DOES REAL EXCHANGE RATE VOLATILITY MATTERS FOR FOREIGN DIRECT INVESTMENT (FDI) INFLOW? AN EMPIRICAL REFLECTION OF THE NIGERIAN SITUATION

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ABSTRACT: *The research has been on the Real Exchange Rate (RER) and Foreign Direct Investment (FDI) inflow. This has become necessary given the declining competitiveness of the Nigeria currency and economy. The study covered the period between 1981 and 2017. The Cointegration and the Error correction Model of the Ordinary least squares technique were used to analyze the data. The result of the Augmented Dickey Fuller (ADF) unit root test indicates that the variables became stationary after the first difference was taken. The Johansen Cointegration test indicates a long run equilibrium relationship among the variables. Also the result of the parsimonious Error Correction Model (ECM) indicates that the volatility of the Real Exchange Rate (RER) has a negative and significant impact on the inflow of Foreign Direct Investment (FDI) into Nigeria. The openness of the economy has a positive and significant relationship with the Foreign Direct Investment (FDI). The interest rates has a negative and significant impact on the Foreign Direct Investment (FDI) inflow. It was therefore recommended amongst others that the government should not only concentrate on the manipulation of the exchange rate but should make concerted efforts to diversify the productive base of the economy so as to increase the competiveness of the Nigerian economy and hence its currency.*
KEY WORDS: Real Exchange Rate, Foreign Direct investment, Real Exchange Rate Volatility, Cointegration

INTRODUCTION

Foreign Direct Investment (FDI) has been identified by (Boreinsten De Gregorio and Lee, 1998 and Bibi, 2014 and Oriavwote, 2018) as playing an important role in the development process of any nation. The importance of FDI draws from the fact that FDI is a key tool for employment creation and the transfer of previously locally non-available technologies to the home country as well as the generation of the much needed foreign exchange. This is why attracting FDI has been a policy focus of both developing and developed countries. The stability of the Real Exchange Rate (RER) is key to the sustainability of the inflow of FDI into any country. The link between FDI and exchange rate becomes more important since every country in the world is linked together in one way or the other. Volatility which represents the unpredictability and unobservable pattern of the RER has created a risk margin for FDI, in Nigeria. This is why it has been emphasized that good foreign exchange rate management serves in many ways to balance the level of imports with the level of export. (Obi, 2017). The lack of investment in the real sector of the Nigeria economy due to the over concentration on the oil sector has hindered the stability of the RER. This has negatively affected the level of FDI inflow into the Nigerian economy. The volatility of the RER and consequent decline in FDI has increased the imports bill of

the country at the expense of exports. This has increased the level of deficit financing which has hindered the level of economic growth in Nigeria. This is a major reason why our Balance of payment (BOP) is in deficits in most of the study period. Another challenge that made the volatility of RER to severely affect the FDI inflow into Nigeria has been the one sided nature of FDI in Nigeria. FDI in Nigeria has concentrated on mainly the oil industry, thus, neglecting the key sector of the economy such as manufacturing and agriculture which have the fastest multiplier effects on the economy as regards job creation, revenue generation and the generation of the much needed FDI. Also, the paucity of competition that resulted from the appreciation of the RER or sometimes over-valuation of RER constitutes hindrance on the inflow of foreign capital in to Nigeria.

The main objective of this study is thus to empirically investigate the impact of real exchange rate on foreign direct investment inflow into Nigeria. This has become important given the lack of consensus among previous researchers. This study therefore attempts to widen the scope of the research beyond that of previous authorities by increasing the time series data to enhance the accuracy of the results obtained from the study.

A positive effect was justified with the view that FDI is export substituting. Increase in exchange rate volatility between the headquarters and the host country induce a multinational to serve the host country through a local production facility rather than exports, thereby insulating against currency risk (Food, 2005). Justification for a negative impact of exchange rate volatility on FDI can be observed in the irreversibility literature pioneered by Dixit and Pindyck (1994). They stated that direct investment in a country with high degree of exchange rate volatility will have a more risky stream of profits. So long as the investment is partially irreversible, there is some positive value in holding off on the investment required more information. Thus, countries with a high currency risk will lose out on FDI to countries with more stable currencies. The study thus attempts to contribute to the debate. Other than this introductory session, the rest of the paper is divided into four sessions. The second session is the literature review while the third session bothers on the materials and methods. The fourth section is on the findings while the fifth session concludes the paper.

