Effect of Foreign Direct Investment on Economic Growth in East Africa

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***Abstract*-The low economic growth rate coupled with high population growth makes poverty alleviation in Africa increasingly difficult. The average annual flows of FDI into Africa doubled in the 1980's compared with the 1970s. However, owing to the fact that there are limited studies on foreign direct investment, various studies indicate divergent views on the effect of foreign direct investment on economic growth. For this reason, it is not clear whether or not foreign direct investment affect economic growth in East Africa. The main objective of this study was to investigate the effect of foreign direct investment on economic growth in East Africa. The study was modelled using the Endogenous Growth Theory. Hausman Specification test was conducted to assess whether to use the fixed effect or random effect panel estimation. The results indicated that foreign direct investment had negative and statistically insignificant relationship with economic growth, gross capital formation had positive and statistically significant relationship with economic growth and Infrastructure development; negative and statistically significant relationship with economic growth. The coefficient for foreign direct investment, gross capital formation and infrastructure development were -8.66, 0.2198 and -1.5294 respectively. The study concluded that infrastructure development in East Africa plays a greater role though faced by several limitations hindering its growth and expansion. The study thus recommends that East African countries should accelerate economic growth through enhanced regional integration in order to attract the market-seeking FDI and the need to improve transport communication and other infrastructural facilities so as to facilitate trade among East African countries and globally.**

Keywords: **Economic Growth, Foreign Direct Investment, East Africa**

I. INTRODUCTION

1.1 Background of the study

Since 1980's, Africa has experienced a relatively unsteady and low economic performance. For instance, the GDP growth rate of 3.2 % achieved in 2002 translated into a low growth rate of 0.8 % in per capital income compared with the rate of 1.9 % in 2001 while in 2003, Africa's population grew at 3.6% (UNCTAD, 2003a). The low economic growth rate coupled with high population growth makes poverty alleviation in Africa increasingly difficult. According to Ajayi (2005), the average annual flows of FDI into Africa doubled in the 1980's compared with the 1970s. It also increased significantly in the 1990s and in the period 2000 – 2003. It the mid -1970s, Africa's share of global FDI was about 6%, which dropped to 2-35 in 2005.Among developing countries, Africans share of FDI has remarkably dropped from 285 in 1976 to less than 9% in 2005 [UNCTAD,2007]. Compared with all other developing regions, Africa has remained aid depend, with-EDI lagging behind official development assistance [ODA]. Between 1970 and 2003, FDI accounted for just one fifth of all capital flow to Africa. Despite the significant increases in the flow of FDI to Africa, the inflows have been uneven. Middle-income countries in spite of policy initiatives in a number of Africa countries, and the significant improvement in the factors governing FDI – including but not limited to economic reform, democratization, privatization, enduring, enduring peace and stability, FDI inflows to Africa still lag behind those of other regions of the word (Ajayi, 2005). The expected surge of FDI inflow into the continent has not occurred due to several factors, such as risks, inappropriate environment, political instability and adoption of inappropriate policies.

The FDI that goes into Africa is concentrated into a few countries, which Egypt, Angola, Nigeria and South Africa getting a significant proportion. The inflows that south Africa has enjoyed in recent time has been attributed mainly to the privatization process, the return of companies that had relocated to neighbouring countries during the apartheid period and the interest of investors in the south Africa large domestic market. Of the increase in FDI flows between 1995-1998 and 1987-1990, 33% went to four oil-producing countries: Angola, The Congo republic, Equatorial Guinea and Nigeria. FDI in the oil industry remained dominant in 2002, with Angola, Algeria, Chad, Nigeria and Tunisia accounting for more than of the 2002 inflows (UNCTAD, 2003a). In 2002, Egypt, Angola, Nigeria and South Africa had a share of 61.9%. give the importance of Tunisia in 2002, its inclusion brought these countries' share to 70.1% (UNCTAD, 2003). Swings of FDI to these countries' have a major impact on the flow of FDI to Africa as a whole looking for FDI inward stock, it increased steadily over time from US$32.2 billion in 1980, to US$117 .0 billion in the 2002. In 1980, Africa had 4.6% share of global FDI inward stocks. This share declined over time until it reached 2.4% in 2002(UNCTAD, 2003a).

