EFFECT OF FOREIGN DIRECT INVESTMENT ON EXCHANGE RATE OF NAIRA: A MULTI-SECTORAL ANALYSIS

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ABSTRACT: *This study examines the effect of foreign direct investment on exchange rate of naira. It covers the period between 1990 and 2016. The unusual depreciation of the naira accompanied by the declining trend of foreign direct investment inflows among other things necessitated this study. Ordinary Least Square Regression Analysis was used to estimate the model relationships. It made use of time series secondary data with five explanatory variables (FDI inflows to Agriculture, forestry and fishery, building and construction, manufacturing and processing, mining and quarrying and transport and communication) and one dependent variable (Exchange Rate). The data were sourced from Central Bank of Nigeria (CBN) statistical bulletin, World Bank Data and Journal Articles. Tests that were carried out include Unit Root Test, Co-integration test and Granger Causality test. The study reveals that there is a positive significant effect of FDI inflow to building and construction on real exchange rate; there is a positive significant effect of FDI inflows to mining and quarrying on real exchange rate and there is a positive significant effect of FDI inflows to transport and communication on real exchange rate. However, there is an universe effect of FDI inflows to agriculture, forestry, fishery on real exchange rate and an inverse effect of FDI inflows to manufacturing and processing on real exchange rate. Based on these findings, the study recommends: massive investment of local investors in the agricultural and manufacturing sectors to strengthen the exchange rate of naira and also serious efforts to increase foreign direct investment inflows in the building, mining and transport sectors in Nigeria be sustained and improved upon to have a strong exchange rate of naira.*

KEYWORDS: Foreign direct investment, exchange rate, depreciation, naira, inflows, mining and quarrying, manufacturing and processing, building and construction, study.

INTRODUCTION

Background Information

It is observed that Nigeria's exchange rate has been unstable over the years. Following the crash of the naira from about N155 to $1 between 2010 and 2011 to N360 to $1, government and people outside government have expressed great concern about it. Some analysts have attributed this ugly situation to low foreign direct investment, low foreign reserves, dwindling crude oil prices and high foreign borrowing in recent times.

The naira depreciated increasingly over the years. Between the year 2010 and 2016, the naira depreciated significantly. The erratic pattern of exchange rate can cause economic instability in a country which will further discourage foreign firms to invest in sectors of their choice. This is because it is difficult to withdraw long-term investment.There was steady decline of foreign direct investment inflows to Nigeria in recent times. Nigeria was a leading foreign direct investment destination in Africa. For instance, it recorded no direct investment inflow in the third quarter of 2016. The dismal picture was as a result of the crash of crude oil price to below $30 per barrel in 2016. It has been argued that low and volatile foreign direct investment (FDI) contributes to the persistent poverty, high inequality and under-development of the sub-Saharan Africa region.

The low and volatile foreign direct investment inflow could influence exchange rate of naira. It has been argued theoretically that if foreign direct investment inflow increases and is being sustained in an economy; it will boost the local production which will in turn lead to increase in export and favourable exchange rate.The study will derive its model especially from the work of Nwosa and Amassoma (2014) who posited that foreign direct investment has a positive effect on exchange rate in Nigeria.This study, in particular, is interested in understanding if foreign direct investment inflows motivate exchange rate of naira appreciation or depreciation and also to proffer solutions to address the problems as highlighted above.

The aim of this study is to empirically investigate the effect of foreign direct investment on exchange rate of naira in Nigeria. However, the specific objectives are as follows:

  I. To ascertain the effect of foreign direct investment inflow to agriculture, forestry and fishery on real exchange rate in Nigeria.
 II. To ascertain the effect of foreign direct investment inflow to building and construction on real exchange rate in Nigeria.
III. To ascertain the effect of foreign direct investment inflow to manufacturing and processing on real exchange rate in Nigeria.
IV. To ascertain the effect of foreign direct investment inflow to mining and quarrying on real exchange rate in Nigeria.
 V. To ascertain the effect of foreign direct investment inflow to transport and communication on real exchange rate in Nigeria.
VI. To ascertain the effect of the overall foreign direct investment contribution of the sectors on real exchange rate in Nigeria.

