Insurgency, Political Risk, and Foreign Direct Investment Inflows in Nigeria: A Sectorial Analysis

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This study examines, among others, the effect of terrorism, political violence, corruption, and religious tension on FDI inflows to the banking, construction, manufacturing, oil and gas, and telecommunication sectors in Nigeria. Thus, empirical models were estimated using the fully modified ordinary least squares (FMOLS) technique. The study spans from 2008Q1 to 2017Q4. Findings show that terrorism adversely affects FDI inflow to telecommunication sector, while corruption positively impacts on the oil and gas sector. Thus, this study among other things, recommends the intensification of effort in the war against terrorism and strengthening of relevant anti-graft agencies to adequately fight corruption in Nigeria in other to enhance the country's attractiveness to FDI inflow.

1. Introduction

A cursory look at studies on the effect of political risk on foreign direct investment (FDI) inflows, shows that majority focused on different countries using panel data analysis while country specific studies are scanty. To the best of the researcher's knowledge, none of the studies on Nigeria, employs quarterly data with a view to determining the effects of these risk factors on FDI inflows to specific sectors of the economy. This has serious implications for policy direction given Nigeria's fragile economy.

Most developing countries, inclusive of Nigeria are bedeviled with myriad developmental challenges such as dualistic economy, narrow economic base, low productivity, low saving, and low investment. Chenery and Strout (1966), stated that FDI inflows helps to bridge the saving and investment gap due to its multiplicity effects

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on the economy such as its impact on employment, technological progress, productivity, and economic growth. It plays the critical role of filling foreign exchange, investment, and tax revenue gaps in developing countries (Anyanwu, 2012). FDI is an investment involving a long-term relationship with a lasting interest and control by foreign investors in an enterprise resident in a country (Krugman, *et al.,* 2012). In most cases, Greenfield and Brownfield FDIs are likely to be more stable and resilient to changes in perception of the investors in host countries.

Natural resources, cheap labor, and size of GDP naturally have made Sub-Saharan Africa a potential destination for resource and market seeking FDI. Beside these factors, conventional theoretical and empirical literature hold that insurgent activities and political risk factors are major drivers of FDI inflows in resource-rich economies and are largely perceived to be the major hindrance to FDI inflow in Sub-Sahara Africa (Asiedu, 2002 and 2006).

The United States Department of Defense (2007, cited in Hellesen, 2008), defines insurgency as a radicalized movement that has the aim of bringing down a constituted government through dissident means and armed conflict. Thus, insurgent groups employ unlawful means towards achieving an end, which could be political, religious, social, or even ideological. Their goal is to confront and bring down an existing government for the control of power, an imposition of religion, resource control or for power-sharing (Geert *et al.*, 2014). Investors always take into consideration the level of shield afforded and deterring factors in the host country. This is the position of the Halo Effect theory of FDI inflows. The increasing exposure of multinational corporations to insurgent activities in host countries has resulted to the loss of assets, skilled labor and returns on investment and this, therefore, has forced foreign investors to consider issues far beyond their traditional appraisal of economic and financial risk factors and are now concentrating on other risk factors (Kolstad & Tondel, 2002; Busse & Hefeker, 2007).

Political risk was however classified as strikes, terrorism, religious tensions, and ethnic tensions, military in politics, corruption and (civil) war. Collier (2008), stated that, African countries are stock in internal conflict as evidenced by communal, religious, political violence, tribal crises or sectional agitation. These have made the in-

vestment climate politically volatile (Collier & Hoeffler, 2002). Nigeria is a resource-rich country and its oil and gas sector has attracted much FDI inflows than other sectors. Other major recipients of FDI inflows in Nigeria include banking, manufacturing, construction, and telecommunication sectors (National Bureau of Statistics [NBS], 2018).

The effect of political risk on FDI inflows remains a serious concern in Nigeria. Despite Nigeria's attractive economy and market size, the country lags in attracting FDI inflows needed for economic growth. This may not be unconnected to the fact that there is high risk of investment and weak investors' confidence owing to these aforementioned factors which are prevalent in the country. The choice of Nigeria as the subject of study is motivated by the reoccurring economic recessions observed in 2016 and 2020, and the security situation.

Thus, the main objective of this study is to evaluate the effect of insurgency and political risk on FDI inflows to selected key sectors of the Nigerian economy. Specifically, the study examined among others, the effects of terrorism, political violence, corruption, and religious tension on FDI inflows to the banking, construction, manufacturing, oil and gas and telecommunication sectors.

The rest of the paper is organized into four sections. Section 2 covers the literature review, while Section 3 focuses on the data and methodology, Section 4 contains results and discussion and Section 5 is the conclusion and recommendations.

2. Literature Review

2.1 Theoretical literature

The eclectic theory is concerned about the sharp rise in worldwide foreign direct investment during the 1980s and 1990s which has resulted in rapid increase in studies on the drivers of FDI. These studies have presented a variety of theoretical models and frameworks which attempt to explain FDI and the location decisions of multinational corporations. The widely known and cited framework in this regard was the OLI-framework as developed by (Dunning, 1980). In this framework, multinational corporations engage in foreign direct investment based on three advantages: Ownership advantages, Location advantages, and Internalization advantages (OLI). Lo-

cation advantages relate to the country-specific advantages that the firm gains when investing abroad. Internalization advantages relate to the production kind of activities undertaken by the firm itself rather than licensing them to another party. Ownership advantages may include firm's superiority over its competitors in terms of marketing practices or on the technological front (Alam & Shah, 2013).

Krugman, *et al.* (2012) further explained that multinational corporations operating in a foreign country incur many costs including failure of knowledge about local market conditions, cultural, legal and other costs. Thus, foreign firms should have some advantages that can offset these costs. Ownership advantage is a firm-specific advantage as earlier stated, that gives power to firms over their competitors. Among other things are advantage in technology, management techniques, easy access to finance, economies of scale and capacity to coordinate activities. Location advantages are country-specific advantages.

