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Foreign direct investment and export growth in Nigeria

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The purpose of this study was to examine the link between Foreign Direct Investment (FDI) in Nigeria from 1970 to 2008. The stationary properties of the data and the order of integration of the data were tested using the augmented Dickey fuller (ADF) and the Philip – Perron (PP) tests. The cointegration results showed at least one cointegrating equation in the export function. The Granger – causality results suggest unidirectional causality running from (i) foreign direct investment to export; (ii) real exchange rate to export; (iii) trade balance to export and bidirectional causality from external market indicator to export. The study suggests that more policies should be channeled towards improving export oriented foreign direct investment and at the same time, efforts should be geared towards improving basic infrastructure which will not only lower production costs but improve upon the competitiveness of the economy which will invariably attract more foreign direct investment into the economy.

Key words: Foreign direct investment, exports, causality cointegration, error correction, augmented Dickey fuller.

INTRODUCTION

There is the belief that under general assumption of laizzez faire, free trade will lead to welfare improvements for those countries that engaged in it. Current theoretical studies have shown that international trade and investment are complementary rather than substitute, if trade between two economies is based on their absolute advantage (Aizeman and Noy, 2005; Ayodele, 2007). However, if the trade between the two countries is based on their absolute advantage, there may be substitution between trade and investment, as business decides to supply products and services through exports or foreign Direct Investment (FDI). The degree of complementarily between trade and investment therefore remains an empirical question.

However, there has been a long debate in the literature on how a country's exports respond to FDI. The critical question here is whether FDI stimulates export performance of the host countries. The proximity concentration hypothesis (Krugman, 1983; Hostmann and Markinson, 1992; Brainard, 1993, 1997) suggest that greater transaction costs resulting from higher trade

barriers and transportation cost lead to horizontal cross-border production expansion thus, stimulating international investment.

The available empirical evidence of the role of FDI on export performance of host countries is mixed. Several cross-country studies found support for the hypothesis of a negative relationship between FDI and export. In contrast, other studies indicated that FDI actually has a positive effect on export performance of host countries (Cabral, 1995; Blake and Pain, 1994).

Empirical evidence in the last few decades indicates that FDI flows have been growing at a pace far exceeding the volume of international trade. For example, between 1975 and 1995, the aggregate stock of FDI was reputed to rise from 4.5 to 9.77% of World GDP, with sales of foreign 48 states of multinational enterprises substantially exceeding the value of word exports (Barell and Pain, 1997). The United Nations Conference on Trade and Development, UNETAD (2007) reports that FDI flow to Africa has increased from $9.68 million in 2000 to $1.3 trillion in 2006. The UNCTAD World Investment Report shows FDI inflow to West Africa is mainly dominated by inflow to Nigeria, who received 70% of the sub regional total and 11% of Africa's total. Out of this total inflow Nigeria, oil sector alone received 90%. The performance

of the Nigeria export sector has been relatively impressive in recent time. Aggregate output growth measure by the Gross Domestic Product (GDP), according to the Central Bank of Nigeria (CBN) 2007 economic report for third quarter of 2007, was estimated at 6.05% compared with 5.73% in the second quarter.

The objective of this paper is to investigate the causal relationship between export and FDI in Nigeria for the period 1970 to 2008.

LITERATURE REVIEW

Evidence from cross-country studies

There are many literatures on the FDI export nexus; and there are a number of ways through which trade and FDI can be linked. Aizeman and Noy (2005) argued that it is common to expect bidirectional linkages between FDI and trade in goods. However, it is difficult to indicate whether inflows and outflows of FDI have different types of goods. They suggested a very strong feedback type of relationship between FDI flows and trade, especially in manufacturing goods. The study applied Geweke's (1982) decomposition method, and found that the Granger causality from FDI to trade openness was stronger than that for trade to FDI flows.

Golberg and Klein (1998) affirmed that FDI may promote export, enhance import substitution, are lead to a greater trade in intermediate inputs which often exist between parent and affiliates producers. Given that the orientation of most investment by multinational firm is toward exports, this may most likely serve as a catalyst for the integration of the FDI hose economy to a global production network in sector in which it may formerly have zero experience (OECD, 1998).