II. LITERATURE REVIEW

2.1 Introduction

In this section, both theoretical and empirical literature on foreign direct investment and economic growth was reviewed. The first section reviewed the theory and exposed the

theoretical foundations that underlie the effects of FDI on economic growth. The second section reviewed studies carried out on the subject.

2.2 Theoretical Framework

The study focused on endogenous growth model borrowed from Barro *et al*(1995) and Ngugi(2013) because it has advantage over neoclassical growth model in that it considers both short run and long run effects of FDI volatility on economic growth.

2.2.1 Endogenous growth model

The study presents a simple endogenous growth model in which FDI has a positive effect on growth, whereas the volatility in FDI flows has a negative effect on economic growth. In the model FDI, as well as the volatility inFDI, affects growth via the cost of innovation. The model assumes that technical progress is represented through the variety of capital goods available. There are three types of agents in the model: final goods producers who rent capital goods: innovators who produce capital goods and consumers.

The innovators sets P_j by optimizing V(t).As Kj is independent of time, this comes down to optimizing $(P_j - 1)k_j$,where k_j is the total quantity demanded by different producers $i(Kj = \sum iKij)$.The solution of the optimization procedure can be shown to be Pj=P=1/α≥1 (where 1/α is the mark-up).Using this result, the quantity demanded from each variety K can be written as:

$$K_i = K = LA^{1/(1-\alpha)}\alpha^{2/(1-\alpha)} \text{ ……………(1)}$$

Using the value for Pj and (1), equation can be rewritten as:

$$v(t) = LA^{(1/(1-\alpha)}\left(\frac{1-\alpha}{\alpha}\right)\alpha^{2/(1-\alpha)}\int_t^\infty \ell^{-r(v-t)}dv \text{ ………(2)}$$

At equilibrium with positive R and D (at cost η) and increasing N, then V(t)=η,hence (2) can be solved to:

$$r = \left(\frac{1}{n}\right)LA^{1/(1-\alpha)}\left(\frac{1-\alpha}{\alpha}\right)\alpha^{2/(1-\alpha)} \text{………3)}$$

The study now introduces FDI. The costs of production contain two parts. Each period there are fixed maintenance costs, assumed equal to 1. In addition, there are fixed set up costs (R and D costs,η). The costs of discovering anew variety of a good (costs of innovation) are assumed to be the same for all goods. Moreover, assume that the costs of discovering new goods depend on the ratio of goods produced in other countries to those produced domestically. This ratio is a proxy for FDI.A higher ratio of goods produced in other countries, and so more FDI, would lead to a decline in the costs of innovation. This reflects the idea that it is cheaper to imitate than to innovate and that the possibility to imitate increases if more goods are produced in other countries (i.e when FDI is higher).The cost of discovering a new good can be modelled as(using FDI=F): $\eta = f(F)$ where $\partial n / \partial F \leq 0$

To account for uncertainity with respect to F, the study assumes that F is stochastic, and modelled as

F=μ(F)+ε ,where μ(F) is the mean of FDI and ε is the error term with $\varepsilon \approx N(0, \varepsilon^2)$.The certainity equivalent of the expected value of FDI equals:

$$E(F) = \mu(F) - 0.5B\delta^2(F)$$

Where B is the coefficient of absolute risk aversion(B is positive for risk averse innovators) and $\delta^2(F)$

refers to the variance in FDI inflows. Taking into account the certainity equivalent value of FDI, and assuming that the rate of return on assets(r) is constant and there is free entry, equation (3) can be written as:

$$r = \left(\frac{L}{F[U(F) - 0.5B\delta^2(F)]}\right)A^{1/(1-\alpha)}\left(\frac{1-\alpha}{\alpha}\right)\alpha^{2/(1-\alpha)} \text{ …(4)}$$

