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Estimation of Import Demand Elasticities for Nigeria: Implications for the Balance of Payments Adjustment Policies

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Abstract
Import demand elasticities have important implications for the formulation of effective balance of payments adjustment policies. Over the years, Nigeria had frequently registered severe balance of payments problems which had led the country into large indebtedness to the rest of the world and consequently depleting the country's long accumulated foreign reserves. Regrettably, despite the governments' enormous efforts to resolve the balance of payments problems in Nigeria, the balance of payments situation continues to worsen. The study, therefore, estimated the Nigeria's imports demand elasticities as implications for the balance of payments adjustment policies using data from 1970 to 2019. The study employed the contemporary econometric techniques of cointegration and error correction mechanism, within the framework of the ARDL model. The results show that there is a longrun relationship between imports demand and the chosen explanatory variables (real GDP, import prices, domestic prices, naira/dollar exchange rate, import tariff rates, and domestic credits). The results further reveal that though imports demand is more sensitive to domestic income in Nigeria, it is generally inelastic since all the estimated imports demand elasticity coefficients are less than unity. Based on these findings, we conclude that the use of price-related imports demand management instruments (e.g. currency devaluation, tariffs, domestic price adjustment, etc.) is not validated for effective adjustment of the BoP position in Nigeria. Thus, the study recommends that the non-price import demand management instruments could be the best option to ensure that Nigerians substitute imported commodities with locally produced goods.

Keywords: *Import Demand, Elasticity, Balance of Payment, ARDL, Nigeria*
JEL Classifications: *F12, F13, F32, O24*

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I. Introduction

International trade has been widely celebrated as one of the major drivers of economic growth and development. This is because international trade does not only make inputs available for domestic production but also enlarges the market for locally produced goods and services. However, it should be noted that if trade between countries is not properly checked, countries (usually developing countries) may suffer the severe problem of external imbalance (deficit) which may launch them into perpetual indebtedness to the rest of the world. Therefore, countries use the balance of payments account to keep track of both changes in their level of indebtedness to foreigners and the fortunes of their export- and import-competing industries. Apart from the national income account, balance of payments (BoP) account is another innovation that has brought a tremendous breakthrough in economic analysis for policymakers and the economists alike. Import is a key element of the current account of the BoP which must be kept within the desired thresholds avoid deficit balance of payments.

Historical data have shown that since the 1960s, Nigeria has, on the average, registered severe balance of payments problems which had led the country into large indebtedness to the rest of the world and consequently depleting the country's long-accumulated foreign reserves. Nigeria has witnessed periods of slump and boom in international trade with consequent effects on her balance of payments. This problem had necessitated the implementation of several BoP adjustment policies aimed at improving the balance of payments situation of the country. Successive governments had, over the years, implemented policies such as the Import Substitution Industrialization (ISI); austerity measures which involve budgetary expenditure slash, administrative control for import licenses, increase and upward review of tariffs; trade liberalization (under the auspices of SAP, based on IMF criteria for financial aid) which involves currency devaluation, reduction of the

public consumption, limited expansion of domestic credits, increased taxes and salary limitations (Egwaikhide, 1999; Vojnovic, 2007; Oyejide et al. 2012; Nwogwugwu, Maduka & Madichie, 2015).

Import demand elasticities are important for the effective formulation of the balance of payment adjustment policies. Governments of various countries may have to decide whether to devalue their currency; increase domestic income taxes; increase imports tariffs rates; and/or limit domestic credits, especially when their exports are stagnant, and imports are mounting, while their BoP position is worsening. However, if the objective of the aforementioned policy measures is to redress the BoP problems via a reduction in the import volume of the country, the objective can only be achieved if the demand for imports is elastic. Thus, import demand elasticities are useful in making policy decisions on optimal imports tariffs structure; currency devaluation; domestic income taxes and domestic credits to improve the balance of payments position. The need to estimate the longrun coefficients of import demand elasticity as well as, test the stability of such coefficients is of great essence in formulating effective balance of payment adjustment policies.

