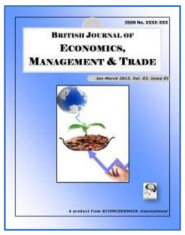

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Foreign Direct Inflows and Economic Growth Nexus in Kenya: Co-integration and Causality Analysis

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

The study focused on the co-integration and causality analysis between FDI and GDP for Kenya using annual data spanning 1970 t0 2013. It was established that though the two variables are I(1), they are co-integrated. The VECM framework revealed that FDI has a significant influences GDP both in the long run and short run. A unidirectional causality was established from FDI to GDP, while impulse response functions revealed that a shock in any of the two variables significantly affects each other for a period of one year. The study concludes that FDI enhancing policies would be necessary for economic growth in Kenya.

Keywords: FDI inflows; economic growth; multivariate granger causality; VAR; VECM.

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1. INTRODUCTION

Developing and transition economies experience high capital inflows from the developed economies; this situation has accelerated with trade liberalization and the formation of economic integrations across the world. While capital inflows often help deliver the economic benefits of increased financial integration, they also create important challenges for policy-makers because of their potential to generate over-heating, loss of competitiveness, and increased vulnerability to crisis [1]

Despite the divergent views from various studies, most have recorded evidence suggesting that capital flows reinforce positive growth dynamics. Capital flows tend to go more to countries with strong investment climates, and their long-run benefits are most pronounced in such environments. As many of the countries with strong investment climates are middle rather than low-income economies, international capital flows in recent decades may have contributed to a widening of income differentials among developing countries, just as they did a century ago [2].

Globally, there is evidence that foreign direct investment to developing countries grew almost twelve times between 1985 and 1998, that is; from USD 14 billion in 1985 to USD 166 billion in 1998 [3]. Carried out an investigation on whether FDI promotes economic growth using a sample of eleven countries from Latin America and East Asia. He concluded that the impact of FDI on host economies is country specific, although FDI tends to promote economic growth when host countries adopt liberalized trade regimes, improve education and employ export oriented FDI. Possible sources of finance on one hand of the official capital flows is in form of grants or loans, provided by bilateral or multilateral aid agencies, packaged with or without technical assistance. On the other hand, the private capital flows from banks, capital markets, companies and individuals, which take the form of short and long term loans, acceptances of company and government bonds, portfolio and direct investments. These capital flows may or may not be debt creating and net capital outflows generated by residents may also reduce total resources available for finance, offsetting net capital flows generated by non residents [4].

Different researchers have raised varied opinions on the role played by capital flows on the growth of economies of either the importers or exporters of capital. According to [5], there is evidence that there are flows of capital from nonindustrial to industrial countries (uphill flow of capital) and they observed that reduced reliance on foreign capital is associated with higher growth. The above view contrasts that of [4], who asserted that foreign aid under all likelihoods increases growth rate unconditionally.

The knowledge disparity found in literature prompts the need for more country specific studies to be conducted in order to raise more conclusive and informative results about the countries unique behaviors. The straightforward view of development economists is that capital is essential for growth and its origin does not matter [6]. Unfortunately, growth experience of many developing countries has not been very satisfactory owing to the fact that they accumulate large external debt and are now facing serious debt servicing obligations. In the recent past, the Kenyan economy has experienced acute hike in the magnitude of foreign direct investment. Kenya had a peak record in the year 2008, which, could be attributed to increased privatization of state corporations recorded in that year. Generally, the relationship between FDI and economic growth has been studied by examining four main objectives; the determinants of economic growth, determinants of FDI, long-run cointegration or relationship and a direction or causality pattern between FDI and economic growth. This study utilizes the last two methods.

1.1 FDI and Growth Trends in Kenya

A brief overview of the flow of FDI in Kenya, Fig. 1, shows that it has been erratic with substantial increase being realized between 2006 and 2013, perhaps due to political and macroeconomic stability characterized in the said period. This could also be attributed to sound macroeconomic management policies, coupled by substantial economic growth experienced around the same period.

Fig. 2 shows the economic growth trend for kenya in the period under study. It reveals some downswings and upswings especially in 1972, 1981, 1992, 2007 atributed to oil crisis and political instabilities. Using FDI growth rate as a measure of volatility in Fig. 3 below, it is clear that FDI is quite erratic in Kenya, with high upswings realized between 1995-2003. However, there is no consistent pattern on growth rates,

suggesting that only emperical investigation can resolve the puzzle on causality.

