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IMPORTS UNDER FOREIGN EXCHANGE CONSTRAINTS IN NIGERIA:A CO-INTEGRATION ANALYSIS

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ABSTRACT

This study emplos a structural econometric model of aggregate imports which incorporate exogenous prices to explain import behaviour in Nigeria relative to foreign exchange availability. Traditional models estimate import demand as a function of relative prices (the real exchange rate), and income (gross domestic product), but omit changes in foreign exchange level. In the 1980's, Nigeria experienced declines in foreign lending and increased debt service costs. These tended to reduce foreign exchange availability and limited the import capacity of Nigeria. This same approach was used by Moran (1987) for the developing and the developed countries from 1970 – 1983. Three models were tested to determine the superiority of one over others. These models include- General Model, Traditional Model and Hemphill Model. Based on the f-test, the general import model performed better than the other two and this model was used to test comprehensively and analyze import behaviour in Nigeria. The general import model equation 12 was used to test import behaviour for Nigeria. The results obtained using model 12 suggest that although price and income effects are important in the analysis of import behaviour in Nigeria, foreign exchange constraints also play a crucial role in determining import demand, as it strongly affects import volumes.

KEY DESCRIPTORS: Import Demand, Foreign Exchange, Cointegration Analysis, Exogenous Prices

INTRODUCTION

Imports, according to Aydin (2004), are mostly affected by the real exchange rate. According to him, real exchange rate is a significant determinant of imports and the trade deficit. He went further to reveal that the real exchange rate is a determinant of current account which indicates that the effects of the real exchange rate on trade deficit basically operate through the imports.

To assess macroeconomic adjustment programs, there is the need for government or policy makers to estimate import demand relative to the foreign exchange availability. Goldstein and Khan (1985) revealed that trade models have been very important tools in the analysis of policy packages to deal with macroeconomic imbalances. According to him, these types of models have received very good attention in the economic literature.

Moran (1987) pointed out that the traditional import models that linked imports to domestic output and relative import prices, worked well for industrial countries that are not constrained by foreign exchange. Mirakhor and Montiel (1987) on the other hand pointed out that the traditional model has not yet been proven to be useful in explaining slump in imports of developing countries that are short of foreign exchange.

Emran and Forhad (2001) in their studies emphasized that the econometric estimates of price and income elasticities of imports (both aggregate and disaggregate) are critical inputs to important policy analysis such as the calculation of equilibrium exchange rate, the design of optimal trade taxes and the estimation of the fiscal implications of trade liberalization. The changing trade and exchange rate policies have critical bearings on the econometric modeling of aggregate imports as they determine a country's overall capacity to import.

Emran and Forhad (2001) analyzed the aggregate imports of Sri Lanka by using a structural econometric model of a two goods representative agent economy that incorporates binding foreign exchange constraint at the administered prices of imports. By parameterizing the Lagrange multiplier associated with the binding foreign exchange constraint in terms of the ratio of income to foreign exchange resources available to a country, the model according to them, avoids the pitfalls of both traditional and foreign exchange availability models. They came to the conclusion that an appropriate treatment of the policy regime in a country is of paramount importance for reliable estimates of the price and income elasticities of import demand.

In the 1980's imports in developing countries were constrained by shortages of foreign exchange (Moran, 1987). In order to adjust to these shortages, governments in the third world used different policy measures. These include changes in the exchange rate and the imposition of tariffs and other barriers that could affect the domestic prices of imports and thereby affect import demand. These factors according to him should be incorporated in models developed to estimate the level of import demand: without them according to him, the results will be biased due to the omission of relevant variables, or due to the simultaneity of import volumes and relative import prices.

The main conclusions arrived at by Moran were as follows:

- Although price and income effects are important in the analysis of import behaviour in developing countries, foreign exchange constraints also play a critical role in the determination of imports. This is because, they strongly affect import volumes. and;
- Since governments are likely to increase domestic prices of imports in the face of these constraints, import demand estimation should also account for the endogeneity of these prices. Import models that neglect either of these factors will yield biased estimates for developing-country imports.