Several studies have estimated Nigeria's import demand function, but only a few of these studies have focused on obtaining the estimates of imports demand elasticities, thus there appears to be a dearth of empirical studies on imports demand elasticities. Import demand elasticities are better parameters used for the effective formulation of the BoP adjustment policies. Another limitation of the previous studies on import demand elasticity for Nigeria is that most of them failed to account for the stability of their estimates and this makes their findings questionable. As pointed out by Heien (1968), a stable longrun trade elasticity is necessary for robust economic forecasting as well as for the balance of payments adjustment policy formulations. Although Nwogwugwu et al. (2015) accounted for the stability of their estimated import elasticity coefficients, their model ignored the role of tariff rates and domestic credits as import demand control instruments in Nigeria. Against this background, this study estimates imports demand elasticity for Nigeria as implications for the BoP adjustment policies.

II. Literature Review

Economic theory has shown only the direction of change in quantity demanded in response to a change in its determinants such as prices, income, prices of related goods, etc but did not tell us, by how much or to what extent, the quantity demanded of a good, will change in response to a change in demand determinants. This information as to how much or to what extent the quantity demanded of a good, will change as a result of a change in its determinants is provided by the concept of elasticity of demand (Ahuja, 2015). The concept of elasticity of demand, therefore, refers to the degree of responsiveness of demand to a change in its determinants. Accordingly, there are three concepts of demand elasticity - price elasticity of demand, income elasticity of demand and cross elasticity of demand. The concept of elasticity has great importance in economic theory as well as for the formulation of suitable BoP adjustment policies.

2.1 Relevant Theories

There are three major frameworks in the theory of international trade. The neoclassical theory of comparative which is characterized by the Heckscher-Ohlin framework extended from the classic Ricardian theory, the focus of which is on how international trade, its volume and direction, is affected by changes in relative prices, which in turn are explained by the differences in factor endowments between countries. The effect of changes in income on trade is not the concern, and the level of employment is assumed to be fixed while the output is assumed to be always on a given production frontier. The Keynesian import demand function is based on macroeconomic multiplier analysis as distinguished from the neoclassical comparative advantage analysis, relative prices are assumed rigid and employment is variable. Further, international capital movements are not assumed away and they will passively adjust as required by the trade balance. So, in this framework, the focus is on the relationship between income and import demand at the aggregate level (and in the short term). Another important theory is the new trade theory - the imperfect substitution theory. Given that empirical evidence shows that prices of goods in different countries do not seem to converge to a single price, the law of one price does not appear to hold. The causes of international arbitrage inefficiency in the setting of one world price are many, but their discussion is outside the scope of this study.

Imperfect Substitution Theory

This theory has its origin in Armington (1969). The basic assumption of this theory is that neither imports nor exports serve as perfect substitutes for domestic goods. This assumption has for the most part been confirmed empirically, both in the shortrun and in the longrun. If domestic and foreign goods were perfect substitutes, then countries would specialize, either only importing or only exporting each particular good. In practice, however, both domestic and imported goods can be found coexisting in markets, indicating that countries do not specialize to such a high degree. If we were to analyze only trade of certain goods, the perfect substitutes model could be applied, such as in the case of some undiversified goods (for example, wheat or other

agricultural products). However, given that in this study we analyze total merchandise trade divided into sectors within which there are still a large number of very different goods, the application of the perfect substitution theory would not be appropriate.

2.2 Empirical Literature

Several studies have attempted the estimates of aggregate import demand function in Nigeria and other countries of the world. Following the pioneering work of Olayide (1968), other studies on the determinants of aggregate imports in Nigeria include Ajayi (1975); Fajana (1975); Muoka (1982); Obadan (1986); Egwaikhide (1999); and many others. However, the focus here is on recent studies that are directly relevant to the chosen theme.

Vojnovic and Unevska (2007), estimated the price and income elasticities of export and import and economic growth for the Republic of Macedonia during 1998 – 2006. The study follows the ARDL modelling framework. The results confirmed the existence of a long term relationship between export and import demand and relative prices and income. Also, the study found evidence for high import elasticity on domestic income changes and relatively significant export elasticity to changes in the world income. The study concluded that the higher income elasticity of import over that of export accounts for the trade balance deterioration. Omoke and Ogbonna (2008), estimated the aggregated import demand function following cointegration and error correction modelling approaches in Nigeria over the period 1980 – 2005. The results suggest that imports demand in Nigeria is more sensitive to real GDP than relative prices.

