

Full Length Research Paper

Does devaluation improve the trade balance of Nigeria? (A test of the Marshall-Lerner condition)

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Accepted 15 September, 2011

This paper aims to investigate the effect of devaluation/depreciation of the Nigerian naira on the country's trade balance for the period 1986 to 2008. The paper adopts the elasticity approach to the balance of payments adjustment. The study investigates the effect of exchange rate devaluation as a policy on the Nigerian economy's Trade for the period 1986 to 2008. The focus is to test for the Marshall-Lerner condition of the power of exchange rate devaluation as a stabilization policy of a particular country. The study adapted the elasticity approach of the Marshall-Lerner condition to the balance of payment adjustment mechanism. The ordinary least square (OLS) method was used to estimate the import and export demand functions. The empirical results shows that devaluation/depreciation does not improve the trade balance; since the sum of demand elasticities for imports and exports is less than unity, the Marshall-Lerner condition do not hold. This paper concluded that devaluation/depreciation cannot improve the trade balance in the Nigerian economy. Devaluation/depreciation can only benefit countries that are originally export based before the devaluation/depreciation of a currency. Economies that are import dependent can hardly benefit from the devaluation/depreciation of its currency. Nigeria is a typical example of a 90% dependent on imported raw materials into the production process. For an economy that is structured like that of Nigeria, devaluation/depreciation will surely complicate the problem on hand, rather than solving it.

Key words: Devaluation, trade balance, Marshall-Lerner condition, co-integration, Nigeria.

INTRODUCTION

Geoffrey (1981) wrote in his book that "nation that requires goods and services from abroad must make adequate arrangement to pay for them, by exporting goods and services". These exports must be so priced that they represent an attractive proposition to overseas customers. If they do not attract customers, it will be impossible to achieve a balance of payment on overseas trade and special measures will be needed to correct the imbalance. The three methods of correcting an imbalance of payments are:

1. The gold-standard method;
2. The flexible-exchange-rate or floating currency method;

3. The method of managed flexibility (adopted at Bretton Woods in 1944).

The Gold standard mechanism automatically corrects an imbalance by deflating the home economy. The flexible exchange rate methods automatically correct an imbalance by varying the exchange rate. The trouble with managed flexibility was that it could not automatically do either.

The solution was proved to be by government action. The only way to deflate the home economy and secure a balance of payments was for the government to introduce controls over the level of economic activity in the economy. The Chancellor of the Exchequer pursued policies, which came to be known as "stop-go" policies. There were various measures available to him.

1. Adjustment of the bank rate (now called minimum lending rate);

JEL code: F₁, f₃, f₄.

Table 1. Foreign trade in Nigeria, 1986 to 2008 (N, b)

<i>Year</i>	<i>Export 1</i>	<i>Import 2</i>	<i>Foreign TR 3</i>	<i>GNP 4</i>	<i>1:4%</i>	<i>2:4%</i>	<i>3:4%</i>
1986	8920.6	5983.6	14904.2	71100	12.6	8	4
1987	30360.6	17861.7	48222.3	70700	42.9	25.3	68.2
1988	31192.8	21445.7	52638.5	77800	40.1	27.6	67.7
1989	57971.2	30860.2	88831.4	83500	69.4	37.0	106.4
1990	109886.1	45717.9	155604.0	90300	128.5	92.0	220.5
1991	121535.4	87020.2	208555.6	94600	128.5	149.8	362.4
1992	207266.0	145911.4	353177.4	97400	212.8	149.8	362.6
1993	218770.1	166100.4	384870.5	10010	218.8	166.1	384.8
1994	206059.2	162788.8	368848.0	101350	203.3	160.6	363.9
1995	950661.4	755127.7	1705789.1	103530	918.3	729.4	1647.6
1996	1309543.3	562626.6	1872169.9	107020	1223.6	525.7	1749.4
1997	2948247.2	30181.3	5250060.1	11050	265.5	207.3	472.8
1998	500123.9	469559.1	969.683.0	120697	414.4	389.0	803.4
1999	1188969	862316	2051486	116,700	1019	739	1758
2000	1945723	985022	2930746	121,200	1605	813	2418
2001	1867954	1158180	32281342	126,300	1479	917	2556
2002	1744177	1512686	3258873	131,500	1326	1150	2478
2003	3087886	2080236	5168122	136,500	2262	1524	3786
2004	4622781	1967046	6569527	140,300	3295	1402	4683
2005	7246535	2800856	10047391	143,200	5060	1956	7016
2006	7324680	3412177	10736857	146,400	5003	2330	7334
2007	8120148	4381930	12502078	147,300	5513	2975	8488
2008	9774511	5921449	15695961	149,800	6525	3953	10,478

Source: Columns 1 to 4 CBN statistical Bulletin. Column 5 to 7 calculated by the author.

