Asymmetric Effect of Foreign Direct Investment on Manufacturing Sector Performance in Nigeria

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Abstract.

In this study, after the use of the Non-linear ARDL method to investigate cointegration between foreign direct investment and manufacturing sector growth and error correction specification combined with annual data from various sources, the study showed that changes to FDI have a short and long run asymmetric effect on the Nigerian manufacturing sector growth. The estimated Non-linear ARDL model further affirmed the presence of asymmetries in the foreign direct investment changes to the manufacturing sector growth. Positive foreign direct investment was found to improve the manufacturing sector growth increasing it by 0.25 percent for every one percent increase to FDI in the short run. The narrative was however different in the long run as positive FDI had a negative impact on the manufacturing sector in the long run indicating that growth in the manufacturing sector reduces by 0.11 for every one percent increase to FDI. The negative FDI on the other hand had a positive statistically insignificant relationship in the short run and a negative statistically significant relationship in the long run with the manufacturing sector.

Keyword: Manufacturing sector, Foreign Direct Investment, Economic Growth, Non-linear ARDL Model.

[1] The views expressed in this paper are those of the authors and do not necessarily show the position of their affiliation.

1 Introduction

Developing countries are beginning to attract foreign direct investment as an important element in their strategy for economic development. This is because foreign direct investment is seen as an amalgamation of capital, technology, marketing and management. The global economy has been witnessed tremendous increase in foreign direct investment especially since the beginning of the 21st century and this has caught the attention of many analysts; Anowor *et al* (2013), Mijiyawa, (2017). The increase in foreign direct investment since the beginning of the 21st century is therefore regarded as a major stimulus to economic growth in developed and developing countries (Anowor *et al*, 2013). This was previously evidenced by UNCTAD (2007) as Malik *et al* (2004) reported that foreign direct investment inflow to Africa has increased from $9.68 billion in 2000 to $1.3 trillion in 2006 making Africa the new destination of foreign direct investment. Hence an interesting area of research is the study of the asymmetric effect of foreign direct investment and manufacturing sector growth in Nigeria.

Going by the drop in oil prices at the end of 2014 which spilled over to the 2015-2017 period, FDI inflows bottomed at $3.1 billion in 2015and despite increasing to $4.4 billion in 2016, the inflow has remained low and unstable reaching an estimated $3.4 billion in 2017. In spite of the efforts by the government and the recorded increase of foreign direct investment inflows, the performance of the sector in terms of output, capacity utilization and sector contribution to GDP was not as expected and therefore needs to be investigated. This has made it the center of attention for policy makers in developing countries. Dozens of scholars have explored the causes between foreign direct investment and its contributions to the growth of an economy some of which include; Marin (2008) who asserted that the Nigerian government relaxed its restrictions to attract external investors and spending large sums of money to attract foreign firms and Malik *et al.* (2004) that also reported that the Nigerian government laid much emphasis on manufacturing sector because it envisaged that the modernization of the sector

requires a deliberate and sustained application and combination of suitable technology, management techniques and other resources to move the economy from the traditionally low level of productivity to a more automated and efficient system of mass production of goods and services.

Prior to the heavy dependence on crude oil, the Nigerian manufacturing sector contributed 4.73% and 7.00% in years 1961 and 1966 respectively (Chete *et al.,* 2014). The structure of GDP in Nigeria for five decades following independence showed the dominance of the primary sector. At independence, the contribution of the primary sector to GDP was about 70 per cent which later dwindled in subsequent years to 62.10 per cent and 55.68 per cent in 1977 and 1990, respectively indicating the extreme dominance of agriculture in GDP in Nigeria and the small contribution of the manufacturing sector to aggregate growth. More recent works such as; Anowor *et al.* (2013) suggested human capital as one major reason for the differential response to foreign direct investment at different levels of development and income because it takes a well-educated population to understand and spread the benefits that accrue from new innovations to the economy as a whole. Also, as inferred from a study by (Mijiyawa, 2017) on research questions asked about the contributions and deterrent factors of Africa's manufacturing development, empirical findings attest to the deficiencies in the harmonization of foreign direct investment into meaningful economic growth which this research work hopes to scale down to the Nigerian manufacturing sector. Though the Nigerian manufacturing sector doesn't significantly support economic development in its current state, it suffices as one of the most attention-grabbing markets with about 200 million consumers which is also a metric for domestic investment in the manufacturing sector as private consumption expenditures averaged 8.05% over the period under study. It is in light of the foregoing issues that the manufacturing sector of the Nigerian economy needs to be investigated to redirect the course of the service led

economy (with contributions of 53.97% to Nigeria's GDP) to suit the current developmental stage of the Nigerian economy.

The study is organized into five sections with this section containing the introduction. Review of related literature and methodology and model specification are contained in sections two and three respectively. The interpretation of results and discussion is contained in section four. The last section presents the conclusion and policy recommendations.

2 Review of Related Literature.

Africa in general has not especially profited from the FDI boom. For most of the time following 1970, FDI inflows into Africa have expanded just unassumingly, from a yearly normal of about US$1.9 billion in 1983-87 to US$3.1 billion in 1998-1992 and US$4.6 billion in 1991-1997. Since the Nigerian government has seen FDI as a vehicle for political and financial domination, the major thrust of government's arrangement through the Nigeria Enterprise Promotion Decree (NEPD) was to control as opposed to advance FDI (Ogunkola and Jerome 2006). Amongst the plethora of economic theories, two of them stand out and are preferred by scholars in the analysis of foreign direct investment and economic growth. These two theories are notably; Neo-Classical Growth Theory and the Endogenous Growth Model. Out of the 40 studies reviewed, 28 studies were focused on FDI, how it related to growth or the manufacturing sector and what appears obvious from the reviewed literature is the fact that foreign direct investment as a flow of capital into an economy has an embedded component that goes into developing human capital upon arrival at the host country and the success depends on the absorptive capacity of the nation in question. 16 studies out of these 40 studies were manufacturing sector specific-explaining the role and the impact that the sector has on the economy. 20 of the studies were panel analysis with 9 of them focusing on the manufacturing sector and obtaining a mixed result, (see Adenikinju, 1998; Okejiri, 2000; Yao and Wei, 2007;

Omri and Kahouli, 2013; Samaniego and Sun, 2015; Su and Liu, 2915; Teixeira and Queirós, 2016; Orlic *et al* 2018 and Amiri *et al* 2019).