The paper is organized as follows: Section 2 presents theoretical overview and selected past studies. Section 3 explains the data and methodology used. Section 4 discusses the empirical results and discussion. The last section of this study offers conclusions.

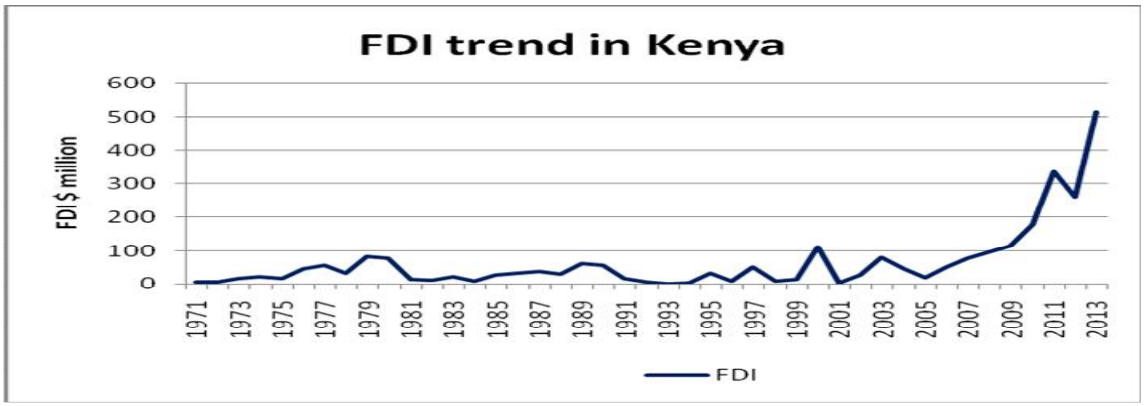

Fig. 1. Foreign direct investment flows in Kenya
Source, Author,2014. Data source, UNCTAD

