delta LRER_t + \beta_4 \Delta DUMY_t + \varepsilon_t \qquad (2)$$

The (2) above ignores any reference to the long-run aspects of decision making, ie this procedure of differencing results in a loss of valuable "long-run information" in the data [15]. This issue is always addressed by the theory of co-integration by the introduction of an error-correction (EC) term. The error correction term lagged one period (EC_{t-1}) integrates short-run dynamics in the long-run import demand function to generate the general error correction model (ECM) as specified below:

$$LM_t = \beta_o + \sum_{i=0}^{n} \beta_{1i} \Delta LM_{t-i} + \sum_{i=0}^{n} \beta_{2i} LPW_{t-i} + \sum_{i=0}^{n} \beta_{3i} LYD_{t-i} + \sum_{i=0}^{n} \beta_{4i} LRER_{t-i}$$

$$+ \beta_5 EC_{t-i} + \beta_6 DUMY_t + \varepsilon_t \qquad (3)$$

Where EC_{t-1} = error-correction term lagged one period

The estimation procedures adopted in this paper are in three steps.

(1) Determine the order of integration of the variables by employing the Augmented Dickery-Fuller (ADF) and Philip-Perron (PP) unit-root tests,

(2) Results of the ADF and PP tests suggest that all the variables have unit root, leading us to the implementation of Johansen (1988) maximum likelihood method of cointegration to obtain the number of cointegrating vector(s) and finally;

(3) When the variables were found to be cointegrated, we now specified and implemented vector error correction model using the standard procedure.

III. Results and Discussion

To stem the problem of spurious regression, the time series property of the data series used in the specification and estimation of the models is tested. The stationary property of the data series is tested using the Augmented Dickey-Fuller (ADF) and Philip-Perron (PP) test procedures.

4.1 Unit Root Tests

To verify the suitability of the data for purposes intended, we implemented the ADF/Philips Perron (PP) unit root tests. Results indicate that all the variables are stationary at first difference, meaning that all the variables have unit root. At the instance of these results, we proceeded to test for possible cointegration among variables of interest using Johansen-Juselius approach.

4.2 Johansen Co integration Test

Following from the results obtained from the above unit root tests, we observe that all the four variables have unit root, meaning that the entire variables became stationary at first difference. To this effect, we go further and apply the Johansen (1988) co integration process. The results obtained are as presented below:

Table 2: Unrestricted Cointegration Rank Test (Trace)

Hypothesize No. of CE (s)	Trace Statistics	0.05 Critical Value	Prob. **
r = 0*	104.60	69.82	0.00
r □1*	64.31	47.86	0.00
r □2*	30.85	29.79	0.04
r □ 3	12.16	15.49	0.15
r □ 4	1.33	3.84	0.25

Trace test indicate 3 cointegrating eqn(s) at the 0.05 level
*denotes the rejection of the hypothesis at the 0.05 level
** Mainnon-Haug-Michelis (1999) p-value

Notes:(i) The test was performed using E view, Version 8
(ii) "r" stands for the number of co integrating equations.

In TABLE 2 above, results of the trace test are reported. Beginning with the null hypothesis of no co integration (r = 0) among the four variables of LM, LNER, LPW, LYD, DUMY, the results suggest (r =3). These lead us to conclude that there are three co integrating relations among the variables and the rejection of the null hypothesis of no co-integration, in favor of three co integration at a 5 percent level of significance. This confirms the existence of an underlying long-run stationary steady state relationship between dependent and explanatory variables in logarithm. This suggests that the dependent variable trend together with the independent variables for long time frame.

Table 3: Estimation of Long-run Conintegration Vectors (Linearised)

LM	LNER	LPW	LYD	DUMY
1.00	**-0.629891** **(0.23732)**	**2.345472** **(01.57855)**	**-0.304384** **(1.94286)**	**-4.794869** **(0.99842)**

Notes: 1. the long-run equation or equilibrium relation is:

LM = -0.629 LNER + 2.345LPW – 0.304LYD – 4.795DUMY

2 Figures in brackets ( ) represent standard errors.

The value of the coefficient of the dummy variable is appropriately signed and statistically significant, meaning that in the long run, SAP must have achieved one of its cardinal objectives of significant reduction in import demand through exchange rate depreciation. This suggestion is corroborated by the appropriate negative signing of the value of nominal exchange coefficient. The inappropriate positive sign of the value of world price index coefficient, though inconsequential, may indicate Nigeria as lacking market power in the global market and may suggest that demand for imports is relatively nonresponsive to foreign price adjustments. This is quiet normal for a country like Nigeria with substantial import orientation ratio. In further support of the result, for Nigeria, a relatively small open economy, with no market power, foreign economies can afford to export as much quantity of their product to Nigeria even at a constant export price [16]. Furthermore, this clearly reflects the observed scenario in Nigeria's import and exchange rate index where the both variables are positively correlated, which is an indication that import appear to be insensitive to prices adjustments. This scenario is in disagreement with earlier findings of [17], that high price elasticity is found in import demand function for Nigeria, but in agreement with [4], who observed that import demand response to relative import price adjustments is inconsequential.

Finally, the positively signed coefficient of the world price index may equally suggest that most of the import demands are essential consumption goods and services which may be nonresponsive to price developments, rather, the demand for such goods and services may attract government subvention to ensure sustainability of such imports in times of price increase.

The negative sign assumed by the value of the coefficient of disposable income variable, though equally insignificant, is inappropriate. This may not present impossibility, because where import restriction policy is complemented with effective and successful export promotion policies, which may include substantial increase in the production of cheaper import substitutes, the additional disposable income may be invested import substitute goods and services instead of imports. This may affect import demand negatively.

4.3 Vector Error Correction Model Estimation

With the confirmation of the existence of an underlying long-run stationary steady state relationship between dependent and explanatory variables in logarithm, suggest that vector error correction model is specified and implemented. This enables us to evaluate the model for possible existence of long run and short run causality between the explained and explanatory variables. To this effect, the VEC models of interest are estimated and the results as presented in table 4 below obtained.

Table 4: Results of the VEC Model Estimatation

D(M) = C(1)*(M(-1) + 2.34547167222*PW(-1) - 0.629890861654*RER(-1) - 0.304383565188*YD(-1) - 4.79486909146*DUMY(-1) - 9.20046860887) + C(2)*D(M(-1)) + C(3)*D(M(-2)) + C(4)*D(PW(-1)) + C(5)*D(PW(-2)) + C(6)*D(RER(-1)) + C(7)*D(RER(-2)) + C(8)*D(YD(-1)) + C(9)*D(YD(-2)) + C(10)*D(DUMY(-1)) + C(11)*D(DUMY(-2)) + C(12)

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	**-0.203405**	**0.072975**	**-2.787305**	**0.0132**
C(2)	**-0.260454**	**0.224727**	**-1.158981**	**0.2635**
C(3)	**0.063440**	**0.231221**	**0.274368**	**0.7873**
C(4)	**0.348044**	**0.970765**	**0.358526**	**0.7246**
C(5)	**-1.032281**	**0.986868**	**-1.046017**	**0.3111**
C(6)	**-0.120309**	**0.173490**	**-0.693460**	**0.4980**

C(7)	**-0.229786**	**0.166324**	**-1.381556**	**0.1861**
C(8)	**-0.509666**	**1.458352**	**-0.349481**	**0.7313**
C(9)	**0.487026**	**1.131821**	**0.430303**	**0.6727**
C(10)	**-0.078256**	**0.416858**	**-0.187728**	**0.8534**
C(11)	**-0.147507**	**0.283968**	**-0.519450**	**0.6106**
C(12)	**0.414037**	**0.158509**	**2.612072**	**0.0189**
R-squared	**0.605695**	**Mean dependent var**		**0.207768**
Adjusted R-squared	**0.334610**	**S.D. dependent var**		**0.259817**
S.E. of regression	**0.211936**	**Akaike info criterion**		**0.032465**
Sum squared resid	**0.718672**	**Schwarz criterion**		**0.603409**
Log likelihood	**11.54550**	**Hannan-Quinn criter.**		**0.207008**
F-statistic	**2.234335**	**Durbin-Watson stat**		**2.015181**
Prob(F-statistic)	**0.070026**			

Note: The estimation was performed using Eview Econometric Package version 8.0
In the estimated model, the results show $AdjR^2$ (goodness of fit) of 0.33.46. This means that the sum effect of the explanatory variables explained only 33.46 percent of the variation in dependent variable. This low goodness of fit must have accounted and corroborated the non significance of the F-statistic value of 2.23 with the P-value of 7%. This suggests that the independent variables failed to jointly significantly influence the dependent variable. The Durbin-Watson stat value of 2. 015, indicates absence of serial correlation in the estimated model.