According to him, an import implication of his results is that policy makers willing to increase imports in developing countries should look to a broader set of policies than those traditionally considered (fiscal and monetary policies that affect income, or exchange rate policies that affect relative prices). According to him, those broader policies should focus on increasing available foreign exchange.

A decline in foreign exchange availability brings about significant macroeconomic adjustments. If a country is unable to adjust to external circumstances, and the country in question is having much higher level of external debt relative to her export earnings, this will lead to a sharp decrease in imports. As import decreases, investment will be adversely affected, and also the per capita output might stagnate.

Moran (1987) recommended that policy makers need to fashion out a strategy that will promote growth without a significant negative effect on trade balance.

The problem of import under foreign exchange constraint has been analysed in economic literature by different authors using different models. Hemphill (1974) made use of the Hemphill model. Chu et al (1983) also made used of the Hemphill model but with some modifications. Khan and Ross (1977), Thursby and Thursby (1984), made use of the traditional import model. Moran (1989) made use of the general import model to analysis import behaviour under foreign exchange constraint.

Moran's (1989) approach, even though is similar to that of Hemphill (1974) was with some modifications. Moran's procedure differs from that of Hemphill in the sense that Moran incorporated traditional variables i.e. relative prices and domestic income, with the variables used by Hemphill i.e. foreign exchange receipts and international reserves. Moran approach according to him, avoid biases due to the omission of relevant variables, or due to the simultaneity of import volumes and relative import prices.

Moran in his study arrived at two main principal conclusions:

- Moran stated that, even though price and income effects are important in the analysis of import behaviour in developing countries, foreign exchange constraints also play a critical role in determining imports. According to him, they strongly affect import volume.

- He stressed that since governments are likely to increase domestic prices of imports in the face of constraints, import demand estimation should also account for the endogeneity of the prices. Import models that neglect either of these factors will yield biased estimates for developing country imports. He stressed further that the imports implication of his results is that policymakers willing to increase imports in developing countries should look to a broader set of policies that those traditionally considered (fiscal and monetary policies that affect income or exchange rate policies that affect relative prices).

The broader policies according to him should focus on increasing available foreign exchange.

THEORETICAL FRAMEWORK

As imports declined, investment deteriorated, and per capita output stagnated or dropped (Moran 1987). In the face of the above, the policymakers have struggled to devise strategies that promote growth without a significant deterioration n their trade balances. For them to do this, they must be able to predict the response of imports to external and domestic shocks in the presence of foreign exchange constraints. In economic literature, there are several models proposed to analyse the above situation. There is the Hemphill's model, expanded by others. There is the general import model with exogenous prices and also an alternative derivation of the general import model with exogenous prices, and third, a general import model with endogenous prices.

(1) A General Import Model with Exogenous Prices

i. The first objective of this import model is to minimize the deviations of current imports in the presence of foreign exchange constraints from the long-run equilibrium import level.

ii. To minimize the deviation of actual imports from the short-run desired import level. Moran (1987) following Hemphill (1974) used an explicit quadratic cost function written as:

$$C_t = \beta_1(m_t - m_t^*)^2 + \beta_2(r_t - r_t^*)^2 + \beta_3(m_t - m_{t-1})^2 + \beta_4(m_t - m_t^d)^2 \quad \text{- - - - -} \quad (1)$$

where:

m_t = actual volume of import at a point in time.

m_t^* = long-run import volume

r_t = current level of international reserves

r_t^* = the long-run level of real international reserves

m_t^d = short-run national or desired level of import volumes.

The long-run level of international reserves is assumed to be positively related to the long-run import level which reflected in a simple linear function as:

$$r_t^* = \Pi_0 + \Pi_1 m_t^* \quad \text{- - - - - -(2)}$$

where:

$0 \leq P_t \leq 1$

In the short-run, international reserves and import level variables are linked through the balance of payments identity as:

$\Delta r_t = f_t - m_t$ - - - - -(3)

where:

= first difference

f_t = current level of real foreign exchange receipts.

