85

MANUFACTURING FOREIGN DIRECT INVESTMENT AND ECONOMIC GROWTH IN SUB-SAHARAN AFRICA (1980–2022)

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Abstract

The study sought to explore the impact of manufacturing foreign direct investment on economic growth in Sub Sahara African countries on non-oil sector of the economy such as manufacturing sector from 1980 to 2022.In a population of fifty-four countries in Africa, forty (40) countries were selected for study based on the purposive sampling. Ex-post facto and analytical design were used. Unit root and other diagnostic tests were applied to ensure that parameters to be estimated are stationary. The ARDL test were used to test the hypotheses of the study. The results show that, Manufacturing FDI have a negative and non-significant impact on economic growth in Sub-Sahara Africa. It is recommended that strategic policies and attractive incentives to foreign investment, institutional set-up for manufacturers need to put in place, and other stake holders should be encouraged to play a vital role in promoting investment to the sector. It is expedient that government policies concentrate on FDI inflows to all these sectors as one of the priorities of every economy especially in Sub-Sahara Africa.

1.1 INTRODUCTION

Foreign Direct Investment (FDI) is and continue to serve as an essential source of capital and convenient link for many underdeveloped and developing countries especially in Africa. Her environment is known for high level of poverty, low savings culture which is associated with low level of income by greater number of people and comparatively weak or even non-existing stock transaction centers (capital markets) in some countries. The United Nations report in their Millennium Development Goals (MDG) agenda indicated that about fifty per cent (50%) of the total population in Sub-Sahara Africa still survives on less than USD 1.25 a day. African continent is the only region across the globe known to have observed an unceasing upsurge in the number of people living in extreme deficiency in terms of living standard. The number moved from two hundred and ninety (290) million in the year 1990 to four hundred and fourteen (414) million in the year 2010 which represent over one third (1/3) of the world's desperately poor people (United Nations, 2013).

The expanse of African landmass that situates in the southern part of the Sahara Desert is geographically known as Sub-Saharan Africa (SSA). The countries which made up the continent are of different economic history and size, with some (big ones) such as Nigeria, South Africa and many small countries. To derive the maximum returns on capital, economists believe that free flow of capital and trade openness across countrywide borders will bring about increase in production. It is in light of this that multinational companies look out for investment in other countries outside their home with reasonable risk. According to International Monetary Fund (IMF) (1993); FDI occurs when an individual or business owns more than 10% of a foreign company's capital therefore any later transactions are extra direct investment. If a foreign investor owns less than 10% of a foreign business capital, it is considered as an addition to his or her collection of stock portfolio.

According to the World Bank, a lasting management interest (normally 10% of voting stock) in a business enterprise operating in a country other than that of the parent company is acquired through an investment it is said to be FDI. This could either be a Greenfield‖ investment (also called mortar and brick investment) as the case may be or that which entails the acquisition of existing interest rather than new investment as merger and acquisition (M&A), Ownership of at least 10% of the ordinary shares or voting stock is the criterion in corporate governance, for the existence of a direct

investment relationship**.**

In time past (early 1960s), foreign direct investment (FDI) was seen and regarded as un-lucrative investment especially to developing economies like African regions. The perceived thought made people to believe that FDI brought inappropriate technology although it was gradually changed over time. It is presently viewed as a favorable investment especially to countries that welcomed it in preference. Many governments in the developing countries have invested more in bettering the institutional and economic policies with the ambition to attract foreign investors Tevelde, (2006). African continent begins to feel the impact of FDI flow in the later part of nineteenth century when most of the countries were controlled by colonial masters using obnoxious laws that were not favorable to Africans.

A certain question that gave rise to controversial opinions and topic over decades was, if foreign direct investments (FDI) generate economic growth? The earlier scholars and researchers showed different outcomes as they try to provide the answer .The benefits of FDI to a large extent depends on the host country's institutional and economic environment .The proliferation of global capital flows such as foreign direct investment (FDI) is an evidence of our modern globalization .Investment as a function of economic growth need no debate and cannot be over emphasized .The less cleared and controversial issue is whether FDI is not more important than the alternative types of investment, which is the domestic investment.

The highest percentage of total FDI in the African region was harnessed by West African countries in the 1970s and early 1980s. It was on record that West Africa had as follows 1971-55.4 %, 1973-74.5%, 1975-91.5% and even in the 1990s the same West African sub-region had the highest percentage of FDI, although in 1970s and late 1980s the North African sub-region received the greater percentage of total FDI, followed by West African sub-region within the same period (UNCTAD, 2012).

