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EFFECT OF TERRORISM ON FOREIGN DIRECT INVESTMENT INFLOWS IN NIGERIA: EVIDENCE FROM A NON-LINEAR AUTOREGRESSIVE DISTRIBUTED LAGS ESTIMATION

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ABSTRACT

Nigeria is currently plagued with terrorist attacks and other social vices with an attendant negative influence on the investment climate of the nation. Previous empirical studies have used military expenditure and financial budget on defense and security as a proxy for terrorism, which may not be empirically appropriate for a nation whose security architecture has been alleged to have been compromised following several anecdotal. Hence, the present study uses terrorism index by Institute of Economics and Peace, Global Terrorism Index which has no financial component in its methodology. The main objective of this study is to empirically examine the effect of terrorism on FDI inflows from 1990 to 2022. The nonlinear autoregressive distributed lag approach of bound test and error correction model were utilized given that time series variables were stationary at levels and first difference, as reported by the ADF and PP unit root tests. The Bounds test revealed that a nonlinear long run relationship do exist among the variables within the era of analysis. On whether the effect of the positive and negative changes in terrorism index on FDI inflows in Nigeria is the same, we found out that the effect is not the same as negative change is empirically stronger than the positive change both in the long run and short run. In the long run, the negative change in terrorism index is larger than the positive change in terrorism index by 1.75%. In the short run, positive and negative changes in terrorism index have significant effect on FDI inflows in Nigeria, but not the same magnitude and size in effect as negative changes is larger than positive changes by 0.96%. The ECM empirical result showed that in case of distortion or shock to the pace of FDI inflows into Nigeria in the current period will be brought back to long run equilibrium at 6.68% in the coming period, this implies that the present value of FDI inflows adjust slowly to positive and negative changes in LRGDP, LTO, EP, EXR, NTI and UMP. Based on the empirical results found, the study recommends that since Nigeria terrorism index does not necessarily deter FDI inflows in Nigeria; policymakers and the government can take full advantage of other determinants or drivers of FDI inflows by expanding the market size, improve more in infrastructural facilities, and comparatively strengthening the economic ties with the rest of the world to make Nigeria a safer haven for investment opportunities.

Keywords: FDI inflows, Terrorism Index, Nonlinear ARDL, Dynamic Multiplier Graph, Global Terrorism Index, Nigeria

1.0 Introduction

Shielding and protecting people and property from dangers, violent and terrorist attacks is critical for the smooth functioning of markets and serves as an incentive for foreign expatriates to invest and bring out technological innovations in the host country. Perhaps this may be the reason most countries of the world marshal their resources to maintain peace and security within the shores of their respective countries. In fact, Amana et al., (2020) opine that no country in the world which grows or develops beyond the threshold of its security systems. The economic prosperity of a country is haplessly hinged on virile security systems, and how confidently peaceful a country is. No right-thinking investors will invest their resources in an unsafe environment. Terrorism remains an incontestable factor that puts investible funds on the run from any country, as investors want to be confident of the safe haven of their investments where they choose to invest. Terrorism is a risk factor that all investors of the world are afraid of; it is an uncertainty that is not only peculiar to businesses but also sends a cautious red-flag to the intending investors to evacuate their investible funds to other safer country. No nation can develop where terrorism negatively thrives as matters centered on internal security are pivotal for the economic advancement of any polity (Elnee, 2023; Adeve, 2023).

Terrorism has, in recent times, added to the major albatross for the Nigerian economy. It ranges from the unrest in Niger Delta areas: militancy attacks and Indigenous People of Biafra onslaught to the most recent and currently ongoing ones, Boko Haram insurgency, kidnapping, and banditry, displacement of persons and properties and hostages taking. Foreign investors now label Nigeria as an unsafe place to invest (Adelaiye, 2023), and this may have a serious macroeconomic disadvantage to the economy going by a priori expectation. In theory, terrorism and FDI is known to have a significant negative correlation and the extent to which this effect leads to the realization of levels of growth where it is found should be of a great necessity for policy (Keser et. al., 2023; Bildirici and Gokmenoglu, 2020). According to Institute for Economics and Peace, Global Terrorism Index, (2020); Nigeria was named as the third most afflicted by terrorism in the 2020 Global Terrorism Index data, after Iraq and Afghanistan (GTI, 2021). Chuku *et al*., (2019) reveal that the appalling level of terrorism has made

Nigeria's economy unenticing and unattractive to local and foreign investors, who have developed a high level of fear and doubt to invest their resources for profitable investments in Nigeria. According to the United Nations Conference on Trade and Development (UNCTAD), an average sum of US$2.4 trillion investment capital revolves and circulates around world economy. Nigeria would have been a $450billion economy as projected by Global Economic Index, (2022) by 2025, if her economic and business environment were more secure than it is today. Foreign investors want to invest their capital in environments that have an appreciable level of peace, tranquility and progressiveness; such that the investors' confidence level will be maintained in carrying out business activities without fear and jittery linked to unrest, terrorist and violent activities. From the mainstream economic theory, there is always a negative relationship between FDI inflows and terrorism, whether in the long run or in the short run; but Nigeria's case going by the available data appears to show a shift in the conservative body of economic theories between FDI and terrorism. Hence, there are no clear paths in the relationship between terrorism and FDI inflows in Nigeria for the period under review (1990-2022). This is because positive and negative changes in explanatory variables may not give similar impact in strength and size so as to show the actual and real empirical relationship between the explanatory variables previous works have been using and FDI inflows. On this wise, this study adopts the non-autoregressive distributed lags methodology to allow for asymmetry with respect to positive and negative changes in the explanatory variables as they shift across period. The study is set to empirically find out if the effect of increases in terrorism index is the same as the effect of decreases in terrorism index on FDI inflows in short run and long run time dynamics.