LITERATURE REVIEW

Cheap raw materials and low production costs as well as availability of market are the factors that attract FDI to various countries. Incentive to would be investors and trade policies are other that attract FDI. RER volatility creates an ambiguous environment for investment decisions. This lead to the redistribution of resources between sectors and countries known as production flexibility or investors delay investment decisions also known as delay hysteresis (Azid and Kousar, 2005). The basic assumption of the production flexibility model is that the flexibility to adjust variable factors e.g. capital and labour costs etc follow price variability as a result of foreign exchange movements and thus tend to invest more. Thus, according to this theory, when there is an increment in exchange rate volatility in the host country, firms place greater priority on manufacturing flexibility advantage against the uncertainty risk (Zerin, 2018). The theory noted that countries experiencing fluctuations in RER, FDI may be higher since this uncertainty constitutes an impediment to trade, multinationals will then shift the production of the exported products to foreign markers through direct capital investments.

Zerrin (2018) assessed the link between exchange rate volatility and FDI in Turkey using the Toda and Yamamoto causality, and data covering 2005 and 2018, the study revealed one way causality from FDI to RER volatility Osinobi and Amaghionyeodiwe (2009) investigated FDI and exchange rate volatility in Nigeria. The OLS technique and data from 1970 to 2004 were used. The study found that foreign investors are not bordered about the volatility of the exchange rate. They added that the depreciation of the naira increases real inward FDI. The association among investment, exchange rate, interest rate and economic development in Nigeria forms the focus of the study by Monogbe and Okah (2016). The study covered the period between 1986 and 2005. The study adopted the Autoregressive Distributed Lag (ARDL) The findings revealed that an appreciation of the exchange rate brings about economic development. Obi (2017) used data covering the period between 1999 and 2016 and the ordinary least squares (OLS) technique to investigate the impact of Foreign exchange volatility on FDI in Nigeria. The findings revealed that perturbations of the exchange rate have a positive and significant impact on foreign private investment. Oriavwote and Ukawe (2018) studied Real Effective Exchange Rate Volatility and FDI sustainability in Nigeria. The study covered the period between 1981 and 2016. The co-integration and ECM models were used in analyzing the data. The findings revealed that one Real Effective exchange Rate has a positive and insignificant impact on the FDI. The Real effective Exchange Rate Volatility has a significant and negative impact on FDI inflow. Mbanesou and Obioma (2017) reviewed and estimated the impact of exchange rate fluctuations on foreign private investments in Nigeria. Using the two stage least squares, the study found that exchange rate fluctuation has negative and insignificant impact on FDI inflow.

Chukwudi and Madueme (2010) assessed the impact dollar exchange rate volatility on FDI in Nigeria. The study adopted the autoregressive conditional Heteroskedasticity. The study found that exchange rate volatility as a result of depreciation of the naira attracts FDI, while exchange rate volatility as due to appreciation of the naira hinders the inflow of FDI Jose (2018) investigate the impact of real exchange rate volatility on FDI inflows in Brazil. They covered the 1976 to 2013 period. Using the ARDL method, the study found that Real Effective Exchange Rate volatility has a statistically significant and negative impact on Brazilian FDI inflows. Udoh and Egwaikhide (2008) studied exchange rate volatility, inflation uncertainty and FDI in Nigeria. The study used the Generalized Autoregressive Conditional Heteroskedasticity. (GRARCH). The data used covered the 1970 to 2005 period. The study found that international competitiveness is a major determinant of FDI inflow into Nigeria.

MATERIALS AND METHODS

The model to be estimated for the study has the FDI as the dependent variable. The independent variables are the Real Exchange Rate (RER), the Real Exchange Rate Volatility (RERV), openness of the economy (OPEN) proxied by the ratio of imports plus exports to the Gross Domestic Product and the interest Rate (INTR). The model is stated functionally and linearly FDI = F (RER, RERV, INTR)

$$FDI = b_0 + b_1 RER + b_2 RERV + b_3 INTR + b_4 OPEN + Ut \quad b_1, b_4 > 0, \; b_2, b_3 < 0$$

The ordinary least squares (OLS) technique was used to analyse the above model. The specific models that were used for the study are the Cointegration and the error correction mechanism. This will commence with a descriptive statistics and the correlation matrix. The Johensen Cointegration were used to analyse the existence or non-existence of a long run relationship among the variables. The parsimonious or preferred Error Correction mechanism (ECM) were be used to assess the signs and magnitudes of the variables as well as validating or invalidating the relevant hypothesis. Various diagnostic checks which include the Jarque-bera normality, Breush Godfrey serial correlation LM and the stability test were used to analyse the data. The shocks were analyzed using variance decomposition.

