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Estimation of Disaggregated Import Demand Functions for Nigeria

Chekwube V. Madichie[1,2], **Uche C. Nwogwugwu**[3], **Franklin N. Ngwu**[2] **and Olisaemeka D. Mauka**[3]

This paper estimates disaggregated import demand function for Nigeria using annual data from 1970 to 2019. The study employs the Zivot-Andrews unit root and Gregory-Hansen cointegration tests to account for the role of structural breaks and the error correction mechanism for shortrun analysis, respectively. The results show that household consumption, industrial output and domestic investment are the major determinants of import demand for consumer, intermediate and investment goods, respectively. Furthermore, the import demand for investment goods is not sensitive to variations in relative prices. However, relative prices is negative and significant to import demand for consumer and intermediate goods. Exchange rate is negative and significant only in import demand for investment goods. Moreso, structural break plays a vital role in modelling all categories of import demand in Nigeria. The study recommends that the managed floating exchange rate regime should be sustained to influence the import demand for consumer and capital goods, while the import demand for intermediate goods should be encouraged since domestic production relies heavily on imported inputs. In addition, the policymakers should take cognizance of the role of structural breaks when formulating import demand policies.

Keywords: Gregory-Hansen, import demand function, Nigeria, structural breaks, Zivot-Andrews

JEL Classification: F12, F13, F32, O24

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1. Introduction

The importance of foreign trade in growth and development has received attention from development economists. Import is a vital component of foreign trade, as it provides strategic raw materials and capital goods necessary for domestic production and improves the society's general welfare by broadening the people's consumption

[1]Corresponding Author: chekwus_vtus2008@yahoo.com

[2]Lagos Businss School, Pan Atlantic University, Lagos.

[3]Department of Economics, Faculty of Social Science, Nnamdi Azikwe University, Awka, Nigeria

basket (Nwogwugwu *et al.,* 2015). Following the increase in the wave of globalization, the interdependence among countries has reached an unprecedented level in recent years. The implementation of the World Trade Organization (WTO) rules and the significant reduction in trade barriers have made it possible for developing countries to experience rapid growth in their shares of the world's import trade over the years (WTO, 1996). However, excessive importation without commensurate export growth usually results in deterioration of the current account balance, shortages of foreign exchange, and macroeconomic instability. It is against this background that governments worldwide, especially those of developing countries, pay serious attention to cross-border economic transactions, particularly to the flow of merchandise goods into their domestic economies.

In recent times, concerns have been raised about the persistently growing import bills in Nigeria. The country's import bills have grown considerably since independence, from ₦432 million in 1960 to ₦970 billion in 2016 (Central Bank of Nigeria [CBN], 2018). This rapid growth of imports in the face of lacklustre export performance has periodically led to the deterioration of the current account balance and consequently leading the country into large indebtedness, as well as frequent depletion of the country's accumulated foreign exchange reserves (Madichie *et al.* 2020). Consequently, import demand management has become a vital element of macroeconomic policies in the country and has witnessed extreme policy swings from a highly restrictive regime since independence to a more liberal regime in recent times. The commonly used policy instruments in managing import demand in Nigeria over the years include import tariffs; currency devaluation; increased domestic income taxes; contraction of domestic credits as well as cut in public expenditure.

It should be noted that the lack of information about the key components, determinants, and elasticities of import demand, may lead to the formulation of policies that could be harmful to domestic production, especially if it relies on imported inputs (Egwaikhide, 1999). Thus, the fundamental question is on how import demand in Nigeria has generally responded to import demand policies. Given the importance of this question, several studies have estimated Nigeria's import demand function. A search in the literature revealed that, apart from Egwaikhide (1999), other available

studies mainly focused on estimating Nigeria's aggregate imports demand function (Omoke & Ogbonna, 2008; Babatunde & Egwaikhide, 2010; Omoke, 2012; Nwogwugwu *et al.,* 2015; Ogbonna, 2016; Nteegah & Mansi, 2016; Madichie, *et al.,* 2020). Thus, there appears to be a dearth of empirical studies on disaggregated import demand function in Nigeria.

The lack of disaggregated estimates of import demand function seems to have poses a serious constraint to efforts to quantify the effects of import demand policies in Nigeria. More so, given that most of the import demand policies in the country were often determined at a much higher level of disaggregation, it means that estimating the aggregate function may lead to the problem of aggregation bias, especially if the disaggregated function behaves differently. Another issue of concern is the possibility of structural break prevalent in most economic time series. This study is not unaware of the likelihood of this phenomenon, taking into consideration the number of regime changes in Nigeria arising from changes in structural, administrative/institutional, and political factors, as well as several external and internal shocks that have taken place during the study period. For instance, the introduction and implementation of the various national development plans shortly after independence, as well as other policy reforms such as the Structural Adjustment Program (SAP) in the 1980s, and the shift from five-year plans to three-year rolling plans in the 1990s may have serious implications on the trends of time-series data. Other factors that may account for structural breaks in time-series include the debt crisis, crude oil price shocks, and the political instability that have taken place in the country over the years. This study estimated disaggregated import demand functions for Nigeria. Specifically, the study estimated import demand functons for consumer, intermediate and investment goods, while accounting for structural breaks.

The rest of the paper is structured as follows: Section 2 presents the review of related literature, while Section 3 outlines the data and methodology of the study. Section 4 presents and discusses the results, while Section 5 concludes the study and provides policy recommendations.

2. Literature Review

2.1 Theoretical Literature

One of the major theories that explains import is the production theory of import demand. The theory uses the differential production approach and the Rotterdam model in its import analysis. According to this theory, it is more appropriate to view imported goods as intermediate products than as final consumption goods even if no transformation takes place since most traded goods are either used in other production processes or go through several other domestic channels before reaching end users. More so, activities such as handling, insurance, transportation, storage, repackaging and retailing still occur even when a traded product is not physically altered.

As Kohli (1991) noted, viewing import as intermediate goods helps maintain theoretical simplicity since the demand for imports can be derived from the production theory and that there is no need to model final demand. Studies such as Burgess (1974a, b), and Kohli (1978, 1991) have utilized this theory in modelling international trade, and each acknowledged that most goods entering international trade require further processing before final demand delivery. One of the major shortcomings of this theory is on its exaggerated assumption that all imports commodities are intermediate and must pass through certain level of production transformation. This is far from reality and thus could only serve as the theoretical foundation for intermediate and investment goods import demand models.

Haberler (1936) propounded the new trade theory. The theory argues that international trade has gone beyond the traditional modelling framework and noted that international trade theory needed further development to incorporate imperfectly competitive markets. One of the reasons for this argument is to provide more realistic assumptions of trade theories. Apparently, an examination of international and domestic markets shows that perfect competition is far-fetched. The theory, which also refers to the imperfect substitution model (Goldstein & Khan, 1985), later became popular following the work of Armington (1969). The basic assumptions of this theory are imperfect competition, economies of scale and differentiated goods (imperfect substitution between foreign and domestic goods). The major strength of this

theory is that its assumptions are close to reality and its flexibility makes modification and disaggregation of import easier (Goldstein & Khan, 1985). Interestingly, most of the underlying assumptions of this theory have been verified empirically both in the short and long run (Nwogwugwu *et al.,* 2015).

2.2 Empirical Literature

Several studies have estimated the 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), and Egwaikhide (1999). However, the focus here is on recent studies that are directly relevant to the current one. In a study, Omoke and Ogbonna (2008) estimated the aggregated import demand function in Nigeria over the period 1980 – 2005. The variables used were merchandise import, relative import prices, GDP, nominal exchange rate and dummy variable to capture the era of trade restriction (1980-1985) and the era of trade liberalization (1986-2005). The study employed Johansen cointegration and error correction models. The results suggested that import demand in Nigeria is more sensitive to real GDP than relative prices.

Similarly, in an attempt to identify the factors responsible for import demand, Omotor (2010) estimated the aggregate import demand function for Nigeria from 1970 to 2005. The study employed the Johansen cointegration and vector error correction mechanism and results showed that import demand is greatly affected by real income (GDP) and less sensitive to relative prices. Babatunde and Egwaikhide (2010) studied the aggregate import demand behaviour for Nigeria using annual data that span from 1980 to 2006. Using the bound test analysis to determine the longrun relationship between import demand and its determinants, the study found that income and relative prices are cointegrated and that the long-run coefficients of income and relative prices were 2.48 and -0.133, meaning that import demand is more sensitive to income changes than the relative price changes.