Azman *et al* (2010) found out that that a positive effect of FDI on growth kicked in only after financial markets development exceeded a threshold level. This finding underlined the importance for government to emphasize on diffusion aspect in formulating FDI policies as knowledge diffusion was not sustained on welfare ground in Nigeria.

Omri and Kahouli (2013) studied the nexus between foreign investment, domestic capital and economic growth from the MENA countries and concluded that there was bi-directional causal relationship between foreign investment and economic growth; there was a uni-directional causal relationship from foreign investment to domestic capital; and there is bi-directional causal relationship between domestic capital and economic growth for the region as a whole.

Lamsiraroj and Ulubasoglu (2015) explored the global FDI–growth relationship in 140 countries and found out that voluntary exchanges in FDI generated economic growth and that FDI–growth relationship exhibited stronger within-region variation than within-country variation and finally the finding suggested that theoretical predictions regarding FDI's positive effect on growth rested on the absorptive capacity of economies.

Silajdzic and Mehic (2015) investigated Knowledge spillovers, absorptive capacities and the impact of FDI on economic growth from transition economies Central and Eastern Europe found out that FDI exerted a significant and positive impact on economic growth along the complementary positive impact of domestic investments on economic growth. Further, the result found that technology related variables had pervasive positive influence on economic growth in the countries under observation.

Prior to 1972, FDI in the Nigerian economy was to a great extent overwhelmed by interests in the non-oil sector, taking up an offer of more than 70%. Be that as it may, by 1974, the critical part of the oil sector as the *primum mobile* of the Nigerian economy had been

completely settled. In that year, the oil sector cornered an offer of 102.5% of aggregate FDI, while that of the non-oil segment remained at negative 2.50% (Anyanwu, *et al*, 1997). More recently, all evidences point to reduced foreign direct investment in the last 7 years and considering the fact that 2018 had the worst year yet in terms of attracting foreign direct investment to the Nigerian economy as a whole making the economy to relinquish its former top investment position in West Africa as it used to attract foreign direct investment averaging $3bn per quarter.

3 Methodology and Model Specification.

Alluding to methods from previous studies; Akinlo (2004) and Anwar (2008), this study presents a variant of the specified models to capture the specifics of the Nigerian manufacturing sector. Hence following the modifications by these authors, this study will modify the growth equation by modelling it to suit the Nigerian manufacturing sector using the linear and Non-linear ARDL methodology. The scope of this study is restricted to the Nigerian manufacturing sector on which data on variables employed are collected over the period of 1981-2018 as the data drawn from the Central Bank of Nigeria (CBN, 2018); World Development Indicators (WDI, 2018).

Model Specification.

Going further with the narrative, the model specification is formally given as;

$$MAN = f(FDI, PRIVK, HC, \varepsilon_t) \quad (1)$$

Where;

MAN = Manufacturing Sector Output,

FDI = Foreign Direct Investment Inflow,

PRIVK = Private investment to the manufacturing Sector,

HC = Human Capital,

and ε_t is the disturbance term.

The model above is backed by the fact that manufacturing sector output depends on the inputs combination capital and labour. Alluding to previous studies; Akinlo (2004) an attempt to augment domestic investment in the economy at the aggregate level, the extent to which depends solely on the quality of environment of recipient country, this study adapted a production unction expressed as;

$$MAN = \alpha_0 + FDI^{\alpha 1} + HC^{\alpha 2} + PRIVK^{\alpha 3} + \varepsilon_t \quad (2)$$

Rewriting equation (6) in a log linear functional form we have that;

$$\log MAN = \alpha_0 + \alpha_1 FDI + \alpha_2 HC + \alpha_3 PRIVK + \varepsilon_t \quad (3)$$

ARDL Model Specification.

An autoregressive distributed lag (ARDL) is a least squares regression consisting of the lags of the dependent variables 'the autoregressive terms' and of the explanatory variables 'the distributed lag terms'. The model is usually denoted in notational terms as ARDL (p, q_1.... q_K), where p is the number of lags of the dependent variable, q1 is the number of lags of the first explanatory variable up to qK which is the K^{th} explanatory variable, and K is the number of explanatory variables (X1...XK). Taking a working example of the simple case of ARDL (1, 1), it can be represented algebraically as;

General ARDL specification goes thus;

ARDL (p, q_1.... q_K):

$$Y_t = \alpha + \sum_{i=1}^{p} \gamma_i Y_{t-1} + \sum_{i}^{k} \sum_{i=1}^{q} X_{j,t-1} \beta_{J,1} + \varepsilon_t \quad (4)$$

Considering ARDL (1, 1), where p = 1, K = 1 and q_j = 0, 1 gives;

$$Y_t = \alpha + \gamma Y_{t-1} + \beta_0 X_t + \beta_0 X_t + \varepsilon_t \quad (5)$$

Non-linear ARDL Model Specification.

Shin *et al* (2011) advanced a non-linear autoregressive distributed lag (NARDL) cointegration approach as an asymmetric extension to the already existing ARDL model by Pesaran and Shin (1999) and Pesaran, Shin and Smith (2001), to capture both long-run and short-run asymmetries in a specified variable of interest. This modelling approach is further adopted for the specific objectives of this study.

FDI^{+} and FDI^{-} are the decomposed partial sums of positive and negative changes in FDI.

$$FDI_t^{+} = \sum_{k=1}^{t} \Delta FDI_t^{+} = \sum_{k=1}^{t} \max(\Delta FDI_t^{+}, 0) \quad (6)$$

and

$$FDI_t^{-} = \sum_{k=1}^{t} \Delta FDI_t^{-} = \sum_{k=1}^{t} \min(\Delta FDI_t^{-}, 0) \quad (7)$$

4. Results and Discussions.

The summary statistics presented in Table 4.1 below shows the mean, standard deviation, minimum and maximum values of the variables used.

Table 4.1: Descriptive statistics.

VARIABLES	HC	FDI	MAN	PRIVK
Mean	144.7319	1.7605	2715.218	8.0791
Median	76.3527	1.6250	1761.750	8.1722
Maximum	586.7216	5.7908	6684.218	11.7777
Minimum	0.4949	0.2574	1018.907	6.0490
Std. Dev.	176.2449	1.2533	1793.441	1.4802
Skewness	1.05126	1.3218	1.274875	0.2695
Kurtosis	2.7353	4.8771	3.100299	2.1424
Jarque-Bera	7.1102	16.6450	10.30954	1.6248
Probability	0.02858	0.000243	0.005772	0.4438
Sum	5499.811	66.9005	103178.3	307.0055
Sum Sq. Dev.	1149304.	58.1208	1.19E+08	81.0638
Observations	38	38	38	38

Source: *Author's computation, 2019 from EViews 10*

This section presents the results of the Augmented Dickey-Fuller (ADF) unit root tests to determine if the series are stationary or non stationary and to ultimately establish their order of integration. The result of the augmented dickey fuller is presented below;

Table 4.2: Summary of unit root tests and order of integration on variables used.