4.3 Testing For Long Run Causality In The VEC Model

We evaluate the value of the speed of adjustment which is the error term lagged one period (EC (-1)) for the long run causal relationship between the dependent and independent variables. For the null hypothesis of "no long run significant associationship between the dependent and independent variables" within the period under review to be rejected, the coefficient of the EC(-1) must be (a) fractional, (b) negative and (c) significant at 5 percent level. The value of the coefficient of EC (-1) is -0.2034 with the P- value of 0.013, meaning that we reject the null hypothesis at the instance of the decision rules and conclude that the independent variables, real exchange rates, World price and consumers disposable incomes in collaboration the liberalization policy, jointly significantly cause import demand on the long run in Nigeria with causality running from the explanatory variables to import demand within the period under review.

4.4 Testing For Short Run Causality In The VEC Model

The short run causality is investigated using the results of the short equation of interest as shown in table 2 above implement Wald Test-Coefficient Restriction approach.

4.4.1 Implementing Wald Test For Short Run Causality

Results of the Wald tests-coefficient restrictions to investigate for the existence of significant short run causality between import demand and its determinants in Nigeria within the period under review are as presented in TABLE 5 in the appendix. The null hypothesis tested is that LRER, LWP and LYD jointly do not significantly influence import demand in Nigeria using the short run coefficients of equation 1 in the VEC model as estimated and presented in TABLE 4 above. The null hypothesis suggests that there is no significant short run causal relationship existing between import demand and any of its function in Nigeria.

Decision Rule

If the value of the coefficient of any explanatory variable is equal to the coefficients of its differing lags and all equated to zero, provides evidence of non causality existing between such a variable and the dependent variable. This expressed in equation form means that in a biX function, where bi = the value of the coefficient of the variable X, this concept is expressed in equation form as bi=bi (-1) =bi (-2) =…=bi (-n) =0. Using coefficient diagnostic approach, we implement Wald Test- coefficient Restriction estimations of the variables (a) If the P-Value of the Chi-Square value is less than 5 percent, reject the null hypothesis, meaning that there exist significant short run causal relationship between the variable in question and the dependent variable. (b) If the P-Value of the Chi-Square of the test is higher than 5 percent, then don't reject the null hypothesis, meaning that there is no significant short run causal relationship existing between the variable in question and the dependent variable. The abridged results of the Wald Test as presented in TABLE 5 in the appendixii are presented thus: LM, c (2) = c (3) = 0, the P-value of the Chi-Square of 1.485 = 48%
LRER, c (4) = c (5) = 0, the P-value of the Chi-Square of 2.045=36%
LPW, c (6) = c (7) = 0, the P-value of the Chi-Square of 1.096 =58%
LYD, c (8) = c (9) = 0, the P-value of the Chi-Square of 0.272 = 87%

DUMY, c (10) = c (11) = 0, the P-value of the Chi-Squares of 0.285 =87%
The results show that for all the variables, the P-values of the Chi-Squares are all greater than 5%. This suggests that at the instance of the decision rule, we cannot reject the null hypothesis, meaning that in the short run, all the explanatory variables of interest, real exchange rate, world price index, disposable and deregulation policy occasioned by the structural adjustment programme of 1986 severally do not significantly cause import demand in Nigeria within the period under review. This by implication indicates that these variables are not good predictors of import demand in Nigeria, meaning that the variables should not be intended for use in the management of developments in import demand index in the short run.

IV. Summary of Findings and Conclusions

4.1 Summary Of Findings

The aggregate import demand model was estimated to examine the Causal effect of exchange rate liberalization policy, occasioned by the structural adjustment programme of 1986, on the import demand function of Nigeria. The results indicate as follows:

i The cointegration test confirms the existence of an underlying long-run stationary steady state relationship between import demand and real exchange rates, world price index and disposable in Nigeria, meaning that the dependent variable trend together with the independent variables for long time frame.

ii Evaluation of the value of the speed of adjustment which is the error term lagged one period (EC (-1)) for the long run causal relationship between the dependent and independent variables indicated that real exchange rates, world price index, disposable income and the structural adjustment policy, jointly significantly cause import demand on the long run in Nigeria with causality running from the explanatory variables to import demand within the period under review.

iii The results of the Wald Tests reveal that in the short run, all the explanatory variables of interest, real exchange rate, world price index, disposable and deregulation policy occasioned by the structural adjustment programme of 1986 severally do not significantly cause import demand in Nigeria within the period under review. This suggests that these variables may not be effective instruments for use in the management of developments in import demand index in the short run in Nigeria.