LITERATURE REVIEW

Froot and Stein (1991) claimed that a depreciation of the domestic currency increases foreign direct investment inflow into a host country while an appreciation of a host currency decreases foreign direct investment inflow. Campa **(1993)** posited that an appreciation of the domestic currency will increase foreign direct investment inflow into a host country and a depreciation of a host currency will decrease foreign direct investment inflow into a host country. Sajjad (2017) estimated the macroeconomics impact on the exchange rate of five SAARC countries: Bangladesh, India, Pakistan, Sri Lanka and Nepal over the period 1971 to 2015. The study used the ordinary least squares method on the variables: exchange rate, real interest rate, inflation rate, unemployment rate, GDP per capital, foreign direct investment net inflows, export and import and the findings show that foreign direct investment has a positive significant relationship with exchange rate. Alie and Hongliang (2015) examined the impact of interest rates on foreign direct investment in Sierra Leone for the period between 1985-2012 using trade openness, exchange rate, inflation rate, GDP, interest rate and foreign direct investment as variables and ordinary least square method.

The results reveal that exchange rate and foreign direct investment are positively related. Nadia, Ambar, and Farza (2015) investigated the effects of exchange rate on foreign direct investment in Pakistan using exchange rate, foreign direct investment and gross domestic product as variables. Both ARDL and ECM were employed. The study covered the period between 1980 and 2009 and the findings show that there is both a short-run and long-run positive relationship between exchange rate and foreign direct investment in Pakistan. Muhammad, Amjad, Muhammad, Mansor, Itaf and Tehreem (2014) analysed the impact of exchange rate on foreign direct investment in Pakistan for the period ranging from 1982 to 2013. The study adopted correlation and regression methods and used only exchange rate and foreign direct investment. The results suggest that there is a positive significant relationship between exchange rate and foreign direct investment. In the study carried out by Cem and Burcak (2013), they examined the impact of exchange rate uncertainty on foreign direct investment inflows into Turkey from 2004 to 2012. Employing real exchange rate, real exchange rate volatility, policy interest rate euro, inflation, confidence index, transportation, communication index, lag value of foreign direct investment inward and dummy variable and adopting GARCH and Markow regime switching models; their findings show an insignificant positive effect of exchange rate on monthly foreign direct investment. Emmanuel and Oteng (2014) carried out a study on the effect of exchange rate volatility on foreign direct investment in Ghana covering the period 1982 to 2002 using foreign direct investment, market attractiveness, trade openness, interest rate volatility and exchange rate volatility. The vector error correction model was used and the findings reveal that a stable exchange rate will attract foreign direct investment inflow into Ghana. Nazima (2011) attempted to analyse exchange rate volatility and foreign direct investment behavior in Pakistan from 1980 to 2010. He employed the following variables: real GDP, current account balance, trade openness, real exchange rate, exchange rate volatility, foreign direct investment and structured adjustment programme (SAP). The data were analysed using Auto Regressive Distributed lag (ARDL) and vector error correction model (VEM). The

results of the analysis reveal a positive significant relationship between exchange rate and foreign direct investment in Pakistan.

On the contrary, Silvia and Nguyen (2017) tried to examine the relationship between foreign direct investment inflows, price and exchange rate volatility in Latin America for the period of 1990 to 2012 using foreign direct investment, real exchange rate, interest rate, gross domestic product per capita, trade openness, Human capital and inflation rate as variables. They employed the Generalized Auto-regressive conditional Heteroscedasticity model (GARCH) and the result shows that there is a statistically negative significant effect of exchange rate volatility on foreign direct investment. Okafor, Ezeaku and Izuchukwu (2016), in their work on a disaggregated analysis on the effects of foreign direct investment inflows on exchange rate in Nigeria, they employed exchange rate, foreign portfolio investment and foreign direct investment as variables. They used a time-series secondary data from 1987 to 2012 and adopted ordinary least squares method and the findings reveal a negative and insignificant impact of foreign direct investment on exchange rate in Nigeria. Odili (2015) carried out an analysis on exchange rate volatility, stock market performance and foreign direct investment in Nigeria between 1980 and 2013. He used foreign direct investment, real gross domestic product, exchange rate volatility, inflation rate, market capitalization, trade openness and interest rate as variables and adopted ordinary least squares method for his analysis. The results show that exchange rate volatility has a negative significant effect on foreign direct investment to Nigeria in both short run and long run. Mariel and Pankova (2010) in their work, investigated the exchange rate effects on foreign direct investment focusing on central European Economies (Czech Republic) from 1998 to 2004. Foreign direct investment, rate of return and gross domestic product were used as variables. The study adopted ordinarily regression methods and it found out that exchange methods rate has a negative significant impact on foreign direct investment in the four European countries. Osinubi and Amaghionyeodiwe (2009) also examined the relationship between foreign direct investment and exchange rate volatility in Nigeria for the period 1970 to 2014 using foreign direct investment exchange rate and real gross domestic product as variables. They used error correction mechanism and ordinary least squares methods of estimation for their analysis and the results suggest that exchange rate is negatively related to foreign direct investment. Nwosa and Amassoma (2014) attempted to analyse the relationship between capital inflow and exchange rate in Nigeria from 1986-2011 with Granger causality and Error correction model as tools for analysis. Foreign direct investment, foreign portfolio investment¸ trade openness, oil price and exchange rate were employed as variables.