Variables	Augmented Dickey Fuller Test (ADF)		Phillips Perron (PP) Test		Order of Integration
	LEVEL	1ST DIFF	LEVEL	1ST DIFF	
HC	1.01259	-5.4349	3.1236	5.4491	I (1)
FDI	-3.3548	-	-3.2733	-	I (0)
MAN	0.1931	-3.2211	1.2292	-3.3172	I (1)
PRIVK	-2.064288	-6.8995	-1.9944	6.8489	I (1)
Critical Value	-2.945842	-2.9484	-2.9458	-2.9484	

Source: *Author's compilation, 2019 from EViews 10*

With a 5% critical value, the test of the unit root is asserted by comparing the observed values with the critical values for the augmented dickey fuller test statistics at the 5% level of significance. Since the results of the conventional unit root tests (ADF) showed that the series used in this study include both I (0) and I (1), the consideration of Auto-Regressive Distributive Lag (ARDL) Bounds effect for cointegration is plausible.

Table 4.3: Result of ARDL Bounds Test for Cointegration.

	Computed Wald(F-statistic): 14.2556					
	0.10		0.05		0.01	
K=3	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
F*	2.37	3.2	2.79	3.67	3.65	4.66

Source: *Author's computation, 2019 from EViews 10*
K represents number of regressors in the ARDL model
F represents the unrestricted intercept with no trend*

The above bounds test for cointegration, shows that the series in the model are cointegrated and have long-run relationships because their associated F-stats is above the I(0) and I(1) critical value bounds at 1%, 5% and 10% level of significance. Having found a long run relationship among the variables the ARDL estimate of the long run and short run parameter will be estimated.

ARDL Regression Result and Discussion.

In this section, the results of the estimated long run and short run model with the error correction term for the Auto-Regressive Distributive Lag specification are presented in Table 4.4 below;

Table 4.4: Long run and Short run Estimates.

Panel A: Long run Estimates				
Dependent Variable: Log (Man)				
Regressor	**Coefficient**	**Standard Error**	**T-Statistic**	**Probability**
C	7.8175	2.4587	3.1796	(0.0055)
LOG(FDI)	-0.2576	0.1940	-1.3280	(0.2017)
LOG(HC)	0.3388	0.0601	5.6334	(0.0000)
LOG(PRIVK)	0.4480	0.8031	0.5579	(0.5842)
Panel B: Short run Estimates				
Dependent Variable: Log (Man)				
Regressor	**Coefficient**	**Standard Error**	**T-Statistic**	**Probability**
C	0.8322	0.1864	4.4655	(0.0003)
DLOG(FDI)	0.1315	0.0384	3.4208	(0.0033)
DLOG(HC)	0.0988	0.0680	1.4523	(0.1646)
DLOG(PRIVK)	0.9579	0.0932	9.0557	(0.0000)
@DATEVAL("1985")	-0.2240	0.0458	-4.8939	(0.0001)
CointEq(-1)*	-0.1065	0.0113	-9.3835	(0.0000)

Source: *Author's computation from EViews 10*

The result of the estimated long run and short run parameters for the Auto-Regressive Distributive Lag specification are shown in panel A of table 4.4 above. The coefficient of -0.23 shows that the Nigerian manufacturing sector growth will decrease by 0.25 percent when the foreign direct investment is increased by 1percent. This result negates the a priori expectation earlier discussed and is contrary to the results of Akinlo (2004); Reiter and Kevin (2010); Su and Liu (2015) that looked into the effect of foreign direct investment on growth; this study presents a negative relationship between FDI and manufacturing sector growth.

Similarly, the results of the estimated short run parameters are presented in panel B of Table 4.4 above. The coefficient of foreign direct investment is positively signed and statistically significant in the short run. This corroborates the a priori expectation. This, however, contradicts the long run estimate which showed a significantly negative relationship. The coefficient of 0.13 shows that manufacturing sector growth will improve by 0.13 in the short run for every 1 percent

increase in foreign direct investment. This result reflects that the Nigerian economy will develop with regards to the Nigerian manufacturing sector when it comes to foreign direct investment. This has been reported in previous studies on the Nigerian manufacturing sector as Anowor *et al* (2013) established a negative relationship between foreign direct investment and the manufacturing sector in the short run but a negative relationship was found to exist in the long run. The error correction term in table 4.4 indicates that ECT is negative (-0. 11) and highly statistically significant. This further lends credence to the existing cointegration among variables under investigation and also indicating that about 11 percent of disequilibrium is corrected in one time period. Overall, the results show that in the short run, changes to private investment, foreign direct investment and human capital have significant impact on the Nigerian manufacturing sector.

Table 4.5: Result of Non-Linear ARDL Bounds Test for Cointegration.

	Computed Wald(F-statistic): 31.9346					
	0.10		0.05		0.01	
K=4	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
F*	2.2	3.09	2.56	3.49	3.29	4.37

Source: *Author's computation, 2019 from E-Views 10*
K represents number of regressors in the Non-Linear ARDL model
F represents the unrestricted intercept with no trend*

The above Bounds test for cointegration, shows that the series in the model are cointegrated and have long-run relationships because their associated F-stats is above the I(0) and I(1) critical value bounds at 1%, 5% and 10% level of significance.

Non-Linear ARDL Regression Result and Discussion.

In this section, the results of the estimated long run and short run model with the error correction term for the Auto-Regressive Distributive Lag specification are presented in Table 4.6 below;

Table 4.6: Long run and Short run Estimates.