By reformulating the aggregate imports demand function for Nigeria with a financial variable (bank credit) into the traditional import demand function for the period 1970

– 2009, Omoke (2012) employed the Johansen cointegration, and results showed no evidence of a longrun relationship between bank credit and import demand and concluded that bank credit is not a sufficient instrument for managing the longrun import demand in Nigeria. Motivated to examine the dynamics underlying the high import bills in Nigeria for 1970 – 2011, Englama *et al.* (2013) employed the ARDL technique in estimating the aggregate imports demand function. Findings showed that the coefficients of external 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, in the shortrun, Nigeria's aggregate demand for imports was both price and income elastic.

Nwogwugwu *et al.* (2015) estimated price and income elasticities of imports demand in Nigeria from 1970 to 2012 employing the ARDL approach. Their findings suggested 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 import demand function for Nigeria from 1980 to 2010. The variables of the model include import, world price index, disposable income, real exchange rate and dummy variable. The study employed Johansen cointegration and VECM and found that variables such as the real exchange rate, world price index, disposable income, and structural adjustment policy may not be effective instruments for managing import demand behaviour in the shortrun, rather a longrun policy options may be more efficient and effective.

Nteegah and Mansi (2016) investigated the factors influencing import demand in Nigeria from 1980 to 2014 by employing the Johansen cointegration and error correction model. Findings showed that GDP, domestic price change and exchange rate have a significant negative impact on total import, whereas the degree of openness, gross capital formation and external debt have a significant positive impact on import demand in Nigeria. In a recent study, Madichie *et al.* (2020) estimated Nigeria's imports demand elasticities using data from 1970 to 2019. The study employed the cointegration and error correction mechanism within the framework of the ARDL model. The results show evidence of a longrun relationship between imports demand and real GDP, import prices, domestic prices, Naira/dollar exchange rate, import tar-

iff rates, and domestic credits. The study concluded that even though import demand is more sensitive to domestic income in Nigeria, it is generally inelastic.

Furthermore, studies in countries other than Nigeria are equally reviewed in this subsection. For instance, Serge and Yue (2010), using time series data from 1970 to 2007, estimated a disaggregated import demand function for Cote d'Ivoire. In their analysis, the ARDL modelling framework was used to capture the effects on import demand of final consumption, investments, export expenditure and relative prices. The study found that the variables have a longrun relationship and showed inelastic import demand for all expenditure components and relative prices. Similarly, Tennakeen (2010) estimated disaggregated import demand functions and their price and income elasticities for Sri Lanka during the post-liberalization period from 1977 to 2007. The paper employed the standard characterization model of import demand, and results showed that relative price is inelastic for all categories of import demand, meaning that consumers may be less sensitive to price changes. The Bangladeshi aggregate import demand function was estimated by Hye and Mashkoor (2010) with data from 1980 to 2008. The analysis used the ARDL cointegration test and the rolling window regression methods. The study found a longrun relationship between imports, relative prices, and economic activity.

Harvey and Sedegah (2011) analysed the structure and model of import demand for Ghana from 1967 – 2004. The model variables were real import, lagged real import, relative prices, real income, foreign reserves, lagged foreign assets, and trade openness. The study employed Johansen Cointegration and error correction model. The results suggested that domestic income, foreign reserves and trade liberalization played significant roles in the import demand level in Ghana both in the long and shortrun. Khan *et al.* (2013) in estimating the disaggregated import demand function for Pakistan from 1981 to 2009, employed the Engle-Granger and Bound tests. The results show that real consumption expenditure and real investment expenditure have a significant positive impact on import demand, whereas export expenditure and relative prices have a significant negative impact.. Ayodotun and Farayibi (2016) examined the determinants of import demand in Sub-Sahara Africa from 1995 to 2012 using the Panel OLS approach. Findings showed that domestic income, foreign

reserves, and trade liberalization play significant roles in import demand levels in Sub-Saharan Africa both in the long and short run.

Having reviewed relevant empirical studies on Nigeria's import demand function, it is important to point out a few critical issues that justify the current study. Firstly, there is a dearth of empirical studies on the estimation of the disaggregated import demand function for Nigeria. It is imperative to note that import demand policies in Nigeria were frequently designed with a higher level of disaggregation, meaning that the estimation of aggregate import demand function may result in the problem of aggregation bias, particularly when the disaggregated function behaves differently. Secondly, there is a high possibility of a structural break in time series given the structural, administrative/institutional, political transformation, as well as economic reforms precedence of Nigeria. Previous studies did not explicitly account for any possible break. Thus, filling these identified gaps is vital and part of the contributions of the current study to the literature.

2.3 Stylized Facts

Since independence in 1960, Nigeria's aggregate imports have increased considerably (CBN, 2019). Evidence from CBN (2019) reveals that aggregate import was dominated by the import of consumer goods until 1965. However, their relative share dropped from around 60% in 1950 to 41% by 1965. Within the same period, the import of capital goods dropped from 40% to 24%, whereas the share of intermediate goods grossly rose from 10% to 23% (Egwaikhide, 1999). One of the major determinants of this outcome was import substitution industrialization (ISI) which was pursued vigorously from the late 1950s to the end of the 1960s. In addition, Egwaikhide (1999) stated that the capital goods industrial subsector was very weak, and as a result, there was a high dependency on the import of machinery and equipment that are vital to production.

The gradual decline in the import of consumer goods after 1980 as shown in Figure 1 was due largely to the foreign exchange crisis, provoked by the collapse of crude oil prices. The disaggregated import demand in Nigeria is shown in Figure 1.

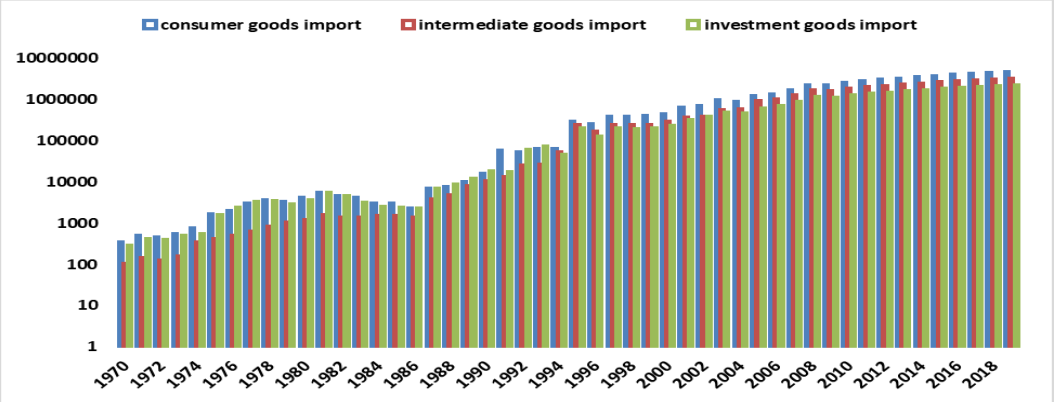


Figure 1: Profile of Disaggregate Import Demand in Nigeria, 1970 -2019
Source: CBN (2009 & 2019)

Nigeria's import experienced exponential growth from the 1970s to the 2000s, dominated by substantial increase in the nominal values of imported consumer goods (Figure 1). For instance, from 1970 to 1989, the import of consumer goods dominated Nigeria's aggregate import, except in 1981, 1988 and 1989, where the import of capital goods dominated (Figure 1). The nominal value of import of consumer goods grew by 2827% from ₦343.2 million in 1970 to ₦10.05 billion in 1989. Within the same period, import of intermediate capital goods grew grew by 7636% and by 4233%, respectively.

Between 1990 and 2019, relative to the import of consumer and intermediate goods, there has been a deterioration in the import of capital goods. Within this period , Nigeria's aggregate import was dominated by consumer goods, followed by intermediate goods. The import of consumer goods grew by 24526% from 1990 2019, while the import of intermediate goods grew by 26392% within the same period. between Similarly, import of capital goods grew by 10353%.. Again, the import of intermediate goods grew faster than other import components.