Aitken et al. (1997) in his study of FDI and export relations in Bangladesh showed the external effect of FDI on export in the country where the entry of a single Korean firm in garment exports led to the establishment of a number of domestic exports firms creating the country's largest export industry. Rodriquez (1996) and Ram (1996) submitted that the very nature of the activities of multinational Enterprises in Mexico could encourage the expansion of its industrial exports. Goldberg and Klein (1998, 1999) do not find evidence to support a significant link between FDI and aggregate export in Latin America. According to them, the trade – promoting effects of FDI appear to be weak or insignificant with regards to Latin American trade with USA and Japan.

Greenway et al. (2004) and Kneller and Pisu (2007) opined that MNC especially those who are export oriented appear to instigate positive export spillovers and may increase the probability of exporting for domestically owned firms operating in the same industry. However, Barrios et al. (2003) studied the case of Spain and found

no such exports spillovers to local firm from the existence of MWCs. The same result of no export spillover was also found for Ireland by Ruane and Sutherlands (2004).

The generation of productivity spillovers is one possible channel through which FDI can affect growth. Some studies found existence of positive spill over effects of FDI on the labor productivity of domestic firms and on the rate (Blomstrom and Persson, 1983; Blomstrom, 1986; Wolf, 1994). However, there is the need to exercise caution as expressed by Rodrique et al. (1996) in the case of Mexico and Uruguay given that spillovers are difficult to identify in industries where foreign affiliates have much higher productivity levels than local firms.

In his contribution, De Gregorio (2003) argued that FDI may allow for technology and knowledge transfer to a host country which may increase productivity growth in the economy. Numerous empirical studies provide mixed findings about the export promoting role of foreign affiliates across countries (Kumar and Siddhartan, 1997). In some countries, foreign firms had contribute to export performance of the hosts, whereas in other countries their contribution is insignificant. Wilmore (1992) shows that foreign ownership positively influences export performance across Brazilian manufacturing firms. Bhaduri and Ray (2004) examine firm specific determinants of firm level exports performance in India and concluded that foreign firms are more successful in exporting than domestic firms.

Experiences from Nigeria

There are studies on the FDI growth nexus in Nigeria. Otepola (2002) reported a low level of existing human capital suggesting that labor available in Nigeria is not FDI inducing. Akinlo (2004) noted that export, labor and human capital are positively related to economic growth in Nigeria. He equally found out that foreign capital has a small and not statistically significant effect on economic growth in Nigeria. He found out that FDI is pro consumption and pro-importation and negatively related to Gross Domestic Investment.

Ayanwale (2007) investigated the empirical relationship between non-extractive FDI and economic growth in Nigeria. Using Ordinary Least Square estimates, he found that FDI has a positive link with economic growth but cautioned that the overall effects of FDI as economic growth may not be significant. Herzer et al. (2006) using a bi-variable VAR modeling technique found evidence of positive FDI led growth for Nigeria, Sri Lanka, Tundia and Egypt; and he also established a long run running in both directions for the same set of countries. Okodun (2009) who examined the sustainability of the FDI growth relationship in Nigeria found out evidence of a long run equilibrium relationship between economic growth and FDI. He employed the Johnsen cointegration framework and multivariate VAR within VECM.

METHODLOGY

The model

Here, we try to capture the effect of FDI by using an empirical model of exports. In this model we include a proxy for the supply capacity of the recipient country that positively affects export supply capacity. To test the impact of FDI on exports, we use a parsimonious model which takes into consideration some trade reform indicators. Accordingly, we employ the following model specification

$$E_t = f\left(R, Q_{t-1} T, M, E_{t-1}, F\right)$$

(1)

The reduce form of Equation (1) for estimation is in the form

$$\ln E = \alpha_0 + \alpha_1 \ln R + \alpha_2 \ln Q + \alpha_3 \ln T + \alpha_4 \ln M + \alpha_5 \ln E_{t-1} + \alpha_6 \ln F + \mu$$

(2)

μ is the error term.

The dependent variable is the value of export (E). R represents the real effective exchange rate index. Thus, the empirical specifications include R to capture the influence of relative price. The index of R is constructed in a way that increase in R denotes a real appreciation of the currency. Thus it is expected that the coefficient α_1 is positive. Q denotes the potential output depicted by real GDP, which we use as a proxy for the supply capacity of the country. The variable is expected to capture the effects of increased supply capacity due to FDI inflows. It enters the model with one year lag. The coefficient α_2 is expected to be positive.