The Northern African region received the highest proportion of foreign capital inflows between 2005 and 2010 in Africa as a continent. The highest proportion of the flow of foreign capital was utilized by the Central African sub-region in 1999, 2002 and 2004. This is not to conclude that the

growth rate on the gross domestic product (GDP) over these periods was the highest among other African regions as a result of assistance rendered by FDI. Over the past four decades, the sub-region on average had access to 19.8% of total foreign direct investment (FDI) in Africa.

An average of 10.6% of FDI was attributed to East African sub-region unlike South Africa that received very low percentage   of total FDI inflow into Africa. The low percentage so far experienced by South African sub- region amounted to 9.2 %; how-ever the same sub-region had the highest percentage of total FDI during the year 1974, year 1997 and year 2001. The Western region in African really earned the greatest percentage of total FDI with a proportion of 31.2 %, then followed by the Northern region which had 29.1%. The percentage of North and Western region jointly, amounted to over 60 % of entire FDI for the whole fifty-four (54) countries in Africa as a continent, which implies that if one put together these two regions as aforementioned, had a greater share than the central, eastern and southern regions if put together (UNCTAD, 2012).

Historical records show that the rate of returns on foreign direct investment (FDI) based on regions across the globe had been fascinating in such a manner that the underdeveloped and developing countries indicated greatest potentials of (ROI) return on investments and should therefore have more foreign capital to be attracted. The regions in Africa as a continent recorded an average of rate of return valued at 22.6 % on the aspect of FDI. The secondary and primary sector had an average of 21% and 19.2% over the years, while 13.8% was attributed to tertiary sector and average of 23.5% on other industries. The FDI unlike in time past failed to is concentrated on primary sector rather gradually spreading to others.

 In the West African region, Nigeria had a little over 30% of FDI in the primary sector, 50% in manufacturing and close to 20 % in service sector. In North East region, Egypt had 45% of FDI in services sector in 1995, while in manufacturing sector had 47% and 4 % in the primary sector. The anticipated effect of foreign capital inflow has not been witnessed in the African region notwithstanding the relative increase in volume. For instance, in 1992, an increase of 23% in terms of returns on investment on (FDI) in the East African region , compared to a dramatic decrease to 69 % in the preceding year (in 1991), resulted in gross domestic product (GDP) decreasing further from 19 % to 8 % fall in 1992.The Western sub-region of Africa witnessed 40.5% increase in

FDI in the year 1996 as compared to a decrease of 3.3 % in the preceding year, and it resulted to 6.8 % fall in gross domestic product (GDP) being experience from what obtained in the preceding year. Central African region, 1999 witnessed a rise in FDI by 14 % from a drop of 21% in the preceding year which resulted in a further fall in GDP from 4.5% in the previous year to 1.5%. The year 2006 witnessed a rise in FDI from 18 % to 28 %, although the sub-region experienced a fall in GDP by 3%.

The flow of private capital is one of the notable features of globalization in the 1990s which was in the form of Foreign Direct Investment (FDI). The Sub-Sahara African countries partake vigorously in the struggle to attract FDI among other countries in the world. The increasing significance of FDI as an alternative means of generating funds and a form of external finance to developing countries reveal not only the condition that firms increasingly discover potential benefits in expanding businesses and their production across national boundaries. The host developing countries also observed that potential advantages emanating from in FDI over other forms of investments is a welcome development like foreign portfolio investment, in their economies.

Domestic investment is expected to increase as a result of inflow of foreign capital; however, it has not been the case in African regions over the years. In East African sub-region, precisely in Djibouti as an example, there was evidence of sharp drop of domestic investment indicator (GDP) by 30% where in the year (2001) an increase of 3% was noticed on foreign direct investment (FDI) before the year 2001.Similarly, in Nigeria, one of the countries in West African sub-region, in the year 2004 and 2005; it was noticed that FDI increased by 13.4% and not-withstanding, domestic investment dropped by 6% during the period. The Northern African sub-region, in Egypt precisely, the year 2003 and 2004 noticed over 80% increase in FDI, but domestic investment was observed to reduce by over 6% within the period. Some studies even find that the net contribution of FDI to economic growth is lower than that of domestic investment (Firebaugh 1992 for LMICs; Tang, Selvanathan, & Selvanathan 2008). At the macroeconomic level, gains from FDI can materialize through increases in investment, employment, foreign exchange, and tax revenues (Paus & Gallagher, 2008). Moreover, FDI often helps integrate host countries into the world economy (as foreign firms are engaged in exporting and use their global sales and supply networks) and, thus,

stimulates trade in the long run. FDI might also have an indirect impact on skills, infrastructure, and the business environment, as countries seeking to attract foreign investment tend to put policies in place to improve these factors. Finally, foreign entry may result in more competition in the host country, leading to lower prices, more efficient resource allocation, and higher aggregate productivity (OECD 2002).