Gap in Literature
 Many studies have been carried out about the relationship between foreign direct investment and exchange rate in the existing literature. Of all the studies, scholars have not reached a consensus on the subject matter. Varying opinions have been emerged. The different opinions may come as a result of location of study, variables or indicators used, duration of study, methodology used e.t.c.

Thus, this study seeks to fill the gap which other studies have not filled in the area of variables or indicators used and the period covered.For instance, Sajjad (2017), Okafor, Ezeaku and

Izuchukwu (2016), Nadia, Ambar and Farza (2015), Odili (2015), Muhammaad, Amjad, Muhammad, Mansor, Itaf and Tehreem (2014), Emmanuel and Oteng (2014), Cem and Burcak (2013) and Osinubi and Amaghionyeodiwe (2009) used variables such as exchange rate, real interest rate, inflation rate, unemployment rate, GDP per capital, foreign direct investment net inflows, export, import, trade openness, policy interest rate euro, confidence index, structural adjustment programmed (SAP), market attractiveness, human capital, exchange rate volatility, foreign reserves, crude oil price, foreign debt, current account balance, market capitalization, infrastructure, domestic debt, foreign portfolio investment and natural resources. None of them disaggregated foreign direct investment inflow into its components. But this study disaggregated foreign direct investment inflow into five components and regressed them against exchange rate (the dependent variable).All the studies did not cover the period up to the year 2016. This study uses a more recent data covering a period between 1990 and 2016.

METHODOLOGY

To capture the relationship between foreign direct investment and exchange rate of naira, the empirical model that accommodates effect of foreign direct investment on exchange rate of naira in Nigeria was specified. From the reviewed literature and theories, the model for the study was derived especially from Nwosa and Amassoma (2014) who concludes that foreign direct investment has a positive effect on exchange rate in Nigeria. In the current investigation, therefore, we shall use five explanatory variables: FDI inflow to agriculture, forestry, fishery, FDI inflow to building and construction, FDI inflow to manufacturing and processing, FDI inflow to mining and quarrying, FDI inflow transport and communication. They shall be regressed against real exchange rate (E) regarded as dependent variable.

The functional relationship of the model is;

$$E_t = f(A_t, B_t, M_t, M_t, T_t) \ldots\ldots\ldots\ldots\ldots\ldots\ldots(1)$$

The econometric specification of the model is:

$$E_t = B_0 + B_1 A_t + B_2 B_t + B_3 M_T + B_4 M_t + B_5 T_t + e_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Where: B_o is the intercept or constant term

$B_1 - B_5$ are the coefficients of explanatory variables. They also represent the rate of change in dependent variable for each unit change in the independent variable respectively.

E is real exchange rate of naira

Data Presentation

The table 4.1 below shows the trend of exchange rate of naira, gross domestic product and the ratio of each of the foreign direct investment inflows to gross domestic product (GDP).

