

Factors Influencing Nigeria's Trade

Tari M. Karimo* Wisdom S. Krokeyi Stephen Z. Ekainsai

Department of Economics, Niger Delta University, Wilberforce Island, P M B 071, Bayelsa State, Nigeria

Abstract

This paper examined factor influencing Nigeria's trade with the rest of the world using standard time series analysis technique on annual data spanning 1981 to 2012. Focus was on industrial and agricultural production. The stylized facts showed the increasing neglect the non-oil sector has suffered over the years. On average, oil trade dominates total trade and is about three times non-oil trade. Oil trade is also more volatile, about 2 times more volatile than non-oil trade. Also, oil balance of trade is comparatively two times more unstable. Nigeria's export on average has been larger and more volatile than import due to the dominance of oil-export. All the variables were I(1) and cointegrated. The error correction results showed that in industrial output growth is more important in explaining balance of trade and total trade adjustments to equilibrium. This could be misleading, because the Nigerian industrial sector is dominated by activities in the petroleum (oil) sector which predominantly is an extractive industry. This implies primary product trade drives the Nigerian economy. This underscores why fluctuations in the crude oil market has had significant effect on the Nigerian economy in time past and in contemporary times. It was concluded that Nigeria's trade pattern does not conform to the Heschler-Ohlin theory of factor endowment. Amongst others, it was recommended that the Nigerian state should come up with a consumption theory, where citizens and foreign nationals domiciled in the country are encouraged to consume more of made – in – Nigeria goods.

Keywords: Factors, Nigeria, oil, non-oil, Trade

JEL Classification: C22 F14

1. Introduction

No country is self-sufficient in terms of goods and services needed to meet her daily needs of raw materials, semi-finished goods, and finished goods. Hence the involvement of countries in international trade as espoused by trade theories is inevitable. Trade has therefore become a standard (norm) in the world system. The trading environment the world all over has been in constant change. These changes come with opportunities and challenges. The success of any nation involved in trade, to a large extent depends on her ability to identify and exploit these opportunities, while formulating programmes and policies to stem and/or turn the challenges to opportunities. Nigeria, since independence in 1960 has implemented various regimes of trade policy to strengthen her trade relations. Her trade policy has witnessed tremendous swings from high protectionism within the first decade of independence to the current more liberal stance (Adenikinju 2005).

Trade policy in Nigeria is geared towards promoting manufactured exports and enhancing linkages in the economy. The aim is not only to increase export revenue and reduce the country's reliance on the oil sector (Olaniyi, 2005) but also to discourage dumping, support import substitution, stem adverse movements in the balance of payment, conserve foreign exchange and generate government revenue (Bankole & Bankole, 2004).

At independence, Nigeria adopted the import substitution industrialization strategy. During the first decade after independence quantitative restriction and high import duties were used to provide protection to local manufacturing industries. Trade policy between 1970 and 1976 became less restrictive due to the post war reconstruction, only items regarded as nonessential consumer goods were restricted. The tariff rates on raw materials were reduced and quantitative restriction placed on spare parts, agricultural equipment and machinery were relaxed. These duties were eventually abolished in 1973 due to oil boom. In 1981, there was a policy shift towards export promotion and a move to intensify the use of local raw materials in industrial production thus tariffs on raw materials and intermediate capital goods were scaled down.

In addition, with the adoption of the Structural Adjustment Programme (SAP) in 1986 there was a significant shift in trade policy towards trade liberalization. A seven-year (1988-1994) tariff regime was introduced with the objective of achieving transparency and predictability of tariff rates. This was succeeded by another seven-year (1995-2001) tariff regime. The tariff structure between 1988 and 2001 increased import duties on raw materials and on intermediate and capital goods, while tariffs on consumer goods were slightly reduced.

Nigeria's trade policy regime as contained in the national economic empowerment and development strategy (NEEDS) and trade policy documents, is geared towards enhancing competitiveness of domestic industries, with a view to encouraging local value-added and promoting as well as diversifying exports. The mechanism adopted to achieve this is gradual liberalization of trade. Current reform packages are therefore designed to allow a certain level of protection of domestic industries and enterprises.