1.2. Statement of Research Problem

The stimulating environment for development in Sub- Sahara Africa has therefore not been accessible despite the expected prospects it can generate, due probably macroeconomic instability, paucity of economic activities, and many other social challenges such as land tenure system and high demands emanating from the host communities which are peculiar to developing economies.

1.3 Objectives of the Study

Evaluate the impact of Manufacturing FDI inflow on economic growth in Sub Sahara Africa,

Statement of Hypothesis:

To what measure did manufacturing foreign direct investment impact economic growth in Sub-Sahara Africa?

1.6 Scope of the Study

The study examines the impact manufacturing foreign direct investment (FDI) on sectorial economic growth in Sub-Sahara Africa as the study focuses on forty-four (44) countries as sampled events from a population of fifty-four countries in Sub- Sahara Africa in line with UNCTAD (2011), in the distribution for Eastern, Northern, Southern, and West and central Africa sub-regions. The rational for choosing the forty (40) countries was to have a justified equilibrium of the African sub- region by selecting at least eight from each region. The event of 1980 is characterized by collapse of economic growth in many African countries from year 1980 to 2000 based on the peripheral shockwaves of oil price increases, declining terms of trade and increased real rates of interest which caused annual GDP growth of 2.1% among countries in Sub-Sahara Africa (World Bank figures, Iliffe, 2007).

REVIEW OF RELATED LITERATURE

2.1 Conceptual Review

2.1.1 The Concept of Foreign Direct Investment

Foreign Direct Investment (FDI) in the form of international capital flows have enlarged significantly all through the last decades. World Bank (2001) defined it as, a long-lasting investment made to obtain management interest which is normally at least 10% of voting stock or above, in a firm operating in a country outside that of the investors home country as defined according to residency. It is an important investment vehicle for rapid transfer of technology, which contributes relatively more to economic growth than domestic investments organized in the host countries. Growth equations according to them, are extremely sensitive to substitutions of human capital development. As obtainable in Sub -Sahara Africa, some factors determine the inflow of capital either in form of financial resources or real capital for investments.

2.1.2: Concept of Economic Growth

Economic growth as describes in Jhingan (2003) is a procedure whereby the actual per capita income of a nation increases persistently over a long period of time. In line with his assertion economic growth is measured by the increase in the number of services and goods produced in a country, quantified in monetary terms over a time period, typically a year. Economic growth arises where economic productive volume increase which in other way round, used to produced more goods and services (Onyemachi 2012). An increase in per capita gross domestic product (GDP) is termed an economic growth or measure of total income. It is often measured as a rate of change in GDP.

2.2 Theoretical Frame work

The study adopts the Solow-Swan growth model or neoclassical growth model as it is generally known, which date back to 1956. The theory adopts the fact that creation of economic growth is absolutely dependent on capital accumulation. It therefore implied that long term relationship exists between economic growth and capital accumulation. Capital accumulation can be obtained through long term domestic savings or attraction of capital inflows through FDI which will eventually accommodate the long run dynamics of some macro and micro economic influences capable of discouraging or stimulating the economic growth rate for mutual benefits

if properly managed (the foreign investor and the host country).

2.2.1: Exogenous Growth Theory

The neo-classical growth model, commonly recognized as the exogenous growth theory or Solow-Swan growth model, was organized by Solow (1956). Economic growth is shaped through exogenic factors of production functions as this theory adopted, such as the stock of capital growth and labor. A positive relationship between capital accumulation and economic growth as established by Barro & Sala-I-Martin (1995). a rise in the stock of investment and its accumulation in line with this theory, will result in an upsurge in growth on presumptuous that the amount of the level of technology remain stagnant and labor (Barro and Sala-I-Martin 1995; De Jager 2004).