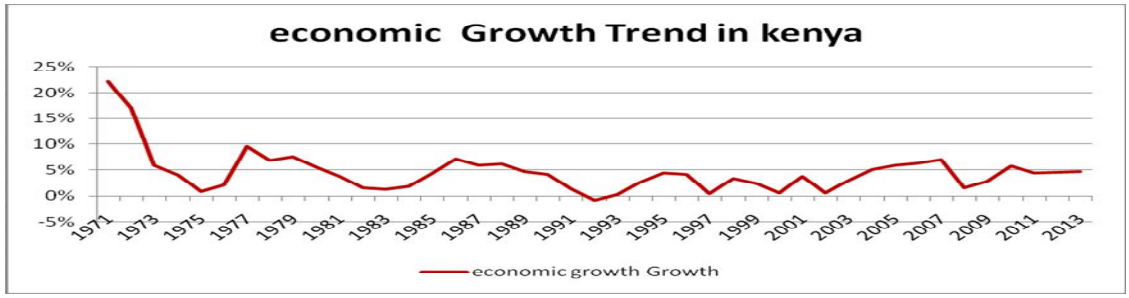

Fig. 2. Economic growth trend in Kenya
Source: Author,2014. Data from UNCTAD

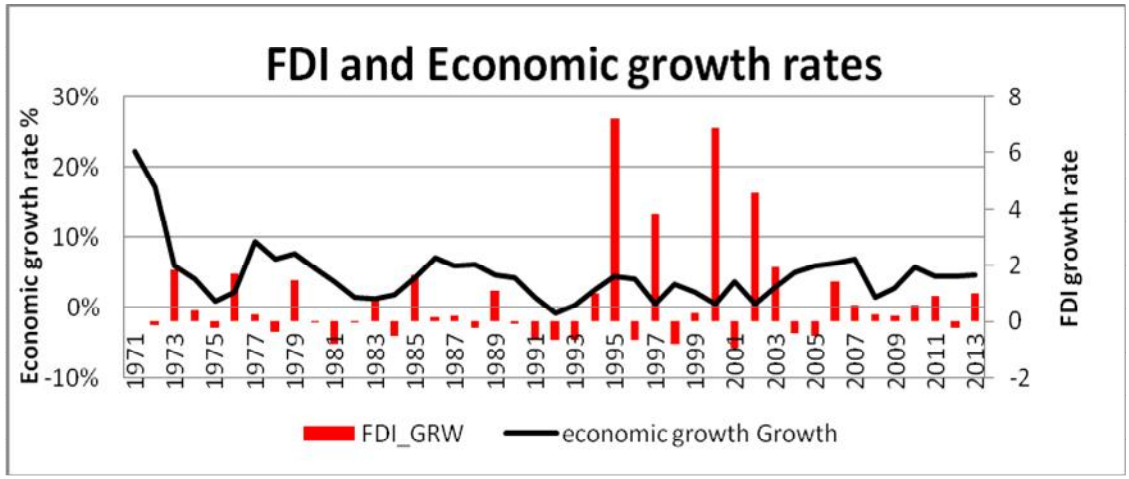

Fig. 3. Foreign direct investment flows and economic growth rates in Kenya
Source: Author, 2014. Data Source. UNCTAD

2. EMPIRICAL

2.1 Foreign Direct Investment

Literature is rich with empirical studies supporting technological diffusion through Imports of high-technology products, adoption of foreign technology, acquisition of human capital and foreign direct investment (FDI) by multinationals [7,8]. Among these channels, the role of FDI as the major transmitter of technology and research and development has received considerable attention by economists [9,10,11]. [8] suggests that the ultimate impact of FDI on output growth in the recipient economy depends on the scope for efficiency spillovers to domestic firms, by which FDI leads to increasing returns in domestic production. Notably, FDI increases in the value-added content of FDI-related production.

FDI, through multinationals, also affects the domestic economy indirectly by improving the productivity of domestic firms, a concept referred to as productivity spillovers. The spillovers may originate from multinationals located in the same industry-horizontal spillovers or from multinationals located up or down the supply chain – vertical spillovers, or inter industry spillovers due to buyer – supplier linkages and labor market links as multinationals use local staff, [12]. However the findings of [10] show that the generalized horizontal spillovers are weak while vertical spillovers are strong.

The effect of FDI is realized through development of domestic human resource as locals learn from trained workers from subsidiaries of transnational companies. Similarly domestic firms may increase e investment or improved the quality of output in response to foreign competition or by vertical or intersectional spillovers accruing from efficient and stringent operations of foreign plants [13].

However, the FDI channel effect may not always be positively significant on domestic firms productivity and economic growth [13]. However, the export spill effect (direction and magnitude) will vary with absorption capacity of domestic firms, productivity gap, trade openness [7], stock market, domestic investment, international experience and network structure [14].

Additional factors such as macroeconomic stability, the trade regime of the host country, monetary and fiscal discipline to control inflation, trade liberalization reforms and necessary institutional framework for property rights and cross-border legal and financial settlements have also been cited as key determinants of FDI flows and spillover effect.

Foreign direct investment plays a significant role in accelerating economic growth in developing countries. FDI has assisted some of the developing economies (such as India and China) and newly industrial economies (NIEs) (such as South Korea, Singapore, Hong Kong and Taiwan) to witness high levels of growth and development [15]. This prospect of FDI led to a shift in the reliance on trade during the 1970s and mid-1980s with respect to the FDI flows in developing countries. The harmful effect of East Asian financial crisis in 1997 also influenced developing countries to shift more toward FDI because of its steady effects on economic growth. The promotion of FDI for economic growth is significantly influenced by the nature and policies of the host country regime.

[16] investigated the relationship between FDI, imports and growth in Pakistan using VECM multivariate framework. Causality was analyzed within the framework revealing that both imports and FDI granger cause Economic growth. This study will apply VECM approach to gauge the effect of FDI in Kenya.

2.2 Theoretical Review

The aim of this paper is to empirically analyze the role of FDI in the economic growth of Kenya from 1970 to 2012. The theoretical underpinning for the relationship between FDI and GDP growth is drawn from the Solow growth model. The Solow fundamental equation is derived by assuming labor -L grows at a constant rate n and technological progress makes L grow at constant rate g. The Capital stock in period t+1 expressed as

$$K_{t+1} = K_t + sY_t - \Delta K_t \quad (1)$$

Dividing equation 1 by the number of Labor in period t+1we obtain equation 2.

$$\frac{K_{t+1}}{L_{t+1}} = \frac{K_t}{L_{t+1}} + s\frac{Y_t}{L_{t+1}} - \delta\frac{K_t}{L_{t+1}} \quad (2)$$