Bobic (2009), estimated income and price elasticities of Croatian trade using panel data approach. The using of panel data method was to disaggregate data which allowed for sectoral differences in the data as well as dynamic adjustment of the data through time. The results show that the income and price elasticity coefficients both in import and in the export model have the expected signs – increase in income positively affects exports and imports while increases in prices lower them. Judging by the size of the coefficients, the study concluded that income effects appear to be more substantial than price effects. Serge and Yue (2010), estimated a disaggregated import demand function for Cote d' Ivoire using time series data for the period 1970 – 2007. The study used the ARDL modelling approach to capture the effect of final consumption expenditure, the investment expenditure, the export expenditure, and relative prices on import demand. The study found evidence of longrun relationship between the variables and showed inelastic import demand for all expenditure components and relative prices.

Hye and Mashkoor (2010), estimated the aggregate import demand function for Bangladesh using data from 1980 to 2008. The study used the ARDL bound test for cointegration and rolling window regression method to estimate the coefficient of each of the observation in the sample by fixing the window size. The estimation showed evidence of a longrun relationship between imports, relative price and economic activity, and longrun economic growth elasticity is 0.93 positive and relative price elasticity is -0.29 negative whereas the results of rolling window method show that the longrun elasticities of national income variable vary in the range of 0.81 to 0.96 and the relative price elasticities are negative except few years. Uz, (2010), in his study, investigated the long-run bilateral trade elasticities of Turkey and its major trading countries. the study found that, in the long run, Turkish bilateral trade was inelastic (with varying sign). Thus, the Turkish trade had an elastic income in the long run but inelastic income in the short run.

Tennakoon (2010), uses a disaggregated approach to investigate Sri Lanka's import demand functions and their price and income elasticities for the post-liberalization period of 1977 – 2007. The paper employs a standard characterization of import demand functions. The econometric estimates reveal that relative price is inelastic for all categories of consumer goods, intermediate goods, and investment goods, implying that consumers may be less price-sensitive. Babatunde and Egwaikhide (2010), empirically analysed the aggregated import demand behaviour for Nigeria using annual data between 1980 and 2006. The bound test analysis was used to estimate the longrun relationship between import demand and its determinants. The study found that import, income, and relative prices are cointegrated. Also, the estimated longrun elasticities of import demand, with respect to income and relative prices were 2.48 and -0.133.

Englama et al. (2013), examined the dynamics underlying the high import bills in Nigeria for the period 1970 – 2011. The study employed the ARDL technique in estimating the aggregate imports demand function. The study revealed that the coefficients of exchange reserves, domestic consumer prices, level of income and exchange rate were the important factors determining the level of imports in Nigeria. The study further revealed that Nigeria's aggregate demand for imports was both price and income elastic in the shortrun. Abu-Lila (2014), estimated the price and income elasticities of international trade for Jordan between 1980 and 2012. The study employed ADF unit root, Johansen cointegration and error correction mechanism. The study showed that the sum of price elasticities of import and export demand exceeds one for Jordan.

Nwogwugwu et al. (2015), estimated price and income elasticities of imports demand in Nigeria from 1970 to 2012. The study employed the ARDL approach to estimate the longrun coefficients of price and income

elasticities of imports demand in Nigeria. The findings of the study suggest that imports demand in Nigeria has been price- and income-inelastic as the coefficients of price and income elasticities of imports demand were about -0.03 and 0.55 respectively. Ogbonna (2016), estimated the aggregate imports demand function for Nigeria from 1980 to 2010. The study employed Johansen cointegration and VECM to evaluate the longrun and shortrun causal relationship explained and explanatory variables. The findings of the study suggest that variables such as the real exchange rate, world price index, disposable income, and structural adjustment policy may not be effective instruments for managing imports demand behaviour in the shortrun, rather a longrun policy options may be more efficient and effective in the management of imports demand in Nigeria.