For foreign investors to fully reap the benefit of firm-specific advantages, they usually consider the location advantages of the host country. This includes accessibility and low cost of natural resource and distance, adequate infrastructure, political atmosphere, macroeconomic conditions, and financial position of the host country which are components of country risk. Consequently, the location advantage of the host country is one essential factor that determines the foreign investors' decision. Internalization is multinational corporations' ability to internalize some activities that protect their exclusive right to tangible and intangible assets and defend their competitive advantage from rival firms. All these three conditions must be met before transnational companies open a subsidiary in a foreign country (Oluchukwu, 2013).

2.2 Empirical Literature

Meyer and Habanabakize (2018) examined the relationship between FDI inflows, political risk and economic growth in South Africa during the period 1995 to 2016 using ARDL (bounds test) approach to cointegration and error correction model. The study found that FDI inflows and political risk affect economic growth in the short- and long- run. While political risk deters inward FDI inflows, economic growth enhances the attractiveness of the economy to FDI. The study further applied Granger causality analysis to investigate the relationship between the variables. The causality

test results indicated bidirectional causality between FDI and economic growth, and unidirectional causality between political risk and FDI, with causation running from political risk to FDI.

The empirical evaluation of the effect of political risk on foreign direct investment inflows in developed and developing economies were carried out using different methodologies and data set by various authors such as: Xingwan and Kyeonighi (2015), Nasreen and Anwar (2014), Seyedaskhan and Mahya (2014), and Krishna (2012). They all acknowledged in their separate studies that political risk is an important consideration for foreign investors even in industrialized markets when we control for other economic factors; political risk is a significant determinant of FDI inflows in both industrialized and developing nations; not all political risk components affect the inflows of FDI in the same fashion in industrialized and developing countries. The findings show that host economies with good democratic accountability and investment profile can attract significantly more FDI. Therefore, irrespective of the political risk rating, a consistent improvement in composite political risk enhances FDI inflow. In a separate study for Nigeria by Ellis and Chris (2015), among the 12 components of political risk employed, corruption, law and order, democratic accountability, and investment profile were found to have significant influences on FDI inflow to the Nigerian telecommunications sector. Corruption explains nearly two-thirds decline in FDI inflow into telecommunication sector in Nigeria. Thus, corruption featured as one of the major factors that constraints FDI inflows (Osabutey & Okoro, 2015).

In the same vein, Aguiar *et al.* (2012) study for Brazil shows an inverse relationship between political risk and FDI inflows, implying that lower political risk is associated with higher level of participation of multinational corporations in the country. Specifically, it was found that the effectiveness of national government is a key driver of the negative relationship between political risk and FDI inflows. When Busse and Hefeker (2005) employed two different panel data econometric techniques, it was established that political risk variables such as corruption, democratic accountability, and socio-economic conditions are statistically significant. In addition to those three mentioned indicators, they also find that the investment profile, internal and exter-

nal conflict, ethnic and religious tensions are important determinants of FDI inflows. Across different econometric models, the relative magnitude of the coefficients of religious tension, internal conflict, and ethnic tension are the largest indication that changes in these variables of political risk and institutions are highly relevant for investment decisions of multinationals.

From country-specific study for Pakistan by Alam and Mingque (2018), and Alam, *et al.* (2017), using separate methodologies, their findings revealed that, terrorism negatively and significantly impact FDI inflows in both the short and long run. In addition, Haider and Anwar (2014), Zulfiqar *et al.* (2014), and Ullah and Rahman (2014) also found out that there is an inverse relationship between terrorism and FDI inflows in Pakistan. Increase in the number of terrorist attacks was found to be associated with decrease in FDI that flowed into the country. However, a disaggregated analysis showed that terrorism has dissimilar effect on FDI inflows to various sectors. While the effect is negative and significant on communications, construction, chemicals, personal services and financial business sectors, its effect in oil and gas, trade, power, petroleum refining and trade sectors are also negative but statistically not significant.

The effect of terrorism on FDI was found to be larger than its effect on tourism (Maja, *et al.,* 2019). A different study by Radi (2018) using dynamic panel data model, found no significant effect of terrorism on FDI in tourism in both the short and long run. The study however found that international tourists' arrival and ease of doing business positively and significantly affect inflow of FDI in the tourism sector. The study by Bezić *et al.* (2016) employed similar dynamic panel data model revealed that terrorist activities adversely affected inflow of FDI to the country. This implies that terrorism reduces investors' confidence in an economy because of insecurity. Similarly, Macroeconomic factors namely GDP per capita (a measure of market size) and capital account openness were found to positively and significantly affect FDI inflows. Thus, expansion of market size, and liberalisation of capital accounts enhance the attractiveness of a country to FDI.

In different geographical economy, a country-specific studies in Sub-Saharan Africa, conducted for Kenya by Kinyanjui (2014), discovered that terrorism negatively af-

fected FDI inflows in the country. Beatrice (2015), in a similar manner investigated Boko-Haram insurgency (terrorism) and its impact on the development of Nigeria and found that the Boko-Haram insurgency has posed serious limitations on development process of Nigeria due to destruction of lives and properties, destruction of schools which have led to the closure of so many schools in the North-East geopolitical zone, disruption of businesses, reduction in government revenue, fear of foreign investors to live and do business in Nigeria, political instability, among others.

Kasasbeh *et al.* (2018), investigated the relationship between corruption and FDI inflows in Jordan and the analysis revealed negative and significant effect of corruption on FDI inflows. The adverse effect of corruption on inward FDI is however found to be moderated by good governance and quality institutions. In a similar manner, Mosikari *et al.* (2018), used panel data model and examined the effect of corruption on inflow of FDI from other African countries, the results indicated that negative relationship exists between corruption and FDI inflows from other African countries to South Africa. In addition, Epaphra and Massawe (2017) investigated the effect of corruption on FDI inflows to five East African countries and two measures of corruption: corruption perception index and the control of corruption were employed. The study found that corruption serves as a hindrance to the flow of FDI into the countries. The study however found that quality institutions and market size are more important factors for attracting FDI.