Panel A: Long run Estimates				
Dependent Variable: Log (Man)				
Regressor	**Coefficient**	**Standard Error**	**T-Statistic**	**Probability**
C	3.7523	0.3673	10.2160	(0.0000)
LOG(FDI_POS)	-0.1086	0.0564	-1.9233	(0.0704)

LOG(FDI_NEG)	0.4302	0.1027	4.1874	(0.0006)
LOG(HC)	0.7834	0.1057	7.4115	(0.0000)
LOG(PRIVK)	1.7687	0.1869	9.4630	(0.0000)
Panel B: Short run Estimates				
Dependent Variable: Log (Man)				
Regressor	**Coefficient**	**Standard Error**	**T-Statistic**	**Probability**
C	0.7947	0.1468	5.4127	(0.0000)
DLOG(FDI_POS)	0.2524	0.04096	6.1618	(0.0000)
DLOG(FDI_NEG)	-0.0147	0.0205	-0.7148	(0.4839)
DLOG(HC)	-0.2105	0.0468	-4.4956	(0.0003)
DLOG(PRIVK)	1.0880	0.0822	13.2213	(0.0000)
CointEq(-1)*	-0.2118	0.0135	-7.5320	(0.0000)

Source: Author's computation from EViews 10

The result of the estimated long run parameters are shown in panel A of table 4.6 above. A negative relationship exists between the positive component of FDI and manufacturing sector growth. In other words, the manufacturing sector growth will markedly improve by 0.11 percent when foreign direct investment is reduced by 1 percent. Although insignificant, this relationship indicates that a continuous flow of FDI (a decomposition) acts as a form of disincentive to the Nigerian manufacturing sector growth in the long run. This result negates the a priori expectation earlier discussed and is contrary to the results of Akinlo, 2004; Reiter and Kevin 2010; Su and Liu 2015 that looked into the effect of foreign direct investment on growth.

The coefficient of 0.43 showed that the Nigerian manufacturing sector growth will decrease by 0.43 percent when the negative foreign direct investment is increased by one percent. This relationship indicates that the negative component of the FDI will reduce the Nigerian manufacturing sector performance by the said amount. This result corroborates the a priori expectation.

Similarly, the results of the estimated short run parameters are presented in panel B of Table 4.6 above. The coefficient of the short run positive component of the FDI is positively signed and is statistically significant thereby exhibiting a positive relationship with the manufacturing sector growth. This implies that the manufacturing sector will increase by 0.25 percent for every one percent increase in the positive component of the decomposed FDI.

In the same vein, the coefficient of the short run negative component of the decomposed FDI is negatively signed and is not statistically significant thereby indicating that a reduction to the inflow of FDI will increase the manufacturing sector growth. This implies that the manufacturing sector will increase by 0.014 percent for every one percent increase if the negative component of the decomposed FDI were increased by one percent.

The error correction term in table 4.6 above indicates that ECT is negative (-0.21) and highly statistically significant. This further lends credence to the existing cointegration among variables under investigation as 21 percent of the disequilibrium is corrected in one time period. Overall the results shows that in the short run, changes to private investment, decomposed foreign direct investment and human capital have significant impact on the Nigerian manufacturing sector. Going by the final results from the short and long run estimates, the study establishes that there is asymmetry between FDI and the manufacturing sector growth in both periods.

Post-Estimation Results.

This section interprets the result of post-estimation/diagnostic tests conducted on the model estimated are presented in table 4.7 below;

Table 4.7: Diagnostics Tests.

Tests	**T-statistics**	**Probability**	**Remarks**
Normality Tests	Jarque-Bera (0.9761)	0.6138	Normally distributed.
Serial Correlation (LM Test)	F-Statistics (1.0301)	0.3809	No serial correlation.
Heteroscedasticity (BPG Test)	F-Statistics (1.0872)	0. 4316	No Heteroscedasticity.
Ramsey Test (Specification	F-Statistics (2.0983)	0.1668	No misspecification.
Adj. R^2= 0.95 R^2= 0.97			

Source: Author's computation from Eviews 10

From Table 4.7, it is observed that the model does not reject the null hypotheses of; normality of the residuals, no misspecification, no serial correlation in the residuals and constant variance of the residuals (homoscedasticity) since the reported probabilities are greater than 10

percent level of significance in all cases, thereby verifying the results as truly best linear unbiased estimates (BLUE). The model is therefore fit for policy prescription and appropriate decision making.

Comparison of Results with Previous Findings.

This study accounted for the asymmetric effect between foreign direct investment and manufacturing sector growth to improve on earlier studies on the manufacturing sector; one of which used the linear ARDL (see Anowor *et al*, 2013) to establish that a long run relationship existed between foreign direct investment and the Nigerian manufacturing sector which this study also validated. This study found that asymmetry exists between foreign direct investment and the Nigerian manufacturing sector exists in both periods going by the significant variation in the coefficients at both periods which justified the use of the methodology as the conventional rule guiding the use of Non-linear and Linear ARDL presupposes that the nonexistence of asymmetry in the short and long run reduces the Non-Linear ARDL to a symmetric linear ARDL, that is the baseline ARDL model.

Going by the results of this research work in observance of the objective that the study set out to achieve, the positive inflows of FDI had a positive relationship with the manufacturing sector in the short run but a negative relationship in the long run while the negative FDI had a positive relationship with the manufacturing sector in the short run and a negative relationship with the manufacturing sector in the long run with varying coefficients bringing with it the conclusion that there is an asymmetric relationship in the both periods. The results from the findings in the long run tallies with the findings of Ayanwale, (2007) Anwar (2008), Anowor *et al* (2013) Ewetan and Ike (2014) Amuche, James and Anthony (2016). While the results of the short run partly paralleled the findings of Anowor *et al* (2013) as foreign direct investment had a positive relationship in the short run and a negative relationship in the long run in the case of this study.

5. Conclusion and Policy Recommendations.

To achieve the objectives of the study stated in chapter one, various economic tools were employed that led to the following findings. Firstly, the study has discovered a long run relationship between foreign direct investment, human capital and manufacturing sector growth going by the ARDL Bounds test for cointegration. Positive foreign direct investment was found to improve the manufacturing sector growth increasing it by every 0.25 percent for every one percent increase to FDI in the short run. The narrative was however different in the long run as positive FDI had a negative impact on the manufacturing sector in the long run as growth in the manufacturing sector will reduce by 0.11 for every one percent increase to FDI. The negative FDI on the other hand had a positive statistically insignificant relationship in the short run and a negative statistically significant relationship in the long run with the manufacturing sector. This analogy fulfills the first objective of the study.