2.0 Literature Review

2.1 Conceptual Literature Review

2.1.1 Concept of Terrorism

The operational conceptualization of terrorism in this study is seen as the intentional and deliberate use of compelling force of violence and fear to achieve political and ideological aims (Borum, 2012). It is used in this context to refer to the deliberate act of violence by sub-national actors during peacetime to cause a major economic

setback. It is usually targeted at non-combatants, a defenseless group of people; it could carry a form of kidnapping, killings, bombing, hostages-taking, banditry and arson. Its perpetrators are usually non-state actors who use premeditated use of violent activities to instill fear in the society and reduce investors' confidence level in macroeconomic potentials of a country in order to gain political or social objectives. According to Global Terrorism Index, (2022), terrorism index is a composite score that ranks countries according to the impact of terrorism from 0 (no impact) to 10 (highest impact).

2.1.2 Concept of Foreign Direct Investment inflows

The operational conceptualization of FDI inflows is the direct equity flows made by non-resident investors in the reporting country. It is a category of cross-border investment peculiar to a resident in one economy having control or an appreciable level of influence on the management and the running of an enterprise that is resident in another country. However, based on its determinants and constraints that vary from country to country at a particular point in time, FDI inflows has been not defined consensually; several scholars have defined the term differently depending on the economic and the environmental peculiarities of the host country (Bajrami & Nazmi, 2019).

2.2 Theoretical Literature Review

As shown by theoretical reviews of past empirical works on FDI inflows and terrorism that there has been studies on the FDI, and other determinants; but a strong theoretical framework on FDI inflows and terrorism is still needed (Faruq, 2023). Of all the theories of FDI inflows, Dunning's Ownership Location and Internalization paradigm framework captured the linkage between terrorism and FDI inflows. Hence, this study is theoretically premised on OLI-paradigm framework. This OLI paradigm entails microeconomic and macroeconomic determinants of FDI to explain the purposes of or advantages of FDI for a company. Bettarelli and Resmini, (2022) opine that the major determinant factor that foreign investors take into serious cognizance before, during and after investing their capital resources in the host country is the location of the business environment, which specifies how safety and peaceful a business environment is. The paradigm of 'L' in OLI poses a great concern to an average foreign investor; the business atmosphere must enjoy

an appreciable level of tranquility and peace, and must have a low tendency of terrorist attacks or any form of criminal activities before capital investment is made (Mansoor, 2023).

2.3 Empirical Review of Related Literatures

The literature on the terrorism-FDI economic relationship has divergent and contrasting arguments. Whilst some scholars empirically believe that terrorism draws and impedes the flows of capital into the host countries, others argue that the impact is negligibly trivial, and such can be overlooked, others stress that the impact is significantly positive. (Ari and Ibrahim, 2022; Arif et. al., 2021; Osgood and Simonelli, 2020; Zhang, 2019; Bano et. al., 2019; Lutz and Lutz, 2017).

2.3.1 Studies on Nigeria

Owing to the economic peculiarities of Nigeria like population strength and vast natural resources, the empirical literature review has shown that more empirical studies need to be done on the terrorism-FDI nexus in Nigeria. In other words there is need to deploy wider data sets for the study on Nigeria.

Olasehinde, (2022) empirically analyzed the relationship between FDI inflows and terrorism-induced happenings in Nigeria. Using defense and security votes as a proxy for terrorism and quarterly data from 1994Q1-2019Q4; ARDL and VAR econometric techniques were used as tools for the empirical analysis. The findings show that FDI inflows react unfavorably to the exogenous manifestation of security and violent threats both in the short and long runs. Using content analytic method, Ayoola (2022) conducted and analyzed the negative effect of terrorist attacks on FDI inflows in Nigeria, through primary data sourced from an in-depth interview of respondents from selected MDAs, academia and some foreign business organizations. The findings showed that foreign investors prefer Nigeria to any other African countries regardless of high security threats and vices because the attractiveness of profit is stronger than the risk of attacks owing to the distinctive economic potentials of the country.

There is need to review more studies on Nigeria for clear gap to be identified

2.3.2 Studies on Other Countries

The effect of a range of political economy phenomenal have been examined on

terrorism across the world. Some indicates positive impacts while others show negative effect depending on the country and context of analysis.

Ari and Ibrahim (2022) investigated the impact of terrorism on FDI inflows in Turkey from 1990-2019; the study used ARDL bound-test co-integration as an econometric methodology and it was found out that terrorism affected FDI in Turkish economy positively, but not significant in the short-run, while it was negative and significant in the long run. The study also showed that military expenditure has a negative and non-significant impact in the short run, which normally has to be positive going by a priori expectation.

Using a dynamic panel analysis method, Lanouar and Shahzad, (2021) studied terrorism in big cities and its effect on capital flows both FDI inflows and portfolio investments in seven of South Asian countries. The empirical results reveal that terrorist attacks in big cities and capital inflows are negatively related. The study did not holistically show the overall effect of terrorism in both big and small cities on capital flows in South Asian countries.

Emphasis is on countries in Africa in Iheonu and Ichoku's (2022) research on terrorism and investments within the context of the role of military expenditure from 2001-2018. Twenty-four African countries were sampled and fixed effect regression analysis was used. The study used military expenditure as a proxy for the measurement of terrorism in Africa. The empirical result revealed that there is a negative insignificant effect of terrorism on both domestic investment and FDI inflows; it further reveals a negative net effect of military expenditure on the relationship between terrorism and investment.

However, empirical studies that have really explored the impact of terrorism on FDI inflows looking at short run and long run nonlinearities via positive and negative changes in the decomposition of explanatory variables are still needed in the literature.