In a similar way, a panel data model by Canare (2017) for 46 Asia Pacific countries revealed that corruption generally exerts negative impact on FDI inflows. However, the effect of corruption on FDI inflows to low and middle-income countries is statistically not significant. The study further found that inflation and exchange rate negatively affected FDI inflows. Economic growth was also found to positively affect inward FDI in the region. In the same line of research, Habib and Zurawicki (2002), investigated the impact of host country corruption and the absolute difference between host country corruption and source country corruption levels on FDI inflows to host country. The empirical evidence indicates that both corruption and corruption differential negatively impact the amount of FDI that flows into a country. This underscores the need for countries to intensify efforts in the fight against cor-

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ruption.

Witte *et al.* (2017) study of the effect of political violence on Greenfield FDI in a sample of 90 developing countries found that political conflict is negatively related to total and non-resource-related Greenfield FDI. The least geographically diversified firms in the non-resource sectors are found to be most affected by conflict. Resource-related FDI was however found to be unaffected by political violence. This was attributed to the high profitability of the resource sectors, and geographic constraints on location choice. Contrary to this finding, Li (2006) investigated the effect of political violence on FDI inflows in a sample of 129 countries and empirical evidence indicated that political violence adversely affects inflow of FDI to countries included in the sample.

Large body of studies in literature proxy infrastructural development with different variables, Mojekwu and Ogege (2012) used electric power consumption as a proxy for their study. Krishna (2012) employed kilowatt of electric power consumption as a proxy for infrastructural development which is more appropriate because the data may appear more realistic. The work of Anyanwu (2011) used fixed and mobile subscribers (per 1000 people), while Bernard and Iyaji (2011) used megawatt of electric power generated and Gholami *et al.* (2006), used ICT data.

Furthermore, Fitriandi *et al.* (2014) empirically examined the relationship between infrastructural development and FDI inflows at the province level in Indonesia by using panel data of 30 provinces. As a proxy for infrastructural development, their study uses four measures of hard infrastructure: electricity distribution, road length, water capacity, and water distribution. Their results show that infrastructural development would promote FDI inflows. Moreover, using government expenditure as a proxy for infrastructure has an issue, as large size of government expenditure causes FDI inflows to decline due to the crowd-out effect. Moreover, Abubakar *et al.* (2012), examined the role of infrastructure in influencing FDI inflows to Malaysia. The study proxied infrastructure with real government expenditure per real GDP and the result shows a strong positive correlation between infrastructure and FDI. This method of measuring infrastructure may not be better measurement for Nigeria because of corruption that have pervaded government expenditure and has become a major obstacle

in translating expenditure of government into real physical infrastructure in the country.

Hakro and Ghumro (2011), investigated the determinants of FDI flows in the dynamic econometric model of Pakistan economy. The study found that cost-related, macroeconomic factors and cumulative risk index variables are the major determinants of FDI inflows in the short-run analysis, while openness appeared as leading determinant of FDI in the long run dynamics. Evidence from their findings showed that variables that exhibit short-run dynamics also exhibit long-run dynamics.

3. Data and Methodology

3.1 Data and Data Sources

Table 1: Variable description

Variable	Measurement	Proxy	Sources
Foreign direct investment	measured as the sum of all long-term investment that flows into various sectors of the economy	fdi	CBN Statistical Bulletin (2018).(cbn.gov.ng)
Trade openness	ratio of imports-plus-exports to GDP	topen	CBN Statistical Bulletin (2018). (cbn.gov.ng)
Market size	Real GDP growth rate is derived as the growth in nominal GDP less inflation and it is often used as an indicator of the general health of the economy (Tim, 2020 and Karen & Louise, 2018).	rgdpgr	CBN Statistical Bulletin (2018). (cbn.gov.ng)
Infrastructure	Measured in kilowatt consumption of electricity	infra	Nigeria Electricity Regulatory Commission (NERC) database, 2018 nerc.gov.ng
Political Violence	The index is computed by calculating 13 different types of violence related incidence spreading at the national level. High values of the index indicate high level of political violence, vice versa.	polv	National Bureau of Statistics data base (2018). nigerianstat.gov.ng
Insurgency	an intentional act of violence or threat of violence by a non-state actor	terr	Institute for Economics and Peace Global Terrorism Index database 2018. economicsandpeace.org

Table 1: Variable description contd.

Variable	Measurement	Proxy	Sources
Corruption	Measured as incidence of corruption cases in court awaiting judgment; control of corruption drive; and factionalized elites.	corr	Institute for Economics and Peace database (2018). prsgroup.com
Religious Tensions	Domination of society and/or governance by a single religious group – or a desire to dominate – in a way that change civil law by religious law, excludes other religions from the political/social processes, suppresses religious freedom or expressions of religious identity.	relt	Political Risk Service database 2018 under the International Country Risk Guide. prsgroup.com

3.2 Theoretical Framework

This study adopts and builds on the theoretical model developed by Tallman (1988) and Kaufmann and Wei (1999). Tallman relates FDI inflows to the level of development and sociopolitical conditions of a country. The model can be algebraically described with the equation below:

$$r = h - S(b) \tag{1}$$

where b = Amount of bribe a multinational corporation (MNC) pays to a corrupt government officer, h = Nominal harassment that the corrupt government officer imposes on MNC, r = Real effect of harassment or bureaucracy MNC faces after paying bribes. Equation 1 is a narrow version of "Efficient Grease Hypothesis" i.e. more bribe less real harassment, but the MNC objective is to maximize profit (π_a) after paying the bribe.