Year	E	GDP	A/GDP	B/GDP	M_1/GDP	M_2/GDP	T/GDP
1990	8.0	19,305,633.16	0.7003815	1.735728067	13.30724851	6.973363637	0.517673283
1991	9.9	19,199,060.32	0.853405691	2.11496193	16.21470813	8.496952314	0.630778119
1992	17.3	19,620,190.34	1.05109834	2.604895886	19.97086846	10.46528347	0.776898773
1993	22.1	19,927,993.25	1.552764351	3.84815513	29.50252266	15.46013201	1.14769539
1994	21.9	19,979,123.44	2.255457146	5.589611188	42.85368578	22.45650811	1.667077021
1995	21.9	20,353,202.25	0.477244015	0.95448803	12.51439861	23.06679406	0.212108451
1996	21.9	21,177,920.91	0.677173792	1.354347583	17.75700164	32.73006658	0.30096613
1997	21.9	21,789,097.84	0.635868982	1.271737964	16.67389775	30.73366747	0.282608436
1998	21.9	22,332,866.90	0.423677622	0.847355245	11.10976877	20.47775176	0.188301166
1999	92.7	22,449,409.72	0.402872529	0.805745058	10.56421299	19.47217224	0.179054458
2000	102.1	23,688,280.33	0.336924959	1.203303427	13.18820556	16.70185157	0.529453508
2001	111.9	25,267,542.02	0.329843342	1.178011936	12.91101082	16.35080567	0.518325252
2002	121	28,957,716.24	0.45302244	1.617937286	17.73259266	22.45696953	0.711892406
2003	129.4	31,709,447.39	0.44269062	1.581037931	17.32817572	21.94480647	0.695656689
2004	133.5	35,020,549.08	0.374592248	1.337829457	14.66261085	18.56907287	0.588644961
2005	132.1	37,474,949.16	0.531825557	2.925040565	54.11325045	30.04814399	2.792084176
2006	128.7	39,995,504.55	0.48548996	2.670194782	49.39860346	27.43018276	2.548822292
2007	125.8	42,922,407.93	0.562505386	3.09377962	57.23492297	31.78155428	2.953153274
2008	118.6	46,012,515.31	0.712458269	3.91852048	72.49262888	40.2538922	3.740405913
2009	148.9	49,856,099.08	0.686354599	3.774950292	69.8365804	38.77903481	3.603361642
2010	150.3	54,612,264.18	0.99311188	2.20691529	42.15208203	22.51053596	3.089681406
2011	153.9	57,511,041.77	1.383560741	3.074579425	58.72446702	31.36071014	4.304411195
2012	157.5	59,929,893.04	1.061730709	2.359401576	45.0645701	24.06589608	3.303162207
2013	157.3	63,218,721.73	0.79194677	1.75988171	33.61374066	17.95079344	2.463834394
2014	158.6	67,152,785.84	0.623402187	1.385338193	26.45995948	14.13044956	1.93947347
2015	193.3	69,023,929.94	0.545431482	0.954505093	12.04494523	8.272377476	0.999957717
2016	253.5	67,931,235.93	0.785223948	1.374141909	17.34036218	11.90922987	1.439577237

E= real exchange rate of naira; GDP= Gross Domestic Product; A=ratio of FDI inflow to Agriculture, forestry, fishery to GDP; B= ratio of FDI inflow to building and construction to GDP; M_1 = ratio of FDI inflow to manufacturing and processing to GDP; M_2 = ratio of FDI inflow to mining and quarrying to GDP; T= FDI inflow to transport and communication to GDP.

Descriptive Analysis

Table 4.3   Result of Descriptive Analysis

	RER	AFF_GDP	BDC_GDP	MAP_GDP	MIQ_GDP	TRC_GDP
Mean	101.3296	0.745558	2.131200	29.80619	21.66107	1.560187
Median	121.0000	0.635869	1.735728	17.75700	21.94481	0.999958
Maximum	253.5000	2.255457	5.589611	72.49263	40.25389	4.304411
Minimum	8.000000	0.329843	0.805745	10.56421	6.973364	0.179054
Std. Dev.	66.66501	0.428831	1.172276	19.63369	9.029246	1.296289
Skewness	0.022726	1.949515	1.139812	0.835706	0.270758	0.646904
Kurtosis	2.213454	7.018195	3.908188	2.325840	2.358277	2.001751
Jarque-Bera	0.698310	35.26686	6.774173	3.654123	0.793178	3.004249
Probability	0.705284	0.000000	0.033807	0.160886	0.672610	0.222657
Sum	2735.900	20.13006	57.54240	804.7670	584.8490	42.12506
Sum Sq. Dev.	115549.8	4.781286	35.73002	10022.52	2119.709	43.68947
Observations	27	27	27	27	27	27

Source: Computer Estimate

In table 4.3 above, we observe that over the period, exchange rate averaged at 101% with highest value at 254%. The standard deviation is high and as such, there is significant fluctuation from the mean. All the other variables: ratio of FDI inflow to agriculture, forestry, fishery to GDP; ratio of FDI inflow to building and construction to GDP; ratio of FDI inflow to manufacturing and processing to GDP; ratio of FDI inflow to mining and quarrying to GDP; and ratio of FDI inflow to transport and communication to GDP averaged at 0.75%, 2.1%, 29.8%, 21.7% and 1.6% respectively with highest values at 2.3%, 5.6%, 72.5%, 40.3% and 4.3% respectively and lower the lowest values at 0.33%, 0.81%, 10.6%, 7.0% and 0.18% respectively. The Jacque Bera statistic shows that the data of the variables are normally distributed.