T represents the trade liberalization index. It is calculated as import ratio on total trade volume (Bamoul et al., 2006). *M,* represents the external market access indicator, which is approximated by the growth rate of export price index. The reason for including *T* and *M* is to account for the potential impact of trade liberalization measures undertaken by the country; α_3 and α_4 are expected to be primitive. E$_{t-1}$ is lagged exports. Our rational for including this variable is to take into consideration the fact that export performance in one year would normally act as a good predictor of the one year would normally act as a good predictor of the next year exports. The coefficient α_5 is expected to be positive. F represents the net FDI inflow into the economy. The coefficient α_6 is expected to be positive.

Estimation technique

Unit root test

A time series is said to be stationary if its means and variance are constant over time and value of covariance between two time periods depends only on the distance or lag between the two time periods and not on the actual time at which covariance is computed (Gujarati 1995). Augmented Dickey – Fuller (ADF) test is used to check whether the underlying series contain unit roots. ADF statistic is obtained by

$$\Delta \times = a_0 + b_0 \times_1 + \sum_{i=1}^{k} c_0 \ \Delta \times_{i_{t-1}} + wi$$

(3)

where, Δ is the difference operator, a$_0$, b$_0$ and c$_0$ are coefficients to be estimated, x is the variable whose time series properties to be

examined and n is the white noise residual are empirically determined by schuarz criterion (SC)

If the underlying series contain unit root, that is, are not I(0 but say, I(1), then the Granger representation theorem requires that they must be cointegrated that is their linear combination must be I(0). Therefore the next step is to examine the variables for cointegration.

Co integration test

Engel and Granger (1987) pointed out that a linear combination of two or more non – stationary variables may be stationary. If such a stationary combination exists, then the non stationary time series are said to be cointegrated. The VAR based co-integration test using the methodology developed in Johasen (1991, 1995) is described subsequently. Consider a VAR or Order ρ

$$y_t = A_1 y_{t-1} + \ldots + A_p y_{t-\rho} + B\chi + \varepsilon_t$$

(4)

where y_t is a k-vector on non – stationary I(1) variables, x_t is a d – vector of deterministic variables and ε_t is a vector of innovations. This VAR can be rewritten as follows:

$$\Delta y_t = \Pi y_{t-1} + \sum_{i=1}^{\rho-1} \Gamma_i \Delta y_{t-1} + Bxi + \varepsilon i$$

(5)

$$where \ \Pi = \sum_{i=1}^{\rho-1} A_i - I \ and \ \Gamma = -\sum_{j=i+1}^{\rho-1} Aj$$

(6)

Granger representation theorem asserts that if the coefficient matric Π has reduced rank r < k, then there exists k + r matrics $\alpha \ and \ \beta$ each with rank r such that $\Pi = \alpha\beta \ and \ \beta y_i \ is \ I(0).$

To determine the number of co-integration vectors, Johasen (1991, 1995), and Johasen and Juselius (1990) suggested two statistic test, the first one is the trace test (λ trace). It test the null hypothesis that the number of distinct cointegrating vector is less than or equal to q against a general unrestricted alternatives q = r. The test is calculated as follows

$$\lambda \ trace \ (r) = -T \sum_{i=r+1} \ln\left(1 - \hat{\lambda}_t\right)$$

(7)

where T is the number of usable observations, and the α are the estimated eingenvalue from the matrix.

ESTIMATION AND ANALYSIS RESULTS

Unit roots result

Table 1 shows that At 5% level of significance, all the variables except import and trade openness which is stationary at level, are found to be stationary at first difference, that is, they are integrated of order I they are

Table 1. Result of unit root tests.

Variable	ADF at level	ADF first difference	Order of integration
Ln e	-0.40	-7.37	1(1)
Ln f	-0.36	-6.62	1(1)
Ln q	-2.28	-5.70	1(1)
Ln r	0.16	-5.11	1(1)
Ln m	-9.06	-6.54	1(0)
Ln t	-3.71	-7.93	1(0)

5% ADF critical values for the test are -3.62 for fist difference and -2.94 at level.