Given the after-bribe profit function as:

$$\pi_a = g(r)\,\pi - b \tag{2}$$

where π = Multinational profit before harassment and bribe from a corrupt government officer.

The first order condition is as follow: $\frac{\partial \pi_a}{\partial b} = \frac{\partial g}{\partial r}\frac{\partial r}{\partial b}\pi - 1 = 0$

$$g_r\{-S_b\}\pi - 1 = 0 => -[g_r\{S_b\}\pi] = 1 \tag{3}$$

The second order condition gives a negative value as shown in equation 4, so the maximization condition is satisfied. Meaning that, the more bribe MNC pays to corrupt government officer, the less profit it realises after the bribe.

$$-g_r(h,b)\{S_b\}\pi = 1 => -[g_r(h,b)\{S_b\}] - \frac{1}{p} = 0$$

$$\frac{\partial^2 \pi_a}{\partial b^2} = -[g_{rr}\{-S_b^2\} + g_r(h,b)\{S_{bb}\}] < 0 \tag{4}$$

Let assume bribe function as: $b = B(h)$. Then the total differential in equation 5 is positive. Meaning more real harassment by corrupt government officer will generate higher bribe from MNC.

$$\frac{\partial b}{\partial h} = \frac{-[\frac{\partial g_r}{\partial r}\frac{\partial r}{\partial h}S_b + g_r \quad . \quad 0]}{-[\frac{\partial g_r}{\partial r}\frac{\partial r}{\partial b}S_b + g_r \quad . \quad S_{bb}]} = \frac{\partial b}{\partial h} = \frac{g_{rr} \cdot S_b}{g_{rr} \cdot S_b^2 - g_r \cdot S_{bb}} > 0 \tag{5}$$

Hence, there is a maximum amount of harassment the MNC is willing to tolerate. To model the actual bribe that the MNC is willing to pay:

Let h^* = Maximum harassment the MNC would tolerate.

Thus, h^* is the point where MNC is indifferent between paying bribes or backing off from their investment opportunity.

h^* = also the optimal nominal harassment from the officer's perspective.

Given the maximum bribe function as

$$b = \min\{B(h^*),\ B(h)\} \tag{6}$$

At this optimal point, more bribes generate more harassment and MNC profit after bribe will tend towards negative. This is contrary to "Efficient Grease Hypothesis".

Therefore, FDI profit function after real harassment is given as;

$$FDI = f\{\pi_a(b)\} \tag{7}$$

The relationship between FDI and corruption, which is measured by bribes, can be solved out using the chain rule as follows:

$$\frac{\partial FDI}{\partial b} = \frac{\partial FDI}{\partial \pi_a}\frac{\partial \pi_a}{\partial b} \tag{8}$$

For the "Grabbing Hand Hypothesis", bribes reduce after-harassment profit. As profit decreases, there will be less incentive for the multinational firm to undertake FDI, thus the amount of FDI will decrease. In consequence, $\frac{\partial \pi_a}{\partial b} < 0$, and since the multinational firm's desire to undertake FDI is positively correlated with after-bribe profit, then $\frac{\partial FDI}{\partial \pi_a} > 0$. Consequently, for the "Grabbing Hand Hypothesis", $\frac{\partial FDI}{\partial b} < 0$ or it is expected that the more bribes that the multinational firm has to pay to the corrupt government officer or the higher the level of corruption in a country, the lower FDI inflows.

3.3 Model Specification

Feath (2009), opined that there is not one single theory of FDI, but a variety of theoretical models attempting to explain FDI and the location decision of multinational firms. Thus, FDI is explained more broadly by a combination of factors from a variety of theoretical models such as ownership advantages or agglomeration economics, market size and characteristics, cost factors, transport costs, protection, political risk factors and policy variables.

However, this study adopts and builds on the theoretical model developed by Tallman (1988), which relates FDI inflows to the level of development and sociopolitical conditions of a country and his theoretical model was derived from Dunning's eclectic theory. According to the model, higher level of development and low level of corruption (characteristics of location advantage), attracts more FDI into a country but "increased conflict at home results in a national environment which threatens private investment and produces an increase in outward manufacturing direct investment" (Tallman, 1988). Kaufmann and Wei (1999), shed some light on this theoretical

model and showed the effect of corruption in connection to profit gained from FDI. Corruption in the form of bribery may lower bureaucracy under the "Efficient Grease Hypothesis.

With reference to Luisa and Michael (2015), a model is specified to determine the effect of political violence, terrorism, corruption, and religious tension and other FDI specific determinants such as infrastructure, trade openness and real GDP have on FDI inflows to Nigeria. The model is stated as:

$$fdi = f(rgdpgr, topen, infra, polv, terr, corr, relt) \tag{9}$$

where: fdi = net FDI inflows as a percentage of GDP, rgdpgr = real gross domestic product growth rate, topen = trade openness, infra = infrastructure, polv = political violence index, terr = terrorism index, corr = control of corruption , relt = religious tension index and t = time.

The econometric form of the model is stated as:

$$fdi_t = \beta_0 + \beta_1 ln(rgdpgr)_t + \beta_2 topen_t + \beta_3 infra_t + \beta_4 polv_t + \beta_5 terr_t + \beta_6 corr_t$$
$$+ \beta_7 relt_t + \mu_t \tag{10}$$

The *a priori* expectations are: $\beta_1 > 0, \beta_2 > 0, \beta_3 > 0, \beta_4 < 0, \beta_5 < 0, \beta_6 < 0, \beta_7 < 0$.

From the baseline model (equation 7), specific models are drawn for determinants of FDI inflows to banking, construction, manufacturing, oil and gas, and telecommunication sectors of the Nigerian economy.