2. Directives to the banks about the restriction of loan facilities;
3. Exchange control to prevent the export of capital and reduce foreign travel;
4. Import controls;
5. Aid to exporters to encourage exports;
6. Higher purchase controls and other credit sequences to reduce home demand.

All these measures could be taken to touch the brakes or the accelerator under the *Bretton Woods* system to cure a temporary imbalance in the balance of permanent. When the imbalance is permanent year after year, the system allowed for devaluation, a major change in the parities laid down at *Bretton Woods*. The *Bretton Woods* system has been abandoned since 1972, after an agreement called the Smithsonian Agreement drawn up in 1971, which allows currency to float freely.

What is the effect of a floating exchange rate? Instead of once-and-for-all devaluation to a new fixed parity position, the floating of an exchange rate allows the currency to change its value in response to the supply and demand positions. How successful this depreciation of the currency would depend upon the elasticities in import and export trade. Wilson and Tat (1979) pointed

out that devaluation increases exports for developed countries with fixed exchange rates.

Devaluation according to Navaretti et al. (1997) were of the opinion that it has major consequences especially for countries already in international market and for those that does not feature effectively. The exporting countries will increased their exports and non-exporting countries will be reluctant to incur the substantial costs needed to enter the international market. That is, cost increased for importing firms.

The objectives of the study

The aim of this paper is to empirically investigate the quantitative impact of devaluation and the depreciation of the Nigerian Naira on the trade deficits (without oil) for 1986 to 2008. Foreign trade in Nigeria between 1986 to 2008 has been illustrated in Table 1.

The hypothesis of the study

H₀: Devaluation and depreciation will not succeed in improving the trade balance deficits (without oil) in the Nigerian economy.

H₁: Devaluation and depreciation will succeed in improving the trade balance deficits (without oil) in the Nigeria economy.

Devaluation and its operations

Devaluation has often been used by developing countries of which Nigeria is one, to solve the following problems.

1. To reduce large external imbalance;
2. To correct – perceived over valuations of the real exchange rate;
3. To increase international competitiveness;
4. To promote export growth.

IMF policy stipulates that a country devalues its currency to solve a fundamental disequilibrium in its balance of payments. However, Gafar (1981) stressed that devaluation is usually considered to be the weapon of last resort by policy makers; and it is frequently used before or when the authorities approach the IMF for balance of payments support.

Effect of devaluation of a currency

Devaluation is expected to be a useful measure for correcting trade imbalance. It has several effects on major macroeconomic variables. It reduces expenditure and stimulates the level of output through the multiplier effect. At the other extreme, it has an inflationary effect and it increases import cost and if the nation involved is import dependent, the cost of production increase. It also increases the cost of servicing foreign debt.

Motivation for the study

The motivation for this study centered on the premises that devaluation as a policy instrument is being used by the Nigeria government to correct the imbalances in the balance of payment equilibrium. There is no serious study in Nigeria that has, analysed this policy to see whether it is an appropriate policy to be used and could be effective in the Nigerian economy. Hence, this study is prepared to provide an in-depth study for the effectiveness and appropriateness of this policy as a stabilizing tool.

LITERATURE REVIEW

Nigeria's economic performance fluctuated over the study period, 1986 to 2008 for economic and political reasons. The trade deficit problem (without oil) that the Nigeria's economy faces is the characteristic feature of Nigeria's

balance of payments situation.