Table 2. Cointegration test results.

Hypothesis no of CEs	Eigen value	Max-Eigen statistics	Max-Eigen statistics5% C.V	Trace statistics	Trace statistics 5% C.V
r = 0 *	0.717	45.482	40.077	100.336	95.753
$r \geq 1$	0.463	22.393	33.876	34.853	69.818
$r \geq 2$	0.408	18.914	27.584	32.459	47.856
$r \geq 3$	0.180	7.179	21.131	13.544	29.797
$r \geq 4$	0.138	5.383	14.264	6.365	15.494
$r \geq 5$	0.026	0.982	3.841	0.982	3.841

*Denotes rejection of the hypothesis at the 0.5 level.

I(1) variables.

Co integration analysis

The results of the unit root test show that almost all the variables are random walk processes. It does not however imply that in the long run, the variables could not express convergence, that is, long run equilibrium. The Johasen cointegration test for the variables is shown in Table 2.

Trace test and max – Eigen Statistics test indicates 1 cointegrating equations(s) at the 0.05 level.

The cointegration analysis rejects the null hypothesis that there is no long run equilibrium relationship between the variables used. The result confirms that there exist a long run relationship between exports and the explanatory variables in the model.

Given the aforementioned multivariate case, the test for cointegration was performed using the Johasen (1991, 1995) maximum livelihood estimate (MLE) approach. Under this approach Trace test and Max Eigenvalue tests were used in testing whether a long run relationship exist among the variables. If these tests established that at least one cointegrating vector exists among variables under investigation, then a long run equilibrium relationship exists between them.

Table 2 showed that there is 1 cointegrating vector in the Trace statistics and 1 cointegrating vector in the Max Eigen-value statistics. This indicates that a long run equilibrium relationship exists between variable in the export function in Nigeria. One major problem of the Johasen cointegration procedure is that of properly identifying the cointegrating relations if y (the number of cointegrating vectors) is greater that 1 but does not identify the actual cointegrating relationship(s) (Lurtz and Talakera, 1998). Under this situation, one needs to resort to economic theory to identify the true cointegrating relationship. However, at this junction, this study has fully established that a long run relationship exists among the variables employed in this study.

Static long run solution equation

The result of the long static equation is presented in Table 3. The variable of foreign direct investment has a positive relationship with export. This is in line with the a priori expectation of positive sign. The value of coefficient is 0.38 which implies that an increase in 10% in F will lead to an increase of 3.8% in export. The coefficient is also significant at 5% level with the t-value of -2.82 greater than the standard rule of 2. The external market access indicator (M) is equally significant at 5% level. The indicator has a positive relationship with export. This also conforms to the a priori expectation. The value of the

Table 3. Static long run solution equation.

Variable	Coefficient	Std. error	T-Statistic
C	-3.60	1.28	-2.82
LnF	0.38	0.8	2.05
LnM	1.36	0.12	11.20
LnQ	0.34	0.10	3.24
LnT	0.11	0.2	-0.54
LnR	0.96	0.16	5.98

$R^2 = 0.98$; R^2 adj. $= 0.97$; $F = 273.3^2$; D.W $= 1.65$.

coefficient is 1.36 which implies that an increase in 10% in M will lead to 13.6% increase in the level of export.

The real GDP (Q) has the a priori positive sign with the coefficient value of 0.34 and it is equally significant at 3.34 which is greater than the standard value of 2. The result shows that a 10% increase in Q will generate a 3.4% increase in export. This shows that as the economy is expanding, the export potential of the economy will also increase. The trade openness index T has a negative relationship with export and it is not significant at 0.54. This implies that a 10% increase in T will lead to a 1.1% reduction in export. However, this does not mean that trade openness has no positive impart on export, but it is a pointer to the fact that the degree of openness in Nigeria has not been yielding any positive results in perhaps, the policies put in place for trade liberalization has not been effective as to stimulate export during the period under review.

The real exchange rate (R) has a priori positive sign with the coefficient value of 0.96 and it is equally significant implying that a 10% increase in the real exchange rate which implies a real appreciation of the naira will increase the level of export by 9.6%. The R^2 and the adjusted R^2 are very high at 0.98 and 0.97, respectively. R^2 of 0.98 implies that 0.98% variation in export is explained by change in the exogenous variables; and if adjusted for degree of freedom, then 97% variation in exports is explained by the exogenous variables.