In spite of government efforts to diversify the economy and by implication its exports basket in order to strengthen her trade the non-oil sector still performs abysmally. For instance recent statistics showed that

Nigeria's commodity terms of trade which stood at 90.66 in 2012 hovered between 83.19 and 108.97 between 2000 and 2012 (CBN, 2012). For most of the period the commodity terms of trade was less than 100 indicating that the prices for Nigeria's exports has not been favourable. This has been blamed on the fact that Nigeria's export basket is constituted more of primary products including agricultural produce and crude oil. Further, whereas Nigeria's oil balance of trade was positive between 1981 and 2012 her non-oil balance of trade remained negative throughout the same period. Although, total balance of trade was negative between 1981 and 1983 it became positive between 1984 and 2012 save for 1998 when it recorded negative value. This position clearly showed that Nigeria's export has been dominated by oil. This underscores the reason why the Nigerian economy has been at the mercy of the vagaries of the global oil market. This situation has attracted contributions from policy makers and scholars to resuscitate and strengthen the Nigeria's trade relations and pattern of trade.

Therefore various studies have been carried out. Most of which have focused on the impact of trade on various macroeconomic indicators. Very little or nothing has been done to explicitly identify the factors influencing Nigeria's trade. The benefits from trade amongst others include higher international prices which favours specialization and exports; lower domestic prices which favours consumption of locally produced goods; and the availability of a wider array of goods and services to the local consumer, these necessarily ascribes a leading role to domestic industries.

2. Nigeria's Trade with the Rest of World

Nigeria – US

In sub-saharan Africa, Nigeria happens to be a USA's largest trading partner as it is the nation's single most important export destination. Nigeria has an export worth of USD 19.1 billion to the USA, which consist of mostly of oil, cashews, coffee, cocoa, ginger, gum arabic and rubber products, among others. The Country had had a favourable trade relation with the USA, in that, in the first quarter of 2010, exports to the US were more than three times greater than in the first quarter of 2009, up from USD2.6 billion to USD7.1 billion. It has also imported from the USA in goods like wheat, machinery and motor vehicles, worth USD3.7 billion. To further cement the trade relations between the duo, trade agreements were signed. Nigeria and the USA, signed Trade and Investment Framework Agreement (TIFA), under the agreement, the two Countries pledged to work together on several trade policies. To further solidify the trade relationship, they met in 2009 and discussed on various issues that has to do with cooperation in the WTO, Export diversification, Trade Capacity building and technical assistance, market access, Intellectual property. Nigeria with its eligibility for the USA's Africa Growth and Opportunity Act (AGOA), has accorded it to export certain goods like chemicals, minerals and metals, transportation equipment and agricultural products to the United State of America with restriction-duty (Corporate Nigeria, 2011).

Nigeria – France

Europe is Nigeria's second most important trading partner. Nigeria's exports to Europe were worth USD11.6 billion in 2010, while imports was about USD10.8 billion.

In Africa, Nigeria happens to be France most important trading partner which has made the two Countries to record a huge trading successes. In 2010, Nigeria and France trade hit 5.5 billion Euros (Corporate Nigeria, 2011).

Nigeria – UK

Nigeria is the second largest African market for goods and the 32nd UK largest overseas market. In 2008, £1,279 million worth of services was exported to Nigeria, according to the UK Trade & Investment. The UK-based Companies in Nigeria's oil and gas industry, provided services to the oil and gas sector for which Nigeria became the UK major export end. The UK and Nigeria have agreed also to double bilateral trade from £4 billion in 2010 to £8 billion in 2014 and beyond (Corporate Nigeria, 2011).

Nigeria – China

China and Nigeria are becoming a strong trade partner in Africa. This became evident in 2009, when the bilateral trade between this two Countries was worth over USD6.5 billion. It is also on record that, in the last ten years, exports from China to Nigeria, increased to about 400%, while export from Nigeria to China have increased to 200%. Nigeria exports petroleum, timber and cotton to China, and China export light industrial products and manufactured goods and to some extent, services to Nigeria (Corporate Nigeria, 2011).