RESULTS AND FINDINGS

The result of the descriptive statistics is shown in the table below:

Table 1: Summary of Results of Descriptive Statistic

	LFDI	LRER	RERV	LINTR	OPEN
Mean	9.878623	4.979170	981.3750	2.717884	0.483784
Median	9.296481	4.924838	71.23737	2.890372	0.460000
Maximum	12.80493	7.482093	7858.040	3.586016	0.880000
Minimum	7.187506	2.358266	1.192881	1.791759	0.160000
Std. Dev.	1.887018	1.603347	1930.976	0.480283	0.164981
Skewness	0.164439	0.138792	2.284742	-0.545508	0.024653
Kurtosis	1.452406	1.710024	7.426777	2.225263	2.608320
Jarque-Bera	3.859110	2.684183	62.40133	2.760405	0.240260
Probability	0.145213	0.261299	0.000000	0.251528	0.886805
Sum	365.5091	184.2293	36310.87	100.5617	17.90000
Sum Sq. Dev.	128.1901	92.54595	1.34E+08	8.304176	0.979870
Observations	37	37	37	37	37

The mean of FDI of 9.87 is higher than the median of .30 indicating that the FDI increased over the study period. The maximum value for FDI is 12.80 while the minimum value is 7.9. FDI is skewed to the right with a long right tail. The Jaque bera with a probability of 0.14 indicate that the residuals are normally distributed. The mean for RER of 5.00 is greater than the median of 4.9 indicating that the RER increased over the study period. The highest and lowest values for RER are of 4.8 and 2.36. The standard deviation of 1.60 did not indicate a major discrepancy. The RER has an average value of 981.378 which is far higher than the median of 71.24 indicating the potentials of the RERV to increase over the study period. The highest and lowest value are 7858 and 1.19. The INTR has a mean of 2.72 which is higher than the median of 2.89. An indication that the INTR increased over the study period. The highest and lowest values are 3.59 and 1.79. The standard deviation of 0.48 did not suggest a major deviation. The OPEN has a mean of 0.48 and median of 0.40 indicating that the OPEN increased over the study period. The highest and lowest values are 0.88 and 0.16 respectively. The standard deviation of 0.016 did not show a major deviation. The Skewness indicates that except for INTR which is Skewed to the left, the other variables are skewed to the right with a long right tail.

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The Kurtosis indicates that only OPEN satisfies the condition. The Jarque-bera test indicates that in most cases, the residuals are normally distributed. The result of the correlation matrix is shown below:

Table 2: Correlation Matrix Result.

	LFDI	LRER	RERV	LINTR	OPEN
LFDI	1	-0.895878	0.275162	0.139143	0.059820
LRER	-0.895878	1	-0.4408622	-0.6653762	-0.594358
RERV	0.275162	-0.440862	1	0.274312	0.370214
LINTR	0.139143	-0.665376	0.274312	1	0.227553
OPEN	0.059820	-0.594358	0.370214	0.227553	1

The closer to 1, the variables, the higher the possibility of multicollinearity. The result indicates that the correlation between RER and FDI is -0. 90 which indicates that the series are not closely related. The correlation between FDI and RERV with a value of 0.28 did not show a closer association. The correlation coefficient between INTR and FDI is 0.39 indicating that the series are not closely related. The correlation matrix between INTR and FDI with value of 0.14 indicate that the variables are not closely related. The mean correlation coefficient between FDI and OPEN is 0.06 which indicates that they are not closely related. The result overall, indicates the non existence of the problem of multicollinearity among the variables.

The next result in this section is the unit root test. The Augemented Dickey Fuller (ADF) unit root test is used in this regard. The result of the ADF unit root test is shown in the table below:

Variables	Level data	First Differences	Order of Integration
RER	0.24	718*	1CD
OPEN	1.16	5.22*	1CD
INTR	0.36	6.41	1CD
RERV	1.44	8.38*	1CD

NB: 1 percent critical value is 3.76 indicates significance at the 1 percent level.