Vector error correction estimate

The cointegration result indicates the presence of error correction model (ECM) involve in them. Thus, the vector error correction model (VECM) is tested. This test indicates short run dynamics of the model. The ECM combines the short and long term relations between analyzed variables. The results of the ECM in Table 4 confirm the cointegration results aforementioned and indicate the presence of error correction term for net FDI inflow, real effective exchange rate and trade liberalization index; it shows correct negative sign for the

three variables. The values of FDI inflows, real effective exchange rate and trade liberalization index are highly significant. However real GDP and external market accessibility showed no short run impact. The model diagnostic test statistics shown in Table 5 fulfill the conditions of no specification errors, structural stability, normality of residuals and homocedasticity. The stability tests further confirm the stability of the estimated coefficients.

Variance decomposition of lne

From Table 6, we observe that the variation in export explained by production capacity Q assumed a peak in the second year and thereafter declined considerably till the fifth year before it picked up again in the sixth year. This shows that the ability of real GDP to influence export dies out steadily on the long run.

The influence of exports to sustain itself become stronger successively throughout the ten year period. It rose from 5.570 in the first year and increased steadily in reaching its maximum in the tenth year at 22.012. The influence of net FDI inflow on exports increases progressively in the first five years. It started at zero level in the first year and moved progressively to 14.91 in the fifth year and started to decline steadily at 12.172 in the tenth year. Thus one can conclude that, in the long run, the influence of FDI in exports dies out steadily.

The external market accessibility variable has an unstable impact on export. It started at zero point in the first year and got to the peak in the fourth year and therefore decline and rise again in the eight year. The cyclical fluctuations flows that there is no steady positive influence of external market accessibility on export in the long run. However, the influence of real exchange rate and trade liberalization increases steadily from the first year to the tenth year. This shows that the influence of these two variables on export increases steadily on the long run.

Impulse response function of lne

The result in Table 7 shows the impulse response pattern of export to a stimulated 1% increase in itself and in every other endogenous variable. The result indicates that the response of export to output potential (real GDP) was positive in the first two years and therefore became negative throughout the remaining periods. Except for the variable of real exchange rate and the ability of export to sustain itself which shows a consistent positive response throughout the period, all other variables are characterize with negative response. Evidently, the trend over the ten years period was characterized by cyclical fluctuation.

From the result in Table 8, there is a unidirectional causality between import and the level of import during

Table 4. Vector error correction estimate.