Equation (4) shows that an increase in FDI leads to an increase in r whereas an increase in the variance of FDI leads to a decrease in r. To introduce the link to economic growth the study closes the model by considering behavior of households. Households maximize a standard inter-temporal utility function:

$$U = \int_t^\infty \left(\frac{C^{1-\theta} - 1}{1-\theta}\right)\ell^{-pt}dt \text{ ……………(5)}$$

Where c denotes consumption and ρ is the discount rate. This optimization process, subject to the budget constraint for households, can be shown to give the well-known result of the growth rate of consumption, $gC = (1/\theta)(r - \rho)$, where θ is the elasticity of marginal utility. In the steady state the growth rate of consumption equals the growth rate of output, g. using the expression for r from (4), economic growth can be expressed as follows:

$$g = (1-\theta)(\left\{\frac{L}{f[U(F) - 0.5B\delta^2(F)]}\right\}A^{1/1-\alpha}\left(\frac{1-\alpha}{\alpha}\right)\alpha^{2/(1-\alpha)} - p) \text{…………………………………………...…(6)}$$

Equation (6) evidently shows that an increase in FDI leads to an increase in the growth rate of output(g). An increase in FDI lowers set up costs (for technology adaptation) and raises the return on assets (r). This leads to an increase in saving and so a higher growth rate in consumption and output. However, an increase in the volatility of FDI negatively affects growth as it

decreases the certainity equivalent value of FDI and consequently increases set up costs and decreases the rate of return on invested foreign capital.

2.3 Empirical literature

2.3.1 Foreign direct investment and economic growth

Ndoricimpa(2009) examined the interrelationship between foreign direct investment, export and economic growth in COMESA countries and assessed the validity of FDI- Led exports, export-led growth and the FDI led growth hypothesis in that region. The study used annual data for a panel of 16 COMESA countries which included; Burundi, Comoros, Sudan, Swaziland, Uganda, Zambia, DRC, Egypt, Ethiopia, Kenya, Libya, Madagascar, Malawi, Mauritius, Seychelles, Sudan and Zimbabwe for the period 1983 to 2007. The following variables were used in the study; the ratio of inward foreign direct investment, the ratio of exports of goods and services and the growth rate of real GDP. The study tested for granger causality test in heterogonous panels by testing first homogenous. Non -causality and homogenous hypothesis as proposed by Hurlin and Venet (2007,2003) and Hurlin(2004,2007,2008). The study further used the Pooled Mean Group (PMG) estimation for heterogeneous causality tests, method suitable for non-causality panels proposed by Pesaran *et al* (1999). The findings suggested strong support for the FDI-led exports hypothesis, the export-led growth hypothesis as well as the FDI-led growth hypothesis. The study findings are not consistent on the interrelationship between FDI, export and economic growth. Moreover, the study was conducted in COMESA countries and yet countries differ from each other in many respects such as economic systems, locality among others.

Semwanga (2011) investigated the empirical relationship between foreign direct investment and economic growth in Uganda for the period 1970 to 2017 and secondary annual time series data on both dependent and independent variables were sourced from the world development indicators. The variables under study included gross domestic product, foreign direct investment, domestic capital, domestic labour force and infrastructure development. The ordinary least squares method was utilized for estimation of the augmented growth model to ascertain the relationship between foreign direct investment and other variables that influence economic growth. Also, unit root test was conducted in the study to check for the stationary of variables. The empirical results confirmed that foreign direct investment impacts positively on Uganda's economic growth. Also, regression results showed that most of the economic variables exhibited the expected signs except the independent coefficient of the domestic capital was negative and significant whereas for infrastructure development was positive and significant. However, the study used time series data and employed ordinary least squares technique which fails to capture the unique unobserved heterogeneity across time and individual countries. Current study will address this limitation using panel data.