The result indicates that all the variables were non-stationary at the level but they became stationary after the first differences was taken. The result of the Johansan Cointegration test is shown in the table below:

Table 4: Summary of Johansan Cointegration Test Result.

Hypothesized No. of CE(s)	Trace Statistic	0.05 Critical Value	Prob**
None*	101.1773	69.81889	0.0000
At most 1	63.21338	47.85613	0.0010
At most 2*	37.67124	29.79707	0.0051
At most 3	14.89716	15.49471	0.0614
At most 4	3.184614	3.841466	0.0743

Hypothesized No. of CE(s)	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None*	37.96388	33.87687	0.0154
At most 1	25.54214	27.58434	0.892
At most 2*	22.77407	21.13162	0.0291
At most 3	11.71255	14.26460	0.1219
At most 4	3.184614	3.841466	0.0743

The trace statistics rejects the null hypothesis of no Cointegration. It accepts the alternative hypothesis of Cointegration in three cases. The Max-Eigen also indicates the existence of a long run equilibrium relationship among the variables. The result thus indicates the existence of a long run equilibrium relationship among the variables. This result allows us to estimate the overparameterized and the parsimonious ECM result. The result of the overparameterized ECM is shown in the table below:

Table 5: Summary of overparameterized ECM Result.
Dependent Variable: LFDI

Variable	Coefficient	Std Error	t-Statisitc	Prob.
LRER	0.132982	0.098447	1.350805	0.1911
LRER(-1)	0.512171	0.138821	3.689432	0.0014
LRER(-2)	-0.085751	0.084356	-1.016533	0.3209
RERV	-2.692225	1.034881	-2.601483	0.0138
RERV(-1)	0.582159	0.382962	1.520147	0.1380
RERV(-2)	0.000117	0.000178	0.659380	0.5168
OPEN	0.148737	0.442251	0.336319	0.7400
OPEN(-1)	2.382549	0.497193	4.792004	0.0001
OPEN(-2)	0.529548	0.474086	1.116989	0.2766
LINTR	-0.028497	0.246453	-0.115630	0.9090
LINTR(-1)	-0.554419	0.268579	-2.064270	0.0516
LINTR(-2)	0.100200	0.217802	0.460052	0.6502
ECM(-1)	-0.780918	0.119231	-6.549633	0.0000
C	10.44084	0.976111	10.69638	0.0000

$R^2 = 0.89$, AIC = 0.33, Sc = 0.96, DW = 2.18

The parsimonious ECM is deduced from the overparameterized ECM. The result of the parsimonious or preferred ECM result is shown in the table below:

Table 5: Summary of overparameterized ECM Result Dependent Variable: LFDI

Variable	Coefficient	Std Error	t-Statisitc	Prob.
LRER(-1)	0.745721	0.044025	16.93867	0.0000
RERV	-0.773697	0.138904	-5.570000	0.0000
OPEN(-1)	2.952896	0.309967	9.526473	0.0000
LINTR(-1)	-0.630434	0.112437	-5.606976	0.0000
ECM(-1)	-0.931236	0.074113	-12.56516	0.0000
C	10.59435	0.559067	18.95004	0.0000

$R^2 = 0.89$, DW = 2.11 DW = 2.11, AIC = 0.06, EC = 0.32,

The result indicates that 89 percent of the total changes in the FDI has been explained by the RER, RERV, OPEN and INTR taken together. This is a good fit since only 11 percent (1-0.89) of the total changes were explained outside the model. The result indicates that the one period lag of the Real exchange Rate has a positive impact on the FDI. A depreciation of the RER by 1 unit increased the FDL by 0.75 units. The volatility of the RER has a negative impact on the FDI. All things being equal, an increase in the volatility of the RER by 1 unit reduced the FDI inflow by 0.77 units. The openness of the economy has a linear relationship with the FDI. An increase in the OPEN by 1 unit increased the FDI by 2.956 units. The INTR has a negative relationship with FDI. An increase in interest rate by 1 unit will increase the FDI by 0.03 unit. The result indicates further that the RERV, OPEN lagged by 1 period and INTR lagged by 1 period with t value of 16.94, -5.57, 9.53 and -5.61 with probabilities of 0.0000, 0.0000, 0.0000 and 0.0000 are statistically significant in explaining the changes in the FDI. The diagnostic checks results are as follows: The Breusch Godfrey test of serial correlation with a probability of 0.56 did not support serial correlation of the residuals. The Breusch-Godfrey test which is shown in the appendix with probability of 0.87 indicates that the residuals are normally distributed. The white heteroskedesticity test with probability of 0.60 indicate that the residuals are homoskedastic which is characteristic of most time series data. The result of the Cumulative Sum of Recursive Residuals (CUSUMQ) tests, shown in the appendix indicates that the residual is stable since both CUSOM and CUSUMQ lines fell in between the two 5 percent lines. The result of the Cholesky ordering variance decomposition is shown in the table below:

Variance Decomposition of LFDI:

PERIOD	LFDI	LRER	RERV	LINTR	OPEN
1	100.0000	0.000000	0.000000	0.000000	0.000000
2	95.97294	0.487615	0.430606	0.742285	2.366549
3	88.10238	1.383043	0.312512	4.933834	5.268230
4	78.24974	4.071701	0.392303	8.169155	9.117100
5	70.42818	5.799191	1.590225	10.31294	11.86946
6	65.80534	5.940011	3.257834	12.45853	12.53828
7	63.55111	5.264202	4.715440	13.33517	13.13408
8	61.96114	4.636709	5.632044	13.63564	14.13446
9	60.28900	4.368354	6.373716	13.92465	15.04428
10	58.31751	4.481209	7.314452	14.12561	15.76121

Variance Decomposition of LRER:

PERIOD	LFDI	LRER	RERV	LINTR	OPEN
1	7,790792	92,20921	0.000000	0.000000	0.000000
2	5,640707	90,17039	3.991116	0.118696	0.079087
3	15,20206	73,42538	4.875206	6.081381	0.415979
4	25,68016	61,73918	4.503872	7.759449	0.317334
5	30,28294	57,28986	4.035126	7.809970	0.582104
6	32,87830	54,47652	3.637328	8.353341	0.654508
7	33,72770	53,80686	3.239833	8.517934	0.707677
8	33,98667	53,29494	3.270379	8.675812	0.772194
9	34,95505	51,67923	3.336030	9.258196	0.771493
10	36,29133	49,91470	3.334984	9.636339	0.822651

Variance Decomposition of RERV:

PERIOD	LFDI	LRER	RERV	LINTR	OPEN
1	0.845075	18.82727	80.32765	0.000000	0.000000
2	0.809597	17.16046	81.69586	0.130095	0.203988
3	0.962941	16.86838	81.32342	0.066997	0.778255
4	1.106025	17.27076	80.13901	0.152934	1.331279
5	1.077854	17.37101	79.44400	0.275945	1.831191
6	0.994518	17.01760	79.45792	0.401936	2.128025
7	0.855825	16.33382	79.96449	0.519592	2.326269
8	0.762442	15.64913	80.48604	0.574390	2.528005
9	0.708531	15.15798	80.79807	0.604839	2.730577
10	0.677215	14.91532	80.87565	0.635036	2.896773

Variance Decomposition of LINTR:

PERIOD	LFDI	LRER	RERV	LINTR	OPEN
1	9.967496	0.418852	1.816553	87.79710	0.000000
2	8.424408	1.873644	1.315823	84.41365	3.972478
3	6.251904	5.777430	1.471633	76.44739	10.05164
4	5.372461	6.168821	1.175127	78.36436	8.919235
5	6.925778	6.960227	1.319198	76.28035	8.514447
6	6.409884	9.055584	1.239874	74.07451	9.220146
7	6.172661	9.924712	1.081014	73.39690	9.424715
8	5.829975	9.600814	1.068156	73.49238	10.00867
9	5.484368	9.167686	1.252388	73.46879	10.62676
10	5.317397	8.762150	1.481962	73.71224	10.72625

Variance Decomposition of OPEN:

PERIOD	LFDI	LRER	RERV	LINTR	OPEN
1	2.513176	19.67539	0.658690	11.64699	65.50576
2	12.75681	21.75517	6.208365	9.173374	50.10628
3	13.69545	27.09373	16.53478	9.249643	33.42640
4	9.936080	32.43754	21.71476	6.598818	29.31280
5	7.783766	36.20739	23.14968	5.149236	27.70993
6	6.953688	33.66190	26.37774	4.448576	28.55809
7	5.881142	29.34697	31.48917	3.929148	29.35357
8	5.104969	25.56458	36.61538	3.860612	28.85446
9	4.378037	23.17711	40.54140	3.908586	27.99486
10	3.814606	22.27503	42.55312	3.711309	27.64594