3. Data and Methodology

3.1 Data

This study uses annual data from 1970 to 2019. The choice of annual data over alternative data structures such as quarterly, and monthly series was based on availability as most of the variables are available in annual series. Data relating to import de-

mand for consumer goods (CSM); intermediate goods (ITM), and investment goods (IVM), household consumption expenditure (HHC), industrial output (IND), total domestic investment (INV) were obtained from the CBN (2009 & 2019) statistical bulletin. Other relevant data such as relative prices (RLP), exchange rate (EXR), tariff rate on imported goods (TAR), domestic credit (DCR) and public expenditure (PEP), were obtained from the World Bank Development Indicators database. Table 1 summarizes the description of variables, measurement and sources of data.

Table 1: Description of Variables, Measurement and Sources of Data.

Variable	Description	Measurement	Data Source
CSM	Imported commodities for final household consumption which include manufactured goods, food and live animals, miscellaneous manufactured goods, beverages, and tobacco.	Measured in millions of Naira.	CBN Statistical Bulletin
ITM	Imported intermediate goods which are further processed into finished goods for consumer satisfaction, and they include crude materials,, mineral fuels, animal and vegetable oils, and fats and chemicals.	Measured in millions of Naira.	CBN Statistical Bulletin
IVM	Imported investment goods used to produce both consumer and intermediate goods and they include machineries and transport equipment.	Measured in millions of Naira.	CBN Statistical Bulletin
HHC	Total value of goods and services purchased by the household sector.	Measured in millions of Naira.	CBN Statistical Bulletin
IND	Total value of production by the industrial sector.	Measured in millions of Naira.	CBN Statistical Bulletin
INV	Total value of investment in the economy.	Measured in millions of Naira.	CBN Statistical Bulletin
RLP	Total prices of imported goods and services relative to world prices.	Measured as the ratio of world prices to domestic prices.	WDI, World Bank Database

Table 1: Continue

Variable	Description	Measurement	Data Source
EXR	The rate at which Naira exchanges for US Dollar.	Measured as the ratio of Naira to one US Dollar (₦/$).	WDI, World Bank Database
TAR	Tax levied on imported goods and services.	Measured as a % of the total value of imported goods and services.	WDI, World Bank Database
DCR	Total amount of credits (private and public) provided by the banks.	Measured in billions of Naira.	WDI, World Bank Database
PEP	Includes all government consumption, investment, and transfer payments.	Measured in millions of Naira.	WDI, World Bank Database

3.2 Theoretical Framework

The study relied on the imperfect substitution model and the production theory of import demand. The imperfect substitution model as developed by Armington (1969) is derived from the imperfect competition theory and has further been modified by Goldstein and Khan (1985) and has been used in many empirical studies such as Omotor (2010), Nwogwugwu *et al.* (2015) and Madichie, *et al.* (2020). The basic assumptions of this theory include imperfect competition, economies of scale, and differentiated goods (imperfect substitution between foreign and domestic goods). In line with the above, the aggregate imports 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,

$$I_i = f(Y_i\ ,\ PIm_i\ /\ P_i\ ) \tag{1}$$

Where I_i = aggregate imports, Y_i = domestic income, PIm_i = import prices, and P_i = price of domestic goods. The model is specified as an inverse function which means that applying a logarithm transformation also modifies the hypothesis being tested. Given that what is 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/P_i

is expected to be negative. Goldstein and Khan (1985) also stated that the flexibility of this model makes modification and disaggregation of imports easy.

3.3 Model Specification

In line with the foregoing, the study functionally specifies a disaggregated model for each category of import demand as follows:

$$CSM = f(HHC, RLP, EXR, TAR, DCR, PEP) \tag{2}$$

$$ITM = f(IND, RLP, EXR, TAR, DCR, PEP) \tag{3}$$

$$IVM = f(INV, RLP, EXR, TAR, DCR, PEP) \tag{4}$$

where *CSM* = imports demand for consumer goods; *ITM* = imports demand for intermediate goods (raw materials); *IVM* = imports demand for investment goods; *HHC* = household total consumption; *IND* = industrial output; *INV* = total domestic investment; *RLP* = relative prices (ratio of import to domestic prices); *EXR* = exchange rate; *TAR* = tariff rates on imported goods; *DCR* = domestic credits; *PEP* = public expenditure. It should be noted that investment goods are production equipment and machinery, while intermediate goods are raw materials which are further processed into finished goods (Egwaikhide, 1999).

Specifying Equations 2, 3, and 4 in econometric forms and applying log to both sides of the equations, we obtain Equations 5, 6 and 7 as follows:

$$LCSM = \Omega_0 + \Omega_1 LHHC + \Omega_2 LRLP + \Omega_3 LEXR + \Omega_4 LTAR + \Omega_5 LDCR + \Omega_6 LPEP + \mu_1 \tag{5}$$

$$LITM = \lambda_0 + \lambda_1 LIND + \lambda_2 LRLP + \lambda_3 LEXR + \lambda_4 LTAR + \lambda_5 LDCR + \lambda_6 LPEP + \mu_2 \tag{6}$$

$$LIVM = \psi_0 + \psi_1 LINV + \psi_2 LRLP + \psi_3 LEXR + \psi_4 LTAR + \psi_5 LDCR + \psi_6 LPEP + \mu_3 \tag{7}$$

Where L = natural logarithm notation; μ_1, μ_2 and μ_3 = uncorrelated random error disturbances; Ω_0, λ_0 and ψ_0 are intercept terms to be estimated; and Ω_1 to Ω_6; λ_1 to λ_6 and ψ_1 to ψ_6 are elasticities to be estimated. Note that the parameters are to be interpreted as elasticities due to the presence of natural log transformation on both sides of the Equations.

3.3.1 A Priori Expectation

From Equation 5, the import demand for consumer goods is a function of household total consumption expenditure (*LHHC*) because the gap between household demand for and domestic supply of consumer goods is met by imported consumer goods, meaning that household total consumption drives import demand for consumer goods (Egwaikhide, 1999). Thus, an increase in household total consumption, usually occasioned by an increase in household disposable incomes, is theoretically expected to increase import demand for consumer goods ($\Omega_1 > 0$). From Equation 6, the import demand for intermediate goods depends on industrial output (*LIND*), among other variables. This is because the shortage of domestic supply of raw materials is usually compensated for by imported raw materials., Thus, an increase in industrial output, when the domestic raw materials are not available implies that more import of intermediate goods is needed ($\lambda_1 > 0$). From Equation 7, import demand for investment goods (capital goods) depends partly on the level of domestic investment since most developing countries, including Nigeria, depend on imported investment goods to expand production capacity (Egwaikhide, 1999). In most cases, these investment goods rarely have domestic substitutes, whereas these countries must expand their production capacity through the purchase of investment goods in order to grow. This means that an increase in the level of domestic investment is expected to theoretically increase import demand for investment goods.

The role of exchange rate (*LEXR*) in driving the various categories of import demand is determined by the availability of foreign exchange in host countries (Egwaikhide, 1999). For instance, adequate stock of foreign exchange in the host country usually goes with an appreciation of the domestic currency, whereas the scarcity of foreign exchange leads to the depreciation of the domestic currency. Thus, exchange rate de-

preciation is expected to discourage each category of import demand (Ω_3, λ_3, $\psi_3 < 0$). From Equation 1, the relative prices (*LRLP*) are expected to negatively influence each category of import demand, meaning that an increase in relative prices will discourage households, firms and investors from importing as they will shift to domestic substitutes (Ω_2, λ_2, $\psi_2 < 0$). An increase in tariff rate also discourages each category of import demand as this adds to the cost of importation (Ω_4, λ_4, $\psi_4 < 0$). The amount of domestic credits (*LDCR*) available to individuals, firms and government determines the level of demand for each category of import. Thus, an increase in the level of domestic credits is expected to increase the demand for each category of import (Ω_5, λ_5, $\psi_5 > 0$). Public expenditure is an instrument of fiscal policy used to encourage expansion in economic activities, especially during an economic downturn. The capital expenditure component of public expenditure also encourages expansion in the production capacity of a country because it encourages consumption and investment. Thus, an increase in public expenditure is expected to result in an increase in each category of import demand (Ω_6, λ_6, $\psi_6 > 0$).