V. Conclusions

This study is designed to estimate the aggregate import demand model to enable us examine the Causal effect of exchange rates liberalization policy on the import demand function of Nigeria. Cointegration approach was implemented. While the error correction term in the estimated VEC model was evaluated for long run causal relationship, the short term coefficients were gauged for short term causal relationship between the explained and the explanatory variables. Results indicate:

(i) the existence of an underlying long-run stationary steady state relationship between import demand and real exchange rates, world price index and disposable in Nigeria.

(ii) Real exchange rates, world price index, disposable income and the structural adjustment policy, jointly significantly cause import demand on the long run in Nigeria with causality running from the explanatory variables to imports.

(iii) In the short run, all the explanatory variables of interest, real exchange rate, world price index, disposable and deregulation policy, represented by dummy variables, severally do not significantly cause import demand in Nigeria. These suggest that these variables may not be effective instruments for use in the management of developments in import demand index in the short run, rater, a long term comprehensive policy options may be more efficient and effective in the management of import demands in Nigeria.

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Appendix I

Table 1: Import Orientation and Import Penetration Ratios for Nigeria, 1980 - 2006

	IMPORT ORIENTATION	**IMPORT PENETRATION**	**EXPORT ORIENTATION**	**EXPORT PENETRATION**
Year	Aggregate imports as % of GDP	Aggregate Imports as % of Aggregate Consumption Expenditures	Aggregate Exports as % of GDP	Aggregate Exports as % of Aggregate Consumption Expenditures
BEFORE SAP, 1980 - 85				
1980	18.23	31.67	28.46	38.94
1981	25.51	32.79	22.62	27.87
1982	20.71	24.79	18.40	22.18
1983	15.44	14.80	13.94	16.27
1984	11.34	9.26	15.01	17.40
1985	10.92	10.20	16.70	19.68
SAP Period,1986 - 2006				
1986	4.14	12.23	12.90	14.80
1987	14.44	19.20	27.56	35.01
1988	14.74	15.07	22.00	26.12
1989	13.71	25.17	42.24	63..77
1990	17.35	29.86	43.19	67.51
1991	23.54	32.46	40.07	55.20
1992	23.76	30.77	35.81	46.37
1993	24.76	30.73	32.60	40.47
1994	18.60	21.75	23.74	27.76
1995	24.38	28.94	34.32	40.74
1996	25.23	28.37	30.20	33.96
1997	34.69	39.13	39.04	44.13
1998	35.66	34.70	26.17	25.46
1999	21.92	32.76	49.68	74.25
2000	18.61	34.25	58.85	108.30
2001	36.70	44.13	45.87	55.15
2002	27.42	32.47	35.97	42.60
2003	35.43	41.33	39.79	46.41
2004	18.29	23.99	30.16	39.57
2005	19.09	23.29	31.66	38.62
2006	21.44	31.90	45.96	68.39

Appendix II

Table 5 Results of the Wald Tests for Short Run Causailty

Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	1.022413	(2, 16)	0.3821
Chi-square	2.044826	2	0.3597

Null Hypothesis: C(4)=C(5)=0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(4)	-0.120309	0.173490
C(5)	-0.229786	0.166324

Restrictions are linear in coefficients.

Wald Test:
Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	0.548111	(2, 16)	0.5885
Chi-square	1.096222	2	0.5780

Null Hypothesis: C(6)=C(7)=0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(6)	0.348044	0.970765
C(7)	-1.032281	0.986868

Restrictions are linear in coefficients.

Wald Test:
Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	0.142375	(2, 16)	0.8684
Chi-square	0.284750	2	0.8673

Null Hypothesis: C(8)=C(9)=0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(8)	-0.078256	0.416858
C(9)	-0.147507	0.283968

Restrictions are linear in coefficients.