III. Methodology

3.1 Theoretical Framework and the Model

The theoretical framework of this study is based on imperfect substitution model of Armington (1969) which has been further developed by Goldstein and Khan (1985) and has been used in Bobic (2009) and Nwogwugwu et al. (2015). Goldstein and Khan (1985) presented two trade models: the imperfect substitution model and the perfect substitution model. While the latter is mainly for the trade of homogeneous commodities, the former is the one mostly used in studying imports of manufactured goods and aggregate imports. The basic assumption of the imperfect substitution model is that neither imports nor exports serve as perfect substitutes for domestic goods. This assumption has for the most part been confirmed empirically, both in the short and in the long run. If domestic and foreign goods were perfect substitutes, then countries would specialize, either only importing or only exporting each particular good. In practice, however, both domestic and imported goods can be found coexisting in the markets, indicating that countries do not specialize, to such a high degree. In line with the above, import demand is specified as a function of the level of income in importing countries and of the price ratio of the domestically produced goods and their imported substitutes. Thus,

$$I_i = f(Y_i , PIm_i / P_i) \quad 1$$

Where I_i = imports, Y_i = domestic income, PIm_i = import prices, P_i = price of domestic goods. The model is specified as an exponential function which means that applying a logarithm transformation also modifies the hypothesis being tested, and given that what is being tested are the coefficients of logs, they are interpreted as elasticities. While the coefficient of Y_i is expected to be positive, the coefficient of PIm_i is expected to be negative and that of P_i is expected to be positive. In addition to these variables, other factors such as the naira/dollar exchange rate, tariff rates and domestic credits, which potentially determine imports demand, are also included in the model.

Following the discussions above, the study adopts, with modifications, the imperfect substitution model of Armington (1969) based on further development by Goldstein and Khan (1985). The model of this study is specified in its functional form as follows:

$$IMP = f(RGDP, PIM, CPI, EXR, TFR, DCR) \quad 2$$

Where IMP = imports; RGDP = real gross domestic product; PIM = imports prices; TFR = tariff rates; EXR = exchange rate; CPI = consumer price index (domestic prices) and DCR = domestic credits. Econometrically, the model is specified as:

$$IMP = \Omega_0 + \Omega_1 RGDP + \Omega_2 PIM + \Omega_3 CPI + \Omega_4 EXR + \Omega_5 TFR + \Omega_6 DCR + \mu \quad 3$$

Where μ = random error term; Ω_0 = intercept term; and Ω_1 - Ω_6 = parameters to be estimated.

Adopting a log-linear specification, the model becomes:

$$LIMP = \Omega_0 + \Omega_1 LRGDP + \Omega_2 LPIM + \Omega_3 LCPI + \Omega_4 LEXR + \Omega_5 TFR + \Omega_6 LDCR + \mu \quad 4$$

Where L = natural logarithm transformation. Note that the presence of log on both sides of Equation 4 implies that the parameters are to be interpreted as elasticities.

A priori Specification: $\Omega_1 > 0, \Omega_2 < 0, \Omega_3 > 0, \Omega_4 < 0, \Omega_5 < 0, \Omega_6 > 0.$

3.2 Estimation Technique

The data used are annualized secondary time series obtained from the CBN statistical bulletin spanning from 1970 to 2019. For a robust estimation of imports demand elasticity in Nigeria, the study employed the ARDL framework advanced by Pesaran et al. (2001) for cointegration analysis. For cointegration analysis, a bound test was conducted within the ARDL framework. This procedure has numerous advantages over the alternative methods (i.e. Engel-Granger (1987), Johansen and Julius (1990), and Philip and Hansen (1990)). First, it has better small sample properties. Secondly, the ARDL bounds testing is based on estimating an unrestricted ECM which seems to take satisfactory lags that captures the data generating process in a general-to-specific framework of specification (Laurenceson & Chai, 2003). The method avoids the classification of variables as I(1) and I(0) by developing bands of critical values which identifies the variables as being either stationary or non-stationary processes. Unlike other cointegration techniques (e.g., Johansen's procedure which require certain pre-testing for unit roots and that the underlying variables to be integrated of the same order), the ARDL model provides an alternative test for examining a long-run relationship regardless of whether the

underlying variables are purely I(0) or I(1) or fractionally integrated. Therefore, the pre-test of unit root on variables is not customary.