Banking Sector (BS):

$$BSfdi_t = \Phi_0 + \Phi_1 ln(rgdpgr)_t + \Phi_2 topen_t + \Phi_3 ln(infra)_t + \Phi_4 polv_t + \Phi_5 terr_t +$$
$$\Phi_6 corr_t + \Phi_7 relt_t + \mu_{1t} \tag{11}$$

a priori expectations: $\Phi_1 > 0, \Phi_2 > 0, \Phi_3 > 0, \Phi_4 < 0, \Phi_5 < 0, \Phi_6 < 0, \Phi_7 < 0$.

Construction Sector (CS):

$$CSfdi_t = \delta_0 + \delta_1 ln(rgdpgr)_t + \delta_2 topen_t + \delta_3 ln(infra)_t + \delta_4 polv_t + \delta_5 terr_t +$$
$$\delta_6 corr_t + \delta_7 relt_t + \mu_{2t} \quad (12)$$

a priori expectations: $\delta_1 > 0, \delta_2 > 0, \delta_3 > 0, \delta_4 < 0, \delta_5 < 0, \delta_6 < 0, \delta_7 < 0$.

Manufacturing Sector (MF):

$$MFfdi_t = \alpha_0 + \alpha_1 ln(rgdpgr)_t + \alpha_2 topen_t + \alpha_3 ln(infra)_t + \alpha_4 polv_t + \alpha_5 terr_t$$
$$+ \alpha_6 corr_t + \alpha_7 relt_t + \mu_{3t} \quad (13)$$

a priori expectations: $\alpha_1 > 0, \alpha_2 > 0, \alpha_3 > 0, \alpha_4 < 0, \alpha_5 < 0, \alpha_6 < 0, \alpha_7 < 0$.

Oil and Gas Sector (OG):

$$OGfdi_t = \Gamma_0 + \Gamma_1 ln(rgdpgr)_t + \Gamma_2 topen_t + \Gamma_3 ln(infra)_t + \Gamma_4 polv_t + \Gamma_5 terr_t +$$
$$\Gamma_6 corr_t + \Gamma_7 relt_t + \mu_{4t} \quad (14)$$

a priori expectations: $\Gamma_1 > 0, \Gamma_2 > 0, \Gamma_3 > 0, \Gamma_4 < 0, \Gamma_5 < 0, \Gamma_6 < 0, \Gamma_7 < 0$

Telecommunication Sector (TC):

$$TCfdi_t = \phi_0 + \phi_1 ln(rgdpgr)_t + \phi topeni_t + \phi_3 ln(infra)_t + \phi_4 polv_t + \phi_5 terr_t$$
$$+ \phi_6 corr_t + \phi_7 relt_t + \mu_{5t} \quad (15)$$

a priori expectations: $\phi_1 > 0, \phi_2 > 0, \phi_3 > 0, \phi_4 < 0, \phi_5 < 0, \phi_6 < 0, \phi_7 < 0$.

3.4 Estimation Technique

The FMOLS estimator was employed for estimation of the specified models. Chang
and Philip (1995) theory for time series regression with unknown mixture of I(0) and
I(1) variables and established that the method of FMOLS is applicable to models with
some unit roots and unknown cointegrating rank. This method is also applicable in
cases of estimation of model involving small dataset, particularly where it is quarterly
time series data for robust parameter estimates.

It is required that the variables of a model are cointegrated for the FMOLS technique to be applied. This is to say that a long run relationship between the variables of the model must be established to proceed with the model estimation. Before performing the cointegration test, the stationarity (or unit root) test was conducted to ascertain whether the variables have unit roots. Two unit root tests were performed: the augmented Dickey-Fuller (ADF) unit root test and Philips-Perron (PP) unit root test. Following the unit root test conducted with the aid of ADF, it appears that there is a mixed order of integration that is, I(0) and I(1) of the variables for this study. Thus, this study used autoregressive distributed lag (ARDL) to check the long-run relationships among the variables.

4. Results and Discussion

Table 2: The results of unit root test for variables

Variable	ADF test Statistics			PP test Statistics		
	Level	1st Diff.	$\sim$I(d)	Level	1st Diff.	$\sim$I(d)
Fdi	-4.21***	-	I(0)	-4.34***	-	I(0)
Rgdpgr	-8.42***	-	I(0)	-7.51***	-	I(0)
Topen	-1.21	-8.92***	I(1)	-0.03	-8.05***	I(1)
Infra	-7.33***	-	I(0)	-5.88***	-	I(0)
Terr	-2.38***	-	I(0)	-0.03	-9.62***	I(1)
Polv	0.38	-5.67***	I(1)	-1.19	-8.44***	(1)
Corr	-3.77***	-	I(0)	-1.17	-12.02***	I(1)
Relt	4.22***	-6.77***	I(1)	-5.54***	-	I(1)

Source: Authors Computation using EVIEWS

The unit root test results are presented in Table 2. The results indicate that some of the variables such as fdi, rgdpgr, infra, terr and corr are stationary at levels while others such as topen, polv and relt at first difference. This implies that all the variables attained stationarity either at levels or at their first difference.

Table 3: ARDL bounds test

Test Statistics	Value	Level of Significance	Lower Bound I(0)	Upper Bound I(1)
F-Statistics	10.23713	10%	3.17	4.14
K	7	5%	3.79	4.85
		2.5%	4.41	5.52
		1%	5.15	6.36

Source: Authors Computation using EVIEWS

The results of the test for cointegration of the variables are presented in Table 3. ARDL bound test statistics value of 10.2371 is greater than the upper bound critical value of 4.85. This indicates that the null hypothesis of no cointegration should be rejected at 5 percent significance level. Thus, it can be inferred from this result that long run relationship exists among the variables, thus the variables are cointegrated. This is one of the requirements for the use of FMOLS estimator.