Karau (2014) examined institutional governance and economic factors influencing foreign direct investment inflows in East Africa. The results revealed that the institutional and governance variables particularly control of corruption, political stability, rule of law and infrastructure significantly influenced foreign direct investment inflows to east Africa other than institutional variables, other factors like inflation, economic growth and rate of return on investment were also found to be significant. But external debt service did not significantly influence FDI inflows. Although the study was conducted on factors influencing foreign direct investment inflows, the results are not consistent. In addition, foreign direct investment was the dependent variable. The current study will estimate FDI on economic growth.

III. RESEARCH METHODOLOGY

3.1 Introduction

The section presents the model specified for the study. The variables used in the study are defined. The data sources and the methods used in data analysis are explained.

3.2 Model Specification

The model is specified to examine the effect of foreign direct investment on economic growth in East Africa. It is a multiple regression model whereby foreign direct investment, domestic capital and infrastructure development are the independent variables and dependent variable is the economic growth proxied by the gross domestic product per capita. Thus, we have the multiple regression model of the form derived and estimated as follows

$$gdp_{it} = \beta_0 + \beta_1 fdi_{it} + \beta_2 gc_{it} + \beta_3 \inf r_{it} + \varepsilon_{it} \text{ .. (3.1)}$$

Where fdi_{it} =is the Foreign Direct Investment

gc_{it} =is the Gross Capital Formation

$\inf r_{it}$ is the Infrastructural Development

ε_i = the error term

i=…n, where n is the number of firms. β_0 =constant/the intercept point of the regression line and the Y-axis. β =is the slope /gradient of the regression line. ε =is the error term.

The expected signs $\beta_1 \geq 0, \beta_2 \geq 0, \beta_3 \geq 0$

Source derived Maingi (2010)

3.3 Data measurement

Economic growth was measured by gross domestic product per capita (current US dollars), foreign direct investment, net

inflows(BOP, current US dollars) was used as a proxy for foreign direct investment, domestic capital was measured by gross capital formation(as a% of GDP) whereas infrastructure development was measured by fixed broadband subscription (per 100 people).

IV. RESULTS AND DISCUSSION

4.1Diagnostic tests

4.1.1 Panel Unit Root Test

Panel unit root test was conducted to investigate whether there were any variables in the model that were non-stationary. The test was developed by IM, Pesaran and Shin(2002).

Table 4.1 Im Pesaran and Shin Panel Unit Root Test for GDP, FDI, GC and INFR

Variable	Level First difference	Constant	Constant +trend
GDP	Level	-3.3708 (0.0004)	-2.4687 (0.0068)
	First Difference	-8.5256 (0.0000)	-7.2980 (0.0000)
FDI	Level	-0.8354 (0.2018)	0.1351 (0.5537)
	First difference	-2.8358 (0.0023)	-1.0375 (0.1497)
GC	Level	0.3419 (0.6338)	2.0967 (0.9820)
	First Difference	-3.5075 (0.0002)	-2.4716 (0.0067)
INFR	Level	0.2103 (0.5833)	-0.1303 (0.4482)
	First Difference	-3.9374 (0.0000)	-2.8475 (0.0022)

Source: Research Data

According to the Im-Pesaran and Shin test results presented in table 4.1 shows that the test statistic for gross domestic product variable was statistically significant at one percent level. This implies that this variable was stationary at level. However, test statistic for variables foreign direct investment, domestic capital and infrastructure development were not statistically significant at level. This suggests that these variables were not stationary at levels and had to be differenced at least once for them to become stationary. Variables that could be considered not to be stationary at levels in accordance with the IPS test were foreign direct investment, domestic capital and infrastructure development. When these variables were differenced once they became stationary suggesting that they were integrated of order one, I (1). Thus, panel unit root test results in table 4.1 show that the variables for the economic growth have a mixed order of integration. Some variables were integrated of order I(0) while others were integrated of order I(1). In addition, if we include the constant plus trend the IPS panel unit rood test results indicates that the gross domestic product test statistics is statistically significant at 5% .This implies that gross domestic product is still stationary at level. However, with the inclusion of the trend the test statistics for foreign direct investment, domestic capital and infrastructure development were also statistically insignificant. This means that they are not stationary at levels with trend and they had to be difference once for them to be stationary.