Secondly, result from the estimated model under the framework of the Non-linear Autoregressive Distributive Lag model revealed that the impact of human capital component on the manufacturing sector growth was negative and insignificant in the short run but positive and statistically significant in the long run implying that while investment to human capital might be negative in the short run, returns to this investment will yield what it set out to achieve upon embarking on such investment at a later date. Vital statistics such as the F-statistics and the adjusted R-square indicated the overall significance of the Non-linear ARDL model. In addition, the result of post estimation tests showed that the estimated model did not suffer from any post estimation diagnostics tests including wrong functional form, non-normality in residuals and non-constant residual variance. By implication the Non-linear ARDL model is adequate for the purpose of policy prescriptions.

Policy Recommendations.

Based on the findings of this study, the following policy options could be found useful.

First, since the study revealed that there is a long run relationship between foreign direct investment, human capital and manufacturing sector growth, the Nigerian government should channel its policies towards addressing the Nigerian manufacturing sector.

Secondly, Government should provide infrastructures and consistent regulations to the manufacturing sector to curb corruption and provide a solid ground for private investors in the Nigerian manufacturing sector.

Thirdly, the advancement of the Nigerian manufacturing sector also depends on the restructuring of the restructuring of research and development institutes as the Nigerian economy is yet to fully catch up with the world technological extension service. This factor if addressed by the government would promote advance the course of the manufacturing sector and possibly enhance the much-needed diversification in the subsectors of the Nigerian manufacturing sector. Finally, the government would set the Nigerian manufacturing sector on the developmental track if the system that churns out her human resources are invested in.

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Summary of Literature Review.

Foreign Direct Investment and Human Capital on Growth.						
S/N	Author(s)	Title	Country/ Period.	Variables	Theoretical Framework / Methodology	Main findings
1	Noorbakhsh *et al* (2001)	Human Capital and FDI Inflows to Developing Countries: New Empirical Evidence.	36 Developing Countries. 1980-1994	Net FDI (as a percentage of GDP=f(Human Capital + Control Variables for FDI	_____ Panel Linear regression	Found Human Capital was a statistically significant determinant of FDI Inflows.
2	Yao and Wei (2007)	Economic growth in the presence of FDI: The perspective of newly industrializing economies	China 1979-2003	GDP= f(capital stock, population, human capital, foreign direct investment/DI+FDI, export/GDP, exchange rate, transportation)	Endogenous growth theory. Panel Data Analysis; panel cointegration tests	Found FDI moves production efficiency because of the reduced gap between the actual level of production and a steady state production frontier. Secondly, FDI shifted the host country's production frontier.
3	Reiter and Steensma (2010)	Human Development and Foreign Direct Investment in Developing Countries: the Influence of FDI Policy and Corruption.	49 Countries 1980-2005	HDI = f (FDI inward inflow, Restricted sectors for foreign investors, Foreign Investor Discrimination, Corruption and Foreign Aid (Control Variable).	Neo-Classical Growth Model. Panel Linear Regression	Found that FDI inflows are positively related to improvement in human development when FDI policy restricts foreign investors from entering some economic sectors and FDI and human development was also strongly positive when corruption was low
4	Thangavelu *et al* (2014)	Human capital, FTAs and foreign direct investment flows into ASEAN.	ASEAN countries. 2000-2009	logFDI = f(log GDP, Kill differential, bilateral distance, official language and Ethnic Language)	____ Panel Data Analysis. Gravity Model.	The results indicated that free trade agreements do have positive impact on FDI inflow and that the returns on FDI inflows depended on domestic absorptive capacity of the economies.
5	Cleeve *et al* (2015)	Human Capital and FDI Inflow: An assessment of the African Case.	35 Sub-Saharan African Countries. 1980-2012	FDI flow= f(Human Capital, Control Variables (location advantage for FDI to take place (ROI in the Host country-GDP per capita used as proxy)	Neoclassical growth theory. Panel Data Analysis.	Found human capital influenced FDI irrespective of the indicator of educational attainment used and control variables, such as; market size and growth, natural resource endowment and major global economic shocks played a significant role in influencing FDI flow into the region.

6	Su and Liu (2015)	Impact of foreign direct investment and human capital on economic growth: Evidence from Chinese cities	China. 1991-2010	Population growth rate effect= f(rate of physical capital accumulation, stock of human capital, FDI	Cobb-Douglas production function. Capital-augmented Solow model. Panel Data Analysis	Found growth rate of per capita GDP to be negatively correlated with population growth rate and positively correlated with investment rate in physical capital and human capital.
Foreign Direct Investment and Growth.						
S/N	Author(s)	Title	Country/ Period.	Variables	Theoretical Framework / Methodology	Main findings
7	Bengoa, *et a.l* (1997)	Foreign direct investment, economic freedom and growth: new evidence from Latin America	18 Latin American countries. 1970-1999	FDI/GDP = f (proxies of the determinants f FDI(Market size, Economic freedom, other economic conditions, human capital)	Neo-classical model followed Solow (`1956) Panel Data Analysis	Found economic freedom in selected countries as a positive determinant of FDI inflows and posited that foreign direct investment is positively correlated with economic growth in host countries.
8	Akinlo, A. E. (2004)	FDI and growth in Nigeria. An empirical investigation.	Nigeria 1970-2001	Output= f (labour, stock of private capital, stock of foreign capital, real government consumption, real export, human capital, financial depth, budget balance over GDP, Adjustment dummy variable D, Time trend.	Production function. Johansen cointegration tests, Error Correction Model	The result showed that foreign capital only had a positive impact on growth in Nigeria after a considerable lag and it is not significant. The result was in favor of the argument that extractive FDI might not be growth inducing as much as manufacturing FDI. Private capital was insignificant due to the small nature of private investment in the economy as the economy has been dominated by the government sector and finally concluded that Labour and Human capital have significant positive effect on growth as evidenced by the improved higher education system with reforms.
9	Asiedu, E. (2006)	Foreign Direct Investment in Africa: The Role of Natural Resources, Market Size, Government Policy, Institutions and Political	22 countries in Sub-Saharan Africa. 1984-2000	FDI/GDP =f (Share of minerals and oil in total exports (NATEXP) as a measure of Natural resource availability and GDP + GDP + Policy Variables + Institutional	_____ Unbalanced panel data analysis.	The results indicated that large local markets, natural resource endowments, good infrastructure, low inflation, an efficient legal system and a good investment framework promote FDI. In contrast, corruption and political instability had a opposite effect.