The short-run desired import demand curve m^d_t could also be written as a simple linear function of relative import prices and real gross domestic product as:

Δ = $\alpha_0 + \alpha_1 (^{PM}/_P)_t + \alpha_2 y_t$.....4

$\alpha_1 \leq 0$; α_2 ³ 0

where: PM_t = level of import prices

P_t = aggregate price index of domestic goods

y_t = real scale variable

α_1 & α_2 = price and income semi-elasticities of import demand respectively.

According to Moran, in order to close the model, an explicit assumption is needed about the long-run level of foreign exchange receipts . f_t^*

(2). According to Hemphill's assumption:

$$f_t^* = f_t + \lambda \Delta f_t = (1+\lambda) f_t - \lambda f_{t-1}$$

- - - - - (5)

λ = How changes in foreign exchange receipts are perceived.
If changes are perceived to be permanent, l = Positive
If transitory, l = Negative

λ = positive is changes are period to be permanent then the changes is extrapolated.

λ = negative is changes are perceived to be transitory. In this case the changes is discounted.

In the empirical estimation, according to Moran, (l) could not be properly identified. In Moran study, (l) was taken to be equal to zero in order to simplify the presentation. To take l = 0 means that the current level of foreign exchange receipts was taken as proxy for the long-run level. This same assumption was also adopted by Sundararajan (1986).

Now, substituting equations 2 and 4 into equation (1) and also taking into consideration that:

$\frac{m_t^*}{f_t^*} = 1$, then we can derive the import equation (1) subject to the constraint imposed the by equation (s) in order to obtain equation (6) which is written as:

$$m_t = k_0 + k_1 f_t + k_2 r_{t+1} + k_3 m_{t-1} + k_4 (pm/p)_t + k_5 - y_t \quad \text{---(6)}$$

The difference between this model and that of Hemphill is that equation 6 incorporated relative import prices and domestic income into the import decision. Equation 6 is the import model commonly used in the literature. This model was also used in this study based on the fact that it incorporated variables capturing the stringency of foreign exchange constraints and relative prices and income. If these are not captured, the estimates are likely to be biased.

(3). The Traditional Import Models that Ignores the Presence of Foreign Exchange Constraints.

This model could be obtained by making $k_1 = k_2 = 0$. That is:

$$m_t = a_0 + a_1(PM/P)_t + a_2 y_t + a_3 m_{t-1} \quad \text{-----} \quad (7)$$

$$a_1 \leq 0 \qquad a_2 \, {}^3 \, 0, \quad 0 \leq a_2 \leq 1$$

where:

a_0 = Intercept

a_1 a_2 = the short-term price and income semi-elasticities of import demand.

$a_1/(1-a)$, $a_2/(1-a_3)$ = the corresponding long-run semi-elasticities (Moran, 1987).

In the case of Hemphill (1974), his own model ignores relative prices and domestic income. Hemphill model is more or less the opposite of that of Moran in the sense that while Moran incorporated relative import prices and domestic income into the import decision, Hemphill on the other hand ignores these. To obtain Hemphill's model, the following assumptions were made:

(i) k_4 in equation (6) equated to k_5 and equated to zero

$\therefore$ $k_4 = k_5 = 0$

or $k_4 = 0$

$k_5 = 0$

$\therefore$ Hemphill model is written as

$$m_t = k_0 + k_1 f_1 + k_2 r_{t-1} + k_3 m_{t-1} \quad \text{-------} \quad (8)$$

where

$k_a = k_5 = 0$

This means that price elasticity and income elasticity of import demand equal zero. That is:

If $k_4 = k!_4$ $\qquad$ $a1 \leq 0$

If $k_5 = k_4$, $\qquad$ $a_2, \geq 0$

Since imports are equal to domestic consumption minus domestic production, the theoretical income semi-elasticity (a_2) can attain negative values. This can occur if domestic production is more income-elastic that domestic consumption (Moran 1989 p 281)