Substituting out the L_{t+1} terms on the right-hand and assuming constant population growth that equals constant labor force growth, we have,

$$L_{t+1}=(1+n)L_t \quad (3)$$

We model tech change as increasing the amount of Labor implying that

$$Lt_{+1}= (1+n)(1+g)L_t \quad (4)$$

Substituting Lt_{+1} values on the right-hand-side with $(1+n)(1+g)L_t$:

$$\frac{K_{t+1}}{L_{t+1}} = \frac{K_t}{(1+n)(1+g)L_t} + s\frac{Y_t}{(1+n)(1+g)L_t} - \delta\frac{K_t}{(1+n)(1+g)L_t} \quad (5)$$

Then, we can apply the K/L = k and Y/L = y by substitution:

$$k_{t+1} = \frac{1}{(1+n)(1+g)}k_t + \frac{s}{(1+n)(1+g)}y_t - \frac{\delta}{(1+n)(1+g)}k_t \quad (6)$$

Equation six simplifies to

$$k_{t+1} = \frac{s}{(1+n)(1+g)}y_t + \left[\frac{1}{(1+n)(1+g)} - \frac{\delta}{(1+n)(1+g)}\right]k_t \quad (7)$$

By mathematical manipulation, we obtain the fundamental solow equation [17] 8 below which shows that per-capita growth rate is positively related to higher savings and technological transfer. Our argument is that FDI increases technological diffusion, increase[s] investment, income increase and saving rate (s) increases, hence we expect a positive relationship between FDI and economic growth rate.

$$\dot{k} = s\,Ak^{\delta} - (\delta + n + g)k \quad (8)$$

3. METHODOLOGY

A preliminary analysis was done through eye ball econometrics and the formal testing of properties of the time series variables was done using the Augmented –Dickey Fuller test ADF and PP tests for unit roots and Johannes- Juselius test for co integration. A multivariate Vector autoregressive (VAR) model was employed and co-integration and granger causality was analysed within the same framework. The variables are co integrated though I(1) processes, hence a vector error correction model (VECM) was used to capture the long run relationships.

3.1 Data

The study used annual data spanning 1970 to 2013. GDP and FDI series are in constant prices US$ obtained from the World Bank and UNCTAD data sites. The variable were transformed in logarithms before preliminary analysis and denoted as LNGDP and LNFDI).

4. TESTING FOR STATIONARY

The time series evolution over time was captured in the Figs. 4 and 5 below. The two figures show that the moments might be time invariant at levels which can be confirmed through formal tests.

The ADF and Philips – Perron tests for unit root where used. The results are summarised in Table 1.

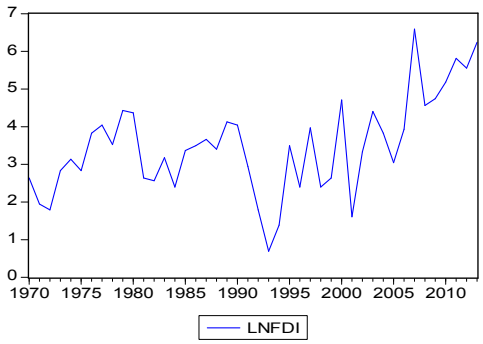

Fig. 4. Natural log of FDI
Source: researcher,2014

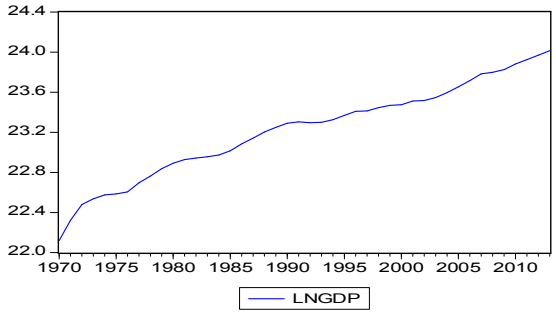

Fig. 5. Natural log of GDP
Source: researcher,2014

Table 1. Test of unit root hypothesis with intercept and trend

	ADF Test			PP test		
Series		**Test statistic**	**Lags**	**Test statistics**	**Lags**	**Conclusions**
LNFDI	level	-2.5698*	2	-3.39046	1	I(1)
	First difference	-7.4155	1	-9.00344	1	I(0)
LNGDP	level	-2.5698*	3	-2.6039***	1	I(1)
	First difference	-4.9928	0	-5.4386	1	I(0)

*Source: Researcher, 2014, *and**represents rejection of null at 5% and 10% significance level respectively*