4.3   Unit Root Test

Table 4.3   Augmented Dickey-Fuller Unit Root Test

Variable	ADF Value	Critical Values 1% 5% 10%	Conclusion	Order Of Integration
E	-3.302095	-3.724070 -2.986225 - 2.632604	Stationary at 1stdifference	1(1)
A	-5.847207	-4.374307 – 3.603202 – 3.238054	Stationary at 1st difference	1(1)
B	-6.082993	4.374307 – 3.603202 – 3.238054	Stationary at 1st difference	1(1)
M_1	-5.930349	4.374307 – 3.603202 – 3.238054	Stationary at 1st difference	1(1)
M_2	-5.628259	4.374307 – 3.603202 – 3.238054	Stationary at 1st difference	1(1)
T	-5.403122	4.374307 – 3.603202 – 3.238054	Stationary at 1st difference	1(1)

Source: Extract from unit root test result (Appendix I)

The Augmented Dicker-Fuller Unit Root test result as summarized in table 4.4 above shows that all the variables are stationary at first difference and are therefore integrated of order one i.e. 1(1).

Johansen Co-integration Test

Table 4.4   Summary of Co-integration

Hypothesized No. Of CE(S)	Trace Statistic	0.05 Critical Value	Hypothesized No. Of CE(S)	Max-Eigen Statistic	0.05 Critical Value
None*	125.5022	95.75366	None *	47.58666	40.07757
At Most 1*	77.91552	69.81889	At Most 1	25.58957	33.87687
At Most 2*	52.32595	47.85613	At Most 2	19.98842	27.58434
At Most 3*	32.33753	29.79707	At Most 3	17.58840	21.13162
At Most 4*	14.74914	15.49471	At Most 4	7.828566	14.26460
At Most 5*	6.920571	3.841466	At Most 5*	6.920571	3.841466

Source Extract from co-integration test (Appendix II)
The unrestricted co-integration rank test is trace and maximum Eigen value indicates 4 and 1 co-integrating equations at 0.05 critical level respectively. This is justified as the trace and maximum Eigen statistic values are less than 5% critical value. This calls for the rejection of the null hypothesis and hence, we conclude that there is co-integration among the variables meaning the existence of long-run equilibrium relationship among the variables.

Pairwise Granger Causality Test
As shown in the table below as regards the result of the Granger causality test, the F-test is carried out on the null hypothesis in order to determine the direction of causality between each pair of variables. The rejection of each of the null hypotheses is based on the significance of the F- value for the particular relationship.

Table 4.5   Result of Pairwise Granger Causality Test
Lag 4

Null Hypothesis:	Obs.	F-Statistic	Prob.
DAFF_GDP does not Granger Cause DRER	22	4.69815	0.0145
DRER does not Granger Cause DAFF_GDP		0.12462	0.9710
DBDC_GDP does not Granger Cause DRER	22	2.09832	0.1393
DRER does not Granger Cause DBDC_GDP		0.19748	0.9353
DMAP_GDP does not Granger Cause DRER	22	0.95385	0.4646
DRER does not Granger Cause DMAP_GDP		0.22311	0.9207
DMIQ_GDP does not Granger Cause DRER	22	0.98196	0.4509
DRER does not Granger Cause DMIQ_GDP		0.62041	0.6559
DTRC_GDP does not Granger Cause DRER	22	1.66758	0.2171
DRER does not Granger Cause DTRC_GDP		0.16754	0.9511

Source: computer printout (Appendix III)
The F-value for the null hypothesis is Agriculture, forestry; fishery is significant which suggests that null hypothesis is rejected.