ANALYTICAL FRAMEWORK AND METHODOLOGY

Empirical Estimation of the model

The study estimates the import equations as laid out in the theoretical section (equations 6 – 8).
That is

$$m_t = k_0 + k_1.f_1 + k_2r_{t-1} + k_3m_{t-1} + k_4(PM/P)_t + k_5y_t \quad \text{-----} \quad (9)$$

$$m_t = a_0 + a_1(PM/P)_t + a_2y_t + a_3m_{t-1} \quad \text{------} \quad (10)$$

Equation (10) above is the traditional import model that ignores the presence of foreign exchange constraint. Equation (11) was also estimated which is the Hemphill version of import model that ignores relative prices and domestic income. Equation (11) is written as $m_t = k_0 + k_1f_1 + k_2r_{t-1} + k_3m_{t-1}$..... (11). These equations were estimated in their log-linear forms as

$$\ln m_t = k_0 + k_1\ln f_1 + k_2\ln r_{t-1} + k_3\ln m_{t-1} + k_4\ln (PM/P)_t + k_5\ln y_t \quad ....(12)$$

$$\ln m_t = a_0 + a_1\ln(PM/P)_t + a_2\ln y_t + a_3\ln m_{t-1} \quad .....(13)$$

$$\ln m_t = k_0 + k_1\ln f_1 + k_2\ln r_{t-1} + b_3\ln m_{t-1} \quad .....(14)$$

The log-linear estimation has been supported by several authors such as (Khan and Ross, 1977; Thursby & Thursby, 1984)

They gave two reasons why the log-linear is justified.

Earlier studies that estimated the traditional import equation reported that the log-linear specification is more appropriate.

That the log-linear specification simplifies the interpretation of the estimated coefficient. This is because the coefficients will be interpreted as elasticities.

In estimating the import model for Nigeria, for instance, the study made use of time series data for twenty three years that is, between 1980-2002 period. Import behaviour was estimated for Nigeria.

METHODOLOGY

Objective

The main objective of the study was to interpret the interaction of the variables affecting import demand and the capacity to import.

Hypothesis

The hypothesis to be tested is:

H_0: Import demand does not respond to a unit change in price and income.

H_1: Import demand responds to a unit change in prices and incomes.

Following from section one above, section two provides import models theoretically. Followed by the estimation of the three models empirically and the estimation of the preferred model. The last section reported the summary, conclusion and the recommendations.

This study used annual data for the period 1980-2002.

Sources of Data

The data used for this study were sourced from;

i. Central Bank of Nigeria (CBN) annual report and statements of accounts (various issues)
ii. Central Bank of Nigeria (CBN) Statistical Bulletin (various issues).
iii. Federal Office of Statistics (FOS) Annual Abstract of statistics (various issues).
iv. International Monetary Fund (IMF) Book (various issues).

Types of Data

m_t = Imports of goods and non-factor services in Nigerian naira

Pm_t = Merchandise import deflator in Nigerian naira calculated by the CBN based on disaggregated import data at the country level.

P_t = GDP deflator in Nigerian naira obtained from CBN national account database

y_t = GDP at market prices in constant naira, obtained from the CBN national ac count database.

r_t = End-year stock of international reserves, obtained from the CBN Balance of payments database deflated by Pm_t.

f_t = Foreign exchange receipts

= exports of goods and non-factor services + net factor income + net transfers + capital inflows (including direct private investment, long-and short-term loans, plus errors and omissions, obtained from the CBN balance of payments database deflated by Pm_t.