3.0 Research Methodology

3.1 Source and Type of Data

Data	Symbol	Source
Foreign Direct Inflows	FDI inflows	Central Bank of Nigeria Statistical Bulletin, 2022
Nigeria Terrorism Index	NTI	Institute of Peace and Economics, Global Terrorism Index
Trade Openness	TO	Central Bank of Nigeria Statistical Bulletin, 2022
Real Gross Domestic Product	RGDP	Central Bank of Nigeria Statistical Bulletin, 2022
Electricity Production	EP	World Development Indicator 2022
Exchange Rate	EXR	Central Bank of Nigeria Statistical Bulletin, 2022
Unemployment Rate	UMP	National Bureau Statistics 2022

Source: Authors' compilations

3.2 Estimation Technique and Econometric Model Specification

To empirically know if the effect of the positive changes in terrorism index is the same as the effect of the negative changes in terrorism on FDI inflows in Nigeria, the NARDL model introduced by Shin, Byungchul and Matthew, (2014) would be used in this study. NARDL model is best suited when order of integration is either at levels or one, I(0), I(1), and none of the variables is of I(2) (Ullah, Zhao, Abdul Kamal and Zheng, 2020).

Generally, Shin et al., (2014) uses this foundation to propose the following NARDL (p,q) model:

$$y_t = \sum_{j=1}^{p} \phi_j y_{t-j} + \sum_{j=0}^{q} \left(\theta_j^+ x_{t-j}^+ + \theta_j^- x_{t-j}^-\right) + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.1)$$

Where x_t is a K x 1 vector of multiple regressors defined such that $x_t = x_0 + x_t^+ + x_t^-, \theta_j$ is the autoregressive parameter, $\theta_i^+ \; and \; \theta_j^-$ are the asymmetric distributed lag parameters, and ε_t is an independent

identically distributed process with mean and constant variance, σ_{ε}^{2}. Shin *et al*., (2014) focus on the case in which x_t is decomposed into x_t^+ and x_t^- around a threshold of zero, consequently, distinguishing between positive and negative changes.

The primary model and nonlinear functional equations are given below:

$FDI_t = \emptyset_0 + \emptyset_1(RGDP_t) + \emptyset_2(NTI_t) + \emptyset_3(EXR_t) + \emptyset_4(EP_t) + \emptyset_5(TO_t) + \emptyset_6(UMP_t) + \varepsilon_t$ (3.2)

In equation 3.2, RGDP, NTI, EXR, EP, TO and UMP represent real Gross Domestic product, Nigeria Terrorism Index, Exchange rate, Electricity Production, Trade Openness and Unemployment rate respectively.

FDI $= f\ (RGDP^+, RGDP^-,\ NTI^+,\ NTI^-,\ EXR^+, EXR^-,$
$EP^+, EP^-, TO^+, TO^-, UMP^+, UMP^-)$ (3.3)

To study the nonlinear impact of RGDP, NTI, EXR, EP, TO and UMP on FDI inflows in Nigeria, the model used in this study is as follow:

$FDI_t = \lambda_0 + \lambda_1(RGDP_t^+) + \lambda_2(RGDP_t^-) + \lambda_3(NTI_t^+) + \lambda_4(NTI_t^-) + \lambda_5(EXR_t^+) + \lambda_6(EXR_t^-) + \lambda_7(EP_t^+) + \lambda_8(EP_t^-) + \lambda_9(TO_t^+) + \lambda_{10}(TO_t^-) + \lambda_{11}(UMP_t^+) + \lambda_{12}(UMP_t^-)$ ……. (3.4)

Where λ_0, λ_1, λ_2, λ_3, λ_4, λ_5, λ_6, λ_7, λ_8, λ_9, λ_{10}, λ_{11} and λ_{12} symbolize the long run parameters and positive and negative asymmetric effect of variables represented by $RGDP_t^+$, $RGDP_t^-$, NTI_t^+, NTI_t^-, EXR_t^+, EXR_t^-, EP_t^+, EP_t^-, TO_t^+, TO_t^-, UMP_t^+, and UMP_t^-

From equation (3.2), the short run effect can be represented by re-writing equation (3.2) as:

$$\Delta FDI_t = \theta_0 + \sum_{l=1}^{m} \theta_{1l}\Delta FDI_{t-1} + \sum_{l=1}^{m} \theta_{2l}\Delta RGDP_{t-1} + \sum_{l=1}^{m} \theta_{3l}\Delta NTI_{t-1} + \sum_{l=1}^{m} \theta_{4l}\Delta EXR_{t-1} + \sum_{l=1}^{m} \theta_{5l}\Delta EP_{t-1} + \sum_{l=1}^{m} \theta_{6l}\Delta TO_{t-1} + \sum_{l=1}^{m} \theta_{7l}UMP_{t-1} + \delta_1 FDI_{t-1} + \delta_2 RGDP_{t-1} + \delta_3 NTI_{t-1} + \delta_4 EXR_{t-1} + \delta_5 EP_{t-1} + \delta_6 TO_{t-1} + \delta_7 UMP_{t-1} \ldots\ldots\ldots\ldots \quad (3.5)$$

Equation 3.5 represents the combined short-run and long-run co-efficient, while $\delta_1, \delta_2, \delta_3, \delta_4, \delta_5, \delta_6,$ and $\delta_7,$ connotes long-run co-efficient and Δ signifies the first

difference operator. The non-linear co-integration regression is specified as:

$Y_{t=}\beta^{+}x_t^{+}+ \quad \beta^{-}x_t^{-}+ \mu_t$ ……3.6

Where K×1 vector regression and x_t are long-run parameters, which is further decomposed as:

$x_t = x_t^{+} + x_t^{-}$ ……3.7

Based on equation 3.4, and the transformation of FDI inflows, RGDP, TO and EP into natural logarithms, which according to Balsalobre-Lorente and Leitao, (2020) has the advantage of reducing the chances of heteroskedasticity in the data, the NARDL model is given as:

$$\Delta InFDI_t = \theta_0 + \sum_{l=1}^{m}\theta_l \Delta InFDI_{t-1} + \sum_{l=1}^{m}\theta_l \Delta InRGDP_{t-1} + \sum_{l=1}^{m}\theta_l \Delta InRGDP_{t-1}^{-} + \sum_{l=1}^{m}\theta_l \Delta NTI_{t-1}$$

$$+ \sum_{l=1}^{m}\theta_l \Delta NTI_{t-1}^{-} + \sum_{l=1}^{m}\theta_l \Delta EXR_{t-1} + \sum_{l=1}^{m}\theta_l \Delta EXR_{t-1}^{-} + \sum_{l=1}^{m}\theta_l \Delta EP_{t-1} + \sum_{l=1}^{m}\theta_l \Delta EP_{t-1}^{-}$$

$$+ \sum_{l=1}^{m}\theta_l \Delta TO_{t-1} + \sum_{l=1}^{m}\theta_l \Delta TO_{t-1}^{-} + \sum_{l=1}^{m}\theta_l \Delta UMP_{t-1} + \sum_{l=1}^{m}\theta_l \Delta UMP_{t-1}^{-} + \delta_1 FDI_{t-1}$$

$$+\delta_2 RGDP_{t-1} + \delta_3 RGDP_{t-1}^{-} + \delta_4 NTI_{t-1} + \delta_5 NTI_{t-1}^{-} + \delta_6 EXR_{t-1} + \delta_7 EXR_{t-1}^{-}$$

$$+\delta_9 EP_{t-1}^{-} + \delta_{10} TO_{t-1} + \delta_{11} TO_{t-1}^{-} + \delta_{12} UMP_{t-1} + \delta_{13} UMP_{t-1}^{-} + \theta ECT_{t-1} + \mu_t \quad \ldots\ldots (3.8)$$

Where m's are the lag orders, $\delta_1, \delta_2, \delta_3, \delta_4, \delta_5, \delta_6, \delta_7, \delta_8, \delta_9, \delta_{10}, \delta_{11}, \delta_{12}$ and δ_{13} are long run coefficients which would be estimated and θ_l is the coefficient of the asymmetric distributed lag, and the ECT_{t-1} is the error correction term and θ is the coefficient of error term which must be negative and statistically significant. From equation 3.8, InFDI is the log form of Foreign Direct Investment inflows; InTO is also the log of trade openness; InRGDP is the log form of real Gross Domestic Product; EP is the electricity production (a proxy for infrastructure); EXR is the exchange rate; NTI is the Nigeria Terrorism Index (a proxy of Terrorism) and UMP is the unemployment rate.

4.0 Presentation and Analysis of Results

4.1 Descriptive Statistics of the variables

	InFDI	InRGDP	InTO	EP	EXR	NTI	UMP RATE
Mean	21.4596	26.3660	3.1740	28.6977	142.7168	6.3959	10.2660
Median	21.4104	26.3879	3.1734	27.9125	129.6352	6.4750	9.6000
Maximum	22.9027	26.9964	3.5842	41.9000	419.7724	9.4000	14.4000
Minimum	19.5179	25.7549	2.6063	16.3000	8.0383	2.3000	9.3000
Std. Dev	0.9395	0.4680	0.1801	8.6135	108.8070	2.3645	1.3333
Skewness	-0.1901	-0.0356	-0.0810	-0.1455	0.8144	-0.2290	1.7084
Kurtosis	1.9742	1.3648	3.2243	1.4761	2.9607	1.5178	4.6807
Jarque-Bera	6.3835	14.2886	0.4085	12.8373	14.1562	12.8362	77.3308
Probability	0.0411	0.0008	0.8153	0.0016	0.0008	0.0016	0.0000
Sum	2746.834	3374.845	406.2695	3673.300	18267.75	818.6750	1314.050
Sum Sq. Dev.	112.0861	27.8161	4.1171	9422.334	1503548.	710.0652	225.7584
Observations	128	128	128	128	128	128	128

Note: InFDI is the log form of Foreign Direct Investment inflows; InTO is also the log of trade openness; InRGDP is the log form of real Gross Domestic Product; EP is the electricity production (a proxy for infrastructure); EXR is the exchange rate; NTI is the Nigeria Terrorism Index (a proxy of Terrorism) and UMP is the unemployment rate.

Source: Authors' estimation using e-view 10

The table above shows the descriptive statistics of the behavioral trends of the normalized form of logged variables LFDI, LTO, LRGDP, and other variables not logged; EP, NTI, and UMP.

4.1.2 Unit Root Test for the variables

Carrying out a nonlinear ARDL estimation exercise requires the checking of the stationary properties of the variables used.

This subsection outlines the results of the unit root test to indicate the order of differencing required to make the data set stationary with the aim of showing the eligibility of the use of NARDL for estimation of the time series. As shown in table 4.2, the order of difference of all the series is either zero or one at 1, 5 or 10 percent level of significance for both ADF or PP tests

Table 4.2: Unit Root Test for the study variables

	Level		First Difference		Comment
Variables	ADF	PP	ADF	PP	
LFDI	-1.4496	-1.8085	-6.8025***	-6.7850***	I(1)
LRGDP	-0.6734	-0.2882	-2.8947***	-2.8665	I(1)
LTO	-4.6526***	-5.6794***	-6.1924***	-18.8089**	I(0)
EP	-0.2644	-0.2644	-8.0795***	-7.6882	I(1)
EXR	1.9661	2.2030	-3.9039***	-3.8213	I(1)
NTI	-1.8263	-1.7121	-6.2023***	-8.7126***	I(1)
UMP	-0.1223	-0.2625	-7.0480***	-7.0744***	I(1)

*Note: For LFDI, LRGDP, LTO and EP, the line plots of the series indicate that trend and intercept should be included at levels while for their first differences, line graph indicates only intercepts can be included; for EXR, NTI and UMP the plots of the series suggest that only constant term should be included at levels neither trend nor constant term should be included in the test equations for their first differences; *, ** and *** represents 10%, 5% and 1% respectively.*
Source: Author's estimation using e-view 10

Table 4.3: Optimal Lag Selection Criteria

The table below shows the appropriate number of lagged observations. Selecting the right numbers of lag is important for the accuracy and effectiveness of the model. The selection of an optimal lag length is important for the robustness of the result of the estimation and so the table 4.3 shows result of the use of several criteria of selection for each possible lag length.