One of the major works on the effect of devaluation on the trade balance of a country was the work of Reinhart (1994). He re-examined the role of relative price in affecting trade. He came up with the following findings:

1. The analysis suggests that in accordance with standard microeconomics theory, income and relative prices are both necessary and sufficient to pin down steady state trade flows.
2. Relative price is found to be a significant determinant of the demand for import and exports.
3. Even though relative price has a predictable and systematic impact on trade, price elasticities tend to be low and in most cases, will be below unity. Zaidan (1999) gave a suggestion that this type of result suggest that large relative price swings are required to have an appreciable impact on trade patterns.
4. Industrial country income elasticities are well above their developing country. This means that in a scenario of balanced growth, the developing country trade balance should improve. However, according to Zaidan, this type of result does not hold for Africa, most likely because of the high primary commodity content of African export. The Jordanian economy was also investigated by Al-Abdelrazag (1997). He investigated the impact of the Jordanian dinar devaluation on the trade balance for the period (1969 to 1994). Al-Abdeirazaq follows the elasticity approach to the balance of payments. His findings shows that devaluation did not improve the trade balance, simply because, the sum of demand elasticities for import and exports is less than one.

Navaretti et al. (1997) also investigated the Cameroonian economy and they showed that the devaluation had major consequences; in particular for firms already involved in trade, firms increase their exports, while non-exporting firms were reluctant to incur the substantial costs needed to enter the international market. Cost, according to them increase especially for importing firms. Akinlo (1996) investigated the effect of depreciation on the Nigerian economy between 1986 and 1991. He pointed out that when the massive depreciation of the naira during the adjustment is taken into consideration, the actual profit for all categories of industries fell precipitately. When compared with 1985 adjusted values, all categories of industry showed a significant decrease. He concluded that negative relationships existed between the profit levels of the manufacturing industries generally and the movement in the exchange rate. The higher the rate of exchange rate depreciation, the lower the rate of profit, and vice versa. He went further to tell us that the result tends to demonstrate that the exchange rate constituted a major component of the manufacturing industries production process in particular and the economy at large in general. This paper will make use of econometric models that will contain a set

Table 2. Average relative importances of export/GNP import/GNP and foreign trade/GNP.

Period	Column 1/ column 4 in %	Column 2/ column 4 in %	Column 3/ column 4 in %
1986-92	89.7	55.8	145.5
1993-98	840.7	363.6	903.7
1986-98	297.9	197.6	495.4
2000-2008	3308.7	1781.0	5099.7

Source: Calculated by the author from Table 1.

of economic variables that might have influence on the deficit. This study just like Zaidan (1999) for the Iraqi economy will follow the elasticity approach in order to determine the validity of the devaluation and depreciation of the Nigerian naira as a policy measure to solve the trade deficit problem, also to test for the validity of the Marshall-Lerner condition.

Foreign trade in Nigeria

The characteristic feature of the Nigeria economy is such that the oil dominated the export basket while raw materials and manufactured goods dominate the import. The importance of foreign trade for Nigeria emerged from her inability to supply her economic development with the necessary inputs. For the period 1986 to 1998, the percentage of imports to gross national product (GNP) averaged 197.6 (Table 2), and from 2000 to 2008 averaged 1781. During this same periods, the percentages of export to GNP average 297.9% and 3308.7.

Nigeria's trade with the rest of the world measured as a percentage of GNP, fluctuated over the study period. In 1986, the foreign trade percentage showed its minimum value of 20.7%, as compared to a maximum of 1749.4% in 1996, and 10,478 in 2008. The feature of the economy's balance of trade without oil has been the trade deficit.

Table 3 threw more light on the state of the Nigerian economy with oil and without oil. The Nigeria economy ran a trade deficit (without oil) throughout the period of study, 1986 to 2008. On the other hand, it has shown a surplus (with oil) throughout. The aim of the study is to ascertain the effect of correcting trade balance (without oil) deficit by using devaluation. This is to analyze the effect of devaluation on the Nigeria economy to see whether or not devaluation can correct the trade balance (without oil) deficit.

Devaluation and the elasticity approach

There are four different approaches to devaluation. We have:

1. Elasticity approach;

2. Absorption approach;

3. Monetary approach, introduced by Kreinin (1983), and

5. Portfolio management introduced by Dornbusch (1973).

For the purpose of this study, the elasticity approach will be adopted (The reason beings that the focus of the study marshal-Lerner stabilization condition is based on elasticity approach).