3.4 Estimation Procedure

Unit root test is conducted using the Augmented Dickey-Fuller (ADF), Phillips Perron (PP) and Zivot-Andrew (ZA) techniques. While ZA accounts for structural breaks, ADF and PP do not. Examining the presence of structural breaks in time series data is important, as Pielh *et al.* (1999) noted that the knowledge of breakpoints is strategic for effectively analysing programmes and policies targeted at structurally transforming the economy. In addition, the unit root test not only helps to identify which variable has a unit root or not but also determines the order of integration of the relevant variables to apply the necessary precautions to overcome the problem of spurious results that usually characterize OLS regression involving non-stationary variables.

The study further conducted cointegration test using Gregory-Hansen (GH) procedure. The GH procedure is used to account for structural breaks. The key reason justifying the GH approach is the likelihood of having a broader form of cointegration that allows the cointegrating vector to undergo change at a single unknown date

within the sample period (Ibrahim, 2009; Maduka *et al.,* 2019).

The cointegration of variables allows for the application of an error correction model (ECM). The ECM is used to examine the adjustment process of model to longrun equilibrium following shortrun shocks. When cointegration is confirmed, error correction models are estimated in differences of all variables, as well as a period lag of the error terms generated from the long run estimates, alongside the break dummies and their interactions with the regressors. Following the approach utilized by Doguwa, *et al.* (2014), the shortrun dynamic models of this study are specified as follows:

$$\Delta LCSM = \alpha + \beta \cdot i\Delta X_1 + \sigma \cdot 1\mathrm{D}_1 + \sigma \cdot 2(D \cdot 1 * \Delta \mathrm{X}_1) + \psi \mathrm{ECM}_{1t-1} + \varepsilon_{1t} \quad (8)$$

$$\Delta LITM = \Omega + \Phi_i \Delta X_2 + \lambda_1 D_2 + \lambda_2 (D_2 * \Delta X_2) + \chi ECM_{2t-1} + \varepsilon_{2t} \quad (9)$$

$$\Delta LIVM = \theta + \pi_i \Delta X_3 + \delta_1 D_3 + \delta_2 (D_3 * \Delta X_3) + \eta ECM_{3t-1} + \varepsilon_{3t} \quad (10)$$

where X_1, $X_{2,}$ *and* X_3 stands for the vector of regressors in equations 5, 6, and 7, respectively. Δ is the difference operator; $ECM_{1,t-1}$, $ECM_{2,t-1}$ and $ECM_{3,t-1}$ are error correction terms, resepectively; σ_1, λ_1, and δ_1 are coefficients of break dummies (D_1, D_2, and D_3), respectively; σ_2, λ_2, and δ_2 are coefficients of the interaction terms; ψ, χ and η are parameters indicating speed of adjustment.

Theoretically, these coefficients (ψ, χ and η) are expected to have negative signs and also statistically significant at the 5% level because a significant error correction term with the right (negative) sign indicates a strong convergence process after any deviation of the various categories of import demand from their path towards longrun equilibrium. In addition, a stability test is performed using the cumulative sum (CUSUM) and cumulative sum of square (CUSUMQ) approaches provided by Brown *et al.* (1975).

4. Results and Discussion

This section presents the results of the model estimation in line with the methods

discussed in the previous section.

4.1 Descriptive Statistics

The relevant descriptive statistics of the variable are reported in Table 2. The mean and standard deviation show evidence of a wide variation across data points in each variable. The value of the skewness statistic for each variable shows that all the variables are, on average, positively skewed, indicating that the series are non-symmetric. The kurtosis statistics for CSM, ITM, IVM, RLP, INV, TAR, DCR and PEP are larger than 3. A relatively large kurtosis (i.e., > 3) suggests that the distribution of the variable is leptokurtic, showing the possibility of a peaked distribution. The leptokurtosis reflects the fact that the variables frequently pass through medium or large changes, which occur with greater frequency than what is predicted by the normal distribution. On the other hand, HHC, IND and EXR have kurtosis statistics of less than 3, meaning that their distributions are platykurtic. The Jarque-Bera statistic for all variables is also statistically significant at 5% level. Thus, the null hypothesis of a normal distribution for each variable is rejected. In general, there is evidence of wide variations among the variables. However, the log transformation of models in the previous section is expected to overcome the econometric challenges resulting from this observation.

Table 2: Summary Statistics

Statistic	CSM	ITM	IVM	HHC	RLP	EXR	TAR	DCR	PEP	IND	INV
Mean	79,866.0	563,512.7	401,087.4	358,926.2	35.5	54.7	25.2	13.4	1,288,030	12,216.6	8,637.7
Median	62,673.7	26,935.6	62,158.3	274,833.3	6.3	19.6	25.6	12.9	160,893.2	11,725.4	8,246.2
Max.	4,008,115.0	2,822,067.0	1,935,630.0	1,124,870.0	170.6	197.2	100.6	38.2	7,073,662.0	16,742.2	15,789.7
Min.	343.2	105.9	285.3	4,219.0	0.10	0.55	9.6	4.7	903.9	8,255.8	5,668.9
Std. Dev.	1,207,085.0	868,248.0	590,786.7	313,890.8	49.2	65.5	13.7	6.3	2,027,523.0	2,503.2	1,979.1
Skewness	1.42	1.41	1.37	0.90	1.37	0.68	3.37	1.95	1.60	0.14	1.32
Kurtosis	3.62	3.51	3.47	2.85	3.63	1.74	20.3	8.41	4.25	-1.19	3.11
JB	16.6	16.1	15.2	6.41	15.5	6.54	680.5	87.2	23.0	10.2	12.4
Prob.	0.00	0.00	0.00	0.04	0.00	0.03	0.00	0.00	0.00	0.00	0.00
Obs.	50	50	50	50	50	50	50	50	50	50	50

4.2 Unit Root Tests

The ADF and PP unit root tests were carried out on levels and first difference of the time series. The results of the ADF and PP tests are reported in Table 3.

Table 3: ADF and PP Unit Root Tests Results

Variable	ADF Statistic		Order of Integration	PP Statistic		Order of Integration
	Level	1^{st} diff.		Level	1^{st} diff.	
LCSM	-0.991	-7.682***	I(1)	-0.999	-7.667***	I(1)
LITM	-1.077	-7.336***	I(1)	-1.091	-7.307***	I(1)
LIVM	-1.149	-8.163***	I(1)	-1.197	-8.266***	I(1)
LHHC	-2.485	-6.252***	I(1)	-2.365	-6.259***	I(1)
LIND	-2.988	-9.179***	I(1)	-2.457	-9.214***	I(1)
LINV	-2.498	-7.661***	I(1)	2.355	-9.013***	I(1)
LRLP	-2.109	-8.754***	I(1)	-2.406	-8.291***	I(1)
LEXR	-0.288	-5.323***	I(1)	-0.382	-5.320***	I(1)
LTAR	-0.925	-3.289**	I(1)	-0.860	-3.130**	I(1)
LDCR	-2.777	-5.433***	I(1)	-2.379	-6.995***	I(1)
LPEP	-1.437	-8.163***	I(1)	-1.176	-8.106***	I(1)

NB: ***(**) implies significant at 1%(5%) level. ADF critical values: -3.615588 (1%), -2.941145 (5%) and -2.609066 (10%); PP critical values; -3.452831 (1%), -2.871332 (5%) and -2.572060 (10%).

The ADF and PP results in Table 3 show that all the variables are non-stationary at level but stationary after first differencing. This means that all the variables are I(1). These results may be misleading, given that both tests display weak power in the face of structural breaks. Thus, not much could be inferred without a confirmatory test that takes into consideration the possibility of structural breaks. Hence, the ADF and PP results are compared to the ZA unit root test that allows for a structural break, as reported in Table 4.

In Table 4, we could not reject the null hypothesis of unit root with a structural break for all the variables at level, but it is rejected at first differences. This is in line with the results of the traditional ADF and PP unit root procedures, which means that all

the variables are I(1). Interestingly, the ZA test endogenously unveils the break year in each variable as reported in column 4. The identified break years have crucial implications for economic policies and external shocks in relation to import demand dynamics.