Our shocks dominated in the result starts from shock by FDI to itself which is 100 percent in the first period and 58 percent in the last period, from 92 percent in the first period to 50 percent in the last period, from 80 percent in the first period to 81 percent in the last period from 87 percent in the last period from 87 percent in the first period to 74 percent I the last period and from 67 percent in the first period to 28 percent to the last period. Shocks to RER explained 1 percent of the changes in FDI in the third period and this increased to 7 percent in the last period. Shocks to RERV explained 2 percent of the changes in FDI in the fifth period but it increased to 7 percent in the last period. Shocks to INTR explained 1 percent of change in INTR in the second period and it increase to 14 percent in the last period. Shocks to OPEN explained 2 percent of changes in the FDI in the second period and it increased to 16 percent in the last period.

The result of the impulse response test is shown in the figure below

Figure 1:   IMPULSE RESPOSE RESULT
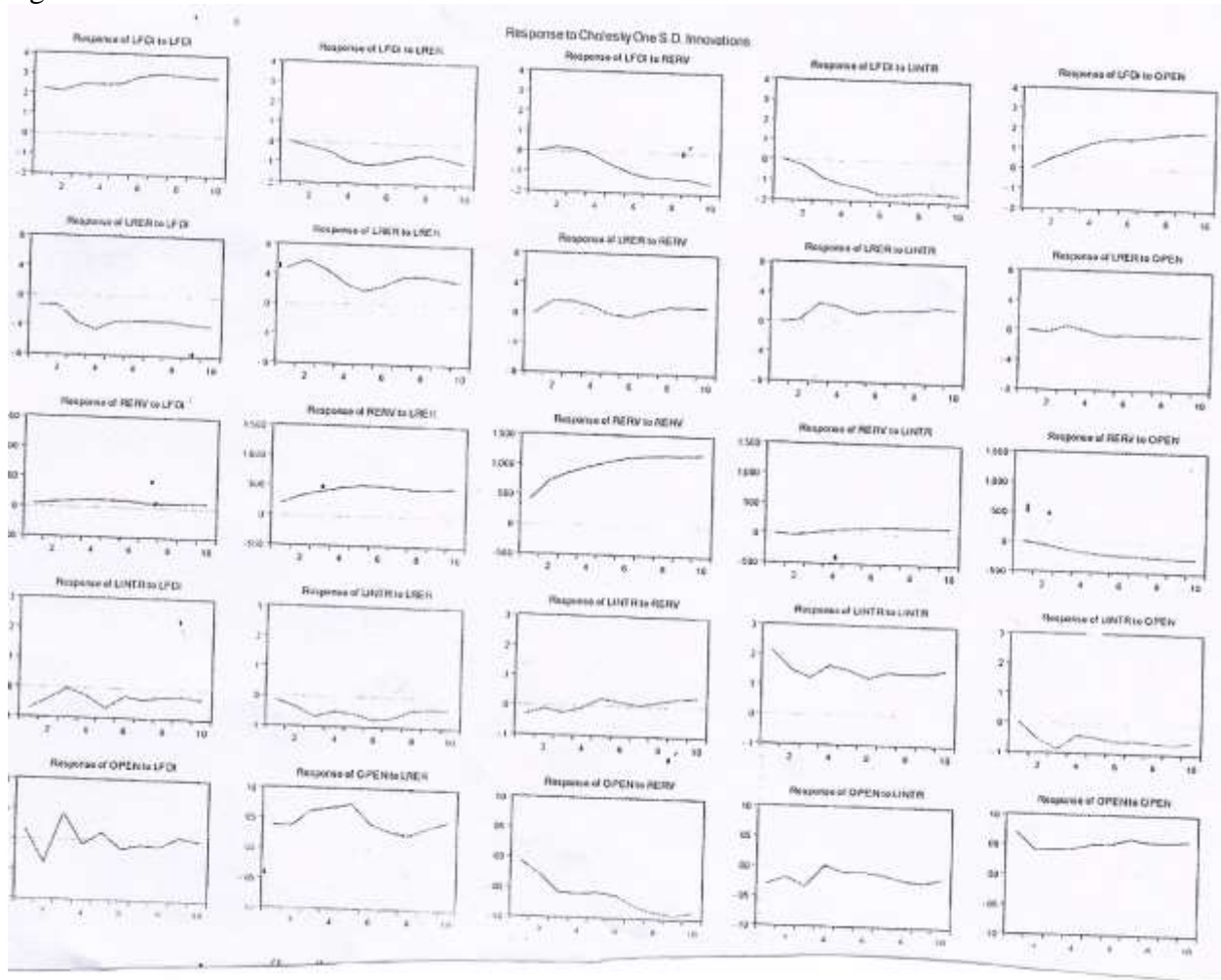
The result indicates the anticipated changes in expected FDI has a positive impact on actual FDI. Also, an unanticipated changes in expected RER has a positive impact on the actual FDI.   Also, an unanticipated change in expected RER has a positive impact on actual FDI. An unanticipated increase in expected INTR has a positive impact on actual INTRI. Also, an unanticipated increase in one period standard deviation changes in expected OPEN has a positive impact on actual OPEN. An unanticipated increase in expected RER has an impact on actual FDI. An unanticipated increase in one period standard deviation RERV has a negative impact on actual FDI. An unanticipated increase in expected INTR has a negative impact on actual FDI. An unanticipated increase in expected OPEN has a positive impact on expected FDI.