2.2.2. Endogenous Growth Theory

The exogenous growth theory in the mid-1980s, explained the determinants of long-run growth though became theoretically unsatisfactory (Barro & Sala-I-Martin 1995). Therefore, Romer in his 1986's article pioneered endogenous growth theory which focused on two factors. The stock of human capital and then from technological changes gave rise to economic growth (De Jager 2004).

2.3 EMPIRICAL REVIEWS

Akinmulegun (2018) investigated how Nigeria's agriculture industry was impacted by globalization. The study evaluated the effects of globalization on agricultural productivity, as measured by agricultural output, using annual time series data covering the years 1986 to 2015, as well as measures of openness, foreign exchange rate, and consumer price index. The study used the Phillips-Perron unit root test and the Augmented Dickey Fuller test to confirm the stationarity of the variables used, and then it adopted the Error Correction Model to test for the short run association. In order to take into account, the long-term link between the explanatory variables and the dependent variables, an autoregressive distributed lag testing approach was used. The result showed that, although the consumer price index had a significant positive impact on agricultural productivity than other factors, foreign exchange, openness, and foreign direct investment did not significantly influence Nigeria's agricultural productivity's positive trend. This suggests that the country's agricultural productivity has room to grow.

Using secondary data from the Central Bank of Nigeria (CBN) Statistical Bulletins, Annual Report and Statements of Accounts, Bullion, The Economic and Statistical Review of National Planning Commission, conferences, journals, and publications, World Bank and United Nations publications, and text books, Fakun & Evbuomwan (2017) evaluated agricultural financing, policies, programmes, and initiatives for a sustainable development in Nigeria from 1990 to 2014. The study's conclusions demonstrated that the Nigerian government's commitment to agricultural operations was insufficient to advance the country's goal of agricultural sustainability.

Using industrial production as a proxy for manufacturing output, Mounde (2017) analyzed time series data from the Central Bank of Nigeria and the National Bureau of Statistics covering 36 years, from 1981 to 2016. The results showed that there is a long-term relationship between foreign direct investment and the growth of manufacturing output in terms of industrial production; the error correction model was used to assess the extent to which equilibrium behavior drives short-run dynamics; and the granger causality test indicated that there is bi-directional causality between them.

Nkalu, Edeme, and Ifelunini (2016) used (OLS) to examine development interventions, foreign capital inflows, and economic growth in Nigeria with a focus on the effects of FDI on Ghana's economic growth. The study made use of yearly time-series data from the Central Bank of Ghana (CBG) statistical bulletins, which covered the years 1970 to 2015. FDI to Ghana, however, has a favorable and statistically significant impact on economic growth, according to the results.

In order to examine the flow pattern and evaluate the impact of a greater flow of FDI on the industry, Ebekozien, Ugochukwu, and Okoye (2015) conducted an analysis of the inflow trends of FDI explored in the Ghanaian construction industry. The National Bureau of Statistics in Ghana and the central bank of Ghana provided annual time series archives that were used. Regression analysis, the Duncan Multiple Range Test, simple percentages, and the causality test were used to examine the data that was gathered. The findings showed that, in comparison to other economic sectors, there is a weak (or negligible) flow of foreign direct investment into the construction industry. The Granger test indicates that the Granger Causality is bi-directional, indicating that while FDI is a necessary precondition and catalyst for sustainable growth and development in the construction industry, the quality of on-the-ground infrastructural facilities is a prerequisite for drawing in foreign direct investment. This finding is further supported by a strong positive

correlation or association between FDI and the construction industry.

Okoli & Agu (2015) used OLS and VECM to look for both short- and long-term relationships while evaluating the effect of foreign direct investment flow on the performance of Nigerian manufacturing companies. The researchers discovered that FDI inflows have a long-term impact on the manufacturing sector using data from the National Bureau of Statistics and CBN Statistical Bulletin that spans 35 years. As a result, they recommend that the government maintain and promote policies that support FDI inflows into Nigeria, particularly in the manufacturing sector.

Osisanwo (2013) examined how foreign direct investment affected Nigeria's manufacturing sector's output growth from 1976 to 2011. During the review period, he employed an econometric model and examined the log of foreign direct investment (FDI), degree of openness (OPEN), investment in human capital development (INV), inflation rate (INF), and first lag of real manufacturing output level (MANt-1). As the regress and, real manufacturing output growth served as a proxy for manufacturing output growth. Using the ordinary least square (OLS) method, the findings showed that while manufacturing output was insignificant and inelastic of foreign direct investment in Nigeria, the first lag of real manufacturing output level (MANt-1) and inflation (INF) were significant factors influencing the growth rate of the country's manufacturing industry.