Table 4: FMOLS model estimation for aggregate FDI

Variable	Coefficient	t-Stat.	Prob.
LOG(RGDPGR)	2.08	23.79	0.00***
TOPEN	0.03	2.05	0.05**
LOG(INFRA)	0.03	0.28	0.78
TERR	-0.21	-4.01	0.00***
POLV	-0.02	-0.33	0.74
CORR	0.24	3.90	0.00***
RELT	-0.15	-1.48	0.14

$R^2 = 0.60$; Adj. $R^2 = 0.57$

Notes: ** and *** indicate significant level at 5% and 1% level respectively.

Table 5: Test for multicolinearity: The variance inflation factor (VIF)

Variable	Variance	VIF
log(rgdpgr)	0.007668	2.740299**
topen	0.004651	2.596582**
log(infra)	0.014198	1.625122**
terr	0.002788	2.231053**
polv	0.003908	1.661052**
corr	0.003885	3.002567**
relt	0.010411	2.380077**

Notes: ** indicate less than 5 which implies absence of multicollinearity

The estimated model does not include an intercept as the FMOLS estimator is designed to correct the problem of heteroskedasticity, and the variables are demeaned before being used for estimation.

From Table 5 above the estimated model reveals that market size measured as real GDP growth rate is positively and significantly related to total FDI inflow. The relationship is highly significant even at 1 percent. Meaning that, 1 percent expansion in the size of the market for goods and services is associated with about 2.1 percent increase in the amount of FDI that flows into the country. This means that the larger the

size of the market, the larger the amount of FDI that flows into the country. The result also suggests that economic growth could enhance the attractiveness of the country to FDI. This outcome conforms to *a priori* expectation, and validates the market size hypothesis of FDI inflows and gravity model vis-à-vis foreign investment inflows. It is also in sync with findings of previous empirical studies such as Iamsiraroj and Doucouliagos (2015) and Alshamsi *et al.* (2015), which found positive and significant effects of real GDP on FDI inflows.

The effect of trade openness on FDI is observed to be positive, as expected and statistically significant at 5 percent. This suggests that openness of Nigeria's economy to international trade enhances its attractiveness to FDI. This is in conformity with empirical evidence from previous studies including those conducted by Tamad and Adoh (2018) and Güriş, and Gözgör (2015), which found that the integration of an economy with the global market engenders increase in inflows of FDI.

Infrastructure is observed to be positively related to FDI. However, the effect of infrastructure on FDI in the country is not statistically significant. This suggests that electricity consumption is not a key factor affecting the amount of FDI that flows into the country. This is in sync with Omri and Kahouli (2017) and Bekhet and Othdan (2011) which also found non-significant positive effect of electricity consumption on FDI inflows.

Terrorism index is observed to be negatively and significantly related to FDI inflows to Nigeria. This conforms to *a priori* expectations and implies that terrorism serves as a deterrence to FDI inflows to Nigeria. This finding corroborates evidence from previous studies such as Kinyanjui (2014), Murtaza and Amar (2014), Alam and Mingque (2018), Ukwueze *et al.* (2019) which found adverse effect of terrorism on FDI inflows.

Political violence is negatively signed as expected, though not statistical significance at the conventional levels. This suggests that political violence hinders FDI inflows to the country. It is worthy to state that FDI inflow into an economy may be insensitive to political violence owing to the interest of some rent seeking investors in some sectors, for example Oil and Gas and Telecommunication sectors. This is corroborated

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by Witte *et al.* (2017) which attributes it to "high profitability of natural-resource extraction and geographic constraints on location choice". Other studies in this same line of thought are Li (2006) and Latif *et al.* (2013).

The observed positive and statistically significant coefficient of corruption perception index implies that the better the quality of governance (in terms of the control of corruption), the more attractive the economy is to FDI inflow. The higher the index, the cleaner the country, and the lower the index, the higher the level of corruption in the country. Thus, the very high statistical significance of this variable which easily passes the significance test even at 1 percent level as indicated by the p-value highlights the relevance of less corruption in attracting FDI into the country, and underscores the effort of the government in combating corruption in the country.

Religious tension negatively affects FDI inflow, though the effect is not statistically significant. This suggests that, as a secular state, there has been religious tension in the country with its attendant negative effects on FDI inflows. This conforms to *a priori* expectation and in tune with findings by Kolstad and Tøndel (2002).

In Table 4, the coefficient of determination and the adjusted coefficient of determination indicate that the model has a good fit and could be deployed for forecasting purpose. The uncentered VIFs in Table 5 are all less than 5, suggesting absence of multicollinearity. This implies that the estimates are reliable.

Based on the specified models, five different estimations are carried out for each of the sectors identified. The results are presented in Table 6.

Banking Sector
The results presented in Table 6 show that real GDP growth rate and trade openness positively affect FDI inflows into Nigeria's banking sector and conform to *a priori* expectations. Their t-statistics of 1.84 and 1.68 respectively show that the effects are however significant at the 10 percent level. These suggest that expansion in market size and greater integration and interconnectedness of the nation's economy with the global market will attract more FDI into the nation's banking sector. The effect of infrastructure on FDI inflows to the banking sector is positive, as expected, but not statistically significant.

Terrorism is found to have adversely affected FDI inflows to the Nigeria's banking sector. The t-statistics at the absolute value of 6.94 shows that the effect is significant at 1 percent. This implies that terrorist activities deter inflows of FDI to the nation's banking sector. Considering the key role of the sector to the financial system, employment, and growth in financing, by extension, the effect of terrorism could be said to have adversely affected the growth of the nation's economy. The adverse effect of terrorism on FDI inflows to the banking sector in Nigeria corroborates evidence from the study by Murtaza and Amar (2014) which also found negative effect of terrorism on FDI inflows to financial and business sectors.