The elasticity approach focuses on the impact of relative price on the trade balances as pointed out by Husted and Michael (1995). The aim of devaluing a country's currency is to bridge the gap between the value of exports and that of imports. Devaluation will lead to a reduction in the net excess demand for foreign currency. Devaluation will reduce the foreign prices of the devaluing country's exports and increase the foreign demand for domestic products. The immediate effect of devaluation is to raise the price of imported goods, which will through one way or the other reduce the demand for imports. Elasticity approach to devaluation stipulates that the effect of devaluation on the trade deficit depends on the demand elasticity of imports and the supply elasticity of foreign goods.

Changes in domestic proceeds from exports depend on the elasticities of foreign demand for export, from the country and on the elasticities of the domestic supply of exports. Any change in the foreign exchange rate will cause a change in the domestic proceeds of imported foreign goods. The relative price effect of the Nigerian naira devaluation is supposed to increase world demand for domestic goods and decrease domestic demand for imported goods. This works out perfectly if a country is a major producer of international goods that can compete effectively in the international market. In this case, demand will be shifted towards the country. But if it is a country that the bulk of the export is oil that is quoted in US\$ or if the goods are agricultural goods that are somehow price inelastic, change in the demand for a country that falls into this type of category might be very insignificant. Nigeria is one of the countries that falls into this type of category.

The Marshal – Lerner condition provides the analytical ground for the elasticity approach. This was proposed by Stern (1980). The Marshal – Lerner condition rests on several restrictive assumptions:

Table 3. Nigeria's trade balance 1986 to 2008.

Year	Trade balance (with oil) ₦'b	Trade balance (without oil) ₦'b
1986	7454.6	-4517.6
1987	25038.5	-12539.6
1988	24632.3	-14885.2
1989	50345.2	-23234.2
1990	100553.4	-36385.2
1991	109262.8	-74747.6
1992	183355.5	-122000.9
1993	172449.5	-119779.8
1994	158360.6	-115090.2
1995	771739.4	-576205.7
1996	1124037.2	-377120.4
1997	246463.1	181819.7
1998	187487.5	-198212.9
1999	967815	-631361
2000	1700063	-739382
2001	1602839	-1093064
2002	1287736	-1056254
2003	2594168	-1586537
2004	4171358	-1555621
2005	6343280	-1897602
2006	6258590	-2346086
2007	7130474	-3392256
2008	8760115	-4907054

Source: CBN statistical Bulletin, 2008.

1. Partial equilibrium provides the theoretical base, that is, it considers the effect of exchange rate variations on import and exports.
2. It assumes that the price elasticity of supply at home and abroad both equal infinity.
3. It ignores the monetary effects of exchange rate variations.
4. The Marshall – Lerner condition assumes an initial balance of trade. Some writers including murray do not agree with some of the assumptions of Marshall – Lerner especially the first two assumptions as stated previously.

They believe that the elasticity of supply is expected to be less than infinity and this will dampen the effect of devaluation. This condition is stated as:

$$\Delta B = X \frac{ex(nx-1) + Mnm(cm+1)}{ex + nx \quad nm + cm}$$

Where ΔB = change in the trade balance; X = value of exports; M = value of imports; ex = home export supply elasticity; cm = foreign import supply elasticity; nx = elasticity of foreign demand for imports and nm = elasticity of domestic demand for imports.

When $ex = cm = \infty$ and $x/m = 1$, the Marshall Lerner

condition is reduced to $nx + nm > 1$.

The econometric model of import and export functions

Import function

One of the simplest import functions is the one that relates the quantity of imports demanded to the real income level and to the relative price of imports (the ratio of the import price to the domestic price index). Positive relationship is expected on *a priori* ground between income level and imports. This is because it reflects the effective demand for domestic goods and services. A negative relationship is expected between the relative price of imports variable and import. This is because devaluation will increase the price of imported goods; this will reduce imports by discouraging imported consumer goods and imported inputs into the production process, which will cause increase in the cost of production especially for countries that are import dependent. This increased cost in the production process will later be transferred to the consumers in the form of higher prices. This price increase will discourage the demand for goods produced which also lead to a decline in the demand for

imported non-consumer goods.

The import demand function can be written in the following form:

$$M = f(Y, pm/pyn) \quad (1)$$

where, M = real value of imports; Y = level of real income, and PM = the price ratio of the import price index (PM) to the domestic price (PY_n) index

In the logarithmic form, Equation (1) becomes:

$$\ln M = \alpha_0 + \alpha_1 \ln Y + \alpha_2 \ln PM/PY_n + \epsilon \quad (2)$$

where, α_1 = income elasticity of import, and α_2 = relative price elasticity of exports.