Emmanuel (2016) investigated how foreign direct investment affected Nigeria's economic expansion. The years 1981–2015 were included in the study. The National Bureau of Statistics' publications and the Central Bank of Nigeria's statistical bulletin provided secondary data for the study. The multiple regression technique was used in the investigation. The findings demonstrated that foreign direct investment significantly and favorably affects the gross domestic product. In the report, he suggested that in order to stimulate significant economic investments, the government should upgrade the nation's infrastructure. Additionally, that the Nigerian Central Bank should develop policies to support the stabilization of the Naira's exchange rate against the world's major currencies, such as the US dollar. This will increase investors' faith in the state of the economy.

Olokoyo (2012) investigated how foreign direct investment (FDI) affected the growth of the Nigerian economy. She claims that in addition to augmenting domestic investment, foreign direct

investment is thought to help developing nations like Nigeria by increasing domestic competition, creating jobs, transferring technology, and producing other positive externalities. Knowing the factors that influence foreign direct investment (FDI) in Nigeria and how they impact the country's economy is the study's primary goal. The time series data from 1970 to 2007 were tested using the Ordinary Least Square (OLS) regression technique in this study. To account for autocorrelation, the Cochrane-Orcutt iterative approach was also employed. It is clear from the regression analysis results that there is little evidence to support the idea that FDI and economic growth in Nigeria are positively correlated. While the model study lowers confidence in the idea that FDI has had an independent growth effect in Nigeria, the outcome does not mean that FDI is irrelevant.

Knowledge Gap

The idea were nursed simply because all the empirical works so far reviewed concentrated on either one region or the other in Sub-Sahara Africa and for periods not more than thirty-six years(36yrs), The use of different econometric techniques, different time periods ,small sample and choice of variables has also led to divergent and variant regression results; Hence, the study used a sample of forty four countries out of a total population of fifty countries in Sub Sahara Africa and a long period of forty -three years which span from 1980 to 2022.

3 METHODOLOGY

3.1 Research Design

The research design adopted in this study is   based on *ex post -facto* and analytical   research design, as it fundamentally focused on examining the causal relationship and the effect of foreign direct investment in areas of construction, manufacturing, agriculture, health and education on economic growth.

3.2 Nature and Source of Data

The data were retrieved from secondary sources. Secondary data being already processed and pooled, are easily found in statistical economic report of the sampled countries in Sub-Sahara Africa. Thus, the data gathering is based on documentation technique and the required information on foreign direct investment (FDI) and economic growth indicators. The data will be extracted from the World Development Indicators of the selected countries (forty countries in Sub-Sahara Africa) within the period 1980 to 2022.

3.3 Population, Sample Size and Sample Techniques

The population of this study consists of all the countries in Sub-Sahara Africa which is about fifty-four. Data were obtained from Word Bank Development Indicators as statistical reports on forty countries for forty-one years period (1980-2022) using purposive sampling technique where the first economies that have the highest average real gross domestic product over the period of study, will form part of the sampled events that will be used for this study.

3.4 Specification of Model variables

The models for this study are specified and modified based on reviewed empirical works of some scholars on manufacturing sector of the economy.

The specified model from the works of Osisanwo (2013) on the impact of FDI on manufacturing sector output growth in Nigeria between 1970 and 2011 were adopted. The ordinary least square (OLS) method was applied and stated as follows:

$MAN_{t-1} = \beta_0 + \beta_1 OPEN + \beta_2 INV + \beta_3 INF + \beta_4 LNFDI + \mu$

MAN_{t-1} =   First lag of manufacturing output as dependent variable

β_0 = Constant

β_1 --- β_4 =   Coefficient of explanatory variables

OPEN = Degree of openness

INV =   Investment in human capital development

INF =   Inflation

μ = the error term

The study adopted autoregressive distributed lag model (ARDL) in replacement of (OLS) as used by Osisanwo (2013) which serves better based on panel data while, time series data is good for (OLS).