Ordinary Least square test

Table 4.6   Ordinary Least Square Result
Dependent Variable: RER
Method: Least Squares
Date: 03/18/20   Time: 21:05
Sample: 1990 2016
Included observations: 27

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	95.89578	28.11004	3.411442	0.0026
A_GDP	-220.2296	59.83936	-3.680346	0.0014
B_GDP	122.9966	42.82338	2.872183	0.0091
M_1_GDP	-17.90242	4.996440	-3.583036	0.0018
M_2_GDP	4.701602	2.251354	2.088344	0.0491
TRC_GDP	217.4473	46.77808	4.648487	0.0001

R-squared	0.744394	Mean dependent var	101.3296
Adjusted R-squared	0.683535	S.D. dependent var	66.66501
S.E. of regression	37.50254	Akaike info criterion	10.27982
Sum squared resid	29535.25	Schwarz criterion	10.56779
Log likelihood	-132.7776	Hannan-Quinn criter.	10.36545
F-statistic	12.23152	Durbin-Watson stat	0.862056
Prob(F-statistic)	0.000012		

Source: Computer Estimate

As shown in table 4.6, the relationship of the model is:
$E = 95.89578 - (-) 220.2296 * A + 122.9966 * B + (-) 17.90242 * M_1 + 4.701602 * M_2 + 217.4473 * T$

The positive constant value of 95.89578 shows that at zero performance of the variables the dependent variable will increaseAs the result shows, B_1, M_2 and T have direct relationship with real exchange rate of naira. Their coefficients of 122.9966, 4.701602 and 217.443 indicate that a unit increase in B_1, M_2 and T respectively will cause E to increase by 122.9966, 4.701602, and 217.4473 units as well. The direct relationship between real exchange rate and ratio of FDI inflow to building and construction to GDP, real exchange rate and ratio of FDI inflow to mining and quarrying to GDP and real exchange rate and ratio of FDI inflow to transport and communication to GDP are statistically significant at 5% level.

On the other hand, ratio of FDI inflow to agriculture, forestry, fishery to GDP and ratio of FDI inflow to manufacturing and processing to GDP have an inverse relationship with real exchange rate. It means that real exchange (E) will decrease by 220.2296 units and 17.90242 units if FDI inflow to agriculture, forestry, fishery (A) and FDI inflow to manufacturing and processing (M_1)

increase by 1 unit respectively. Furthermore, the relationship between A and E, and M_1 and E are statistically significant at 5% level.

Statistical Criteria
F-test
The F-test is used to determine the effect of the overall contribution of foreign direct investment inflow to all sectors on real exchange rate of naira.

Table 4.7 Summary of F ratio result, coefficient of determination, and Durbin Watson statistic.

R-Squared	0.744394
Adjusted R-squared	0.683535
F-statistic	12.23152
Prob. (F-statistic)	0.000012
Durbin Watson stat.	0.862056

Source: Extract from OLS result (table 4.7)

As summarized in the above table 4.8, the probability of F-statistic (0.000012) is less than 0.05 which indicates that the effect of the overall contribution of foreign direct investment inflow to all the sectors on real exchange rate is significant at 5% level. Therefore, the model is adequate for any decision made with it.

Coefficient of Determination (R^2)
The Coefficient of Determination (R^2) measures the explanatory power of the multiple regression model. It shows from the result that the R^2 (0.744394) is above 50% which implies that the model is good fitted, adequate and reliable.

In addition, the adjusted R^2 value shows that 68.35% in exchange rate naira is explained by the independent variables while the remaining 31.55% is explained by other variables not captured in the model.

Autocorrelation (serial correlation)
The Durbin Watson Statistic (d) is 0.86 leading to the conclusion that there is the existence of positive serial correlation.

Testing of Hypotheses
The result of the t-test and its probability values as shown in table 4.7 shall be used to test the hypotheses.

Hypothesis One: There is no significant effect of foreign direct investment inflow to agriculture, forestry and fishery on real exchange rate in Nigeria. The probability value for the hypothesis is 0.0014 at 5% significant level. Because the probability value is less than 5%, therefore, the null hypothesis is rejected and we conclude that there is significant effect of foreign direct investment inflow to agriculture, forestry, fishery on real exchange rate in Nigeria.

Hypothesis Two: There is no significant effect of foreign direct investment inflow to building and construction on real exchange rate in Nigeria.

The probability value for the null hypothesis is 0.0091. The significant level is 5%. The probability value which is 0.0091 is less than 0.05 and, as such, the null hypothesis is rejected. The conclusion, therefore, is that there is significant effect of foreign direct investment inflow to building and construction on real exchange rate in Nigeria.