Moreover, the traditional cointegration methods may also suffer from the problems of endogeneity bias while the ARDL method can distinguish between dependent and explanatory variables. Thus, estimates obtained from the ARDL method of cointegration analysis are unbiased and efficient, since they avoid the problems that may arise in the presence of serial correlation and endogeneity bias. Note also that the ARDL procedure allows for uneven lag orders, while the Johansen's VECM does not. However, Pesaran and Shin (1999) argued that appropriate modification of the orders of the ARDL model is sufficient to simultaneously correct for residual serial correlation and problem of endogenous variables. In summary, it can be seen that ARDL bound test can be used with a mixture of I(0) and I(1) data; it involves just a single-equation set-up, making it simple to implement and interpret; and different variables can be assigned different lag-length as they enter the model. In line with the model of this study, the ARDL bounds testing procedure consists of estimating the following generic form of an unrestricted error correction model:

$$\Delta LIMP_t = \alpha + \Sigma\beta_i \Delta LIMP_{t-i} + \Sigma\delta_j \Delta LRGDP_{t-j} + \Sigma\lambda_k \Delta LPIM_{t-k} + \Sigma\phi_l \Delta LCPI_{t-l} + \Sigma\gamma_m \Delta LEXR_{t-m} + \Sigma\theta_n \Delta TFR_{t-n} + \Sigma\pi_p \Delta LDCR_{t-p} + \eth_1 LIMP_{t-1} + \eth_2 LRGDP_{t-1} + \eth_3 LPIM_{t-1} + \eth_4 LCPI_{t-1} + \eth_5 LEXR_{t-1} + \eth_6 TFR_{t-1} + \eth_7 LDCR_{t-1} + \mu \quad 5$$

The above equation shows the unrestricted ECM version of ARDL specification. The bounds test is mainly based on the joint F-statistic whose asymptotic distribution is nonstandard under the null hypothesis of no cointegration (Pesaran et al. 2001). The first step in the ARDL bounds test approach is to estimate Equation 5 by OLS, which tests for the existence of a long-run relationship among the variables by conducting an F-test for the joint significance of the coefficient of the lagged level of the variables. Thus, the null hypothesis of no cointegration for equation (5) is stated as follows:

H_0: $\eth_1 = \eth_2 = \eth_3 = \eth_4 = \eth_5 = \eth_6 = \eth_7 = 0$, against H_1: $\eth_1 \neq \eth_2 \neq \eth_3 \neq \eth_4 \neq \eth_5 \neq \eth_6 \neq \eth_7 \neq 0$

The F-statistic which normalizes on *LIMP* is denoted with F_{LIMP}*(LIMP/ LRGDP, LPIM, LCPI, LEXR, TRF, LDCR).* The F-test has a nonstandard distribution which depends upon: (i) whether variables included in the ARDL model are I(0) or I(1); (ii) the number of regressors; and (iii) whether the ARDL model contains an intercept and/or a trend. Two sets of critical values are reported in Pesaran et al. (2001): one set is calculated assuming that all variables included in the ARDL model are I(0) and the other is estimated considering that the variables are I(1). We reject the null hypothesis of no cointegration when the F-statistic exceeds the upper critical bounds value. We do not reject the null hypothesis if the F-statistic is lower than the lower bounds. Finally, the decision about cointegration is inconclusive, if the calculated F-statistic falls between the lower and upper-bound critical values.

Furthermore, if a stable longrun relationship is confirmed from the ARDL bound test, then we shall estimate the shortrun dynamic coefficients through the following error correction model:

$$\Delta LIMP_t = \alpha + \Sigma\beta_i \Delta LIMP_{t-i} + \Sigma\delta_j \Delta LRGDP_{t-j} + \Sigma\lambda_k \Delta LPIM_{t-k} + \Sigma\phi_l \Delta LCPI_{t-l} + \Sigma\gamma_m \Delta LEXR_{t-m} + \Sigma\theta_n \Delta TFR_{t-n} + \Sigma\pi_p \Delta LDCR_{t-p} + \Psi ECM(-1) + \mu_t \quad 6$$

where ECM_{t-1} is the error correction term resulting from the verified long-run equilibrium relationship and Ψ is a parameter indicating the speed of adjustment to the equilibrium level after any particular shock. The sign of ECM_{t-1} must be negative and significant to ensure effective convergence of shortrun dynamics to the long-run equilibrium. The value of the coefficient, Ψ, which signifies the speed of convergence to the equilibrium process, usually ranges from -1 to 0. The value of -1 signifies perfect and instantaneous convergence while 0 means no convergence after a shock in the process. Also, as pointed out by Pesaran and Pesaran (1997), it is imperative to ascertain the constancy of the long-run multipliers by testing the above error-correction model for the stability of its parameters. The commonly used procedures for stability test are the cumulative sum (CUSUM) and the cumulative sum of squares (CUSUMQ), both of which have been introduced by Brown et al. (1975) and used extensively in several empirical research.