4.1 Test for Co-integration

Since variables have unit root at level, we tested for long run relationship using the [18] to establish the co-integrating vectors. The method is applicable only when all the variables are I(1). Considering a system of equations where y represents a vector of variables with k=2 and p=n.

$$y_t = A_1 y_{t-1} + A_2 y_{t-2} + \ldots + A_n y_{t-n} + u_t \qquad (9)$$

Equation 9 above can be remodeled through re-paremetization of the VAR system to obtain equation 10 below

$$\Delta y_t = \Pi y_{t-n} + \sum_{i=1}^{n-1} \Phi_i \Delta y_{t-i} + u_t \qquad (10)$$

Where $\Pi = \left(I - \sum_{i=1}^{n} A_i\right)$ and $\Phi_i = -\left(\sum_{j=i+1}^{n} A_j\right)$ = *-A*(L).* With the variables being I(1) , the vector error correction model can be estimated. There are three possibilities**,** the first one being rank (Π)=0**,** hence the variables are not co-integrated. In this case, all rows are linearly dependent, and the system is not stationary. Similarly, $\sum_i^n A_i = I$. Which implies first-differencing all the variables to remove non-stationarity, then applying standard inference (based on t, F and χ^2). The VECM can be represented as a simple VAR in first differences as below

$$\Delta y_t = \sum_{i=1}^{n-1} \Phi_i \Delta y_{t-i} + u_t \qquad (11)$$

The second case is where rank (Π)=2 full rank, hence is nonsingular**,** meaning all rows **and** columns are linearly independent and y_t ~I(0), all roots are in the unit circle with modulus<1, and hence the system is stationary and the levels of variables have stationary means. Thirdly rank (Π)= r **<** k. The system is non-stationary but there are co-integrating relations among the variables (r rows are linearly independent, thus r linearly independent combinations of the $\{y_{it}\}$ sequence are stationary). The y vector may be I(1) or higher and the co-integrating relation is determined by $\Pi = \alpha\beta'$ where α =a (k x r) is the loading matrix, which measures the average speed of convergence towards long run equilibrating relationship. β = a (k x r) matrix of parameters determining the co-integrating vectors. $\beta' y_{t-1} \neq 0$ is the long-run equilibrium error. The ECM model can be expressed as

$$\Delta y_t = \alpha\beta' y_{t-n} + \Gamma_1 \Delta y_{t-i} + \Phi D_t + u_t \qquad (12)$$

Where β_{ij} coefficients show the long run equilibrium relationships between levels of variables, α_{ij} coefficients show the amount of changes in the variables to bring the system back to equilibrium, Γ_{ij} coefficients show the short run changes occurring due to previous changes in the variables, and Φ_{ij} coefficients show the effect on the dynamics of external events.

Two test statistics are used to test the number of co-integrating vectors, based on the characteristic roots. For both trace and Eigen statistics, the null is at most r co-integrating vectors. The trace statistics:

$$\lambda_{trace}(r) = -T \sum_{i=r+1}^{k} \ln(1 - \hat{\lambda}_i) \qquad (13)$$

The alternative is at most k co integrating vectors. The maximum Eigen statistics,

$$\lambda_{\max}(r, r+1) = -T \ln(1 - \hat{\lambda}_{r+1}) \qquad (14)$$

The alternative is at most r+1 CI vectors. It tests rank r+1 by testing if $\hat{\lambda}_{r+1}$ is zero.

4.1.1 Optimal lag length selection for the VAR model

The optimal lag length was selected base on comparison of various information criteria presented in Table 2. They include Akaike information criterion (AIC) Schwarz information criterion (SC), Hannan – Quinn information (HQ) criterion, Final prediction error (FPE) and Sequential modified LR test statistic.

4.1.2 Co-integration test

Both the Eigen and Trace statistic rejects the one co-integration hypothesis at 5% significance level for at most one co integrating relationship. This reveals that there is enough statistical evidence for existence of co-integration between FDI and GDP.