The ARDL model is specified as follows:

$MAN/GDP_{t-1} = \beta_0 + \beta_1 FDI_{t-1} + \beta_2 MKT_{t-1} + \beta_3 MAN_{t-1} + \beta_4 TOP_{t-1} + \beta_5 INF_{t-1} + \mu$

MAN/GDP_{t-1} = % Contribution of manufacturing sector to GDP

β_0 = Constant

β_1 --- β_4 =   Coefficient of explanatory variables

FDIM = Foreign direct investment on manufacturing sector

MKT = The market size

MAN = Manufacturing cost in the host country

TOP = Trade openness

INFL = Inflation

Explanatory variable (manufacturing cost) was used in place of human capital development and market size were included.

2.4.1 Techniques of Analysis

The aim of the study is to provide analysis on the contribution of the foreign direct investment on the economic growth of Sub-Sahara African countries. In view of this, the study will carry out some preliminary tests like panel unit root test to ensure that the stochastic process is stationary since the study is of long term nature (43 years),Test of co-integration will be used to statistically express the equilibrium relationship with co-integrated variables sharing a common stochastic trend if stationary is not achieved at 1(0) or at 1(1)   as the case may be, Johansen (1988) co-integration or Eagle ganja co-integration using bounds test could be applied. Vector   Error correction model (VECM) or VAR as the case may be will be applied to test for long and short run causal effect. Correlation test will be carried out.

4 DATA PRESENTATION AND ANALYSIS

4.1 Unit Root Test

Statement of Hypothesis

H_0: Series has a unit root

H_1: H_0 is not true

Decision: Reject the null hypothesis if the augmented Dickey-fuller statistic (ADF) is more negative than the critical value at 5% level of significance, otherwise accept the null.

Table 9: **Unit root Table**

VARIABLES	ADF START	@ 5% CRITICAL	P-VALUES	ORDER OF DIFF	DECISSION
MAN_GDP	-8.32991	-2.8629	0.0000	1(0)	Reject Null
MAN_EQUIP	-3.605472	-2.8633	0.0058	1(0)	Reject Null
LNFDI	-10.60019	-2.8630	0.0000	1(0)	Reject Null
MKT	-15.89300	-2.86287	0.0000	1(1)	Reject Null
TOPEN	-7. 174914	-2.8630	0.0000	1(0)	Reject Null
INFL	-12.7378	-2.8629	0.0000	1(0)	Reject null

Sources: Researchers computation

MAN_GDP = % contribution of manufacturing sector to GDP, MAN_EQUIP= manufacturing equipment, LNFDI =Log of Foreign Direct Investment, MKT= market, TOPEN =Trade Openness INFL =Inflation Rate,

In table 9 , we observe that the dependent and independent variables as listed (-8.32991 and -3.605472,-10.60019,-40.89300,-7.174914,-12.7378) with corresponding values of ADF statistics are more negative than the 5% critical values (-2.8629,-2.8633,-2.8630,-2.86287,-2.8630and -2.8629) or in absolute terms are greater than all the values associated with 5% critical values. All the probability values are less than 5% level of significance. The study fail to accept the null hypothesis and state that series has no unit root. Table 7 in model two indicate that stationary level were achieved in all the variable at difference order zero, except MKT which is at 1(1).This outstanding observation implied that Johansson Co-integration is not applicable in model two, therefore, we use bounds co-integration test to examine the long run relationship among the variables.

4.2 **Test for Co-integration**
Statement of Hypothesis
H_0 : Series is not co-integrated
H_1 : H_0 is not true
Decision Criteria: Reject the null hypothesis if the i(1) bounds is less than F-statistics at 5% level of significance, otherwise accept the null hypothesis.
Table 10

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	15.5003	10%	2.08	3
k	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15
			Finite Sample: n=80	
Actual Sample Size	1664			
		10%	2.303	3.154
		5%	2.55	3.606
		1%	3.351	4.587

Sources: Researchers computation

Table 10 displayed the co-integration test carried out using bounds test on (MAN_GDP = % contribution of manufacturing sector to GDP, MAN_EQUIP= manufacturing equipment, LNFDI

=Log of Foreign Direct Investment, MKT= market, TOPEN =Trade Openness INFL =Inflation Rate). The value of F-stat is 15.5003, while the value of I (1) bounds at 5% level of significance is 3.38. The outcome of the test implied that there is evidence of lung run relationship among the variables. This implied that any deviation in the short run, will be corrected in the long run. The speed at which this correction is affected, need to be known through the error correction model (ECM).