Nigeria – Brazil

It is on record that, trade relationship between Nigeria and Brazil dates back to 18th century. The two Countries have and still enjoy warm Cultural and trade relationship. Nigeria is the second largest trade partner of Brazil in sub-saharan Africa and 11th in the world. Brazil happens to be the third largest importer of Nigerian Crude oil after the USA and India. It has been said that, Nigeria balance of trade with Brazil is very favourable. As a leading Economic power in Latin America, it has key industries; such as, textiles, Shoes, Chemicals, Cement, Agriculture, motor vehicles and parts, other machineries and equipment. It also has as major export product; such as, aircraft, coffee, vehicles, soybean, sugar, rice orange juice, iron ore, steel, textiles, footwear, electrical

equipment, etc. Which Nigeria as its trade partner, benefit from. The President of the Nigerian - Brazilian Chamber of Commerce and Industry (NBCCD) holds Anniversary and in his speech, Mr Ibru said the long historical ties between Nigeria and Brazil and their political and Economic similarity make it imperative that the two Countries earnestly pursue those values that will boost economic activities among them. He said: "The total figure of bilateral trade between Nigeria and Brazil for 2011 stood at \$9.6 billion. Nigerian import from Brazil was \$1.2 billion, while her export to Brazil was \$8.4 billion". As part of its objective to diversify its economy from oil, Nigeria seeks to increase trade in other commodities which propelled it to have a signed bilateral agreement with Brazil covering areas such as Agriculture, Electricity, Culture, Education and Aviation (Corporate Nigeria, 2011).

3. Literature Review

3.1 Theoretical Framework

This paper is anchored on the Neoclassical Model of variable proportions/factor endowment theory propounded by Hecksher-Ohlin in 1933 which is a modification of the comparative advantage theory associated to David Ricardo and J. S Mill (Todaro & Smith, 2009; Egai, 2011). The factor proportion theory, in contrast to classical trade theory, is able to provide clarification in the differences of advantages exhibited by trading countries. According to this theory, countries will tend to produce and export goods and services that harness large amounts of abundant production factors that they possess, while they will import goods and services that require large amounts of production factors which may be relatively scarce. Morgan et al (1997) pointed out that this theory extends the concept of economic advantage by considering the endowment and costs of factors of production.

3.2 Empirical Literature

Prasad and Gable (1998) provided some empirical perspectives on the relationship between international trade and macroeconomic fluctuations in industrial economies. First, a comprehensive set of stylized facts concerning fluctuations in trade variables and their determinants was presented. A measure of the quantitative importance of international trade for the propagation of domestic business cycles was then constructed, focusing on the role of external trade as a catalyst for cyclical recoveries. Finally, structural vector autoregression models were used to characterize the joint dynamics of output, exchange rates, and trade variables in response to different types of macroeconomic shocks.

Lai and Zhu (2004) presented a monopolistic competition model that incorporates asymmetric trade barriers and international differences in production costs. They showed that trade liberalization will shift trade from rich countries to poor countries and from within continental trading partners with preferential trade agreements to intercontinental trading partners.

Tombofa and Karimo (2014) attempted to quantify the relationship between international trade and overall economic performance in Nigeria, the results showed a positive relationship between economic growth, export performance and import penetration. However, growth was negatively related to financial deepening. Further results showed that export performance and financial deepening were more important to Nigeria's growth than import penetration over the period 1981-2012.

Karimo (2015) examined the impact of economic liberalization policy on performance of the Nigerian industrial sector and showed that the impact of economic liberalization policy on performance of the Nigerian manufacturing, mining and quarrying, and power subsectors and the aggregate industrial sector is mixed. Periods with economic liberalization policy, 1986Q3-2012Q4 performed differently from periods before economic liberalization policy. The study concluded that the policy change that took place in 1986Q3 and continuous government efforts to further open the economy to the rest of the world has significantly shaped the Nigerian industrial landscape but much is still needed to be done for Nigeria to benefit from the ongoing liberalization process.

Apere and Karimo (2015) attempted a cyclical analysis of trade dynamics in Nigeria over the period 1981 – 2012 using first differenced VAR(1) model. Their study showed two historical business cycle troughs, one in 1985 and the other in 2001. They did not show any evidence supporting the assertion that non-oil trade contributes to economic recoveries in Nigeria. Further results showed that nominal shocks dominated output shocks in explaining changes in trade variables.