The importance of the value of relative price elasticity of imports lies in the fact that if import price elasticity is > 1 ; the Nigerian naira value of imports falls and the value of exports increases and vice versa.

Export function

Economic theory made us to believe that there is a set of explanatory variables that determine the export function:

1. The level of world income;
2. Relative price (that is, the ratio of the non-oil export price index in the country in focus (in this case Nigeria (to the world price index).

The export function can be written as:

$$E = f(Y_w, PE)$$

Where, E = real value of Nigerian non-oil exports; PE = price index of non-oil exports; PW = World price index (1983 – 100), and Y_w = growth rate of world income.

Oil export has been excluded here simply because the price is quoted in US\$ which is being determined by external forces. Essentially, the focus of this paper is to examine the possibilities of improving the trade balance (without oil) via devaluation, and also to test for the validity of the Marshall-Lerner condition for the Nigeria economy. Zaidan (1999) used this same procedure for the Iraq economy. A negative relationship is expected between price variables and exports demand while a positive relationship is expected between income variables and export demand.

When Equation 3 is transformed into a logarithmic form then we have:

$$\ln E = \beta_0 + \beta_1 \ln YW + \beta_2 \ln PE/PW + \epsilon \quad (4)$$

where, β_1 = foreign income elasticity of import demand function, and β_2 = relative price elasticity of export demand function.

TYPE AND SOURCES OF DATA, DEFINITION OF VARIABLES AND METHODOLOGY

This study made use of secondary data; the data covered a period of twenty five years starting from 1986 through 2008.

Sources of data

1. CBN annual reports and statement of account.
2. CBN Statistical Bulletin.
3. CBN financial statistics.
5. IFS – International Financial Statistical year book, and
6. World tables.

Definition of variables

The variables used in the study are as defined as:

- M = Real value of imports;
- Y = Level of real income;
- PM = Import price index;
- PY_n = Domestic price index;
- E = Real value of non-oil export;
- PE = Price value of non-oil exports;
- P_w = Growth rate of world income, and
- PW = World price index.

EMPIRICAL RESULTS AND INTERPRETATIONS

The import demand function Equation 2 and export demand function Equation 4 were estimated using the ordinary least square method. In order to avoid the possibility of spurious regressions from the OLS, it is very important to check the variables used of stationarity.

To test for stationarity, the study adopted the Augmented Dickey Fuller (ADF) 1989 unit root test.

The regression equation is of the form:

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

To test for a unit root in the regression, we test the coefficient of X_{t-1} .

The MacKinnon critical values gave the critical values for the determination of the order of integration. The null hypothesis of the existence of a unit root is stated as

$$H_0: X_{t-1} \quad (1)$$

If the MacKinnon critical value is less than the ADF test statistics, then, we reject the null hypothesis that X_t contains a unit root and the alternative hypothesis is accepted that X_t is stationary and vice versa.

In a situation where the variables were found to be non – stationary, they were differenced (d) times in order to make them stationary. The co-integration among the

Table 4. Import supply (Unit root test).

Variable	adf Value at level	First difference	Second difference	Mackinnon critical value 1%	No. of lags
Im	-0.3780		-5.41955	-3.7204	2
ly	0.5036		-5.4874	-3.7204	2
Im/pyn	-0.47256		-4.5416	-3.7204	2

Table 5. Export supply (Unit root test).

Variable	adf Value at level	First difference	Second difference	Mackinnon critical value 1%	No. of lags	Order of integration
LNO EX	-0.8296	-4.6151		-3.7204	1	(1)
LYW	-3.4671	-9.8191		-3.7076	1	(1)
LPE /PW	-0.70868	-4.3280		-3.7076	1	(1)

Table 6. Johansen co-integration test.

Eigen value	Likelihood ratio	5% Critical value	1% Critical value	hypothesized no. of co-integrated equations
0.39944	16.7911	29.68	35.65	None
0.091242	3.02393	15.41	20.04	At most 1
0.016189	0.44067	3.76	6.65	At most 2

* (**) Denotes rejection of the hypothesis at 5% (1%) significance level; LR rejects any co-integration at 5% significance level.