CONCLUSION/RECOMMENDATION

Drawing from the flexibility and hysteresis models, the paper investigates the links between RER and FDI inflow into Nigeria. The international competitiveness, measured by the RER has become a major

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focus of policy makers since most countries develop policies to attract FDI inflow. The case in Nigeria has not been very effective. This is because policy makers neglect the key macroeconomic indicators and only try to manipulate the exchange rate. They ignore the fact that manipulating the exchange rate without commensurate policy to improve productive base will not produce the desired level of economic progress. The results concludes that a depreciation of the RER has the potentials of improving the inflow of FDI into the country. The result further concludes that foreign investors are bothered about the volatility of the RER, hence such volatility has reduced the inflow of FDI into the country over the years. It is recommended that the monetary authorities should not only focus on the manipulation of the RER, but should develop meaningful policies that will expand the productive base of the country. This will stabilize and reduce the volatility of the RER. The Central Bank of Nigeria should also continue its policy of intervening in the foreign exchange market as this will in short and medium term stabilize the value of the Nigerian currency and improve the international competitiveness of the naira against other major currencies.

Implication of the Study
This research has been able to extend the frontier of knowledge from the findings which among others proved that manipulation of real exchange rate cannot significantly stabilize the exchange rate in the long run without adequate measure to address key macro-economic indicators.
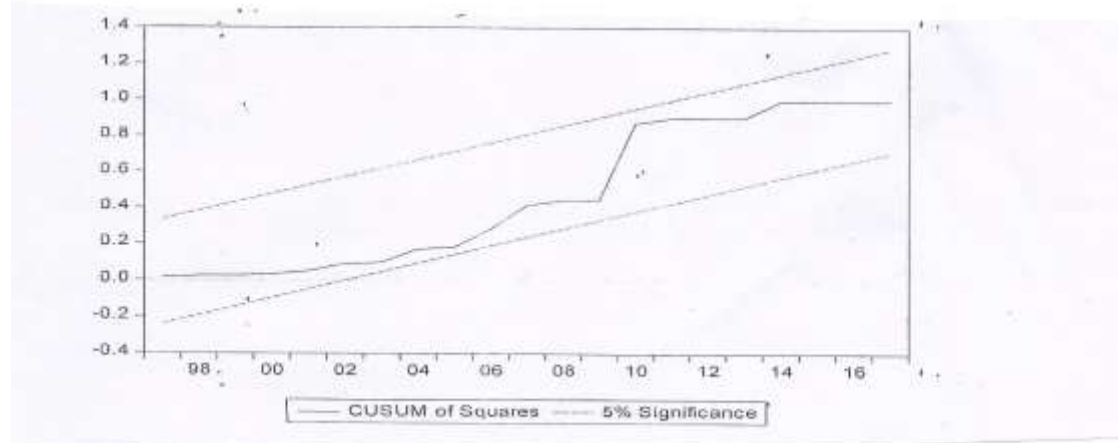
REFERENCES
Azid, R.H. and Kovsar, j.A. (2005). " Impact of exchange rate volatility on growth and economic performance: A case study of Pakistan, 1973 – 2003. The Pakistan development review, 44(4).
Bibi, S. (2014). "Impact of trade openness, FDI, exchange rate and inflation on economic growth. A case study of Pakistan." International Journal of Accounting and Financial Reporting, 9(2)
Boreinztein, E., DR. Gregorio, J. and Lee, J. W. (1998). "How does FDI affect economic growth? Journal of International economics, 45(1).
Chukwudi, O.S. and Maduema, S.I. (2010). "The impact of dollar exchange rate volatility on FDI in Nigeria". International Journal of Research in Arts and Social Sciences, 2.
Jose, F.M. (2015). "Impact of RER volatility on FDR flows in Brazil." A project submitted to ISCTE Business School, Institute in partial fulfillment for the requirement of the award of M.Sc in Finance.
Mbanefor, C.O. and Obioma, J. (2017). "Exchange rate flunctuations and foreign private investments in Nigeria". International Journal of economics and Business Management, 3(8)
Monogba, T.G and Okah, O.J. (2016). "The association between investment, exchange rate, interest rate and economic development in Nigeria: ARDC Approach." Sardi Journal of Business and Management studies.
Obi, C. (2017). "The impact of foreign Exchange Volatility in FDI in Nigeria (1999 – 2016)." Global Journal of Management and business Research, 17(6)