4. Methodology

4.1 Data and Sources

Data for this study are annual time series spanning the period 1981 to 2013. Data were collected for exports, imports, total trade, trade balance, agricultural output, industrial output, oil trade, non-oil trade, Oil balance of trade and non-oil balance of trade. The data were drawn from the Central Bank of Nigeria Statistical bulletin, 2013 edition.

4.2 Model Specification

Two models were specified and estimated. The first model captures the impact of industrial and agricultural outputs on balance of trade, respectively and the second captures impact of industrial and agricultural outputs on total trade. While investment in the industrial sector is capital intensive investment in the agricultural sector is labour intensive. This underscores the use of these variables.

Model 1: Balance of Trade

The following functional equation is specified to capture the relationship between trade balance and its determinants:

$$TB = f(INQ, AGQ) \quad (1)$$

Where: TB is Trade balance; INQ is industrial output; and AGQ is agricultural output. The relevant structural model is specified in equation (2):

$$TB = \beta_0 + \beta_1 INQ + \beta_2 AGQ + \varepsilon \quad (2)$$

Where the variables remained as defined: ε is the error term; and β_i 's are parameters to be estimated.

Model 2: Total Trade

The following functional equation is specified to capture the relationship between total trade and its determinants:

$$TT = f(INQ, AGQ) \quad (3)$$

Where: TT is Total Trade other variables remained as previously defined. The relevant structural model is specified in equation (4):

$$TT = \gamma_0 + \gamma_1 INQ + \gamma_2 AGQ + u \quad (4)$$

Where the variables remained as defined: u is the error term; and γ_i 's are parameters to be estimated.

4.3 Estimation Technique

This study first summarized the data and presented some stylized facts about Nigeria's trade from the data summary. This study also adopted the standard time series methodology of Error Correction Mechanism (ECM). The technique involves: (i) testing for unit roots in the series, because time series are often trending and non-stationary thus applying the usual least square technique to such series may lead to the spurious (nonsensical) regression phenomenon; (ii) testing for cointegration. If the series are non-stationary but are cointegrated, it means that though, they are trending they have a common mean governing their co-evolution in the long-run; (iii) if they are cointegrated then, the appropriate model is the ECM. It provides a way of incorporating the long-run dynamics of the variables into their short-run relationship.

5. Results and Discussion

5.1 Stylized Facts

To bring to fore the seemingly neglect the non-oil sector in Nigeria has suffered over the years, the study first presented stylized facts about trade variables in Nigeria starting with summary statistics on table 1. Statistics are presented for non-oil trade (NOILT), oil trade (OILT), total trade (TT), balance of trade share of GDP (BTGDP), oil balance of trade share of GDP (OBTGDP), non-oil balance of trade share of GDP (NBTGDP), import share of GDP (MGDP) and export share of GDP (XGDP). These statistics showed that the increasing neglect the non-oil sector has suffered over the years. On average, oil trade dominates total trade and is about three times non-oil trade as indicated by the mean values of 3566132 and 1482717, respectively. Oil trade is also more volatile (about 2 times more volatile) than non-oil trade as revealed by the standard deviations (5144373 and 2128421, respectively). However the distribution of both variables showed fat tails and are skewed rightward as indicated by the Kurtosis and Skewness statistics respectively. The balance of trade statistics showed non-oil balance of trade to be negative on the average and leftward skewed as indicated by the mean and skewness statistics respectively compared to oil balance of trade that is about three times larger and more normally distributed. The oil balance of trade is however, about two times more unstable as revealed by the standard deviation. Because trade in Nigeria has been dominated by oil-export which is also more volatile, export on average has been larger and more volatile than import, which explains why the balance of trade is not negative. The foregoing revealed that non-oil trade is not only a drag on balance of trade but have also not contributed meaningfully to total trade. This position is further buttressed in Figure 1. The time graph in figure 1 showed clearly how oil trade has gained increasing importance over non-oil trade in Nigeria since 1984. Oil trade share of total trade line lied below the Nonoil line before 1984 but increased rapidly and equilibrated in 1984 and has since outgrown non-oil trade with the gap between the two becoming wider over time. This is a clear indication of the declining importance the non-oil sector in Nigeria's trade.