4.2 Causality and VECM

The existence of co-integration has been established in Table 3 above with the two taste statistics rejecting the null hypothesis of non co-integration. This justifies the estimation of a VECM to capture the short run dynamism as in [19] representation theorem. According to the concept of Granger causality, 'X causes Y' if and only if the past values of X help to predict the changes of Y. While, 'Y causes X' if and only if the past values of Y help to predict the changes of X. The vector auto regression (VAR) model is useful in this context. According to [19] a set of variables are co-integrated, [;] there must be short- and long-run causality which cannot be captured by the standard first difference VAR model. In this case, we must implement the Granger causality test with the VECM framework as follows:

$$\Delta \ln FDI_t = \alpha_1 + \sum_{i=1}^{P} \beta_1 \ln FDI_{t-i} + \sum_{i=1}^{p} \vartheta_i \Delta \ln GDP_{t-1} + \psi_1 ECT_{t-1} + \nu_{1t} \quad (15)$$

$$\Delta \ln GDP_t = \alpha_2 + \sum_{i=1}^{P} \vartheta_1 \ln GDP_{t-i} + \sum_{i=1}^{p} \beta_i \Delta \ln FDI_{t-1} + \psi_2 ECT_{t-1} + \nu_{2T} \quad (16)$$

Table 2. VAR lag order selection (LNGDP and LNFDI)

Lag	Log L	LR	FPE	AIC	SC	HQ
0	-54.09018	NA	0.114169	3.505637	3.597245	3.536002
1	36.54971	164.2848	0.000509	-1.909357	-1.634531	-1.818260
2.	44.10014	12.74135*	0.000409	-2.131259	-1.673216*	-1.979431*
3.	48.67115	7.142193	0.000398*	-2.166947	-1.525687	-1.954387
4	49.73505	1.529358	0.000487	-1.983440	-1.158964	-1.710150

*Source: Researcher, 2014, Where * shows the lag length selected by the criterion. Majority of the criteria suggest that we use a lag length of 2.*

Table 3. Johansen-Juselius co-integration test results with intercept and no trend

Trace statistic				
Hypothesized No. of CE(s)	**Eigen value**	**Trace Statistic**	**0.05 Critical Value**	**Prob.****
None *	0.383636	19.26777	15.49471	0.0128
At most 1	0.010077	0.395011	3.841466	0.5297
Trace test indicates 1 co-integrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
Eigen statistic				
Hypothesized No. of CE(s)	**Eigen value**	**Max-Eigen Statistic**	**0.05 Critical Value**	**Prob.****
None *	0.383636	18.87276	14.26460	0.0087
At most 1	0.010077	0.395011	3.841466	0.5297
Max-Eigen value test indicates 1 co-integrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				

Source: Researcher,2014

Where Δ the first is difference operator and $\ln$ is the natural logarithm. The residuals υ_{it} are assumed to be normally distributed and white noise. ECT_{t-1} is the one period lagged error-correction term derived from the co-integration equation. The ECT_{t-1} variable will be excluded from that model if the variables are not co-integrated. The optimal lag length *p* is determined by the Akaike's Information Criterion (AIC) because of its superior performance in small sample. Next, we apply the Likelihood Ratio (LR) statistics to ascertain the direction of Granger causality between the variables of interest. In this study, we tested the following hypotheses:

$H_{01}: \vartheta_1 = \vartheta_2 = \cdots = \vartheta_p = 0$, implying that GDP does not Granger-cause FDI,

$H_{02}: \beta_1 = \beta_2 = \cdots = \beta_p = 0$, implying that FDI does not Granger-cause GDP,

The VECM estimation reveals in Table 5 shows that the long run co-integrating explicit equation is

$$LNGDP = 21.77 + 0.428271FDI \quad (17)$$

(-4.67622)

Where the t-statistic is under parenthesis. The estimation shows that FDI significantly explains variations in GDP with 1% increase resulting into 0.43% growth in GDP. The error correction model is estimated and represented as follows. From Table 4 below the causality test rejects a null hypothesis of FDI does not granger cause GDP implying that FDI significantly contributes to GDP growth. However we do not establish bidirectional causality between the two variables.

Table 4. Granger causality test

Pairwise granger causality tests			
Null Hypothesis:	**Obs**	**F-statistic**	**Probability**
LNGDP does not granger cause LNFDI	39	2.05737	0.10101
LNFDI does not granger cause LNGDP		2.59863	0.04726*

**significance at 5%; Source: Researcher 2014*

From the over-parametized VECM which shows the short run movements above, the lagged error term (ECMt-1) shows that 2.4% of any disequilibrium is corrected annually by movement in the GDP. The signs of the differenced lagged variables show how variables change overtime in restoring equilibrium. The results also emphasize that FDI has [a] positive effect on GDP in the short run.