The method of analysis was the OLS method. The long-run stability of the variables used was tested by making use of unit root test, the cointegration and the error correction models. The scope of the study was 1980-2002

The Time-Series Characteristics of the Variable

In order to avoid the possibility of spurious regressions, it becomes very important to check whether the variables are stationary or not before running the regression for the import models specified in equation 9. To test for stationarity, the study adopted the Augmented Dickey-Fuller (ADF) 1989 unit root test.
The regression equation is in the form:

$$\Delta X_t = \alpha_0 + \alpha_1 X_{t-1} + \alpha_2 \Delta_{t-1} + \alpha_3 t + e_1$$

The test for unit root is a test on the coefficient of X_{t-1} in the regression. The Mackinnon critical values give the critical values for the determination of the order of integration. The null hypothesis of the existence of a unit root is stated as
H_0: X_{t-1} (1)
If the Mackinnon critical value is less than the ADF test statistics, then we reject the null hypothesis that X_t contains a unit root and the alternative hypothesis is accepted that X_t is stationary and vice versa. Where it was discovered that the variables were non-stationary, they were differenced (d) times in order to make them stationary. The study also investigated whether there is co-integration among the variables within the framework established by Johansen.

Empirical Results

The three equations were tested in order to capture the explanatory power of the equations. The result of this is contained in table 1.The coefficients of the three models have their expected signs and they are statistically significant (at 10% level).
The coefficient of the foreign exchange and reserves i.e (b_1 and b_2) in the Hemphill and are higher than that of the general import model. Also, price and income coefficients (b4 and b5) in the traditional model are higher than their counterparts in the general import model. This outcome might not be too surprising in the sense that, when foreign exchange constraints, are explicitly considered, imports demand might be less responsive to variation in the real exchange rate.

This is because import restrictions dampen the transmission mechanism of relative prices. In order to capture the explanatory power of the general import model and the two other models (Hemphill and Traditional), the conventional F-test was performed (See table 1 Col 9). The F-test proved that the general model dominates the traditional model and the Hemphill model very strongly in all cases. The important reason for this outcome is that, the general model contains as special cases, the Hemphill and the traditional model.

The same reason was also confirmed by Moran (1989). In light of the above discussions, the general import model (equation 12) was adopted for analyzing the response of import behaviour to a limit change in price or income under foreign exchange constraint.

Table 1: Estimation of Equations 12-14

	b_0	B_1	B_2	b_3	b_4	b_5	R^2	F-Tests
General	-0.46 (-0.73)	0.50 (7.28)	0.03 (2.01)	0.19 (3.02)	-0.01 (-0.34)	0.21 (2.01)	0.989	684.3
Hemphill	0.11 (0.20)	0.54 (8.17)	0.03 (1.92)	0.22 (3.21)	-0.05 (-0.42)	0.29 (1.98)	0.990	521.4
Traditional	0.37 (0.61)	-	-	0.46 (4.61)	-0.39 (-1.02)	0.72 (2.63)	0.921	276.5

Source: The output of OLS statistical package SPSS technique

Equation 12 was estimated. The need to verify the time series characteristics of the variables used in the models prompted a step-by-step approach in the analysis of the empirical results obtained for the models.

Table (2) present the results of stationarity test for all the variables used. After comparing the ADF value against the Mackinnon critical value at 1%, the null hypothesis was accepted since the reported statistic is greater than (one tail test) the critical values. The results show that when expressed in levels, none of the variables were found to be stationary. Differencing once shows that the variables became stationary except YT which was differenced twice before achieving stationarity.

Table 2: Results of Tests of Stationarity (ADF Unit Root Tests) for the Levels of the Variables

Variable	ADF Value	Mackinnon critical value at 1%	No. of Lags
FT	-0.209919	-3.7667	1
LAG MT	0.014933	-3.7667	1
LAG RT	0.200720	-3.7667	1
PMPT	-2.139535	-3.7667	1
YT	0.447809	-3.7856	2
MT	-0.228268	-3.7667	1

Table 3: Results of Tests of Stationarity for the Differences of the Variables

Variable	ADF Value	Mackinnon critical value at 1%	Order of Integration	No. of Lags
(FT)	-6.123333	-3.7856	1(1)	1
(LAG MT)	-5.301489	-3.7856	1(1)	1
(LAG RT)	-5.148602	-3.7856	1(1)	1
(PMPT)	-6.152528	-3.7856	1(1)	1
(YT)	-4.022755	-3.8572	1	2
(MT)	-6.871950	-3.7856	1	1

Table 4 below presents the results of the Johansen Cointegration test. Looking at the likelihood ratios as compared to the critical values at 5%, we reject the hypothesis that there is no cointegrating vector or the existence of at most one cointegrating vector. The results show that there are two cointegrating equations (vectors) in the set of normalized cointegrating vectors. These two cointegrating vectors are presented in table (5). This test reveals the existence of equilibrium condition that keeps the variables in proportion to each other in the long-run. In this case, there is need to set up a parsimonious error correction model (ECM) that will introduce dynamism into the model.