		Instability		Variables and Political Variables)		
10	Ayanwale, A. (2007).	FDI and Economic Growth: Evidence from Nigeria.	Nigeria. 1970-2002	Output= f(domestic Investment to GDP ratio, FDI to GDP ratio and human capital stock)	Exogenous Growth Theory 2SLS method to ascertain the relationship between the variables.	Results suggested that the determinants of FDI in Nigeria are market size, infrastructure development and stable macroeconomic policy. Openness to trade and available human capital were not FDI inducing. Although the overall effect of FDI on economic growth may not be significant, the components of FDI had a positive impact. The manufacturing sector FDI negatively affected the economy, reflecting the poor business environment in the country.
11	Azman *et al* (2010)	FDI and economic growth: New evidence on the role of financial markets	91 countries. 1975-2005	Average growth rates of GDP= f(FDI and vectors of variables hypothesized to affect output growth(PCI, POP growth rates, Investment GDP ratio, Human capital and Financial market indicators)	_____ Threshold regression.	The study established that a positive effect of FDI on growth kicks in only after financial markets development exceeds a threshold level. This finding underlined the importance for government to emphasize on diffusion aspect in formulating FDI policies as knowledge diffusion is not sustained on welfare ground.
12	Omri and Kahouli (2013)	The nexus among foreign investment, domestic capital and economic growth: Empirical evidence from the MENA region.	13 MENA countries. 1990-2010	Real GDP=f(domestic capital stock, FDI, Labour, total factor productivity)	Aggregate Production function. Simultaneous-equation models; (GMM)	Found out that there is bi-directional causal relationship between foreign investment and economic growth; there is uni-directional causal relationship from foreign investment to domestic capital; and there is bi-directional causal relationship between domestic capital and economic growth for the region as a whole.
13	Lamsiraroj and Ulubasoglu (2015)	Foreign direct investment and economic growth: A real relationship or wishful thinking?	140 countries. 1970-2009	Real GDP = f(FDI/GDP, Absorptive Capacity; financial development and Trade openness and vector of other controls, regional dummies)	Neo Classical Model. Meta Regression Analysis.	The result found that voluntary exchanges in FDI do generate economic growth. Other important results include that FDI–growth relationship exhibits stronger within-region variation than within-country variation. Finally the finding suggested that theoretical predictions regarding FDI's positive effect on growth rested on the absorptive capacity of

						the economy.
14	Sahraoui *et al* (2015)	Causal Interactions between FDI, and Economic Growth: Evidence from Dynamic Panel Co-Integration.	65 Countries. 1980-2010	Gross domestic Product = f(FDI)	FDI-led growth hypothesis; market size hypothesis and neutrality hypothesis. Panel Data Analysis	The results indicated that unidirectional causality exists between foreign direct investment and economic growth for Asia and oceanic, Middle East, North America North Africa and central Africa and there was a bidirectional causality FDI and GDP for Latin America and Europe making causality to run from foreign direct investment to economic growth which is stronger compared to causal relationship from economic growth to foreign direct investment in all panel.
15	Sasi lamsiraroj (2015)	The foreign direct investment–economic growth nexus.	124 cross-country. 1971-2010	Real Growth per capita = f(FDI/GDP, FDI*Human Capital, Vector of control variables) FDI=f(GDP, Control Variables; 4 Domestic Endowment variables, 3 Government Policy Variables, 2 Institutional Variables)	Industrial organization theory, product cycle theory, eclectic paradigm theory) Panel Data Analysis	Results from the estimation showed that overall effects of FDI are positively associated with growth and vice versa; whereas labor force, trade openness and economic freedom are other key determinants of FDI, that in turn stimulate income growth further.
16	Silajdzic and Mehic (2015)	Knowledge spillovers, absorptive capacities and the impact of FDI on economic growth: empirical evidence from transition economies	Transition economies of central and eastern Europe. 2000-2013	RealGDP= f(FDI stock in manufacturing sector, GDP per capita , Domestic Investment, Government Balance, Export and Import Share in GDP R&D by Government)	Traditional Neoclassical assumption of exogenous technology. Panel Data Analysis	The results of this empirical investigation revealed that FDI exerts a significant and positive impact on economic growth, along the complementary positive impact of domestic investments on economic growth. Further, the result found that technology related variables had pervasive positive influence on economic growth in the countries under observation.
17	Kalu *et al* (2016)	Responsiveness Of Foreign Direct Investment To Trade Openness In Nigeria	Nigeria. 1995-2014	LogFDI= f(Ratio of Net Export to Gross Domestic Product, Real Exchange Rate, Ratio of Broad Money to GDP)	Theories of international production; international capital movements and trade.	The Foreign Direct Investment was found to be a positive and significant function of Trade openness but financial depth (M2/GDP) and Real Exchange Rate was positive and non-significant. The result indicates that the more open an economy is

					Ordinary Least Square Regression method	to trading activities, the greater the flow of Foreign Direct Investment.
18	Huang And Zhang (2017)	How does outward foreign direct investment enhance firm productivity? A heterogeneous empirical analysis from Chinese manufacturing.	China. 2002-2007	Firm level productivity = f(self-selection effect, Treat it is a core dummy on the own-firm effect, time effect)	_____ Propensity score matching (PSM) techniques and differences-in-differences (DID) Analysis.	The result presented a robust evidence that Outward FDI promotes parent firm's productivity and this effect varied substantially with the firms' characteristics. In particular, firm's absorptive capacity was essential for the own-firm effect, and the absorptive capacity related with the product innovation was more important than that of the process innovation for the own-firm effect. Outward FDI strategies for obtaining advanced technology and investing in developed countries significantly strengthened the own-firm effect, whereas, government supports had no significant impacts on the own-firm effect.
19	Sunde, T (2017)	Foreign direct investment and economic growth: ARDL and causality analysis for South Africa	South Africa. 1990-2014	GDP=f (Capital formation, Labour employment, FDI, Human Capital, New technique and international trade)	FDI-led Growth hypothesis, Growth-led FDI hypothesis, Feedback causality hypothesis. ARDL bounds testing approach. VECM Granger Causality.	The result found out that both foreign direct investment and exports spur economic growth contrary to some studies, which found that FDI does not cause economic growth. Also, VECM Granger causality analysis found a unidirectional causality between economic growth and foreign direct investment running from foreign direct investment to economic growth, unidirectional causality between foreign direct investment and exports running from foreign direct investment to exports and bidirectional causality between economic growth and exports.
20	Makiela and Ouattra (2018)	Foreign direct investment and economic growth: Exploring the transmission channels	108 countries. 1970-2007	Growth rate = f(FDI, country specific heterogeneity.	___ Generalized Method of Moments; panel data analysis	The result revealed that FDI affects growth via inputs accumulation but not the total factor productivity growth channel. In other words, the results suggested that factors other than FDI may have contributed to the increase in productivity witnessed in developing countries for the time under study.