4.1.2 Panel Cointegration Test

The study employed Pedroni(1999) residual-based panel cointegration test for heterogeneous panels.

Table 4.2 Panel cointegration test between GDP, FDI,GC and INFR in East Africa

Pedroni Residual Cointegration Test				
Series: GDP FDI GC INFR				
Included observations: 105				
Null Hypothesis: No cointegration				
Trend assumption: No deterministic trend				
Automatic lag length selection based on SIC with lags from 0 to 3				
Alternative hypothesis: common AR coefs. (within-dimension)				
			Weighted	
	Statistic	Prob.	Statistic	Prob.
Panel v-Statistic	-0.437943	0.6693	-1.016693	0.8454
Panel rho-Statistic	-1.023959	0.1529	-0.537393	0.2955
Panel PP-Statistic	-3.951042	0.0000	-2.928846	0.0017
Panel ADF-Statistic	-3.685861	0.0001	-2.719456	0.0033
Alternative hypothesis: individual AR coefs. (between-dimension)				
	Statistic	Prob.		
Group rho-Statistic	0.463099	0.6784		
Group PP-Statistic	-5.085063	0.0000		
Group ADF-Statistic	-3.435830	0.0003		

Source: Research Data

Table 4.2 above shows that majority of the tests statistics of panel cointegration tests and group mean cointegration tests indicate that we strongly reject the null hypothesis of no cointegration since the probability values are significant at 1% level except the panel v-statistics, panel Rho-statistics and group Rho-statistics. Basing on the Pedroni(2004) cointegration tests we hence conclude that there is a long-run relationship between economic growth, foreign direct investment, domestic capital and infrastructure development in the sample of the East African countries. The null is no cointegration and alternative hypothesis cointegration exists. Thus, we rejected the null and accepted the alternative.

4.1.3 Hausman Specification Test

Table 4.3 Hausman Specification Test

---- Coefficients ----				
(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))	
	Fixed	Random	Difference	S.E.
fdi	6.63e-10	8.66e-10	-2.03e-10	2.21e-10
gc	.1764863	.219864	-.0433777	.0274692

infr	-1.675643	-1.529377	-.1462659	.2870805
b = consistent under Ho and Ha; obtained from xtreg				
B = inconsistent under Ha, efficient under Ho; obtained from xtreg				
Test: Ho: difference in coefficients not systematic				
chi2(2) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 4.01				
Prob>chi2 = 0.1349				

Source: Research Data

Table 4.3above was the Hausman specification test which showed that random effect model was the preferred model. The null hypothesis was that the preferred model was random effect and the alternative fixed model preferred model. The probability was 0.1349 which was not statistically significant at 5 %. The probability was insignificant at 13.49 % implying that we shall accept the null hypothesis and reject the alternative hypothesis. Thus, the random effect model was the preferred model. Also, the chi-square test value 4.01 which was less than the probability value at 13.49 % which indicated that there was nocorrelation between the unique errors (ui) and the regressors.

4.1.4 Heteroscedasticity

Breausch-Pagan LM test of heteroscedasticity was conducted to test if the variance of the residual term will be constant over different values of the explanatory variables.

gdp[id,t] = Xb + u[id] + e[id,t]		
Estimated results:		
Var sd = sqrt(Var)		
gdp	6.899361	2.626664
e	4.071486	2.017792
u	.6693552	.8181413
Test: Var(u) = 0		
chibar2(01) = 3.13		
Prob > chibar2 = 0.0384		

Table 4.4 Breusch and Pagan Test for Random Effects Source: Research Data

Table 4.4 Breusch –Pagan test of heteroscedasticity for economic growth was conducted. The null hypothesis was that no heteroscedasticity existed and alternative heteroscedasticity exists. The chi-square value was 13 % less than the probability value at 0.1%. The probability was 3.84 % which was less than the 5% significant level. This indicated that heteroscedasticity existed.