Political violence negatively affects FDI inflows to the banking sector. The t-statistics at the absolute value of 2.80 shows that the effect is highly significant at 1 percent level. This suggests that incidences of political violence adversely affect the attractiveness of the nation's banking sector to FDI. The effect of corruption on FDI inflow to the banking sector is not statistically significant. Religious tension adversely affects FDI inflows to the nation's banking sector. The t-statistics at the absolute value of 2.19 shows that the effect is significant at 5 percent level. This implies that incidences of religious violence deter the inflow of FDI into the nation's banking sector.

From Table 6, the coefficient of determination (R^2 = 0.69) of the estimated model indicates that 69 percent of the systematic variation in FDI to the banking sector is explained by changes in the regressors. Hence the model has an impressive fit. The result of test for multicollinearity presented in the appendix shows that the model is devoid of multicollinearity as all the VIFs in Table 5 are less than 5.

Construction Sector

Market size or real GDP growth rate positively affects FDI inflows to the nation's construction industry. The t-statistics of 2.14 indicated by the positive and statistically significant coefficient of real GDP growth rate which passes the test of statistical significance at 10 percent level. Thus, the market size influences multinational participation in the nation's construction industry. Trade openness also positively influences FDI inflows into the nation's construction sector. The t-statistics of 2.99 shows that the effect is significant at 1 percent level. The more opened the econ-

omy is, the greater the amount of FDI that flows into the nation's construction sector. Infrastructure is negatively signed and the t-statistics at the absolute value of 2.09 shows that the variable is statistically significant at 5 percent. This suggests that an inverse relationship exists between the level of infrastructure in the country and the amount of FDI that flows into the nation's construction industry. This is not unexpected since construction is a component of infrastructural development and the more developed the infrastructure of a country is, the less attractive will be the infrastructure (construction) sector to FDI.

Table 6: FMOLS estimation results for sectors of the economy

variables	Banking	Construction	Manufacturing	Oil& Gas	Telecommunications
log(rgdpgr)	3.28*	7.18**	3.33*	-3.56	2.39**
	(1.84)	(2.14)	(1.71)	(-1.07)	(2.22)
topen	0.04*	0.12***	0.03**	0.06**	-0.03
	(1.68)	(2.99)	(2.15)	(2.02)	(-0.57)
log(infra)	0.10	-1.56**	0.34**	-0.08	0.32***
	(0.25)	(-2.09)	(2.10)	(-0.07)	(2.98)
terr	-0.56***	-0.28*	-0.04**	-0.29**	-0.01**
	(-6.94)	(-1.84)	(-2.00)	(-2.14)	(-2.13)
polv	-0.18***	-0.05	0.07	-0.14	0.19
	(-2.80)	(-0.42)	(1.00)	(-1.02)	(1.37)
corr	0.12	0.27	0.13	0.66**	-0.02**
	(1.00)	(1.18)	(1.05)	(2.50)	(-2.12)
relt	-1.06**	0.83	-0.76	0.66	-0.20
	(-2.19)	(0.91)	(-1.44)	(0.62)	(-0.19)
c	-29.83	-89.91*	-43.15	74.40	-38.20
	(-1.07)	(-1.72)	(-1.42)	(1.34)	(-0.63)
R^2	0.69	0.55	0.52	0.50	0.56
N	39	39	39	39	39

Notes:***, **, * indicate statistical significance at 1%, 5% and 10% level respectively and t-ratios are in ()

Turning to the variables of interest, we observe negative effect of terrorism on FDI inflows to the construction sector, and the t-statistics at the absolute value of 1.84 shows that the effect is significant at the 10 percent level. This implies that increase in terrorist activities and attacks deter inflow of FDI into the nation's construction industry. This is in sync with the empirical evidence from Haider and Anwar (2014) which also found that terrorism adversely affects FDI inflows to Pakistani's construc-

tion sector.

It can be observed that the effects of other indicators of political risks such as political violence, corruption, and religious tension on FDI inflows to construction sector are not statistically significant. This implies that the amount of FDI that flows into the nation's construction sector is unaffected by political violence, corruption, and religious tension.

In Table 6, the coefficient of determination of the model indicates that the model has a good fit as the regressors explain 55 percent of the systematic variation in the amount of FDI that flows into the construction sector. The VIF test for multicollinearity result presented in Table 5 indicates absence of multicollinearity among the variables of the model.

Manufacturing Sector

The effect of market size on FDI inflows to the manufacturing sector is positive and the t-statistics of 1.71 shows that the effect is significant at the 10 percent level. The positive sign on the coefficient conforms to *a priori* expectation. Expansion of the market (or real aggregate demand) for manufactured goods enhances the attractiveness of the sector to greater inflow of FDI. This corroborates evidence from Petrović-Ranđelović, *et al.* (2017) which also found market size to be a significant determinant of FDI inflows.

Trade openness positively affects FDI inflows to Nigeria's manufacturing sector. The more integrated the economy is with the global market, the more FDI will flow into the manufacturing sector. The t-statistics of 2.15 shows that the effect of trade openness on inflows of FDI to the manufacturing sector is significant at 5 percent level. Trade openness thus enhances the attractiveness of the nation's manufacturing sector to FDI. This is not unexpected as it enables multinational corporations operating in the sector to import inputs needed for production, and export output of their production processes. This corroborates evidence from the study by Güriş and Gözgör (2015) which also found that trade openness is a significant causal factor of FDI inflows.

Of the four indicators of political risk indicated in the model, only terrorism signif-

icantly affects inflow of FDI into the manufacturing sector. The t-statistics at the absolute value of 2.00 shows that the effect is significant at 5 percent. The implication is that incidences of terrorist attacks hinder inflow of FDI into the manufacturing sector.

In Table 6, about 52 percent of the systematic variation in the amount of FDI inflow to the manufacturing sector is explained by the model. This is indicated by the coefficient of determination of 0.52. The model therefore has a good fit. The VIF test in Table 5 indicates absence of multicollinearity. Thus, the variances of the estimated coefficients are not inflated.