Table 7. Johansen co-integration test.

Eigen value	Likelihood ratio	5% Critical value	1% Critical value	Hypothesized no. of co-integrated equations
0.606797	32.2974	29.68	35.65	None *
0.211882	7.09477	15.41	20.04	At most 1
0.024360	0.66585	3.76	6.65	At most 2

* (**)Denotes rejection of the hypothesis at 5% (1%) significance level; L.R. tests indicate 1 co-integrating equation at 5% significance level.

variables was also investigated using Johansen co-integrating techniques.

The need to verify the time-series characteristics of the variables used in the model prompted a step-by step approach in the analysis of the empirical results obtained for the Model 1 (Import supply) and Model 2 (Export supply) (Tables 4 and 5).

The unit root test was performed to check whether each of the data series is integrated and has a unit root. The Adf test is based, on the regression as follows:

$$\Delta y_t = \alpha_0 + \alpha_1 y_{t-1} + \sum_{t=1}^n \alpha_t \Delta y_t + \alpha_t + e_t$$

Where time series, T = liner time trend; Δ = the first difference operator; A_0 = a constant; n = the optimum number of logs on the dependent variable, and E = the random error term.

After comprising the ADF values against the Mackinnon critical values at 1%, the null hypothesis was accepted since the variables were expressed in levels, and none of them was found to be stationary, both in import supply and export supply functions.

In the import function, all variables were stationary at second difference. In the export function, all variables became stationary at first difference. These results are shown in Tables 4 and 5. Tables 6 and 7 present the results of Johansen co-integration tests for the two functions

1. Import model (Table 6);
2. Export model (Table 7).

Looking at the likelihood ratios as compared to the critical values at 5% for the two functions, the hypotheses of no co-integrating vector was rejected.

Table 8. Error correlation model.

Variable	Coefficient	Std error	t-Statistic	Prob.
C	- 0.00746	0.001103	-6.7633	0.000016
D(LY, 2)	0.15926	0.03097	5.14239	0.000032
D(LPM/PY _n , 2)	-0.35637	0.066554	5.35499	0.000021
ECM (-1)	-1.02265	0.27552	-3.7117	0.00071
R ²	0.687042	Mean dependent variable		-2.00065
Adjusted R ²	0.607091	S.D. dependent variable		1.98764
S. E. of regression	0.572401	Akaike info criterion		3.1857
Sum Sq. residuals	7.53677	Schwarz Criterion		3.04997
Log likelihood	-21.08298	F –statistics		24.84098
Durbin-Watson stat	2.030791	Prob (F-statistics)		0.000092

Table 9: Error Correlation Model

Variable	Coefficient	Std error	t-Statistic	Prob.
C	-0.078798	0.030891	-2.55084	0.04234
D(LWY)	0.061965	0.022905	2.70530	0.03245
D(LPE/PW)	-0.428727	0.209464	-2.04678	0.5678
ECM (-1)	-0.625239	0.27671	-2.25953	0.0336
R ²	0.616561	Mean dependent variable		2.021968
Adjusted R ²	0.5783	S.D. dependent variable		2.727892
S. E. of regression	0.685003	Akaike info criterion		6.217166
Sum squared residuals	10.79227	Schwarz Criterion		4.409142
Log likelihood	-25.93175	F –statistics		22.119246
Durbin-Watson stat.	2.09676	Prob (F-statistics)		0.00046

For the export demand function LR test indicates one cointegrating equation at 5% significance level. With these results, there is need to set up error correction models for the two functions. These are shown in Table 8.

Error correction (import model):

Dependent variable: D (LM, 2)
 Method: Least squares
 Samples (adjusted): 1982, 2008.
 Included observations: 27 after adjusting endpoint

Error correction (export model):

Dependent variable: D (LNOEX, 2)
 Method: Least squares
 Samples (adjusted): 1986, 2008
 Included observations: 27 after adjusting endpoints.

The results of the two error correction models and their interpretations are as discussed subsequently.

The Nigerian economy was modeled using time series data from 1980 to 2008 to estimate both import and

export functions in order to test whether devaluation can improve the trade balance in Nigeria (A test of the Marshall – Lerner condition).