Hypothesis Three: There is no significant effect of foreign direct investment inflow to manufacturing and processing on real exchange rate in Nigeria.
The probability value for the null hypothesis is 0.0018 and the significant level is established at 0.05 percent. Since the probability value (0.0018) is less than 0.05 percent significant level, then the null hypothesis is rejected. Therefore, we conclude that there is significant effect of foreign direct investment inflow to manufacturing and processing on real exchange rate in Nigeria.

Hypothesis Four: There is no significant effect of foreign direct investment inflow to mining and quarrying on real exchange rate in Nigeria.
The probability value is 0.0491 and the significant level is put at 0.05 percent. We reject the null hypothesis because the probability value which is 0.0491 is less than 0.05 percent significant level. As such, we conclude that there is significant effect of foreign direct investment inflow to mining and quarrying on real exchange rate in Nigeria.

Hypothesis Five: there is no significant effect of foreign direct investment inflow to transport and communication on real exchange rate in Nigeria.
The probability value is 0.0001 and the significant level is put at 0.05 percent. The probability value (0.0001) is less than 0.05 significant level and thus, the null hypothesis is rejected on that basis. Therefore, we conclude that there is significant effect of foreign direct investment inflow to transport and communication on real exchange rate in Nigerian.

Hypothesis Six: There is no significant effect of the overall foreign direct investment contribution of the sectors on real exchange rate in Nigeria.
The probability value (of the F-statistic) is 0.000012. The significant level is established at 0.05 percent. The null hypothesis is rejected because the probability value is 0.000012 which is less than 0.05 significant level. Therefore, the conclusion is that there is significant effect of the overall foreign direct investment contribution of the sectors on real exchange rate in Nigeria.

DISCUSSION OF RESULTS

The evaluation of the slope of the co-efficient of the explanatory variable points out the existence of positive effect of foreign direct investment inflow to building and construction on real exchange rate; foreign direct investment inflow to mining and quarrying on real exchange rate; foreign direct investment inflow to transport and communication on real exchange rate; and the effect of the overall foreign direct investment contribution of the sectors on real exchange rate. However, there is a negative effect of foreign direct investment inflow to agriculture, forestry, fishery on real exchange rate and foreign direct investment inflow to manufacturing and processing on real exchange rate.

Consequently, the result is statistically significant at 5% probability interval. This led to the rejection of the null hypotheses (2,4,5 and 6) because each of their probabilities is less than 5% significant level. From the result of the t-test, the probability value for null hypothesis 2 is 0.0091 which is less than 5% significant level and the coefficient is 122.9966. Since the coefficient is positive, there is a positive effect of foreign direct investment inflow to building and construction on exchange rate of naira. This means that an increase in FDI inflow to building and construction will also lead to an increase in exchange rate of Nigeria.

Following the result of the t-test, the probability value for a null hypothesis 4 is 0.049 which is less than 0.05 significant level. The coefficient is 4.701602. The null hypothesis is rejected on this basis and the positive coefficient shows that there is a positive significant effect of FDI inflow to mining and quarrying on exchange rate of increase naira. This is an indication that a unit increase in FDI inflow to mining and quarrying sector will result in a unit increase in exchange rate of naira. From the t-test result, the probability value for null hypothesis is 0.0001 which is less than 5% significant level. The coefficient is 217.4473. The null hypothesis is rejected on this basis and the positive coefficient reveals a positive significant effect of FDI inflow to transport and communication on exchange rate of naira. It also explains that an increase in FDI inflow to transport and communication sub-sector will lead to an increase in exchange rate of naira.
However, judging from the t-test, the probability value for null hypothesis one is 0.0026 which is less than 0.05 significant level. The coefficient is -220.2296. the null hypothesis is rejected on this basis and the negative coefficient reveals a negative significant effect of FDI inflow to agriculture, forestry, fishery on exchange rate of naira. It implies there is a significant effect of the inflows on exchange rate but the effect is negative. This means that an increase in FDI inflow to the sector of agriculture, forestry, fishery will result in a decrease of exchange rate of naira.

Also, from the t-test, the probability value for null hypothesis three is 0.0018 which is less than 0.05 significant level and a coefficient of -17.90242. The null hypothesis is rejected and the negative coefficient indicates a negative significant effect of FDI inflow to the sector of manufacturing and processing on exchange rate of naira. This means that an increase in FDI inflow to manufacturing and process sectors will cause a decrease in exchange rate of naira. The FDI inflow increase in the sector will influence a depreciation of the naira.