Error correction	D(LNQ)	D(LNE)	D(LNF)	D(LNM)	D(LNR)	D(LNT)
CointEq1	0.003088	0.024027	-0.004358	0.021554	-0.0047898	-0.007175
	(0.00342)	(0.00488)	(0.00308)	(0.00366)	(0.00216)	(0.003779)
	[0.90239]	[4.92400]	[-1.41610]	[5.89013]	[-2.21670]	[-1.89270]
]D(LNQ(-1))	0.161630	-0.377494	0.088385	-0.438078	-0.049357	0.162099
	(0.20232)	(0.28889)	(0.18219)	(0.21665)	(0.12816)	(0.22445)
	[0.79889]	[-1.30671]	[0.48511]	[-2.02209]	[-0.38513]	[0.72221]
D(LNQ(-2))	-0.027381	-0.005692	-0.035366	-0.004987	-0.165586	0.032810
	(0.19370)	(0.27658)	(0.17443)	(0.020741)	(0.12270)	(0.21488)
	[-0.14136]	[-0.02058]	[-0.20275]	[-0.02404]	[-1.34957]	[0.15269]
D(LNE(-1))	0.288991	0.024644	0.057087	0.427714	-0.228235	0.070014
	(0.14393)	(0.20551)	(0.12961)	(0.15412)	(0.09117)	(0.15967)
	[2.00792]	[0.11992]	[0.44045]	[2.77521]	[-2.50343]	[0.43849]
D(LNE(-2))	-0.338026	0.234435	0.064085	0.386047	-0.021058	-0.036057
	(0.16005)	(0.22854)	(0.14413)	(0.17139)	(0.09117)	(0.17756)
	[-2.11199]	[1.02581]	[0.44463]	[2.25248]	[-2.50343]	[-0.20307]
D(LNF(-1))	-0.038421	-0.581099	-0.087833	-0.240158	0.048251	-0.082172
	(0.25425)	(0.36304)	(0.22896)	(0.27225)	(0.16105)	(0.28206)
	[-0.15112]	[-1.60066]	[-0.38362]	[-0.88211]	[0.29960]	[-0.29133]
D(LNF(-2))	0.101267	0.679226	0.151218	-0.095199	-0.343040	0.144262
	(0.30264)	(0.43214)	(0.27254)	(0.32407)	(0.19171)	(033575)
	[0.33461]	[1.571771]	[0.55485]	[-0.29375]	[-1.78941]	[0.42967]
D(LNM(-1))	0.233882	1.150505	-0.464748	0.631989	-0.166146	-1.069603
	(0.42990)	(0.61386)	(0.38714)	(0.46035	(0.27232)	(0.47693)
	[0.54404]	[1.87423]	[-1.20045]	[1.37285]	[-0.61012]	[-2.24269]
D(LNM(-2))	0.860795	0.175157	-0.276716	-0.089675	-0.170227	-0.347416
	(0.33675)	(0.48085)	(0.30326)	(0.36060)	(0.21331)	(0.37359)
	[2.55618]	[0.36427]	[-0.91248]	[-0.24868]	[-0.79802]	[-0.92994]
D(LNR(-1))	-0.114038	0.672179	0.167695	-0.331611	0.475985	-0.148941
	(0.36495)	(0.52111)	(0.32865)	(0.39080)	(0.23117)	(0.40487)
	[-0.31248]	[1.28990]	[0.51025]	[-0.84855]	[2.05898]	[-0.36787]

Table 4. Continued

D(LNR(-2))	-0.037742	-0.081791	0.159044	-0.164650	0.083929	-0.082298
	(0.36593)	(0.52250)	(0.32953)	(0.39184)	(0.23179)	(0.40595)
	[-0.10314]	[-0.15654]	[-0.48264]	[-0.42020]	[0.36208]	[-0.20273]
D(LNT(-1))	0.379189	0.558559	-0.300446	0.495204	-0.055573	-0.726470
	(0.31294)	(0.44685)	(0.28182)	(0.333511)	(0.19823)	(0.34718)
	[1.21169]	[1.24999]	[-1.06610]	[1.47775]	[-0.28035]	[-2.09252]
D(LNT(-2))	0.025028	-0.150862	0.134129	-0.177415	0.014119	-0.23191
	(0.18112)	(0.25862)	(0.16311)	(0.19395)	(0.11473)	(0.12421)
	[0.13818]	[-0.58333]	[0.82234]	[-0.91475]	[0.12306]	[-1.29333]
C	0.139450	0.126741	0.108398	-0.030818	0.198159	-0.023191
	(0.11196)	(0.15987)	(0.10083)	(0.11989)	(0.07092)	(0.12421)
	[1.24551]	[0.79277]	[1.07509]	[-0.25705]	[2.79405]	[-0.18671]

Table 5. Results of diagonistic test.

Test	1	2	3	4	5
Serial correlation χ^2(Lm)	47.8143(0.0900)	50.3339(0.0568)	32.0957(0.6549)	34.4866(0.5406)	49.1052(0.0714)
Normality χ^2 (Jarque Bera)	6.4978(0.0388)	2.3774(0.3046)	3.0466(0.2180)	2.7456(0.2534)	3.5238(0.717)
Heteroscedasticity χ^2	27.1416 (0.4019)	29.2118 (0.3015)	17.1056 (0.9056)	27.2768 (0.3949)	19.1800 (0.8287)
R^2	0.77	0.83	0.48	0.77	0.54
F	1.0627	1.5528	0.2941	1.0867	0.3730

Probability values are in parenthesis.

Table 6. Variance decomposition of LNE.