5.2 Estimation Results

Results for the Augmented Dickey-Fuller unit root test are presented on table 2. As expected all the variables are integrated of order one, I(1). The variables are non-stationary therefore a level form estimation could lead to the spurious regression problem. The study therefore test for a long-run relationship among the variables using the

Johansen's cointegration approach for which results are presented on tables 3a and 3b. The results showed one cointegrating equation in each of the models, implying that there is a meaningful long-run relationship between balance of trade on the one hand and agricultural and industrial output on the other; and total trade on the one hand and agricultural and industrial outputs on the other. Thus a sufficient condition for fitting error correction models is satisfied. The parsimonious error correction results are presented on table 4. The results for the Bbalance of trade model are presented on the first column. The results showed $D(\text{LOG}(\text{INQ}))$ and $D(\text{LOG}(\text{AGQ}))$ to be positively signed as expected but it was $D(\text{LOG}(\text{INQ}))$ that was statistically significant. This showed that short-run fluctuation in industrial output is more important in explaining balance of trade adjustment to equilibrium. The coefficient on the ECM term of -0.65 showed that trade balance adjusts to long-run equilibrium after a short-run disturbance at the speed of 65 percent per annum (65 percent of previous errors are corrected in the current period). Over 45 percent of variation in trade balance is explained by the model as indicated by the R-squared (0.445) which is a poor fit however, the overall regression was statistically significant at the 1 percent level as revealed by the F-statistic (7.214) and its probability value (0.001), and the Durbin-Watson statistic (1.8108) showed evidence of no serial correlation. Therefore the model is dynamically stable and appropriate for policy analysis. The results for the total trade model are presented in the second column of table 4. Whereas the coefficient on $D(\text{LOG}(\text{INQ}))$ showed positive sign, which is expected that of $D(\text{LOG}(\text{AGQ}))$ unexpectedly showed negative sign. These results showed indication that in the short-run it is movements in the industrial sector that affects Nigeria's total trade with the rest of the world, but this could be misleading, because the Nigerian industrial sector is dominated by activities in the petroleum (oil) sector which predominantly is an extractive industry. This implies primary product trade drives the Nigerian economy. It turns out that $D(\text{LOG}(\text{INQ}))$ became statistically significant at 5 percent level whereas $D(\text{LOG}(\text{AGQ}))$ was statistically not significant at all. This indicates that the key determinant of Nigeria's trade is the industrial sector which is dominated by extractive industry activities in the oil and gas subsector in the short-run. This means the agricultural sector is yet to get adequate attention in terms of productivity and backward and forward linkages resulting from agro-ally industries. The coefficient on the ECM term showed negative sign as expected and became significant at the 10 percent level, indicating significant adjustment to long-run equilibrium. Its absolute value of 0.235 revealed that if there are short-run fluctuations Nigeria's trade will adjust to long-run equilibrium at the speed of 24 percent per annum. Over 24 percent of variation in Nigeria's trade is explained by the model which showed a poor fit as indicated by the R-squared (0.235) however, the overall model is statistically significant at the 10 percent level as revealed by the F-statistics (2.76) and its probability value (0.062) and the Durbin-Watson statistic showed no evidence of serial correlation. The model is therefore appropriate for policy analysis. These results showed that the key factor influencing Nigeria's trade is resource endowment. Because Nigeria is more endowed with crude oil compared to other resources it has focused more on the export of same and has neglected the non-oil sector. This underscores the reason why fluctuations in the crude oil market has had significant effect on the Nigerian economy in time past and also in contemporary time.

6. Conclusions and Recommendations

6.1 Conclusions

The major conclusions that can be drawn from this study are that: (i) oil trade dominates Nigeria's trade (ii) Oil trade is relatively more volatile (iii) the key factor influencing Nigeria's trade is industrial output growth which is dominated by oil sector activities (iv) the agricultural sector has not influenced Nigeria's trade in any way (v) The Nigeria's trade pattern does not conform to the Heckscher-Ohlin theory of factor endowment.