4.3 Impulse Response Function

To capture the effect of a shock in FDI to GDP, we computed impulse response functions in Fig. 6 above. The response of GDP to FDI shows that a shock in FDI has a one year significant effect on GDP before the effect becomes insignificant. The Recursive VAR here is identified based on ordering of variables. Since impulse response functions are sensitive to variable ordering, we have based the ordering on the proven causality, meaning, FDI has contemporaneous effect on GDP and the reverse is not true. Notably, a shock on GDP also affects FDI for almost similar period.

Table 5. VECM results

Vector error correction estimates		
Standard errors in ( ) & t-statistics in [ ]		
Co integrating Eq:	**CointEq1**	
LNGDP(-1)	1.000000	
LNFDI(-1)	-0.428271	
	(0.09158)	
	[-4.67622]	
C	-21.77274	
Error Correction:	D(LNGDP)	D(LNFDI)
CointEq1	-0.024523	1.305228
	(0.00989)	(0.57001)
	[-2.47948]	[2.28983]
D(LNGDP(-1))	0.428008	24.43041
	(0.16668)	(9.60617)
	[2.56789]	[2.54320]

D(LNGDP(-2))	-0.306672	2.577462
	(0.18691)	(10.7721)
	[-1.64077]	[0.23927]
D(LNGDP(-3))	-0.125249	-9.225250
	(0.16148)	(9.30650)
	[-0.77564]	[-0.99127]
D(LNGDP(-4))	-0.173562	9.335985
	(0.11454)	(6.60136)
	[-1.51530]	[1.41425]
D(LNFDI(-1))	-0.001641	-0.173123
	(0.00406)	(0.23386)
	[-0.40438]	[-0.74030]
D(LNFDI(-2))	-0.003219	-0.259390
	(0.00383)	(0.22096)
	[-0.83951]	[-1.17394]
D(LNFDI(-3))	0.003708	0.095637
	(0.00355)	(0.20446)
	[1.04531]	[0.46776]
D(LNFDI(-4))	0.003032	0.042562
	(0.00305)	(0.17598)
	[0.99311]	[0.24186]
C	0.045103	-0.923698
	(0.00937)	(0.53982)
	[4.81542]	[-1.71113]
R-squared	0.563449	0.459076
Adj. R-squared	0.427967	0.291203
F-statistic	4.158861	2.734662
Log likelihood		61.18866
Akaike information criterion		-2.009675
Schwarz criterion		-1.071256