4.1.5 Multicollinearity test

Multicollinearity test was conducted by calculating the variance inflation factor and the results are presented in the table 4.5. Clearly the multicollinearity was not a problem since no VIF was more than 10.

Table 4.5 Multicollinearity Test Variance Inflation Factor

Variable	VIF	1/VIF
fdi	2.62	0.381468
gc	2.62	0.381611
infr	1.00	0.999347
Mean VIF		2.08

Source: Research Data

No variable was eliminated from the model to address multi collinearity since all had the lowest VIF.VIF for all the variables reduced to less than ten as shown in the table 4.5. Thus, multicollinearity was no longer a major problem in the data.

4.2 Fixed Effect Model

Table 4.6 Fixed Effect Model Statistics of Economic Growth and Foreign Direct Investment Variables

Fixed-effects (within) regression				Number of obs = 88		
Group variable: id				Number of groups = 5		
R-sq: within = 0.1391				Obs per group: min = 8		
between = 0.7593				avg = 17.6		
overall = 0.3321				max = 21		
				F(3,80) = 4.31		
corr(u_i, Xb) = 0.3539				Prob > F= 0.0072		
gdp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
fdi	6.63e-10	7.67e-10	0.86	0.390	-8.63e-10	2.19e-09
gc	.1764863	.0631286	2.80	0.006	.0508565	.3021162
infr	-1.675643	.8322064	-2.01	0.047	-3.331787	-.0194998
_cons	2.439088	1.180739	2.07	0.042	.0893417	4.788834
sigma_u | 1.1468885						
sigma_e | 2.0177924						
rho | .24417902 (fraction of variance due to u_i)						
F test that all u_i=0: F(4, 80) = 3.62 Prob > F = 0.0091						

Source: Research Data

The result obtained from the fixed effect model is presented in table 4.6. The table shows that foreign direct investment had negative and insignificant relationship with gross domestic products. The statistical insignificant implied that foreign direct investment did not play by role in determining gross domestic product in East Africa. The probability value for foreign direct investment was 0.390 which was more than the 5% level of significance 39%. Also, gross capital had positive and significant relationship with the gross domestic product. The probability was significant at one percent (0.007) level. Infrastructure development had negative and significant relationship with the gross domestic product. the probability

was significant at 5% (0.047) level. The coefficient of foreign direction of foreign, gross capital and infrastructure development were -6.63, 0.1765 and -1.6756 respectively. The statistical significance of gross capital formation and the infrastructure development implies that the two explanatory variables play greater role in determining gross domestic product in East Africa.

4.3 Random Effect Model

Table 4.7Random Effect Model Statistics of Economic Growth and Foreign Direct Investment Variables

Random-effects GLS regression					Number of obs = 88	
Group variable: id					Number of groups = 5	
R-sq: within = 0.1364					Obs per group: min = 8	
between = 0.8112					avg = 17.6	
overall = 0.3496					max = 21	
					Wald chi2(3) = 23.01	
corr(u_i, X) = 0 (assumed)					Prob > chi2 = 0.0000	
gdp	Coef.	Std. Err.	Z	P>|z|	[95% Conf. Interval]	
fdi	8.66e-10	7.34e-10	1.18	0.238	-5.72e-10	2.30e-09
gc	.219864	.0568389	3.87	0.000	.1084619	.3312662
infr	-1.529377	.7811224	-1.96	0.050	-3.060349	.0015944
_cons	1.550995	1.140333	1.36	0.174	-.6840165	3.786007
sigma_u .81814128						
sigma_e 2.0177924						
rho | .14118911 (fraction of variance due to u_i)						