6.2 Recommendations

The Private sector should be encouraged to go into mechanized farming and agro-ally businesses. Here priority should be on first increasing the production of food and cash crops. Second, processing raw materials into finished and semi-finished goods (that is emphasis should be on value-addition). This will increase the competitive advantage of agricultural products.

The Nigerian state should also come up with a consumption theory, where citizens and foreign nationals domiciled in the country will be encouraged to consume more of made – in – Nigeria goods. This will not only reduce the import dependence of consumption but also the competitive advantage of imported goods thereby increasing the terms of trade in favour of made – in – Nigeria goods.

References

- Adenikinju (2005), African Imperatives in the New World Trade Order: Country study of the manufacturing sector in Nigeria, in Ogunkola O.E and Bankole A. (eds) Nigeria's Imperatives in the New World Trade Order, African Economic Research Consortium (Nairobi, Kenya) and the Trade Policy Research and Training Programme (Ibadan, Nigeria)
- Apere, T. O. and T. M. Karimo (2015), Cyclical Analysis of Trade Dynamics in Nigeria. *Advance in Social Sciences Research Journal*, 2(4), 121 – 129.

- Bankole, A.S and Bankole, M.A. (2004), “Industrial Trade and Export Promotion Policies and Revealed Comparative Advantage in Nigeria’s Manufactured Export, In Garba, Abdul-Ganiyu et al (eds), Leading Issues in Macroeconomic Management and Development, NES Ibadan.
- Central Bank of Nigeria (2012), Annual Report and Statement of Accounts, Abuja.
- Central Bank of Nigeria (2011), Annual Statistical Bulletin, Abuja
- Corporate Nigeria (2011), Corporate guidelines International Limited. (Accessed at www.corporate-nigeria.net).
- Egai, N. A. (2011), *International Economics*, Institute of Finance and Control, Lagos.
- Karimo, T. M. (2015), Impact of Economic Liberalization Policy on Performance of the Nigerian Industrial Sector. *International Economics*, 68(2), 229 – 257.
- Lai, H. and S. C. Zhu, (2004). The determinants of bilateral trade. *Canadian Journal of Economics*, 37 (2),459–483
- Morgan, R. E. and S. C. (1997), Theories of International Trade, Foreign Direct Investment and Firm Internationalization: A Critique. *Management Decision*, 35(1), 68 – 78
- Olaniyi, (2005), ‘Nigeria’s Trade Policy from 1960-2004: A critical review’. Paper presented at the workshop on capacity building on International Trade, National Assembly in Collaboration with Friedrich Ebert Stiftung (Nigeria), Jos 25-17 July 2005.
- Prasad, E. S. and J. F. Gable, (1998). International Evidence on the Determinants of Trade Dynamics. IMF Staff Papers, 45(3).
- Todaro, and Smith, . (2009), *Economic Development*; Pearson edu. Ltd
- Tombofa, S. S. and T. M. Karimo, (2014). Effects of trade on growth in Nigeria’s open economy: econometric analysis. *Journal of International Economics*, 67(4), 517 -529.

Table 1: Summary statistics

Measure	NOILT	OILT	TT	BT/GDP	OBT/GDP	NBT/GDP	M/GDP	X/GDP
Mean	1482717.	3566132.	5048849.	2.076875	4.138437	-2.061875	2.905313	4.982500
Median	646372.4	1231397.	1788980.	0.530000	2.315000	-1.615000	2.150000	2.860000
Maximum	7689186.	17615591	24475406	7.910000	12.87000	-0.020000	12.27000	17.07000
Minimum	5621.800	7372.800	14904.20	-0.220000	0.030000	-8.030000	0.020000	0.030000
Std. Dev.	2128421.	5144373.	7244736.	2.729692	4.836313	2.324682	3.427121	5.878768
Skewness	1.630814	1.483108	1.513801	0.999153	0.831120	-1.045833	1.221355	0.910327
Kurtosis	4.598915	4.049840	4.151586	2.398738	2.032206	3.046535	3.557942	2.284649
Jarque-Bera	17.59299	13.20081	13.99004	5.806320	4.932887	5.836308	8.370847	5.102009
Probability	0.000151	0.001360	0.000916	0.054850	0.084886	0.054033	0.015216	0.078003
Sum	47446954	1.14E+08	1.62E+08	66.46000	132.4300	-65.98000	92.97000	159.4400
Sum Sq. Dev.	1.40E+14	8.20E+14	1.63E+15	230.9877	725.0876	167.5285	364.1000	1071.357