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1258.860	NA	2.050246	20.58310	20.74314	20.64811
1	414.5857	3129.208	6.93e-12	-5.830663	-4.550318	-5.310590
2	719.0229	534.6214	1.10e-13*	-9.984113*	-7.583468*	-9.008977*
3	733.5827	23.91115	1.96e-13	-9.424109	-5.903163	-7.993909
4	758.9262	38.73646	2.98e-13	-9.039451	-4.398204	-7.154188
5	851.7524	131.3151*	1.55e-13	-9.752072	-3.990523	-7.411745

*Note: LR, FPE, AIC, SC and HQ represent sequential modified LR test statistic (each test at 5% level), Final Prediction Error, Akaike Information Criterion, Schwarz Information Criterion and Hannan-Quinn Information Criterion. * indicates lag order selected by the criterion.*

Source: Author's estimation using e-view 10

4.1.3 Nonlinear ARDL Bounds Co-integration Test

This is carried out in order to empirically detect if there is a long run nonlinear co-integration among the variables. Consequently, the F-test is the premise on which the bounds test stands and it is assumed to check the presence of long run linkage among variables.

Table 4.4: NARDL Bounds Test

The bound test is used to check whether there exist a long run nonlinear co-integration equilibrium among the variables. The table below shows that there is a long run co-integration relationship among the variables

MODEL	**F-Statistic**	**K**	**CRITICAL VALUES**		
LFDI = f(LRGDP$^+$, LRGDP$^-$, LTO$^+$, LTO$^-$,EP$^+$, EP$^-$, EXR$^+$, EXR$^-$, NTI$^+$, NTI$^-$,	4.4132	12	%	Lower Bound I(0)	Upper Bound I(1)
			10%	1.76	2.77
			5%	1.98	3.04
			2.5%	2.18	3.28
			1%	2.41	3.61

UMP^+, UMP^-
)

Note: The actual sample size is 124; the finite sample is 80 and the p-values for 10%, 5% and 1% (both upper and lower critical values) are -1 all through. Reject H_0 and Accept H_1: Co-integration exists because the F-statistic is greater than the upper bound I(1) critical value at 5%

Source: Author's estimation using e-view 10

From the table above, the estimated F-statistic value of 4.4132 is greater than the upper bound critical values of 3.04 and 3.61 at both 1% and 5% significance level explaining the salient economic point of long run co-integration asymmetric relationship that exists between foreign direct investment inflows and the explanatory variables in the model as they decomposed.

4.1.4 Nonlinear ARDL Short Run and Long Run Estimated Results

The asymmetric long run effect of all the explanatory variables on FDI inflows are contained in table 4.5A. The positive changes in RGDP has a positive significant effect on FDI inflows; an increase (positive changes) in RGDP will lead to 3.16% increase in FDI inflows, while negative changes in RGDP depletes the FDI inflows by 0.92% but not significant. Both positive and negative changes in trade openness has significant effect on FDI inflows; an increase (positive changes) in TO will lead to 3.57% decrease in FDI inflows, and a decrease (negative changes) in TO will also lead to decrease in FDI inflows by 7.79%. The positive changes in electricity production, EP, has insignificant effect on FDI inflows; FDI inflows increases by 1.75% whilst a negative changes in EP has a significant positive effect on FDI inflows by 0.12%.

What about NTI? You did not interpret it and is the key explanatory variable of the topic

Table 4.5A: Asymmetric Long Run Coefficients (Dependent Variable: LFDI)

Variables	Coefficients	Standard Error	t-Statistic	Prob. Value
LRGDP_POS	3.1637	10.1774	0.3109	0.0267**
LRGDP_NEG	0.9232	100.9272	0.1974	0.1440n
LTO_POS	-3.5739	13.3719	-1.0151	0.0130***
LTO_NEG	7.7994	9.1793	0.8497	0.1009*

EP_POS	1.7553	1.9086	0.9197	0.3604[n]
EP_NEG	-0.1278	0.3445	-0.3710	0.0116[***]
EXR_POS	-0.0187	0.0271	-0.6924	0.0006[***]
EXR_NEG	-0.5229	0.4923	-1.0621	0.2913[n]
UMP_POS	0.1562	5.1379	0.8089	0.4209[n]
UMP_NEG	7.5911	9.0073	0.8428	0.0018[***]
NTI_POS	0.9343	1.0031	0.9314	0.0043[***]
NTI_NEG	-2.6833	2.9138	-0.9209	0.1598[n]
Constant	19.9599	7.4463	2.6805	0.0089[***]

Source: Author's estimation using e-view 10

Table 4.5B: Asymmetric Short Run Coefficients (Dependent Variable: ΔLFDI)

Variables	Coefficients	Standard Error	t-Statistic	Prob. Value
ΔLFDI(-1))	0.3859	0.0906	4.2579	0.0001[***]
ΔLFDI(-2))	-0.0153	0.0739	-0.2074	0.0162[***]
ΔLFDI(-3))	-0.0287	0.0699	-0.4105	0.6825[n]
ΔLRGDP_POS	3.5439	3.0773	1.1516	0.0028[***]
ΔLRGDP_POS(-1))	-0.1332	2.9978	-0.0444	0.9647[n]
ΔLRGDP_NEG	11.8400	15.1060	0.7838	0.100[*]
ΔLRGDP_NEG(-1)	-2.2946	15.1325	-1.3411	0.1835[n]
ΔLTO_POS	-2.7316	0.4405	-6.2011	0.0000[***]
ΔLTO_POS(-1))	1.5500	0.4407	3.5169	0.0007[***]
ΔLTO_NEG	2.1779	0.4118	5.2883	0.0000[***]
ΔLTO_NEG(-1))	-1.3049	0.4373	-2.9838	0.0037[***]
ΔEP_POS	0.1047	0.0930	0.0506	0.9598[n]
ΔEP_POS(-1))	-0.1792	0.1017	-1.7627	0.0016[***]