The overall result captures null hypothesis six. From the F-test, the probability value for the hypothesis is 0.000012 which is less than 0.05 significant level. Therefore, the null hypothesis is rejected on this basis and the prob (F-statistic) value is positive, we conclude that there is positive significant effect of the overall contribution of foreign direct investment of all the sectors on exchange rate of naira. This means that foreign direct investment has a positive significant effect on exchange rate of naira. It shows that as foreign direct investment inflow increases, exchange rate of naira also increases. It implies that the increase in foreign direct investment inflow in Nigeria also induced the appreciation of the naira. The result is in line with the Camp's model (1993) which concludes that foreign direct investment inflow in a host country causes an appreciation of the host country currency.

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The outcome of the study is also collaborated by that of Nadia, Ambar and Faiza (2015) which shows there is a positive significant effect of foreign direct investment on exchange rate in Pakistan. It is also in accordance with the results of the study of Muhammad, Muhammad Amjad, Muhammad, Mansoor, Itaf, Tehreem (2014) which concludes that whatever that effects foreign direct investment affects exchange rate in Pakistan. Their findings reveal that there is a positive significant relationship between foreign direct investment and exchange rate. Also, in the works of Nazima (2011), the findings show a positive significant impact of foreign direct investment on exchange rate.

The results of the study are also in line with that of Olusuyi, Akinbobola, Samuel and Oluyomi (2016) which states that foreign direct investment has a positive and significant effect on exchange rate in Nigeria.From the F-test, the independent variables are significant since the probability value is 0.00012 which is less than 0.05 percent significant level. Jointly the independent variables are significant and we conclude that there is a positive significant effect of all the independent variables (FDI inflow to agriculture, forestry, fishery, FDI inflow to building and construction, FDI inflow to manufacturing and processing, FDI inflow to mining and quarrying; FDI inflow to transport and communication) on the dependent variable: exchange rate of naira. The adjusted R-square shows that 68% of the change in real exchange rate is explained by the independent variables while the remaining 32% is explained by other variable not included in the model.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The unstable nature of the exchange rate in Nigeria creates a high level of uncertainty about the business environment. Some factors such as low foreign direct investment, low foreign reserves, falling oil prices and high foreign-debts have been identified as being responsible for instability of exchange rate. Of particular interest, is the link between exchange rate and foreign direct investment inflow. This is due to the potential benefits of foreign direct investment inflows to a host country.

This study concludes that:

1. There is negative significant effect of FDI inflow to agriculture, forestry, fishery on real exchange rate in Nigeria.
2. There is positive significant effect of FDI inflow to building and construction on real exchange rate in Nigeria.
3. There is negative significant effect of FDI inflow to manufacturing and processing on real exchange rate in Nigeria.
4. There is positive significant effect of FDI inflow to mining and quarrying on real exchange rate in Nigeria.
5. There is positive significant effect of FDI inflow to transport and communication on real exchange rate in Nigeria.
6. There is positive significant effect of the overall contribution of foreign direct investment of the sectors on real exchange rate in Nigeria.

Recommendations

Based on the findings of this study, the following are recommended:

1.   Foreign direct investment in the agricultural sector of the economy should be discouraged. The government should make more efforts to encourage local investors in the sector. It behoves the government to make policies to include local investors to invest heavily in the agricultural sector. New technologies should be learned and applied by Nigerian farmers. Furthermore, the government should endeavour to provide the basic amenities to enhance productivity.

2.   Governments efforts to woo more and more foreign firms to invest in the building and construction sector of the economy should be sustained and intensified so as to strengthen the exchange rate of the naira.

3.   Perhaps, the manufacturing and processing sector is highly dominated by foreign investors and as such, there is a negative impact on the exchange rate. In the light of this, the federal government should make policies to discourage foreign direct investment in this sector.

4.   More and more foreign direct investment inflows should be attracted in the mining sector to cause appreciation of the exchange rate.

5.   The transport and communication sub-sector is also an integral part of the economy. Therefore, efforts to increase foreign direct investment inflows into the sector be maintained.

6.   Increasing foreign direct investment inflows in all sectors of the economy is necessary and desirous. Therefore, efforts to increase foreign direct investment in Nigeria should be sustained and improved upon in order to have a strong exchange rate of naira.

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