Table 4: Results of Johansen Cointegration Test Sample: 1980-2003 Included Observations

Test assumption: Linear deterministic trend in the data. Series' Log (Lag GMT) log (FT) log (LAGRT) log (PMPT) log (YT)

*(**) denotes rejection of the hypothesis at 5% (1%) significance level.

Eigen Value	Likelihood Ratio	5% critical value	1% critical value	Hypothesized No. of CE(s)
0.881410	92.79966	68.52	76.07	None
0.689716	50.15804	47.21	54.46	At most 1
0.621901	26.75271	29.68	35.65	At most 2
0.289046	7.300596	15.41	20.04	At most 3
0.023604	0.477736	3.76	6.65	At most 4

Source: Extracted from E-views computer output.

LR tests indicates 2 cointegrating equations at 5% significance level.

Table 5: Normalized Cointegrating Coefficients: Two Cointegrating Equations

Log (LAGMT)	Log (FT)	Log (LAGRT)	Log (PMPT)	Log (YT)	C
1.000000	0.000000	0.356057 (0.31301)	2.969066 (1.13400)	-18.75441 (4.21294)	74.09949
0.000000	1.000000	0.167773 (0.24153)	3.021012 (0.87505)	-16.23987 (3.25090)	63.95219

Log likelihood 51.83485

Table 6: Modeling Imports Under a Foreign Exchange Constraint by Ordinary Least Square: (A dynamic or overparameterized Error Correction Model) Summary of Estimated Equations (1980 – 2002)
Dependent Variable: log (MT)
Method: Least Square
Sample (adjusted): 1981 – 2002
Included observations 22 after adjusting endpoints

Variable	Coefficient	Std. Error	t-statistics	Prob.
C	0.113590	0.059882	1.896916	0.0822
D log (LAGMT)	0.358469	0.102434	3.499503	0.0044
D Log (FT)	0.454450	0.091864	4.946973	0.0003
D Log (LAGRT)	0.037762	0.053086	0.711330	0.4905
D Log (LAGRT(-1)2)	0.110426	0.040011	2.759865	0.0173
D Log (PMPT)	0.487718	0.102864	4.741384	0.0005
D Log (YT)	-3.241504	1.241822	-2.610280	0.0228
D Log (-1)	-0.001139	0.000415	-2.743810	0.0178
R-squared	0.927828	Mean dependent var	0.237528	
Adjusted R-sq	0.885728	S.D. dependent var	0.457352	
S.E of regression	0.154604	Akaike infor criterion	-0.606723	
Sum squared resid	0.286829	Schwarz criterion	-0.208430	
Log likelihood	14.06723	f-statistic	22.03853	
Durbin-Watson stat	1.898776	Prob. (f-statistic)	0.000006	

INTERPRETATION AND DISCUSSION OF RESULTS

The estimation of the import model used for the Nigerian economy time series data for twenty three years (1980 – 2002) period. Import behaviour was estimated for the Nigerian economy. The empirical investigation started by looking at the response of imports to a unit change in prices or income after due account is taken of the foreign exchange constraint. The coefficients of the multiple determination was 0.9278 (93%), meaning that the explanatory variables account for 93% of the total change in the dependent variable (D Log (MT)). This is a good fit. After considering the degree of freedom, the adjusted R-squared was 0.885 (89%). The f-test was then performed to confirm the significance of R^2, the F-statistic of 22.038 with a statistical significance at even 1%. This revealed that variation in long-run import volume could actually be attributable to changes in the independent variables and as such, all explanatory variables were jointly significant in explaining variation in the dependent variable. The Durbin-Watson statistic used to test for the presence of autocorrelation was within the normal bound at 1.90. Table (6) presents the results of the general import models considering the estimates of the general import model with exogenous prices (text equation 9). All the parameters have the expected signs. The coefficient associ-

ated with the variable measuring foreign exchange receipts (b_1) is quite significant and higher than other coefficients. Relative prices and domestic income also play an important role in the equation and they are also very significant.