ΔEP_NEG	-0.0377	0.0437	-0.8630	0.0134**
ΔEP_NEG(-1))	0.0208	0.0445	0.4668	0.6419n
ΔEXR_POS	0.0065	0.0047	1.3804	0.0020***
ΔEXR_POS(-1))	-0.1087	0.0047	-1.8460	0.0085***
ΔEXR_NEG	-0.1208	0.0580	-2.0833	0.0403***
ΔEXR_NEG(-1))	0.1206	0.0589	2.0473	0.0438***
ΔNTI_POS	0.3309	0.0941	3.5171	0.0007***
ΔNTI_POS(-1))	-0.1867	0.0980	-1.9057	0.0602n
ΔNTI_NEG	-0.6311	0.1108	-5.6968	0.0000***
ΔNTI_NEG(-1))	0.3831	0.1130	3.3906	0.0011***
ΔUMP_POS	0.6499	0.2948	2.2043	0.0303***
ΔUMP_POS(-1))	-0.5874	0.2987	-1.9668	0.0525n
ΔUMP_NEG	-0.0863	0.4555	-0.1896	0.8501n
ΔUMP_NEG(-1))	-0.8345	0.4839	-1.7246	0.0083***
ECM(-1)	-0.0668	0.0090	-7.4344	0.0000***

Source: Author's estimation using e-view 10

Note:, **, ***, n represent 10%, 5%, 1% and Not Significant respectively.*

From the table 4.5A and 4.5B above, it could be observed that both the effect of the positive changes in terrorism index is not the same as the effect of the negative changes in terrorism index on FDI inflows in both short run and long run time dynamics. In the long run, the negative change in terrorism index is stronger than the positive change in terrorism index by 1.75%. In the short run, positive and negative changes in terrorism index have significant effect on FDI inflows in Nigeria, but not the same magnitude and size in effect as negative changes is stronger than positive changes by 0.96%.

4.1.5 The Wald Test Results

The Wald test is usually carried out to empirically confirm the asymmetric long run and short run relationship among the variables.

4.1.5 The Wald Test Results

The Wald test is usually carried out to empirically confirm the asymmetric long run and short run relationship among the variables.

Table 4.6: Wald Test

Null hypothesis	Probability	*Long-run*	
	0.05 ≤ P≤ 0.1	Chi-square(X)	P-Value
symmetric effect of LRGDP	REJECT NULL	0.4737	0.0121
symmetric effect of LTO	REJECT NULL	11.9088	0.0006
symmetric effect of EP	REJECT NULL	26.2490	0.0000
symmetric effect of EXR	ACCEPT NULL	3.1156	0.0775
symmetric effect of NTI	REJECT NULL	21.7228	0.0000
symmetric effect of UMP	REJECT NULL	14.6302	0.0001
Null hypothesis	**Probability**	***Short-run***	
	0.05 ≤ P≤ 0.1	Chi-square(X)	P-Value
symmetric effect of NTI	REJECT NULL	24.2459	0.0000
symmetric effect of LTO	REJECT NULL	41.1131	0.0000

Source: Author's estimation using e-view 10

There need is to interpret the Wald test result for your reader to know whether asymmetric relationship is confirm among the variables in question

4.2 Dynamic Multipliers

The dynamic multiplier shows the effects of positive and negative changes in explanatory variables on FDI inflows.