IV. Empirical Results and Discussion of Findings

We begin this section with a discussion on the order of integration of the chosen variables. Although it has been stated that unit root test is not a customary practice when using the ARDL bound test for cointegration analysis, the need to carry out this test is to ensure that none of the chosen variables is I(2) because ARDL bound test makes no meaning in the face of I(2) variables.

Table 1: ADF and PP Unit Root Test Results

Variable	ADF Statistic	I(d)	PP Statistic	I(d)
LIMP	-7.392168**	I(1)	-7.358198**	I(1)
LRGDP	-6.184849**	I(1)	-6.193463**	I(1)
LPIM	-3.193674*	I(0)	-3.269573*	I(0)
LCPI	-3.285188*	I(1)	-3.123475*	I(1)

LEXR	-5.322891**	I(1)	-5.319518**	I(1)
TFR	-4.627197**	I(0)	-4.728889**	I(0)
LDCR	-3.251357*	I(0)	-3.264904*	I(0)

NB: **(*) implies significant at 1%(5%) level of significance.

Source: Authors' Computation using Eviews 9.

The results from both ADF and PP unit root tests as reported in Table 1 show that variables: LIMP, LRGDP, LCPI, and LEXR are all I(1) variables whereas LPIM, TFR, and LDCR are I(0) variables. This implies that we can proceed to the ARDL bound test as the chosen variables are either I(0) or I(1) and none is I(2).

Table 2: ARDL Bound Test Results for Cointegration

Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	4.344641	6

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	1.99	2.94
5%	2.27	3.28
2.5%	2.55	3.61
1%	2.88	3.99

Source: Authors' Computation using Eviews 9.

Table 2 presents the ARDL bound test result for cointegration. The result shows that there is a longrun relationship between imports demand and the chosen explanatory variables as the F-statistic, 4.344641, for the joint significance of the lagged level of variables is greater than the upper critical value bounds, 3.99 and 3.28, at both 1% and 5% levels of significance respectively.

Table 3: Estimated Longrun and Shortrun Coefficients of Imports Demand Elasticities

Dependent variable: LIMP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LRGDP	0.527699*	0.196746	2.682134	0.0159
LPIM	-0.384747**	0.118088	-3.258138	0.0014
LCPI	0.212771*	0.101828	2.089513	0.0356
LEXR	-0.387842*	0.186351	-2.081244	0.0379
TFR	-0.025852*	0.012526	-2.063868	0.0462
LDCR	0.065627*	0.030052	2.183781	0.0314
C	30.36203	49.28594	0.616038	0.5425

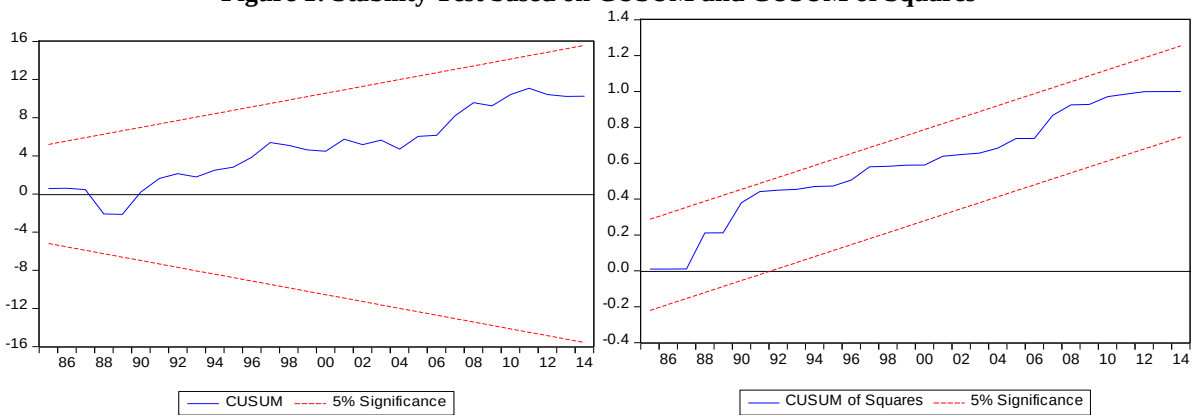
Source: Authors' Computation using Eviews 9.