Oriavwota, E.V. and Ukawe, A. (2018). "Real Effective exchange volatility and FDI sustainability: Implications for the Nigerian economy: International Journal of Development and Economic Sustainability 6(5).
Osinobi, T.S. and Amaghionyeodowe, L.A. (2009), FDI and exchange rate in Nigeria." International Journal of Applied Econometrics and Quantitative Studies. 6(2)
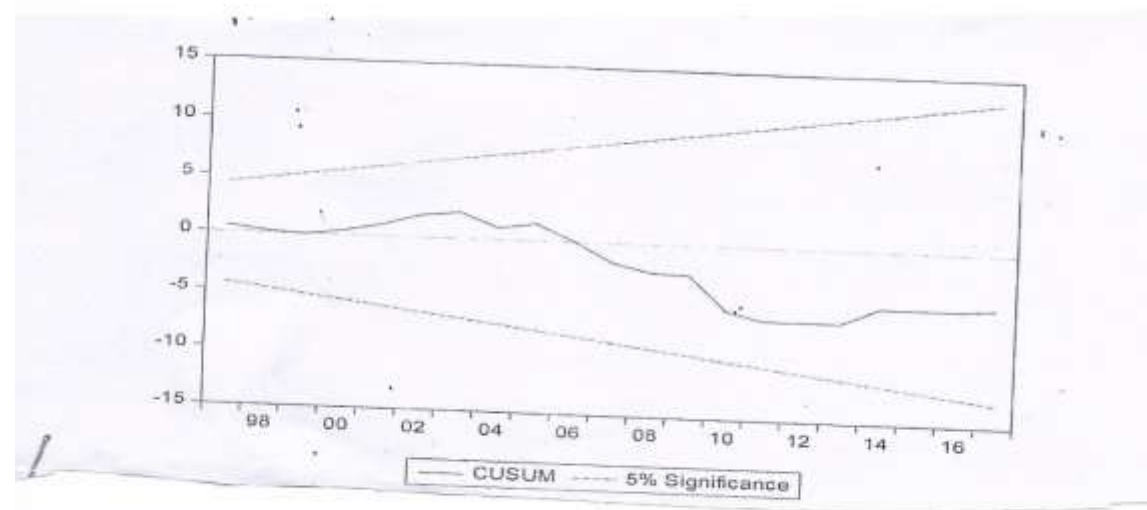
Udoh, E. and Egwaikhide, F.O. (2008). "Exchange rate volatility, inflation uncertainty and FDI in Nigeria". Boteswana Journal of Economic, 5(7).

Zerrin, K (2018). "The relationship between exchange rate volatility and FDI in Turkey: Toda and Yammoto causality". International Journal of economics and Financial Issues". 8(4)

Appendix 2: CUSUM Stability Test

Appendix 3: CUSUMQ Stability Test

Appendix 1: Jarque-bera Normality Test

Series: Residuals	
Sample 1981 2017	
Observations 37	
Mean	-2.28e-16
Median	0.156207
Maximum	1.738700
Minimum	-1 418543
Std. Dev.	0.757277
Skewness	0.145314
Kurtosis	2.681931
Jarque-Bera	0.286184
Probability	0.866674