Table 4: Zivot-Andrews (ZA) Unit Root Test

Variable	**ZA Stat. (Level)**	**ZA Stat. 1st Diff.**	**I(d)**	**Break Year**
LCSM	-3.093	-4.953**	I(1)	1995
LITM	-2.551	-4.983**	I(1)	1994
LIVM	-4.003	-4.965**	I(1)	1992
LHHC	-2.953	-7.411***	I(1)	1981
LIND	-3.841	-7.233***	I(1)	1981
LINV	-2.871	-4.823**	I(1)	1981
LRLP	-4.247	-5.368***	I(1)	1984
LEXR	-3.063	-5.579***	I(1)	1986
LTAR	-2.498	-5.376***	I(1)	1997
LDCR	-3.501	-5.986***	I(1)	1987
LPEP	-4.129	-5.355***	I(1)	1993

Note: *** (**) implies significant at 1% (5%) level. Critical values at 1%, 5% and 10% are -5.34, -4.93 and -4.58, respectively.

Period 1981-1985 marks the introduction of the Fourth National Development Plan (1981-1985) by the Federal Government since the country attained political independence in 1960. This development could have accounted for the break in household consumption (LHHC), industrial output (LIND), and domestic investment (LINV) in 1981. In addition, the introduction of austerity measures to redress the trade deficit by the government in 1984, alongside the Fourth National Development Plan, could have been responsible for the break in relative prices (LRLP) in 1984. Other events that may have contributed to the breaks include the debt crisis, crude oil price shocks and political instability during the period. The above scenarios are corroborated by Figure 2.

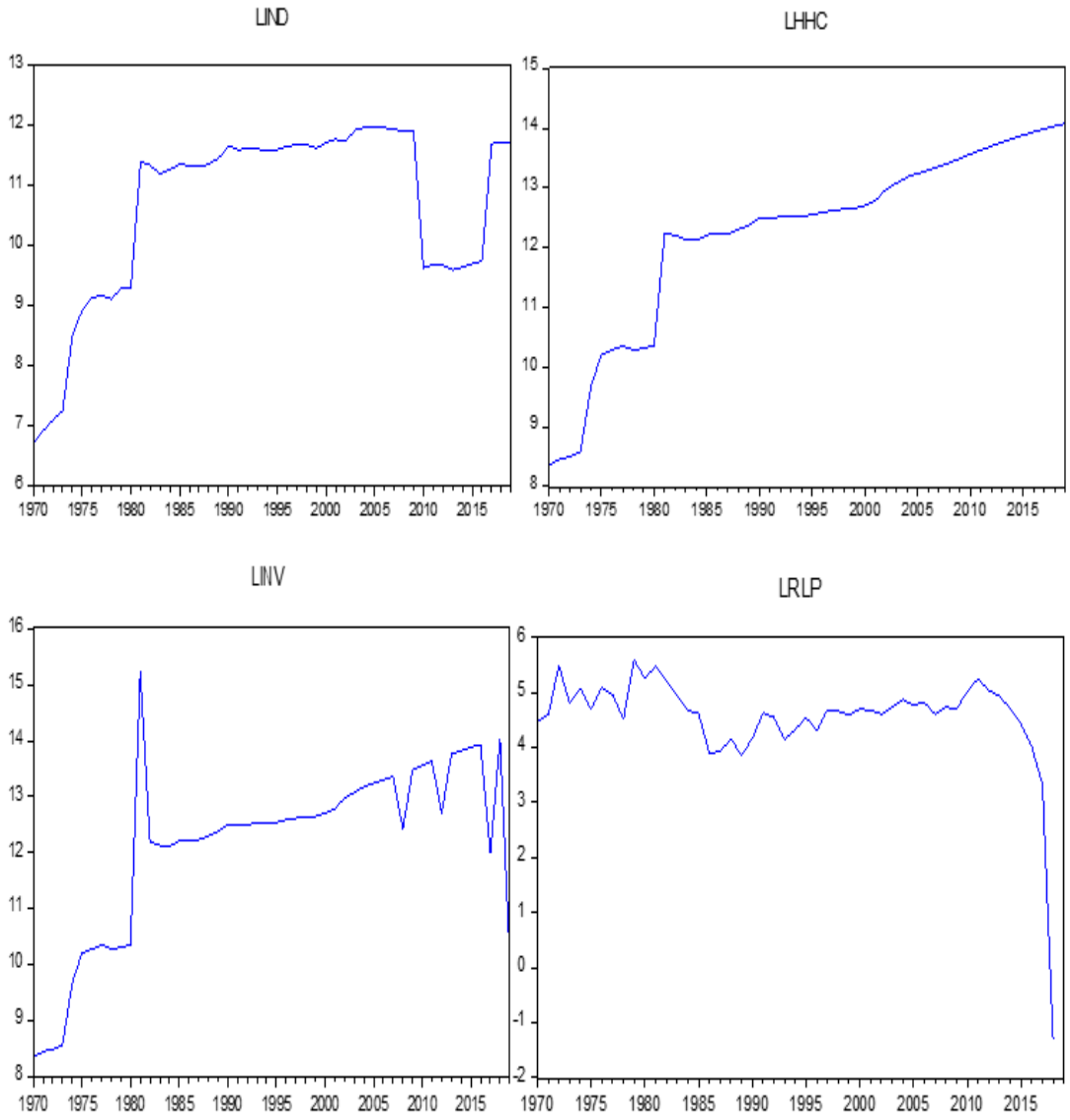


Figure 2: Trends on LHHC, LIND, LINV and LRLP

The period 1986-1989 is marked with the introduction and implementation of the Structural Adjustment Program (SAP) from 1986 to 1989, which emphasized privatization, market determined prices, and reduced government expenditure. This development could have been partly responsible for the break in the exchange rate

(LEXR) in 1986 and domestic credits (LDCR) in 1987. The above scenarios are corroborated by Figure 3.

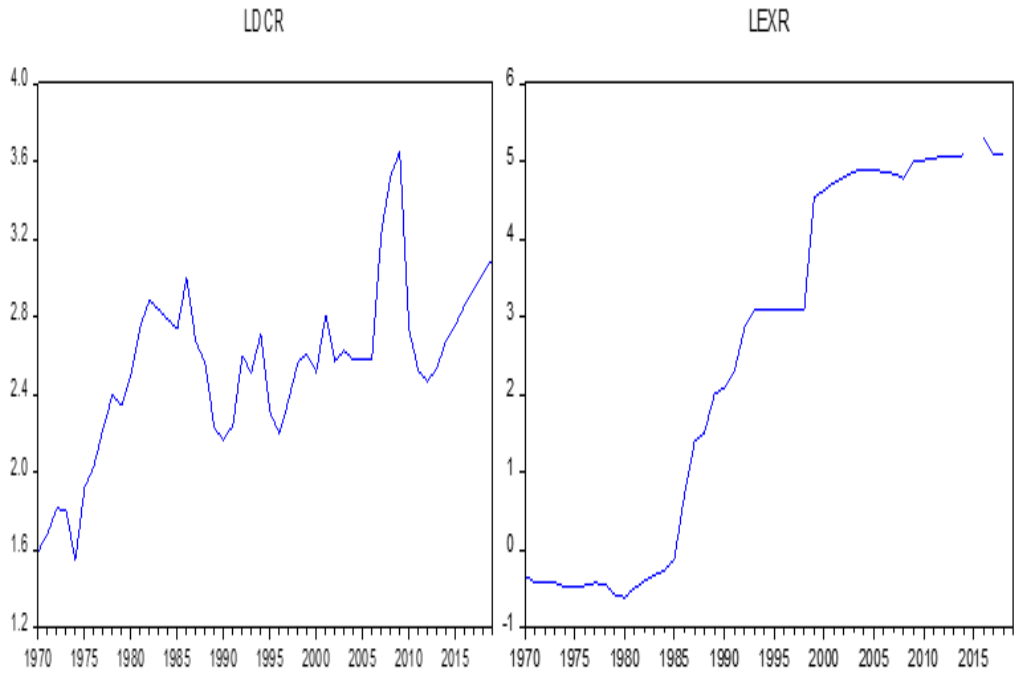


Figure 3: Trend on LEXR and LDCR

During the 1990s, there was a shift by the government from the five-year plans to three-year rolling plans which were accompanied by more flexible as well as amenable periodic reviews. Given that there was no radical improvement in the economy in the era of the rolling plans, further economic reorganizations for sustained growth were made. These may have accounted for the breaks in investment goods import demand (LIVM) in 1992; intermediate goods import demand (LITM) in 1994; consumer goods import demand (LCSM) in 1995; public expenditure (LPEP) in 1993; and import tariff rate (LTAR) in 1997. The above scenarios are corroborated in Figure 4.