The coefficient of relative prices is significant and correctly signed. Also the coefficient of domestic income is positive and is also significant. The two coefficients are very significant based on their t-values (table 6).

i. The important things to note about the results above are:

ii. Although, price and income effects are important in the analysis of import behaviour in Nigeria.

In the face of foreign exchange constraint, a domestic price of import is likely to increase. Import demand estimation is expected to account for the endogeneity of domestic prices of import. Any import models that neglect foreign exchange constraint or domestic prices as factors that affect import volumes will likely yield biased estimates for Nigerian imports or even developing countries imports.

The parsimonious error correction model was also performed through the running of a regression of the variables in order to present the true parsimonious error correction model. This is shown in table (6)

All variables in the parsimonious error correction model are significant in explaining changes in import volume at varying levels of ether 1%, 5% or 10% significance levels.

The coefficient for relative prices and domestic income shows that this variable contributes significantly to a unit change in import volumes, this outcome is based on the t-value of the coefficient. The result also confirms the importance of foreign exchange constraints in the analysis of import behaviour in Nigeria countries.

The result shows that in as much as price and income effects are important in the analysis of import behaviour in Nigeria, foreign exchange constraints also play a critical role in determining imports, as they strongly affect import volumes. With the shift to the parsimonious error correction model, the explanatory power of the model continues to be impressive. Not only did the f-statistic confirm the overall significance of the model, the Durbin-Watson of 1.94 shows that autocorrelation is not present in the model. All variables followed the apriori expectation, and they are all significant.

This shows that there exists a long-run relationship between the variables in the import demand equation. This long-run relationship is tested by conducting an f-test on the significance of lagged levels of variables in the error correction form. That is, the

test of the null hypothesis was performed, i.e. all coefficients on lagged levels of variables are all equal to zero as against the alternative that each one is not equal to zero.

The calculated f-statistic is compared with the critical value tabulated Pesaran et al (2001). If the calculated f-statistic falls above the upper bound, then we can make a conclusive decision that there exists a long-run relationship, in this case, the null hypothesis of no long-run relationship was rejected. The fact that all variables followed the apriori expectation and that they are significant shows that long-run relationships exist and that the relationships are significant. In general there, the study found evidence that the used variables affect the import levels in Nigeria.

CONCLUSION

The article presents a model of import behaviour for Nigeria. This model captures the important elements of import response in a manner most amenable to analysis for policy decisions in developing countries.

While income and relative prices are important in the analysis of import behaviour in Nigeria, foreign exchange constraints play a critical role in the determination of imports. This is because foreign exchange constraints affect import volumes. The study also established the long-run relationships between the variables used

RECOMMENDATIONS

The recommendation to the government or policy makers in Nigeria is that, to increase imports, government must take into consideration, not just one policy, but a broader set of policies.

The traditional policies such as the fiscal and monetary policies affect only income or relative prices. But broader policies in addition to the above will focus on increasing available foreign exchange.

Broader policies such as the structural adjustment programme indifferent sectors of the economy. That is broadening of the agricultural sector and strengthening of the manufacturing sector, so that there will be forward and backward linkages in the economy. Government should encourage local sourcing of raw materials, mechanized agricultural, whereby the end products would serves as raw materials for the productive sector, chandelling of these will bring the economy together, reduced cost of production and also promote competitive exports that will make available foreign exchange to import at greater volume.

This is because, foreign exchange constraint play a critical role in determining imports, as they strongly affect import volumes. Increase in available foreign exchange will surely determines a country's overalls capacity to import.

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