Source: Research Data

The random effect model results are presented in table 4.7. The results indicate that foreign direct investment had negative and statistically insignificance relation with gross domestic product. The statistical insignificance implied that foreign direct investment did not play a role in determining gross domestic product in east Africa. The probability value was 0.238, which was more than the 5% value 23.8%. Also, gross capital had positive and significant relationship with gross domestic product. The gross capital was statistically significant at 1% level (0.00). Infrastructure development on the other hand had negative and significant relationship with gross domestic product infrastructure development was statistically significant at 5% (0.050) level. The statistical significant relationship between gross capital infrastructure and economic growth implied that gross capital and infrastructure development plays a greater role in determining economic growth in East Africa. The coefficient for foreign direct investment, gross capital and infrastructure development were-8.66,0.2198 and -1.5294 respectively whereas the probability values for foreign direct investment, gross capital and infrastructure development were 0.238, 0.000 and 0.050.

4.4 Discussion of the Findings

The main objective of the study was to investigate the effect of foreign direct investment on economic growth in East Africa. The study specifically sought to examine effect of foreign direct investment on economic growth, domestic capital on economic growth and estimate the effect of the infrastructure development on economic growth in East Africa using a panel data for 21 years from the period 1997 to 2017. The first objective of the study was to examine the effect of foreign direct investment on economic growth. Analysis of data on this objective was based on the null hypothesis that foreign direct investment has no effect on economic growth in East Africa. Foreign direct investment had a negative but insignificant relationship with economic growth. The results are contrary to the results of Maranga (2015) who postulated that foreign direct investment is statistically significant predictor in determining economic growth. Empirical results showed that foreign direct investment and natural logarithm of exports and gross domestic product of Kenya have a positive and significant effect on economic growth. Also, Ndoricimpa (2009) tested for granger casualty in heterogeneous panels and pooled mean group estimation. Findings suggested strong support for the FDI led expert's hypothesis as well as the FDI led growth hypothesis.

Results are also inconsistent with Ocharo (2014) who found positive and statistically significant effect of foreign direct investment on economic growth in Kenya. Results implied that FDI plays an important role on economic growth in Kenya. Gheeraet and Malek (2005) and Vihn Vo (2009) showed that foreign direct investment has a positive impact on economic growth. Foreign direct investment affects economic growth through three mechanisms; the size effects, the skills and technology effects and the structural effects (Fortainer, 2007).Results are consistent with Haddad and Harrison (1993), Carkovic and Lavine (2003) who found that foreign direct investment has no effect on economic growth in micro and other recipient countries. From the results, the study therefore does not reject the null hypothesis rather accept accept null hypothesis that states that foreign direct investment has no effect on economic growth in East Africa.

The second objective of the study was to examine the effect of domestic capital on economic growth in East Africa. analysis of data on this objective was based on the null hypothesis that domestic capital has no effect on economic growth on East Africa. Domestic capital had a positive and statistically significant relationship with economic growth. These findings are inconsistent with the results of Semwanga (2009) who found the coefficient of domestic capital to be negative. Also, Maingi (1999)contrary results who found that capital stock had a negative coefficient suggesting that one unit increase in capital stock yields 0.353 unit decrease in real GDP growth. The sign is inconsistent with the theory. Capital input available in the economy at a certain period influence productive potential. The growth of capital stock through investment increases the nations productive capacity leading

to a higher economic growth. The inconsistency can be attributed to excess capacity in the economy.

These results are consistent with Halima (2015)who found that capital stock had a positive and significant relationship with GDP growth as was expected a prior. These findings support that of Drezgic (2008) and Limam and Miller (2003) who found that capital accumulation had a positive effect on economic growth. Capital accumulation involves increased spending of a country's savings on capital goods that are necessary for production, an increase in capital investment is likely to increase labour productivity if it promotes technological progress. The resulting increase in aggregate output leads to improvement in GDP growth and standards of living. The findings are also in tandem with Ugochukwu (2013) and Alexiou (2009) who found that capital expenditure is statistically significant and positively related to economic growth in 30 LDCs and in South Eastern Europe respectively. The coefficient of capital measured in terms of the gross capital formation as a percentage of GDP was positive as predicted. This is in agreement with neoclassical growth model and empirically proven in studies like Mankiw *et al* (1990), Barro (1991) among others. In Oryema(2009), all the GMM models the coefficient was positive and statistically significant. From this result, the study rejects the null hypothesis and accepts the alternative which states that domestic capital affects economic growth in East African countries.