4.3 Error Correction Model
Table 11: ECM Table

ARDL Error Correction Regression
Dependent Variable: D(MAN_GDP_(1))
Selected Model: ARDL(2, 0, 0, 0, 1, 0)
Case 2: Restricted Constant and No Trend
Date: 10/31/23   Time: 12:36
Sample: 1 1892
Included observations: 1806

ECM Regression
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MAN_GDP_)	0.957655	0.143028	6.695561	0.0000
D(TRADE_OP(1))	3.93E+08	2.01E+08	0.000000	0.0000
CointEq(-1)*	-0.120189	0.011871	-10.12418	0.0000

Sources: Researchers computation

Table 11 explain the speed at which the equilibrium can be achieved in the long run, if there is evidence of deviation in the short run, since co-integration has been established in table 8.The coefficient value of (-0.120189) and probability value of T-stat (0.0000) show that any deviation that occurs in the short run take 12% speed of adjustment to normal in the long run. This is significant at (0.0000) as indicated in the Table 9 since the probability value is less than 5% level of significance.

4.4 Test for multi-collinearity
Statement of Hypothesis.
H_0: Series has multi-collinearity
H_1: H_0 is not true
Decision Criteria: If the value of centered variance inflation factor is greater than 10, accept the null hypothesis, if otherwise, do not accept the null hypothesis.

Table 12: **Variance Inflation Factor Table**

Variance Inflation Factors
Date: 11/04/23   Time: 03:16
Sample: 1 1892
Included observations: 1809

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
MAN_GDP (-1)	1.66E-05	7.555757	7.466126
MAN_GDP_ (-2)	1.65E-05	7.556255	7.466418
LNFDI	5.14E+15	1.097429	1.002699
MAN_EQUIP	4.41E+15	1.242340	1.003715
MKT (1)	556354.8	1.011511	1.001738
TRADE_OP	1.60E+14	4.017280	1.005130
INFL	8.69E+12	1.021089	1.006376
C	5.80E+17	4.326912	NA

Source: Researchers Computation

MAN_GDP = % contribution of manufacturing sector to GDP, MAN_EQUIP= manufacturing

equipment, LNFDI =Log of Foreign Direct Investment, MKT= market, TOPEN =Trade Openness

INFL =Inflation Rate,

Table 12 displayed the outcome of multi-collinearity test using the variance inflation factor test.The values of centered variance inflation factor (CVIF) with their respective explanatory variables as indicated on the table 10 are not greater than 10 in absolute terms such as MAN_GDP(-2) =7.466418, LNFDI =1.002699,MAN_EQUIP =1.003715,MKT(1)1.001738,TRADE_OP= 1.005130 and INFL=1.006376).The results of the centered VIF as indicated in table 10 showed that all the values are greater than one and less than eight , therefore, the null hypothesis is not accepted and the study state that there is no evidence of multi collinearity among the variables.

4.5 **Determination of Lag length**
Decision Criteria; Select the least value among LR, FPE, AIC, SC and HQ
Table 13: **Lag Length Table**

 VAR Lag Order Selection Criteria
Endogenous variables: MAN_GDP_ MAN_EQUIP LNFDI MKT TRADE_OP INFL
Exogenous variables: C
Date: 11/04/23   Time: 04:17
Sample: 1 1892
Included observations: 1675

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-99615.89	NA	1.84e+44	118.9515	118.9709	118.9587
1	-89417.95	20310.64	9.90e+38	106.8178	106.9538	106.8682
2	-89281.06	271.6480	8.77e+38	106.6974	106.9499*	106.7910
3	-89193.38	173.3809	8.25e+38	106.6357	107.0048	106.7724
4	-89042.08	298.0690*	7.19e+38*	106.4980*	106.9837	106.6779*

Table 13 displayed several values associated with each criteria; however, selection is based on the least value especially among those values marked asterisk. AIC Colum at lag 4, with a corresponding value of 106.4980* is taken as the lowest value in the table, therefore lag 4 is selected as the lag length for model two.

Test of Hypothesis Two

Statement of null hypothesis.

H_0: Manufacturing foreign direct investment does not have a positive and significant impact on economic growth in Sub Sahara African countries

Decision Criteria: Accept the null hypothesis if the coefficient of the explanatory variables is not positively signed and the probability value of t-statistic is not less than 5% level of significance, otherwise reject the null hypothesis.