Oil and Gas Sector

FDI inflows to the oil and gas sector is unaffected by market size, electricity consumption, political violence and religious tension as indicated by the coefficient of these variables which fail the test of statistical significance at the conventional level of 5 percent. This is not unexpected considering that resource-seeking investors, when making investment decisions, do not usually take these factors into consideration, but considers the availability of resources and expected return on investment in the sector. The positive sign on the coefficient of trade openness variable which is also significant at the 5 percent level implies that trade openness plays a key role in the decision of foreign investors to invest in the oil and gas sector. This may be attributed to the fact that potential investors in the sector will have to take into consideration, the ease of importing factor inputs needed for exploration and/or production (including refining), and the ease of exporting the output. Thus, the more open the economy is, the more attractive it tends to be, to long term foreign investors.

The coefficient of terrorism is negatively signed and the t-statistics at the absolute value of 2.14 shows that it is statistically significant at 5 percent level. This suggests that, the fact that the country is highly terrorized (the country is rated the third most terrorized country in the World, and the most terrorized in sub-Sahara Africa), is taking a toll on the amount of FDI attracted by the oil and gas sector. The positive coefficient of corruption which is also significant at 5 percent level suggests that FDI inflows into the oil sector has been increasing despite the rising trends in corruption. These results buttress the argument of Sadvakassov and Orazgaliyev (2015),

who also noted that size of resource (oil and gas) in a country is paramount for investment decisions of resource-seeking multinational firms wishing to invest in the sector, rather than market size and level of development (of infrastructure) which are not key factors.

In Table 6, the coefficient of determination indicates that 50 percent of the systematic variation in the amount of FDI inflows to the oil and gas sector is explained by the included explanatory variables. The model is not affected by multicollinearity as all the VIFs are less than 5.

Telecommunication Sector

Inflow of FDI to the telecommunications sector is positively affected by market size. The t-statistics of 2.22 shows that the effect is significant at 5 percent level. This implies that expansion in the level of economic activities in the country can increase the attractiveness of the telecommunications sector to FDI. This corroborates evidence from the study conducted by Arawomo and Apanisile (2018) which also found that market size positively and significantly affects FDI inflows into Nigeria's telecommunications sector.

The effect of trade openness on FDI inflows to the telecommunications sector is not statistically significant. This implies that openness of Nigeria's economy to global trade is not a key factor explaining decision of multinational corporations to participate in the telecommunications sector. This may be attributed to structural rigidities confronting FDI inflows into telecommunication services in Nigeria. The effect of electricity consumption on FDI inflows to the telecommunications sector is positive and the t-statistics of 2.98 shows that the coefficient is statistically significant at 1 percent level. This underscores the relevance of electricity to sustenance of the telecommunication sector. Improvements in electricity generation and distribution which will in turn enhance electricity consumption, all things being equal, will enhance the attractiveness of the sector to inflow of FDI.

Inflow of FDI to the telecommunication sector is negatively affected by terrorism and the t-statistics at the absolute value of 2.13 shows that the effect is significant at 5 percent level. This suggests that incidences of terrorist attacks deter FDI inflows

to the sector. Corruption also adversely affects inflow of FDI into the telecommunications sector as indicated by the negative coefficient of corruption index and the t-statistics at the absolute value of 2.12 shows that it passes the test of statistical significance at the 5 percent level. However, political violence and religious tension do not significantly affect FDI inflows to the telecommunications sector as indicated by the t-ratios of the coefficients of the variables.

From Table 6, the coefficient of determination indicates that about 56 percent of the systematic variation in the dependent variable is explained by the regressors, hence the model has a good fit. Multicollinearity is also absent as indicated by the results of the VIFs test presented in Table 5.

5.   Conclusion and Recommendations

Inflows of FDI to specific sectors such as banking, construction, manufacturing, oil and gas, and telecommunications sectors of the Nigerian economy are adversely affected by political risk factors. Of these political risk factors are terrorism and corruption. Terrorist activities in the country tend to deter inflow of FDI to the Nigerian economy. The effect of corruption on FDI inflow to the economy was found to be positive, and the effect in specific sectors including the banking, construction and manufacturing sectors were found to be statistically not significant, though, its effect on FDI in oil and gas, and telecommunications sector were quite significant. Also, corruption adversely affects inflow of FDI to the telecommunication sector but was positively related to FDI inflow to the oil and gas sector. However, political violence and religious tension exhibited insignificant effect on FDI inflows to the specific sectors in Nigeria.

Based on the empirical evidence emanating from the study, the followings are recommended.

1. Efforts should be intensified by Nigerian government on the war against terrorism through a combination of diplomatic engagement and foreign assistance by working with foreign government partners to develop modern warfare technologies that will build the capabilities necessary to prevent, degrade, detect, and respond to terrorist threats. This includes efforts to strengthen intelli-

gence gathering, law enforcement and judicial capabilities. Additionally, expanding aviation and border security and deepening global information sharing to counter terrorist financing and violent extremism, and improving crisis response would be appropriate.

2. The fight against corruption by the Nigerian government through its various anti-graft agencies should be strengthened via technology that would enable the country to build electronic platforms to manage government finances and to provide transparency of government finances. This is in addition to deploying block-chain and other emerging technologies to underpin our contract negotiations and procurement systems. These efforts can be complemented by building strong and independent audit and justice systems, including a well-equipped judiciary and oversight office to field complaints.

3. Trade restrictions should be relaxed by allowing the market to regulate imports through a competitive foreign exchange regime and the country should promote exports of consumables. However, if necessary, Nigeria can also invoke the flexibilities in WTO law, such as imposing import restrictions for balance of payment or safeguard reasons or using the anti-dumping provisions. But it must invoke these exemptions in accordance with WTO rules in view of the observed positive and significant effects trade openness has on FDI inflow.

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