21	Asongu and Odhiambo (2019)	Foreign direct investment, information technology and economic growth dynamics in Sub-Saharan Africa	25 countries in Sub-Saharan Africa. 1980-2014	Economic Growth= f (FDI, Information Technology, Interaction between FDI and Information technology)	The instantaneous utility function is of the Constant Relative Risk Aversion and the production function was adopted. Generalized Method of Moments (GMM) Panel Data Analysis.	The study found out that both internet penetration and mobile phone penetration overwhelmingly modulated FDI to induce the ensuing overall positive net effects on all three economic growth dynamics; Gross Domestic Product (GDP) growth, real GDP and GDP per capita.
22	Li and Tanna. (2019)	The impact of foreign direct investment on productivity: New evidence for developing countries	51 developing countries. 1980-2014	TFP growth = lagged value of TFP, Zt (is a set of control variables; human capital, inflation, civil conflict, financial development, institutions and year dummies), FDI.	Standard neoclassical (Cobb-Douglas) production function. Panel Data Analysis two-step Sys-GMM estimator.	The result suggested a weak direct effect of FDI on Total Factor Productivity growth but, after accounting for the roles of human capital and institutions as contingencies in the FDI-Total Factor Productivity growth relationship, they found a robust FDI-induced productivity growth response depended 'absorptive capacities'. The relevance of the human capital contingency effect diminished with respect to the institutions suggesting that improving institutions was more important than human capital development for developing countries to realize productivity gains from FDI.
23	Combes *et al* (2019)	Financial Flows and Economic Growth in Developing Countries	77 low and middle income countries. 1980-2012	GDPGrowth= f(GDPGrowthi,t-1, Aid, FDI, Remittances, Portfolio, Other flows)	_____ GMM for dynamic panel data analysis.	The results showed that net financial flows affect economic growth both directly and indirectly and that a one percent increase in total financial flows appreciates the real exchange rate by 0.5 percent. Also the real exchange rate appreciation effect of remittances was twice the effect of aid and ten times greater than the effect of Foreign Direct Investments. It was also shown that financial flows stimulate economic growth regardless of the developmental level.
Human Capital And Growth.						
S/N	Author(s)	Title	Country/	Variables	Theoretical Framework /	Main findings

			Period.		Methodology	
24	Teixeira and Queirós, (2016)	Economic growth, human capital and structural change: A dynamic panel data analysis	OECD Countries. 1960-2011	Real GDP Per capita= f(Vector of Variables influencing economic growth (including Human Capital and structural change), observable country specific effect)	A single model supply-side variable linked to the endogenous growth theory, and demand-side variables linked to structural and evolutionary approaches, namely the specialization pattern of countries. Dynamic Panel Data Analysis; (GMM)	The study found out that human capital and the countries' productive specialization dynamics are crucial factors and the impact of the interaction was positive. The inclusion of transition and Mediterranean countries showed that human capital significantly and positively impacted the countries' economic growth but the effect of human capital via specialization in high-tech and knowledge-intensive activities was negative.
25	Ogundari and Awokuse. (2018)	Human capital contribution to economic growth in Sub-Saharan Africa: Does health status matter more than education?	35 Countries. 1980-2008	Real GDP=f(lagged Human Capital, lagged physical capital, lagged per capita GDP).	Solow Neoclassical Growth Model. Generalized Method of Moments; panel data analysis	The results showed that estimated coefficients for primary and secondary school enrolment and average years of schooling used as measures of education had positive and statistically significant effect on economic growth in SSA. In contrast, the estimates for both tertiary school enrolment and government expenditure on education were not statistically significant and the health measure of human capital made a larger contribution to economic growth in SSA than the education measure of human capital.
Foreign Direct Investment And Manufacturing Sector						
S/N	Author(s)	Title	Country/ Period.	Variables	Theoretical Framework / Methodology	Main findings
26	Anowor *et al* (2013)	Foreign Direct Investment and Manufacturing Sector Growth in Nigeria.	Nigeria 1970-2011	Manufacturing Sector Output = f (FDI, EXR, Trade Openness, Domestic Investment) and GDP = f (FDI, EXR, Domestic Investment, Trade Openness)	_____ Johansen cointegration tests, OLS Regression	The study found out that Foreign Direct Investment, Domestic Investment, Exchange Rate and the Degree of trade Openness were all positively related to Manufacturing sector Output Growth in Nigeria.
27	Akpan *et al* (2017)	Foreign Direct Investment and	Nigeria.	Log GDP = f GDP_{t-1} FDI and Industrial Sector	_____	Found that FDI had a slight significant positive impact on GDP while industrial

		Industrial Sector Performance: Assessing the Long-Run Implication on Economic Growth in Nigeria.	1981-2015	Output. Ditto for FDI and Industrial Sector Output.	Johansen cointegration tests; Granger Causality Tests and VAR.	sector output had a small significant positive impact on GDP with a negative relationship observed at previous periods. The study concluded that Nigeria is yet to fully reap the benefit of FDI since its contribution to GDP is still very low while the contribution of industrial sector to the country has not been vibrant enough.
28	Orlic *et al* (2018)	Cross sectoral FDI spillovers and their impact on manufacturing Productivity.	Manufacturing firms in five European transition countries. 2002-2010	Total Factor productivity of firm = f (MNC as a vector of spillover, Determinants of Total Factor Productivity, Vector of Variables controlling competition and demand effects)	Production functions were estimated for each country-industry combination to account for the heterogeneity arising from different production means. Dynamic Panel Data Analysis.	Found that local manufacturing firms benefit from the backward spillovers in manufacturing and forward spillover effects of FDI in services and this was consistent with the view that liberalization of services and subsequent increased entry of MNCs is associated with improved availability, range and quality of services to improve firms in downstream manufacturing.
Foreign Direct Investment and Human Capital on Manufacturing Sector Growth.						
S/N	Author(s)	Title	Country/ Period.	Variables	Theoretical Framework / Methodology	Main findings
29	Anwar, S. (2008)	Foreign investment, human capital and manufacturing sector growth in Singapore.	Singapore 1980-2005	Output = f (real value added of manufacturing sector, real foreign investment in manufacturing sector, employment in manufacturing sector and real human capital)	Exogenous growth theory Johansen's method, Vector Error Correction Model.	Found that an increase in foreign investment per unit of employment increased the value added in manufacturing per unit of employment and that an increase in human capital per unit of employment in manufacturing increased the real value added per unit of employment.
Other Related Studies.						
S/N	Author(s)	Title	Country/ Period.	Variables	Theoretical Framework / Methodology	Main findings
30	Adeola Adenikinju (1998)	Productivity growth and energy consumption in the Nigerian manufacturing sector: a panel data analysis.	Nigeria. 1960-1995	Total Factor Productivity= f(Energy Consumption)	Cobb-Douglas production function. Panel Data Analysis.	Found that productivity growth for most industries in the sector had been energy using and attempts were made to switch productivity growth towards energy saving which will take some a gestation period for the impact of current energy pricing policy to