Note: NOILT is Non-oil trade; OILT is Oil trade; TT is total trade, BT/GDP is balance of trade share of GDP; OBT/GDP is oil balance of trade share of GDP; NBT is non-oil balance of trade share of GDP; M/GDP is import share of GDP; and X/GDP is export share of GDP.

Source: Authors’ Computation

Table 2: Augmented Dickey-Fuller Unit Root Test

Variable	ADF-Statistic		Lag(s)	Model	~I(d)
	Level	1 st Difference			
LOG(TT)	-0.4833	-6.3853***	0	Drift	I(1)
LOG(TB)	-3.4889*	-5.9198***	0	Trend	I(1)
LOG(INQ)	-0.3681	-5.0532***	0	Drift	I(1)
LOG(AGQ)	-2.1587	-5.8649***	0	Trend	I(1)

Note ***(**)* is significant at 1%(5%)10% levels respectively

Source: Authors’ Computation

Table 3a: Johansen's Co-integration Rank Test for Model 1

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.510521	40.75854	35.19275	0.0113
At most 1	0.381776	19.32615	20.26184	0.0669
At most 2	0.150664	4.899011	9.164546	0.2947

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Source: Authors' Computation

Table 3b: Johansen's Co-integration Rank Test for Model 2

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.501526	24.89560	24.27596	0.0418
At most 1	0.094716	4.009494	12.32090	0.7095
At most 2	0.033567	1.024294	4.129906	0.3617

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Source: Authors' Computation

Table 4: Error Correction Results

Variable	D(LOG(TB))	D(LOG(TT))
Constant	0.138	0.267***
D(LOG(INQ))	6.701***	2.655**
D(LOG(AGQ))	0.145	-1.991
ECM(-1)	-0.651***	-0.235*
R-squared	0.445	0.235
Adjusted R-Squared	0.383	0.150
F-Statistic (Probability)	7.214 (0.001)	2.760 (0.062)
Akaike info Criterion	2.0143	0.8539
Schwarz Criterion	2.1993	1.0389
Hannan-Quinn criterion	2.0746	0.9141
Durbin-Watson Statistic	1.8108	2.2243

Source: Authors' Computation

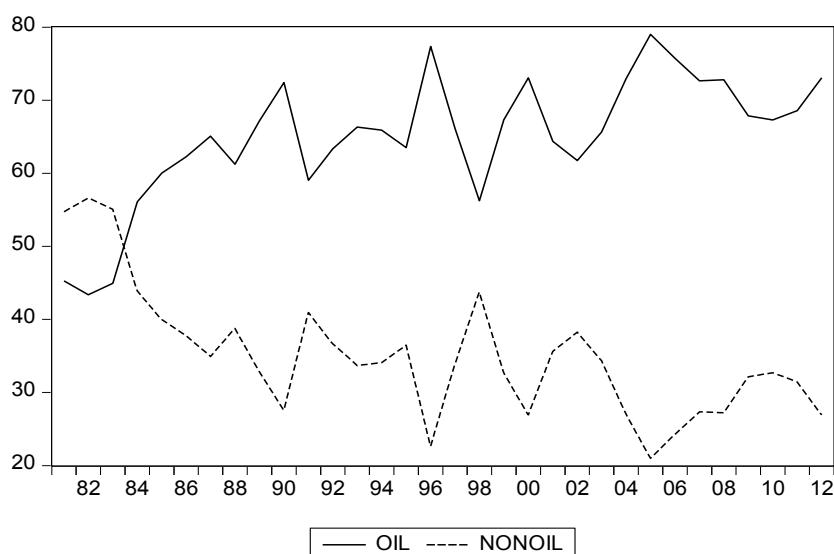


Figure 1: Trend of Oil and non-oil share of total trade