Source: Resercher, 2014

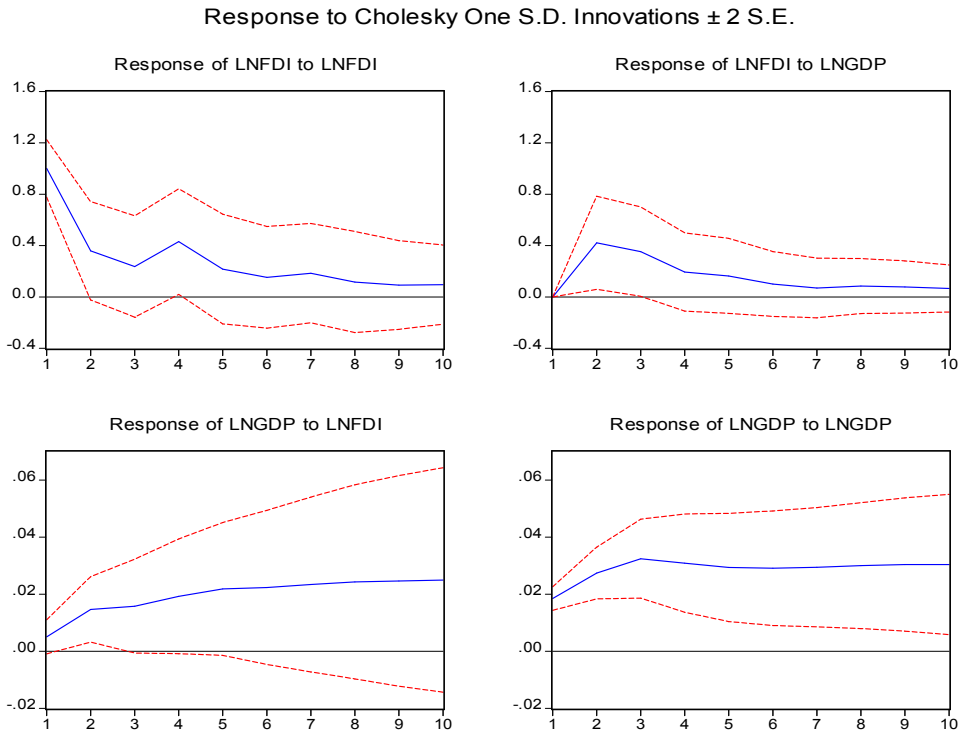

Fig. 6. Impulse responses
Source: Researcher,2014

5. CONCLUSION

Unidirectional causality has been established from FDI to GDP with the co-integrating equation showing that FDI significantly affects GDP in the long run. The impulse response functions also emphasize the effect of FDI on GDP with a shock in FDI having a one year significant effect on GDP before a decay afterwards. Since FDI is growth enhancing, FDI enhancing policies should be adopted by the government. These measures include liberalization of all the sectors of the economy, discipline in policy design and implementation to ensure growth stability since GDP shocks have significant effect on FDI flows, political and governance mandate which improves the country's economic outlook. Finally, policies that target foreign investors should be given priority so as to harness the full effect of FDI on the growth of the economy.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Cardarelli R, Elekdag S, Kose M. Capital Inflows: Macroeconomic Implications and Policy Responses. IMF working paper WP/09/402; 2009.
2. O'Rourke M, Williamson J. Globalization and History: The Evolution of a Nineteenth Century Atlantic Economy. Cambridge, Mass: MIT Press; 1999.
3. Zhang. Does Foreign Direct Investment Promote Economic Growth? Evidence from East Asia and Latin America. Contemporary Economic Policy. 2001;19(2):175-185.
4. Prasad ES, Rajan RG, Subramanian A. Foreign capital and economic growth, massachusetts: National Bureau of Economic Research, NBER working paper 13619; 2007.
5. Hansen H, Tarp F. Aid and growth regressions. Journal of Development Economics. 2001;64(2):547-570.
6. Waheed A. Foreign capital inflows and economic growth of developing countries: A critical survey of selected empirical studies. Journal of Economic Cooperation. 2004;25(1):136.
7. Borensztein E, De Gregorio J, Lee Jong-Wha. How does foreign direct investment affect economic growth? Journal of International Economics. 1998;45(1):115-135.
8. De Mello L. Foreign direct investment in developing countries and growth: A selective survey. Journal of Development Studies. 1997;34:1-34.
9. Aitken B, Hanson GH, Harrison AE. Spillovers, foreign investment, and export behavior. Journal of International Economics. 1997;43(1-2):103-132.
10. Greenaway D, Sousa N, Wakelin K. Do domestic firms learn to export from multinationals? European Journal of Political Economy. 2004;20:1027-1043.
11. Kneller R, Pisu M. Industrial linkages and export spillovers from FDI. The World Economy. 2007;30(1):105-134.
12. Farole T, Winker D. Does FDI work for Africa? Assessing local spillovers in a world of global value chain. World Bank Paper No. 135; 2014.
13. Kugler M. The diffusion of externalities from foreign direct investment: Theory ahead of measurement, discussion paper series in economics and econometrics, No. 23, Southampton, United Kingdom, University of Southampton; 2001.
14. Schneider MR, Bentrop C, Paunescu M. Mapping the institutional capital of high-tech firms: A fuzzy-set analysis of capitalist variety and export performance. Journal of International Business Studies. 2010;41(2):246-266.
15. Uzoigwe. Economic development in Nigeria through the agricultural, manufacturing and mining sectors: an econometric approach, Doctoral Thesis, Economics Department, University of Pretoria; 2008.
16. Rahman M. Do imports and foreign capital inflow lead economic growth? Cointegration and cauality analysis in Pakistan. MPRA; 2011.
17. Solow R. A contribution to the theory of economic growth. Quarterly Journal of Economics. 1956;70(1):65-94.
18. Johansen S Juselius K. Maximum likelihood estimation and inference on cointegration---with Applications to the Demand for Money. Oxford Bulletin of Economics and Statistics. 1990;52(2):169-21.

19. Engle RF, Granger CW. Co-integration and error correction: Representation, estimation and testing. Econometrica. 1987;55:251-276. Growth Regressions. Journal of Development Economics. 1987;64(2):547-570.

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