						permeate the sector.
31	Okejiri, E. (2000)	Foreign technology and development of indigenous technological capabilities in the Nigerian manufacturing industry.	Data Survey of 130 manufacturing firms in Nigeria. 1994-1997	Production System= Value of Goods and Services and Value of learning opportunities.	Classical Growth Theory; A typical production function. Data Survey Analysis.	Found that modernization of production facilities in the form of new plants and machineries were important for upgrading process technologies and that education with a technical workforce greatly influenced the rate of learning as half the workforce in the 130 firms were involved in technical operations and only about 15% of the technical workforce were university graduates.
32	Szirmai, A. (2012)	Industrialization as an engine of growth in developing countries.	67 developing countries and 21 advanced countries. 1950-2005	_____	_____ Theoretical arguments and empirical literature review.	The results showed that Manufacturing has been important for growth in developing countries, but not all expectations of the 'engine of growth hypotheses were borne out by the data.
33	Ewetan and Ike (2014)	Does financial sector development promote industrialization in Nigeria?	Nigeria. 1981-2001	Aggregate Output = f(Labour, Capital, Financial Depth M2/GDP, Ratio of private sector Bank Credit to GDP, Interest Rate	Finance led-growth; supply leading hypothesis, growth driven finance; demand following hypothesis. Multivariate VAR and VECM, Granger Causality Tests.	Found an existence of a long run relationship between financial sector development and industrialization in Nigeria. Ratio of private sector bank credit to GDP had a positive relationship with industrial output while the ratio of broad money stock to GDP had a negative relationship with industrial output. Granger causality results showed a long run unidirectional causal link running from industrialization to financial development.
34	Samaniego and Sun (2015).	Technology and contractions: evidence from manufacturing.	150 Countries. 1970-2007	Growth= f(differential impact of industry characteristic on industry growth during contractions, Control Variables)	Business Cycle Theory. Panel Data Analysis.	The study found out that growth in labor intensive industries is especially sensitive to contractions and industries that suffer most in contractions are those with high labor intensity and some specific capital-intensive industries due to propagations or amplification mechanism that particularly impacts these industries.
35	Amuche, James and	Evaluation of Manufactured Goods	Nigeria.	Domestic Manufacturing sector output value-= f(	Cornwall's Manufacturing Output Growth	The result showed a positive statistically significant relationship between domestic

	Anthony (2016)	Import and the Manufacturing Sector Productivity in Nigeria.	1960-2009	Imported manufactured goods value, Real exchange rate, interest rate) and GDP=f(Domestic Manufacturing sector output value, Imported manufactured goods value, Real exchange rate, interest rate)	Determinants Theory. Multiple Regression Analysis; Ordinary Least Square.	manufacturing sector output and the Nigeria manufactured imports. Model two indicated that domestic manufacturing sector contributes positively to economic growth in Nigeria.
36	Mijiyawa. (2017)	Drivers of Structural Transformation: The Case of the Manufacturing Sector in Africa	53 African Countries. 1995-2014	Manufacturing Share of GDP= f(Population size, Income and Square Values of Income (control variables))	An Augmented Version of the Chenery (1960) Model. Panel Data Analysis	Four factors were reported to have significantly affected the manufacturing share of GDP in Africa and they are; Population Size, Income per capita, Nominal exchange rate, and the quality of governance. There is a U-Shaped relationship between per capita GDP and the Manufacturing share of GDP in Africa.
37	Oguntoye and Evans. (2017)	Framing Manufacturing Development in Africa and the Influence of Industrial Sustainability.	Nigeria. ____	_____	Literature review of inherent concepts used to describe industrial sustainability in Nigeria. Content Analysis Method on academic literature in manufacturing in Nigeria	After taking a sample of relevant academic publications, this study found out that literature on manufacturing in Nigeria does not cover important concepts of industrial sustainability such as industrial symbiosis, circular economy, sustainable business models, cleaner production and some other related concepts.
38	Abdu and Jibir (2017)	Determinants of firms innovation in Nigeria	2676 business establishments from the Nigerian manufacturing sector. 2014-2015.	propensity for the firm to innovate = f (individual characteristics, Human Capital Variables, Vector of innovative activity, Vector of industry Characteristic)	Endogenous growth model combined with the Schumpeterian theory. Binary probit regression.	The findings showed that investing in research and development, formal training, a firm's size, exporting status, competitors, location, type and sector, or activity of firms all positively drive the propensity of a firm to innovate. It was also established that the firm's age and employee education negatively affect the chances of innovation.
39	Schwab and Werker (2018)	Are economic rents good for development? Evidence from the manufacturing sector.	49 Countries. 1963-2010	Productivity growth (t-1) = f (mark up price in period (t-1), Log GDP per capita (t-1), and	_____	Found the relationship between rents and growth was strongly negative, with the results being primarily driven by the poorer countries in the sample. This result was

				fixed effects for year, country, and sector, with or without an interaction term of mark up times log GDP per capita)	Panel Data at the industry-country-year level.	consistent with the instrument for mark-up using the average mark-up for other industries in the country and rents were especially harmful making a case for the fact that high rents were associated with a slower reduction in tariffs.
40	Amiri *et al* (2019)	Natural resource abundance, institutional quality and manufacturing development: Evidence from resource-rich countries.	28 countries (resource rich). 2000-2016	Manufacturing value added ratio =f (Total Natural Resource Rents, Institutional Quality, Institutional Quality*NRR, Real Effective Exchange Rate, Labour Productivity Difference)	_____ Panel Data Analysis.	Various panel regression estimations confirmed that the efficient institutional structure in natural resource-based countries was through alleviating the effects of the natural resource curse phenomenon which would later improve the manufacturing sector's performance.