Figure 4.1: LRGDP Dynamic Multiplier Graph

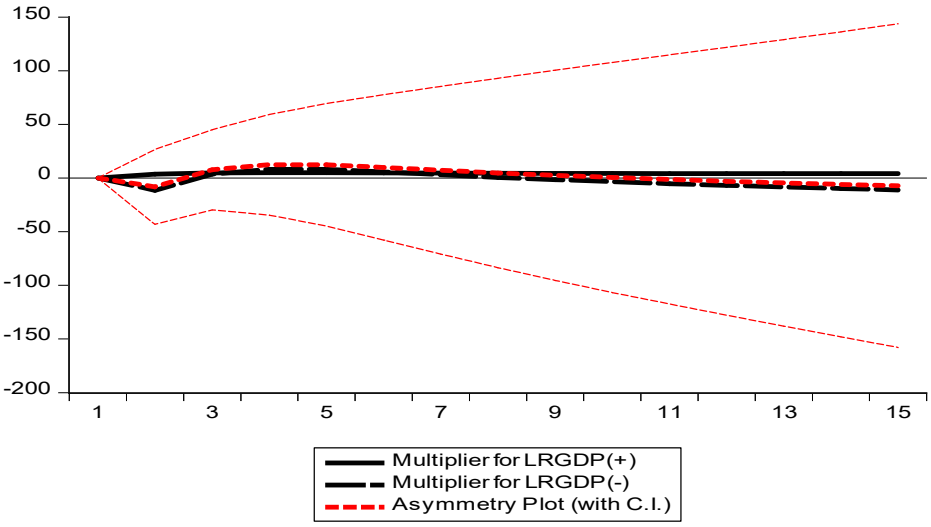


Figure 4.2: LTO Dynamic Multiplier Graph

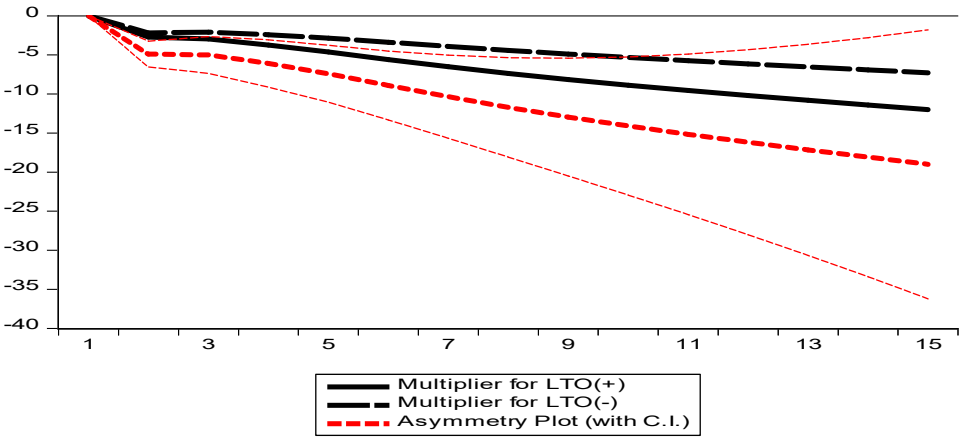


Figure 4.3: EP Dynamic Multiplier Graph

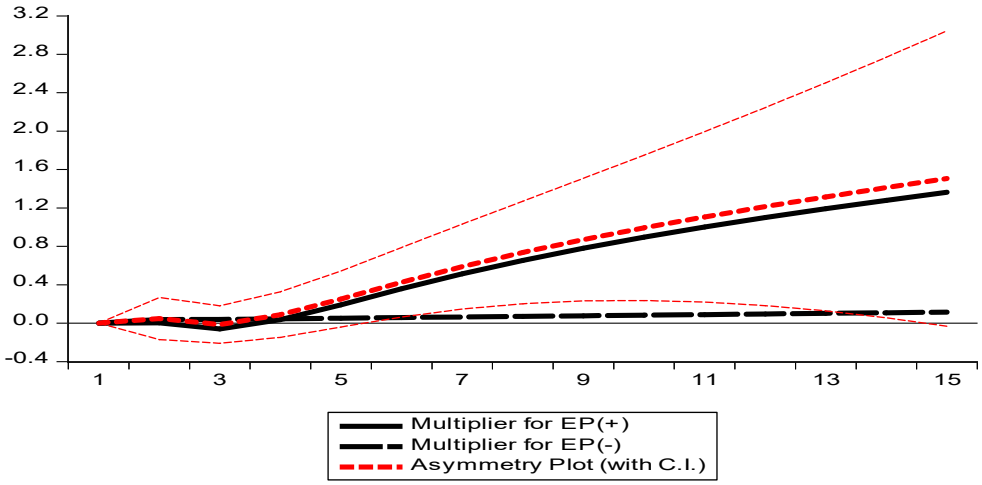


Figure 4.4: EXR Dynamic Multiplier Graph

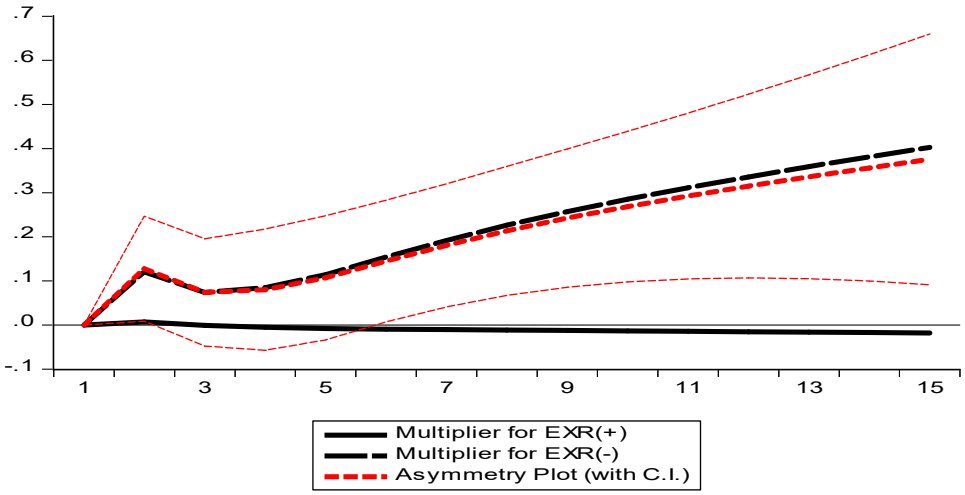


Figure 4.5: NTI Dynamic Multiplier Graph

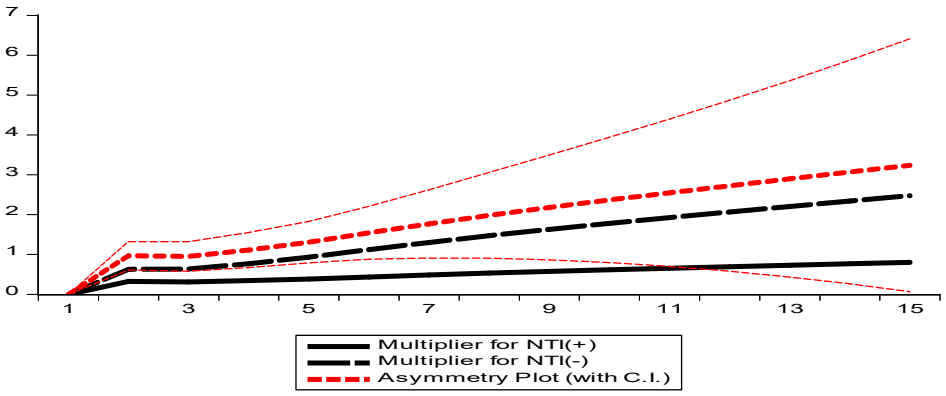
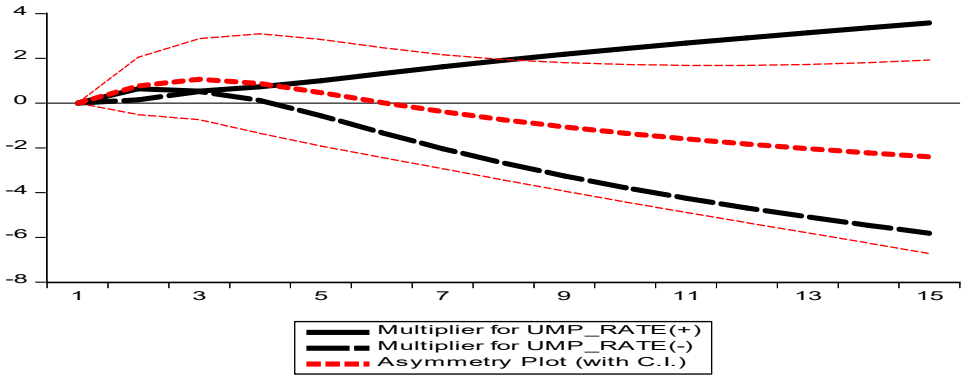


Figure 4.6: UMP Dynamic Multiplier Graph



From the dynamic multiplier graphs for all the explanatory variables above, it could be observed that from figure 4.2 to figure 4.5 (LTO, EP, EXR, and NTI), the zero line fall outside the boundary as asymmetry line moves away from zero, signifying that there is a significant asymmetric relationship between them and the FDI inflows.

4.3 Stability Test

To detect if our estimated parameters are stable to be used for inferences, we utilized the cumulative sum test for stability.

Figure 4.7: CUSUM Graph

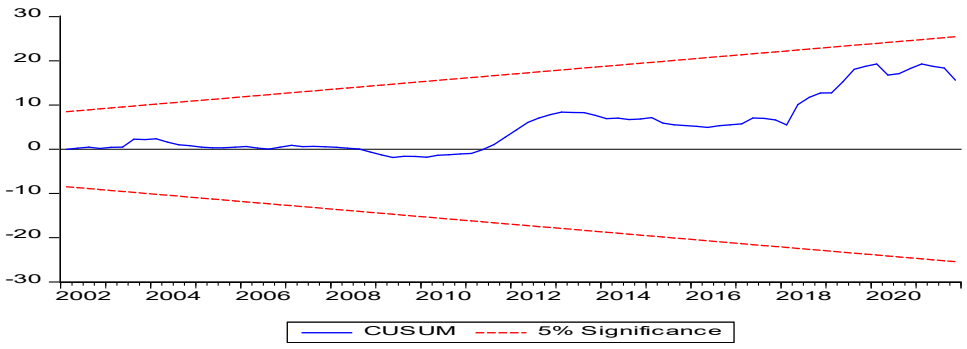
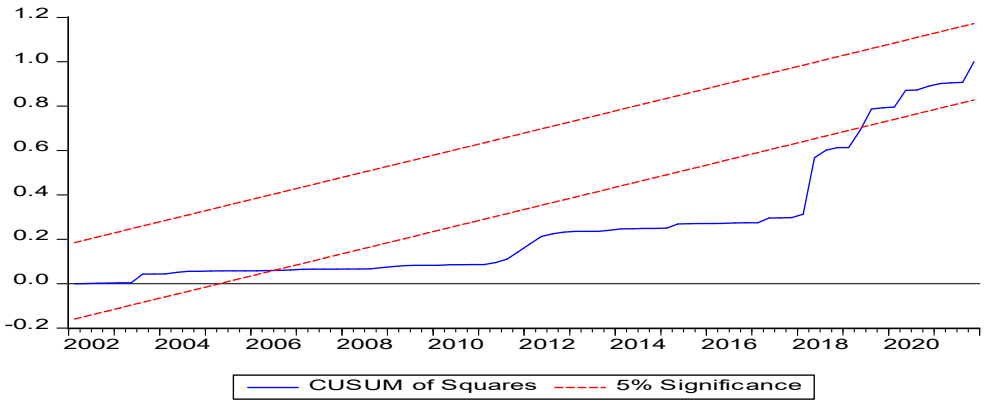


Figure 4.8: CUSUM SQUARE



5.0 Conclusion and Recommendations

This study empirically analyzed the effect of terrorism on FDI inflows in Nigeria, using a framework of Dunning (1977), which is an eclectic paradigm OLI-framework that stipulates that foreign trade or generating of capital inflows into a host country is rattled around Ownership, Location and Internalization structure of the host country, location being the most important and scariest. The NIPC policy on FDI inflows support full ownership of foreign companies as amended in 2004, even in the face of social and economic uproar that may pop up in the country.

The major findings of this study are: one, that the effect of the increases in terrorism index and decreases in terrorism on FDI inflows in

Nigeria do not have the same effect both in the short run and long run: the negative effect is stronger in magnitude and sizes than positive effect. Specifically at full effect, the elasticities of the FDI inflows to a negative change in terrorism index in Nigeria is larger than a positive changes in terrorism index both in the short run and long run as depicted by the dynamic multiplier graph. Two, that there is a nonlinear long run co-integration among the variables, implying that they all move together in the same direction, and any distortion or shock to the pace of FDI inflows in the coming year would be brought back to long run equilibrium at 6.68%.

The study recommends that for the fact that terrorism index does not necessarily deter FDI inflows in Nigeria, policymakers and the government can take full advantage of other determinants or drivers of FDI inflows by expanding the market size, improve more in infrastructural facilities, and comparatively strengthening the economic ties with the rest of the world to make Nigeria a safer haven for investment opportunities.

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