Table 3 presents the estimated longrun and shortrun coefficients of imports demand elasticity. It should be noted that the concern of this study is on the longrun imports demand elasticity. The results show that all the explanatory variables conform to a priori expectation and are individually statistically significant. The estimated coefficients show that imports demand responds positively to a unit change in domestic income (LRGDP) by about 0.53, meaning that imports demand is income-inelastic in Nigeria. The price elasticity of imports demand is about -0.38, meaning that a unit increase in imports prices would bring about less than proportionate decrease in imports demand in Nigeria. Thus, import demand is both price- and income-inelastic in Nigeria and this is consistent with Nwogwugwu et al. (2015) and Ogbonna (2016). This finding implies that relative price and domestic income adjustment will not translate to any meaningful BoP adjustment in Nigeria.

The coefficient of domestic prices (LCPI) is about 0.21, meaning that the cross-price elasticity of imports demand with respect to homemade goods is inelastic, thus fall in the prices of domestic goods would not bring about much fall in the demand for import goods, and consequently is not an effective instrument of BoP adjustment policies in Nigeria. While this finding supports Nwogwugwu, et al. (2015), it negates Englama et al. (2013). Also, the coefficient of the naira/dollar exchange rate is about -0.39, meaning that a unit increase in the exchange rate can only bring about a lesser fall in imports demand. This implies that the exchange rate devaluation will not bring the desired adjustment in BoP in Nigeria. This is contrary to the conclusion by Englama et al. (2013).

Furthermore, the results show that imports demand responds to a unit change in import tariff rates by a lesser proportion (-0.03), meaning that import tariff is not an effective instrument of BoP adjustment policies in Nigeria. This is probably due to the haphazard application of tariffs in Nigeria, which is provoked by the conflict between using tariffs to control import demand and raising revenue for the government. Finally, the response of imports demand to a unit change in domestic credits is about 0.07, meaning that domestic credit slash does not translate to serious adjustment in BoP in Nigeria. This finding is consistent with Omoke and Ogbonna (2008). In passing, it could be deduced that though imports demand is more sensitive to domestic income than other variables, the demand for import goods is generally inelastic in Nigeria since all the estimated imports demand elasticity coefficients are less than unity. This explains the extent to which Nigeria is dependent on the importation, as well as why various policy attempts to redress BOPs problems had been ineffective. The findings of this study are in support with that of Nwogwugwu et al. (2015).

Figure 1: Stability Test based on CUSUM and CUSUM of Squares



Source: Authors' Computation using Eviews 9.

The stability tests based of the cumulative sum (CUSUM) and cumulative sum of squares (CUSUMQ) show that the estimated longrun coefficients of imports demand elasticity in Nigeria is stable since the CUSUM and CUSUMQ plots fall within the 5% critical regions.

V. Conclusion

The study estimated the imports demand elasticity in Nigeria as implications for the balance of payments adjustment policies using data from 1970 to 2019. The study employed contemporary econometric techniques of cointegration and error correction mechanism within the framework of ARDL provided by Pesaran et al. (2001). The results show that there is a longrun relationship between imports demand and the chosen explanatory variables (real GDP, import prices, domestic prices, naira/dollar exchange rate, import tariff rates, and domestic credits). The results further reveal that though imports demand is more sensitive to domestic income in Nigeria, it is generally inelastic since all the estimated imports demand elasticity coefficients are less than unity. Based on these findings, we conclude that the use of price-related imports demand management instruments (e.g. currency devaluation, tariffs, domestic price adjustment, etc.) is not validated for effective adjustment of the BoP position in Nigeria. Thus, the study recommends that the non-price import demand management instruments could be the best option to ensure that Nigerians substitute imported commodities with locally produced goods.

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