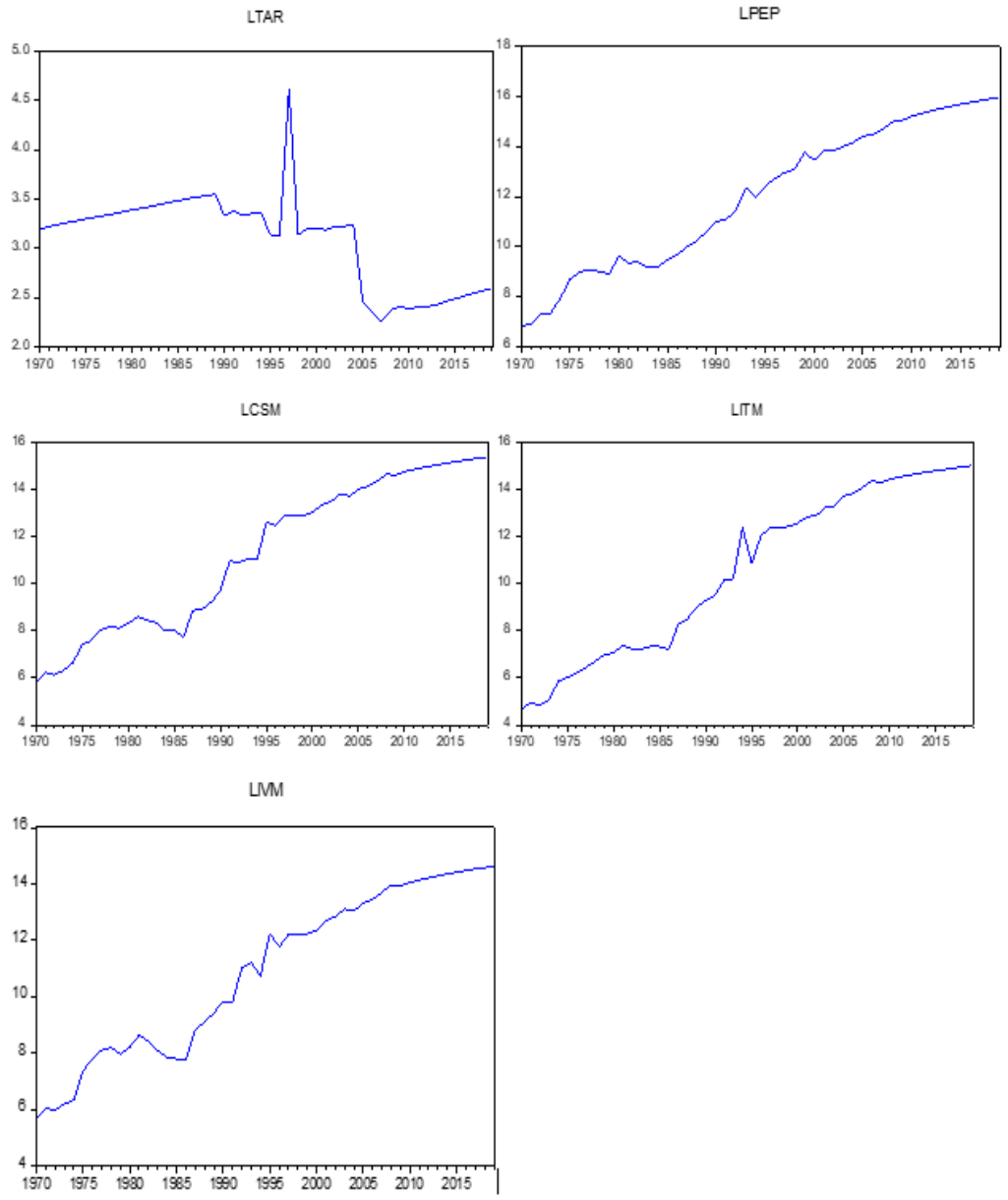


Figure 4: Trends LTAR, LPEP, LCSM, LITM and LIVM

4.2.2 Results of Cointegration Test

To determine the existence of a long run relationship among the variables, the GH procedure was carried out and the results for the three categories of import demand

are reported in Table 5. The GH model used in this study follows Model 4 of the GH procedure, which assumes cointegration with regime shift.

Table 5: GH Cointegration Results

Procedure	LCSM	LITM	LIVM
ADF			
t-stat	-9.165**	-7.182**	-8.362**
	(-6.41)	(-6.41)	(-6.41)
Lag	1	1	1
Break year	1986	1987	1988
Philip Procedure			
Z_a-stat	-95.17**	-93.24**	-97.34**
	(-78.52)	(-78.52)	(-78.52)
Z_a-break	1986	1987	1988
Z_t-stat	-8.53**	-6.97**	-6.84**
	(-6.00)	(-6.00)	(-6.00)
Z_t-break	1986	1987	1988

Note: *GH* denotes Gregory-Hansen. Figures in parenthesis are the *GH* critical values at the 5% level. Also, note that t-stat represents the *GH*'s extension of the conventional ADF test of the residual unit root, and Z_a and Z_t represent the *GH*'s extension of the Philip test of the residual unit root. ** denotes rejection of the null hypothesis of no cointegration at the 5% level

Table 5 shows the result of the GH cointegration test for the three categories of import demand. Since the computed values of ADF, Z_a and Z_t for all categories of import demand are less than their corresponding critical values -6.41, -78.52 and -6.00, respectively, we reject the null of no cointegration for all categories of import demand. This shows evidence of a longrun relationship among the various categories of import demand and the explanatory variables regardless of a structural break in the cointegrating vector. Interestingly, the ADF procedure seems to agree with the Philips procedure in identifying the break date of the cointegrating vector. For instance, both procedures reported 1986 as the break date. Moreover, both procedures reported that a regime shift took place in the intermediate goods import demand in 1987. Finally, the procedures agree in identifying the break date in the cointegrating relationship of investment goods as 1988. These structural breaks could be attributed to the SAP implementation in 1986. Thus, economic reform policies have important implications for the dynamics of import demand in Nigeria.

4.3 Estimation Results

4.3.1 Long run Results

Customary to the test of cointegration and the existence of a longrun association among the explained and explanatory variables is the report of the estimated longrun coefficients of the explanatory variables. In our case, it has been confirmed that a longrun relationship exists between each category of import demand and their respective explanatory variables, even in the face of a structural break using the GH cointegration procedure. Note that the GH procedure uses a dummy variable to account for the regime shift by multiplying the break dummy (i.e., @TREND>45-2) by each regressor. The GH break dummy (@TREND>45-2) takes the value of 0 from 1970 to 1985 and a value of 1 from 1986 to 2019 for Equation 5, a value of 0 from 1970 to 1986 and a value of 1 from 1987 to 2019 for Equation 6, and value of 0 from 1970 to 1987 and value of 1 from 1988 to 2019 for Equation 7. Thus, the break-adjusted longrun coefficients are reported in Table 6, and the estimated longrun coefficients are derived from the GH presentation.

The results in Table 6 show that the estimated models have high coefficients of determination. The adjusted R^2- show that about 99.1 percent, 99.6 percent and 99.0 percent of total variations in import demand for consumer goods, intermediate goods and investment goods were explained by their respective models. This is evidence of a good fit between each model structure. The F-statistic implies that all the estimated models are adequate and as such, all the explanatory variables jointly explain variations in import demand. The Durbin-Watson (DW) statistic in each model is approximately 2, indicating that none of the models is plagued by autocorrelation. The coefficients of each model show evidence of conformity with the theoretical expectation in terms of their signs. Household consumption is a significant determinant of import demand for consumer goods, with a positive influence. This finding is in support of Egwaikhide (1999). In terms of magnitude, a percentage increase in household consumption is expected to increase import demand for consumer goods by 0.52%. Although a 0.52% response per 1% change in household consumption may be considered inelastic, such a magnitude may be moderate for effective income-consumption policies (Heien, 1968). Interestingly, when disturbed

by structure break, the marginal effect of household consumption increases but is not significant in driving import demand for consumer goods.