The third objective of the study was to estimate the effect of infrastructural development on economic growth in East Africa. Analysis of data on this objective was based on the null hypothesis that infrastructure development has no effect on economic growth in East Africa. Infrastructure development had negative and significant relationship with economic growth at 5% level of significance. The findings are contrary to the results of Semwanga (2009) who found the effect of infrastructure development to be positive and significant implying that good infrastructure facilitates production through reducing operating costs (Wheeler and Moody, 1992). This suggests that investing in productive infrastructure can be considered an instrument to improve the competitions of the country. Also, Wainaina (2012) found the coefficient of landline tele-densityto be positive and significant at 5% level of significance. Ole-mohaki (2015) found that government expenditure on road infrastructure and growth to be significant. Molem and Akame (2016) results found that all strands of infrastructure including economic, social and financial to be positive and having significant effect in economic growth in Cameroon.

The results however are consistent to Ziramba,2009)and Devajaran , Swaroop and Hengfu *et al* (1996) also who found a negative effect of government expenditure on roads towards economic growth. And also, with Sahoo *et al* (2010) studies which found that infrastructure development in China is a significant contributor to growth than both public and private investment. Therefore, the study rejects the null hypothesis and accept the alternative hypothesis which states that infrastructure development affects economic growth. The hypothesis is accepted by the study because infrastructure development is statistically significant at 5% level and negatively affects economic growth in East Africa.

V. CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The main objective of the study was to examine the effect of foreign direct investment on economic growth in East Africa. The study concentrated on 5 countries in East Africa since data was available and covered the period 1997 to 2017.The findings of the study showed a negative and insignificant relationship between foreign direct investment and economic growth. The findings of the study showed positive and significant relationship between domestic capital and economic growth. Also, the findings on infrastructure development revealed negative and significant relationship with economic growth. According to Wainaina (2012), increased economic growth leads to growth in mobile telephone penetration in Sub Saharan Africa partly due to affordable handsets and competitive mobile telecommunication market into the region. The negative coefficient of infrastructure development had implication in East Africa. This indicated that the infrastructure development investment priced by telephone subscription per 100 people was subject to diminishing returns suggesting that the countries at earlier stages of development are likely to benefit mostly by investing in the telecommunication infrastructure. The study concludes that infrastructure development in EA plays a greater role though faced by several limitations hindering its growth and expansion.

5.2 Policy Recommendation

The aim of this study was to determine how foreign direct investment affects economic growth in East Africa. According to the results, the findings demonstrated that domestic capital and infrastructure development had significant effect on economic growth. Specifically, in order to encourage economic growth, policy makes should continuously reform institutions in order to improve their efficiency and productivity to attract more FDI in East Africa. Given that infrastructure significantly influences economic growth, there is need for the East Africa government to develop the infrastructure to encourage FDI inflows.

Moreover, EA countries should accelerate economic growth through enhanced regional integration in order to attract the market-seeking FDI. A country with a large market as indicated by high economic growth rate has a greater ability to consume the production capacity established by the inflows of FDI. The EA region should thus continue to promote growth of EA community that will widen the market for goods and services and hence attract FDI. Finally, there is need of improving transport, communication and other infrastructural facilities so as to facilitate trade among East African countries

and globally. The existing infrastructure in EA countries are relatively not sufficient; there is less developed rehabilitation of roads, telecommunication and railways which are very important to reduce transportation and transaction costs during delivery with free trade, eventually the trade will increase rapidly and hence promoting the higher economic growth of the East African regions.

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