Period	S.E	LNQ	LNE	LNF	LNM	LNR	LNT
1	0.514453	0.192066	99.80793	0.000000	0.000000	0.000000	0.000000
2	1.337694	1.783490	19.05608	8.705907	59.21490	0.039052	11.20057
3	1.432766	1.558433	17.78310	14.90006	51.65212	4.333314	9.772976
4	1.505612	1.505579	17.76313	13.83338	51.51838	6.369889	9.009639
5	1.573787	1.465167	19.39887	14.91298	48.97218	6.986431	8.264380
6	1.633812	1.696287	19.85540	14.33611	48.53745	7.877655	7.697095
7	1.707837	1.617115	21.16258	13.36568	47.88446	8.427952	7.542220
8	1.786945	1.544324	21.11383	12.81100	48.29287	9.250960	6.987012
9	1.833912	1.644225	21.56145	12.38139	47.19180	10.58589	6.635251
10	1.897786	1.700581	21.77971	12.16270	46.99295	11.13742	6.226627

the period under consideration, that is, an expansion in the level of export will cause import to grow and vice versa. The result also show that there is a unidirectional causality running from foreign direct investment to export, that is, that foreign direct investment causes export to grow in Nigeria within the period under review. This result

Table 7. Impulse response function of lne.

Period no.	LNE	LNF	LNM	LNQ	LNR	LNT
1	0.514453	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.284702	-0.411019	-1.007999	-0.239965	0.026435	-0.447689
3	0.154579	0.386637	0.015290	0.036390	0.297079	-0.013983
4	0.191725	-0.080967	-0.286241	-0.172468	0.235461	0.060127
5	0.276632	-0.227883	-0.170453	-0.152733	0.169243	-0.021353
6	0.218199	-0.102630	-0.230337	-0.208156	0.192980	-0.027736
7	0.293180	-0.077576	-0.276330	-0.170219	0.188513	-0.120510
8	0.236384	-0.131275	-0.333771	-0.198112	0.222667	-0.055883
9	0.222136	-0.075081	-0.166684	-0.163136	0.246229	-0.007174
10	0.239691	-0.135942	-0.269376	-0.208444	0.212289	-0.032898

Cholesky ordering: LNE, LNF, LNM, LNQ, LNR and LNT.

Table 8. Granger causality test.

Null hypothesis	Observation	F Statistics	Decision
F does not Granger cause E	37	5.478	R
E does not Granger cause F		1.049	A
M does not Granger cause E	37	35.538	R
E does not Granger cause M		3.685	R
Q_{t-1} does not Granger cause E	36	0.712	A
E does not Granger cause Q_{t-1}		0.609	A
R does not Granger cause E	36	18.936	R
E does not Granger cause R		2.001	A
T does not Granger cause E	37	3.639	R
E does not Granger cause T		2.599	A

is contrary to the work of Golberg and Klein (1998) who do not find evidence to support a significant link between FDI and aggregate export in Latin America.

The study equally finds out that there is a unidirectional causality running from (1) real exchange rate and export, and (ii) running from trade openness and exports. This study helps to understand and explain the behavior of export in Nigeria for the period under study. So also, the degree of trade openness causes the growth of GDP overtime during the period under consideration. However, the study does not find any directional causality between initial levels of output, that is, the production capacity of the economy and the level of export. This study therefore confirms that for the period under review, the export led

hypothesis is not valid in Nigeria.

Conclusion

Policies of emerging market economic to attract foreign investment are based upon the belief that foreign firms access to international trading networks increases exports and domestic economic growth, as these economies are integrated into the global economy.

The study examined whether inward FDI positively affected export growth in Nigeria over the period 1970 to 2008. The result of the Johason cointegration test showed that there exists a long run equilibrium relation-

ship in the export function for the period under study. The causality analysis revealed that a unidirectional causality runs from (i) F to E (ii) R to E and T to E and bidirectional causality runs from M to E. however, there is no causality running from Q to E for the period under study.

Our result, have important implication fro policy makers. Policy makers therefore need to encourage inward FDI by providing more incentives to foreign firms and designing other appropriate policies and reforms that would attract foreign firms and designing other appropriate policies and reforms that would attract foreign investment.

The encouragement of FDI should focus on export oriented foreign firms. There is the need therefore to encourage strategies that will improve upon the level of infrastructure, human resources and governance and business climate which will import positively on transactions and production casts on one hand and the overall competitiveness of the economy as the other hand.

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