The coefficient of industrial output is also positive and significant, and the size of the coefficient shows that a percentage increase in industrial output is expected to significantly increase import demand for intermediate goods by about 0.44%. This finding is consistent with Egwaikhide (1999). Although this result suggests that industrial output is a significant determinant of import demand for intermediate goods, the magnitude of the coefficient implies that the response to import demand for intermediate goods is inelastic. The finding is theoretically meaningful as it is expected that an increase in industrial output, especially when there is rarely any domestic substitute for the needed intermediate good, will increase import demand for intermediate goods. However, the effect of industrial output when disturbed by structural break increases but is not significant in driving import demand for intermediate goods. Import demand for investment goods is positively and significantly influenced by domestic investment. From our results, a percentage increase in the level of domestic investment is expected to increase import demand for investment goods by 0.36%. This coefficient is inelastic, implying that investment goods are essential for domestic production. This is because, in most developing countries, investment goods have no substitute, meaning that the import demand for investment goods may be highly inelastic. This finding also supports the finding by Egwaikhide (1999). The magnitude of the effect of domestic investment on import demand for investment goods is also not significantly influenced by regime shifts. The study found that each category of import demand is negatively impacted by its relative prices. For instance, it was revealed that the responses of import demand for consumer, intermediate, and investment goods to a 1% increase in relative prices are negatively 0.38%, 0.20% and 0.19%, respectively. These coefficients are significantly influenced by structural break, implying that the magnitude of the effect of relative prices on the various import demand categories increases with regime shift. This suggests that import demand for consumer, intermediate, and investment goods are price-inelastic even after a regime shift. However, the import demand for consumer goods seems to be more sensitive to changes in relative prices than intermediate and investment goods.

Table 6: Longrun results

Variable	Consumer Goods	Intermediate Goods	Investment Goods
C	1.489	3.611**	-0.945
	(0.3278)	(0.029)	(0.5299)
LHHC	0.522*		
	(0.0194)		
LIND		0.445*	
		(0.0108)	
LINV			0.361*
			(0.0119)
LRLP	-0.379**	-0.195*	-0.189
	(0.0043)	(0.0456)	(0.1339)
LEXR	-0.032	-0.011	-0.252*
	(0.7614)	(0.8880)	(0.0284)
LTAR	-0.006	-0.007*	-0.009*
	(0.1139)	(0.0135)	(0.0113)
LDCR	0.541**	0.018	0.011
	(0.0010)	(0.8752)	(0.9274)
LPEP	0.706**	0.386**	0.928**
	(0.0000)	(0.0013)	(0.0000)
TREND>45-2	-0.197	-0.103	-0.157
	(0.2107)	(0.3816)	(0.3115)
*(@TREND>45-2)*LHHC*	0.046		
	(0.2653)		
*(@TREND>45-2)*LIND*		0.058	
		(0.9406)	
*(@TREND>45-2)*LINV*			0.060
			(0.4075)
*(@TREND>45-2)*LRLP*	-0.029**	-0.048**	-0.059**
	(0.0042)	(0.0058)	(0.0046)
*(@TREND>45-2)*LEXR*	-0.062	-0.021	-0.079*
	(0.7467)	(0.1405)	(0.0345)
*(@TREND>45-2)*LTAR*	-0.002	-0.059*	-0.051*
	(0.9896)	(0.0291)	(0.0490)
*(@TREND>45-2)*LDCR*	0.084*	0.035	0.065
	(0.0454)	(0.9188)	(0.0691)
*(@TREND>45-2)*LPEP*	0.059*	0.053*	0.025*
	(0.0165)	(0.0221)	(0.0257)

NB: **(*) indicates significance at 1%(5%) level. Figures in () are the p-values

Table 6: Continue

	Consumer Goods	Intermediate Goods	Investment Goods
R-squared	0.992	0.997	0.992
Adjusted R-squared	0.991	0.996	0.990
F-statistic	1053.113	1548.089	605.078
Prob. (F-statistic)	0.000	0.000	0.000
Durbin-Watson stat	1.789	1.763	1.728

NB: **(*) indicates significance at 1%(5%) level. Figures in () are the p-values

Thus, currency devaluation as an instrument of import demand management may not be effective. In summary, it can be inferred that, on average, import demand in Nigeria is generally price-inelastic, regardless of a regime shift. This finding is consistent with the finding by Babatunde and Egwaikhide (2010), Nwogwugwu *et al.* (2015), and Madichie *et al.* (2020).

Exchange rate also has no significant impact on import demand for consumer and intermediate goods, given that its coefficients are not significant. It is, however, significant in the investment goods model with a regime shift. This implies that the exchange rate only influences import demand for investment goods and its magnitude rises with a regime shift, meaning that exchange rate policies can only be effective in managing import demand for investment goods. The coefficients of import tariff rates are approximately the same (-0.01%) in the three models. Each categories of import demand responds to a 1% change in import tariff rate by about -0.01%, suggesting that import demand is generally insensitive to variations in import tariff rates. Thus, using import tariffs to influence import demand behaviour in Nigeria may not have the desired impact. However, when disturbed by regime shift, there is a smaller increase in magnitude, which is only significant for intermediate and investment good models. This is probably due to the lack of a clear-cut import tariff structure by the Nigeria Customs Service (NCS), which is usually provoked by the conflict between imposing tariffs to raise revenue and using the same to correct periodic current account deficit. Therefore, we conclude that the import tariff rate is generally not an effective policy instrument for managing import demand behaviour in Nigeria and that regime shifts in import tariff rates do not make any significant change in modelling import demand for consumer goods.

The results also show that import demand for consumer, intermediate, and investment goods positively responded to a 1% change in public expenditure by about 0.71%, 0.39% and 0.93%, respectively. This suggests that import demand for investment goods is more sensitive to variations in public expenditure than import demand for consumer goods, which is also more sensitive to public expenditure than import demand for intermediate goods in Nigeria. Import demand for investment and consumer goods is relatively more sensitive to changes in public expenditure than the import demand for intermediate goods. This shows that a decrease in public expenditure may not bring about the expected decrease in import demand when the aim is to solve current account deficit problems, rather, such a policy would harm domestic production, which relies heavily on imported inputs. However, when public expenditure is disturbed by a structural break, there is a marginal increase in the magnitude of effects on the various categories of import demand, and the marginal effect is significant, indicating that regime shifts in public expenditure matter for modelling all categories of import demand in Nigeria.

The study further reveals that the coefficients of domestic credits for the three categories of import demand are individually inelastic. For instance, import demand for consumer, intermediate and investment goods responded to a 1% change in domestic credits by about 0.54%, 0.02% and 0.01%, respectively. This suggests that the import demand for consumer goods is more sensitive to variations in domestic credits than the import demand for intermediate and investment goods. Thus, domestic credit is an insufficient policy instrument for managing Nigeria's import demand. This finding is consistent with the finding of Omoke (2012). However, with regime shifts, the effect of domestic credit increases only on import demand for consumer goods. Thus, when the target of trade policy is to restore balance on the current account, decreasing the stock of domestic credits is expected to have little effect on the import demand for consumer goods with no effect on intermediate and investment goods.

4.3.2 Shortrun Results

The study reports in this subsection the results of the estimated shortrun dynamic model for the three categories of import demand. In line with Doguwa *et al.* (2014),

the error correction term in each of the models was generated from the GH longrun results, while the break dummies derived from the GH procedure are used to account for the role of regime shift within the ECM specification. The ECM results of the various import demand category are reported in Table 7. From the table, the regressors have the same signs and similar magnitude as in the long run, while a similar pattern of regime shift and effects were equally observed. All ECM estimates were negative, as expected and statistically significant at 1% level. For the consumer goods model, about 48.65 percent of the deviations from equilibrium are corrected annually. Similarly, the model of the intermediate goods adjusts to shortrun shocks by about 44.69 percent annually, while about 46.80 percent of the shortrun disequilibrium in the investment goods model is corrected in each period.