4.6 Autoregressive Distributed Lag Model (ARDL)

MAN_GDP = F(MAN_EQUIP,LNFDI, MKT, TRADE OP, INFL)

Table 14: ARDL Table

Variables	Coefficients	t-statistics	P-Values	R-squared	DW-Start.	Pro(F-stat)
MAN_GDP(-4)	-0.0066	-1.6323	0.1028	0.92		
MAN_EQUIP	-19058	-0.2836	0.7767		1.81	0.0000
LNFDI	-47910	-0.66305	0.5091			
MKT	-78.372	-0.1052	0.9162			
TRADE OP	-41660	-0.3271	0.7437			
INFL	-22798	-0.0768	0.9387			

Source: Researchers computation

MAN_GDP = % contribution of manufacturing sector to GDP, MAN_EQUIP= manufacturing equipment, LNFDI =Log of Foreign Direct Investment, MKT= market, TOPEN =Trade Openness INFL =Inflation Rate,

Table 14 showed the outcome of ARDL test where the coefficients of the explanatory variables are associated with negative values (-0.0066, -19058, -47910, -78.372, -41660, and -22798) as obtained on MAN_GDP, MAN_EQUIP, LNFDI, MKT, TRADE OP and INFL respectively. All the   coefficient values are not positively signed. This implied that there is evidence of negative

impact of these variables mentioned. The corresponding probability values of all the explanatory variables are not less than 5% level of significance as indicated in the same table.

There is evidence of 92% level of explanation on the impact of the explanatory variable on the explained variable, leaving a balance of 08% unexplained as a result of variables not accounted for or not included in the model. The Durbin Watson statistics (1.81) indicated a positive serial correlation which is not relatively significant since it remained 0.19 to be 2 which forms an absence of serial correlation. The probability value of F-statistic (0.0000) indicate that the overall regression is statistically significant since the value is less than 5% level of significance.

Decision: Evidence of negative coefficient values of the explanatory variables and its corresponding probability values which is in absolute term not less than 5% level of significance, influence the decision to accept the null hypothesis. The study therefore state that manufacturing foreign direct investment does not have a positive and significant impact on economic growth in Sub Sahara African countries over the years under study.

4.7 DISCUSSION OF RESULTS

Mounde (2017) examined the causal relationship between foreign direct investment and manufacturing output in Nigeria. Using the Industrial production as a proxy for manufacturing output, time series data was compiled from Central Bank of Nigeria and National Bureau of Statistics spanning of 36years, 1981-2016. The findings revealed that there is a long run relationship between foreign direct investment and output growth of the manufacturing sector in terms of industrial production. The error correction model was employed to determine the degree to which equilibrium behavior drives short run dynamics. Also, granger causality test revealed that there exists bi-directional causality between them. Our study is carried out on the same manufacturing foreign direct investment on economic growth in Sub-Sahara Africa from 1980 to 2022. Data sourced from World Bank development indicator. Unit root test were carried out to ensure that all variable are stationary at levels 1(0) or 1(1) for parameter stability .Bounds co-integration test revealed that long run relationship exist and any deviation in the short run can be corrected at 12% speed of adjustment just like the findings of Mounde (2017) that established long run relationship though their speed of adjustment were not disclosed .He concluded that FDI in Nigeria contributes positively to economic growth but stressed that although the overall effect of FDI on economic growth may not be significant, the components of FDI do have a positive

impact. He added that FDI in the communication sector has the highest potential to grow the economy and is in multiples of that of the oil sector. The manufacturing sector FDI negatively affects the economy, reflecting the poor business environment in the country.

5 Findings

Manufacturing foreign direct investment does not have a positive and significant impact on economic growth in Sub Sahara African countries over the years under study.

5.1 Conclusion

The study aimed to examine the contribution of foreign direct investment to economic growth using panel data approach over the period 1980-2022 to observe the impact of foreign direct investment on economic growth through the five main sectors of economic activity, namely manufacturing sector in 40 Countries in Sub-Sahara Africa. Unlike some studies in the literature, which assume a non-linear functional relationship between FDI and economic growth, we document strong linearity. We found on all Africa's region that the FDI's contribution is negative and non- significant at 5% level of significance according to ARDL model.

5.2 Recommendations

It is recommended that strategic policies and attractive incentives to foreign investment, institutional set-up for manufacturers need to put in place, and other stake holders should be encouraged to play a vital role in promoting investment to the sector. It is expedient that government policies concentrate on FDI inflows to all this sector as one of the priorities of every economy especially in Sub-Sahara Africa.

Conflicts of Interest

The writers have disclosed no conflicts of interest.

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