The estimated import function of the Nigerian economy, at 1985 constant prices as shown in Table 9 is extracted as:

$$L_n M = - 0.00746_{(6.76)} + 0.15926_{(5.14)} L_n Y - 0.35637_{(5.36)}$$

$$\left(\frac{PM}{PY_n} \right)$$

$$\bar{R}_2 = 0.607$$

$$F\text{-stat} = 24.840$$

$$D. W. = 2.030$$

The income variable as indicated by the result shows that the income variable is having the correct sign, that is, the positive sign, and is also very significant.

The income elasticity for import demand stood at 0.15926. This shows that for every 1% increase in the level of income, there will be a 0.16% increase in volume of demand (that is, the quantity demanded).

The relative price variable has the expected negative result and is significant. This result indicates that the price elasticity of demand is elastic. If the relative price ratio is increase by 1%, this will reduce the quantity imported by 0.356%.

The R^2 stood at 0.60 and this means that the variation in the explanatory variables explain 60% of the variations in the volume of imports.

The total significance of the model is indicated by the F -statistics. The results of the export demand function is as shown in the following equation.

$$L_n E = -0.078798_{(-2.55)} + 0.061965 L_n Y_w_{(2.705)} - 0.42872 L_n PE/PW_{(-2.046)}$$

Adjusted R^2 = 0.58

F – statistics = 22.12

$D.W.$ = 2.10

The proxy used to represent world income is its growth rate. The findings as per the export function shows a positive and a significant impact of the world income growth rate on the export performance.

The income elasticity of export stood at 0.619. The implication of the result is that if the growth rate of world income is increased by 1% then, export performance will increase by 0.0619%. The relative price variable is significant and is negative. This outcome conforms to the a priori expectation. The price elasticity of export demand stood at -0.428. The explanatory variables of the equation explained about 58% of the variation in the export volume as indicated by the adjusted R^2 .

The major objective of this paper is the test on the Marshall-Lerner condition. The Marshall Lerner condition stipulate that, for devaluation of a country's currency to improve the balance of trade, the sum of the price elasticities of the import and that of the export demand functions must be greater than one.

From the empirical results, the absolute sum of the price elasticities of the import and export demand functions is less than one, that is, $0.3564 + 0.4287 = 0.7851 < 1$

The outcome of the result shows that the devaluation of the Nigerian naira does not guarantee an improvement in the Nigerian trade balance.

SUMMARY, CONCLUSION AND RECOMMENDATION

So far, the study has been able to analyze import and export demand functions for the Nigerian economy from 1980 to 2008. The method of OLS was used. The variables were tested for stationarity, cointegration and error correction.

The variables were found to be significant at 5% level. In the import demand function, the income variable has the correct sign that is, positive, and is very significant. Its elasticity stood at 0.15926. The price variable also has the expected sign (that is, negative), and is also significant.

The result of the export demand function also shows a positive and a significant impact of the world income growth rate on the export performance. Its elasticity stood at 0.0619.

The relative price variable is negative and significant. Its elasticity stood at -0.428. The paper was able to test effectively, the Marshall – Lerner condition. It was proved that in the Nigerian economy, between 1986 and 2008, the Marshall-Lerner condition does not hold. The implication of this is that, devaluing the Nigerian naira, will not improve the trade balance of Nigeria.

In the analysis so far, it has been established that the absolute sum of the price elasticities of the import and export demand functions is less than one, when estimated at point (that is, $0.3564 + 0.4287 = 0.7851 < 1$)

The implication of this outcome is that, devaluing the Nigerian naira does not guarantee improvement in her trade balance. For the Nigerian economy, from 1980 to 2008, the Marshall – Lerner condition does not hold.

Going by the results of the study, the Marshall – Lerner condition for the Nigerian economy does not hold. The implication is that, the devaluation of the naira currency does not guarantee any improvement in the trade balance.

The ways, by which this condition can hold, whereby the devaluation of the naira can bring about improvement in the trade balance includes:

1. Stimulation of export base;
2. Research into local sourcing of raw materials;
3. Reduction in the unit price of production;
4. Increase in productivity;
5. Government policies that are export friendly, and
6. Government must provide infrastructures in order to reduce the burden of export sector, and also to promote efficiency in the sub-sector, and to promote effective participation in the international market. These infrastructures includes: NEPA, good road, and good tariff systems that are export friendly.

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