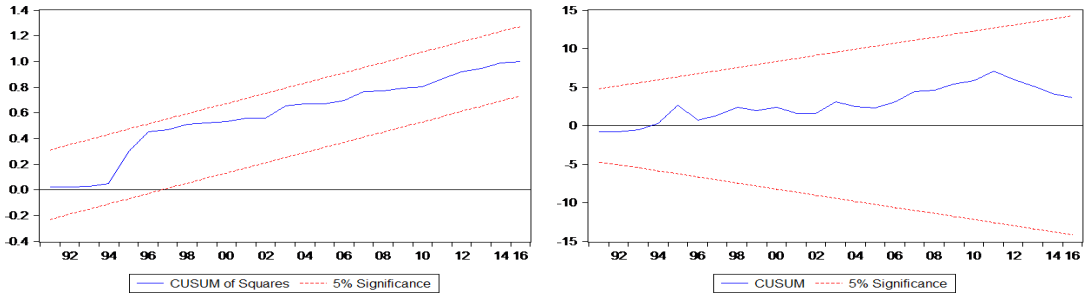
Table 7: Error Correction Model (Short run Dynamics)

	Consumer Goods	Intermediate Good	Investment Goods
C	1.505	1.453	1.423
	(0.3327)	(0.2091)	(0.4116)
D(LHHC)	0.5083**		
	(0.0253)		
D(LIND)		0.4361**	
		(0.0318)	
D(LINV)			0.4914***
			(0.0001)
D(LRLP)	-0.3556***	-0.3032**	-0.2568**
	(0.0043)	(0.0448)	(0.0412)
D(LEXR)	-0.5489	-0.4635	-0.6287
	(0.1124)	(0.2799)	(0.3819)
D(LTAR)	-0.0917	-0.1046	-0.0745
	(0.0747)	(0.0862)	(0.3184)
D(LDCR)	0.4938**	0.2234**	0.1898**
	(0.0248)	(0.0366)	(0.0266)
D(LPEP)	0.5002***	0.6057***	0.6258***
	(0.0027)	(0.0005)	(0.0010)
TREND>45-2	0.2901	0.4746***	0.1852**
	(0.4288)	(0.0068)	(0.0305)
*(TREND>45-2)*D(LHHC)*	0.0925	0.0811	0.0677
	(0.1241)	(0.4120)	(0.1389)
*(TREND>45-2)*D(LRLP)*	-0.0514**	-0.0318**	-0.0862**
	(0.0182)	(0.0308)	(0.0194)
*(TREND>45-2)*D(LEXR)*	-0.0614	-0.0644	-0.0447
	(0.1429)	(0.1260)	(0.2610)
*(TREND>45-2)*D(LTAR)*	-0.0029	-0.0611	-0.0025
	(0.4900)	(0.2216)	(0.0890)
*(TREND>45-2)*D(LDCR)*	0.1181**	0.0576**	0.1165**
	(0.0331)	(0.0248)	(0.0281)
*(TREND>45-2)*D(LPEP)*	0.0947***	0.1258***	0.1894*
	(0.0031)	(0.0017)	(0.0358)
ECM(-1)	-0.4865***	-0.4469***	-0.4680***
	(0.0002)	(0.0015)	(0.0006)
R-squared	0.842	0.784	0.740
Adjusted R-squared	0.810	0.769	0.719
F-statistic	23.13	15.284	18.042
Prob. (F-statistic)	0.000	0.000	0.000
Durbin-Watson stat	1.818	1.602	1.902

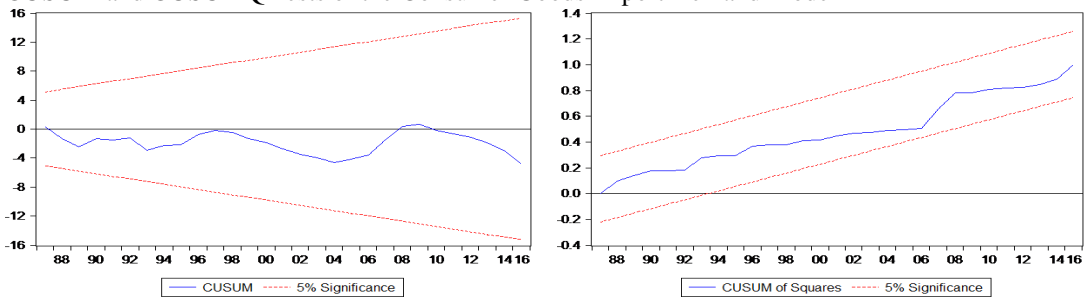
NB: ***(**) denotes significance at the 1%(5%) level. Figures in () are the P-values

4.3.3 Post-Estimation Diagnostic Tests

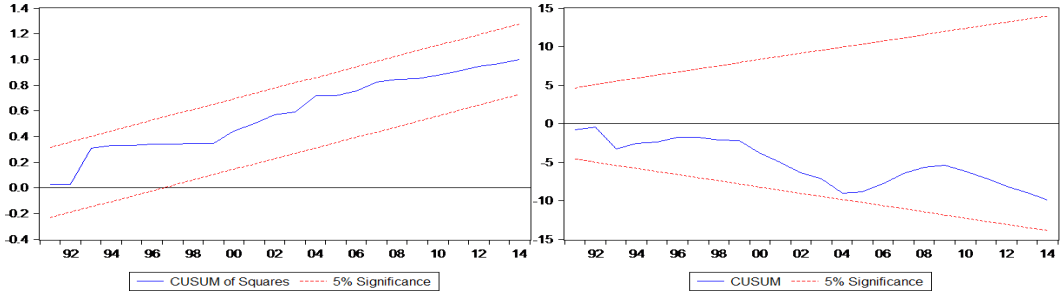
It is imperative to test the stability of the estimated models over the period under review, having accounted for regime shifts using break dummies. This also ensures the reliability of the estimates for effective policy formulation. For this purpose, the cumulative sum (CUSUM) and cumulative sum of squares (CUSUMQ) were used and the results shows that the coefficients of the three categories of import demand are stable. This is because the fitted lines fall within the 5% upper and lower bounds for both CUSUM and CUSUMSQ. are reported in Figure 5.



CUSUM and CUSUMQ Tests of the Consumer Goods Import Demand Model



CUSUM and CUSUMQ Tests of the Intermediate Goods Import Demand Model



CUSUM and CUSUMQ Tests of the Investment Goods Import Demand Model

Figure 5: Stability Test of the Estimated Import Demand Models

The Breusch-Godfrey Serial Correlation LM test was used to test for serial correlation, and the results are reported in Table 8.

Table 8: Breusch-Godfrey Serial Correlation LM Test

Model	F-statistic	Prob.
Consumer Goods Import Demand Model	0.237597	0.7905
Intermediate Goods Import Demand Model	0.175974	0.8396
Investment Goods Import Demand Model	2.366308	0.1522

From the Table, the probability value of the F-statistic for each of the models is greater than 0.05. Thus, we could not reject the null hypothesis of no autocorrelation. Accordingly, we conclude that none of the three models is plagued by the problem of serial correlation.

5. Conclusion and Policy Recommendations

5.1 Conclusion

The study estimated the disaggregated import demand function for Nigeria during the period 1970 – 2019. The study disaggregated Nigeria's import demand into three major categories of consumer, intermediate and investment goods. The objective is to determine the sensitivity of each category to variations in relative prices, import tariff rates, public expenditure, and domestic credits, as well as to understand the role of a structural break in modelling import demand in Nigeria. The results show that the major determinants of import demand for consumer, intermediate, and investment goods are household consumption, industrial output, and the level of domestic investment, respectively. Furthermore, import demand is generally inelastic to variations in relative prices, income, import tariff, public expenditure, and domestic credits in Nigeria., It was also found that regime shifts in relative prices and public expenditure significantly influence all categories of import demand. Based on these findings, the study concludes that import demand management can be more effective based on disaggregated import demand functions. It was also found that structural break has important implications for modelling each category of import demand.

5.2 Policy Recommendations

The study recommends that import management policies should be designed to encourage more importation of intermediate and investment goods; currency depreciation should always be targeted only to discourage the importation of consumer.

The fiscal authority should review the existing import tariff structure. There is a need for a periodic cut in excessive public expenditure, especially on consumption, that tends to attract more imported consumer goods, as well as reduce expenditures on unproductive projects. Policies that would contract the stock of domestic credits are needed to discourage expenditures on imported consumer goods, while credits should be made available for the importation of intermediate and investment goods, which are necessary for domestic production in the country. In formulating import demand management policies, relevant authorities should always take cognizance of the role of regime shifts usually brought by economic reforms.

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