Effect of External Debt Service on Foreign Direct Investment Inflows in Kenya

Purity Kagendo Mugambi MA
James Murunga, PhD Student
University of Nairobi, School of Economics, Kenya

Abstract

Foreign direct investment has an important role in fixed capital formation of a host country. FDI inflows are of great importance to developing economies than the developed economies since most of the developing economies experience inadequate savings. Further, these economies have incomplete access to advanced technology. In Kenya, fixed capital formation stands at about 21 % of GDP of which about 7% is contributed by foreign direct investment inflows.

Economic theory postulates that external debt service is one of the key determinants of foreign direct investment inflows. The theory stipulates that an increase external debt service results to higher taxes which discourage foreign direct investors. This study therefore sought to investigate the effect of external debt service on foreign direct investment inflows in Kenya using time series data running from 1980 to 2014. The study adopted gross fixed capital formation, inflation rate, exchange rate and real GDP as the control variables.

The study estimated long run cointegating equation and the findings showed that external debt service have a negative impact on country's foreign direct investments. The study recommends that the government should not heavily rely on external borrowing to finance economic growth but should rather cut her programs to avoid higher budget deficit. This recommendation is premised on the fact that lower external debt service will attract foreign direct investment that will eventually result to a more reduced budget deficit. This is because foreign direct investment inflows result to employment and thus increase in tax collection.

Keywords: Foreign direct investment (FDI), external debt service, Kenya.

Introduction

Foreign direct investment inflows refer to capital that originate from the investor country to a host country. The foreign investor invests in assets of the host country. The foreign investor in such arrangement takes financial responsibility of the investment and also manages the assets in the host country (Ostadi &Ashjaa, 2014). World Bank defines FDI as an investment which allows foreign investor to acquire 10 percent of voting rights in business enterprise based in a foreign country. If the foreign investor commands less than 10 percent voting rights, then such FDI is referred to as a portfolio investment.

Most developing countries use foreign direct investment inflows as a source of capital for their industrialization because foreign direct investors usually place a long term commitment to host countries. Further, foreign direct investment inflows have significant contribution to a host country's fixed capital formation (Abala, 2014). For instance, Kenya's fixed capital formation was about 21 % of Gross Domestic Product where foreign direct inflows accounted for about 7 per cent (World Bank, 2016).

World Bank shows that Kenya's net FDI inflows increased from KES 586 million in 1980 to KES 83027.3 million in 2014. The trend in Kenya's FDI inflows is shown in figure 1.

**Figure 1: Trend in Kenya's Net FDI inflows**
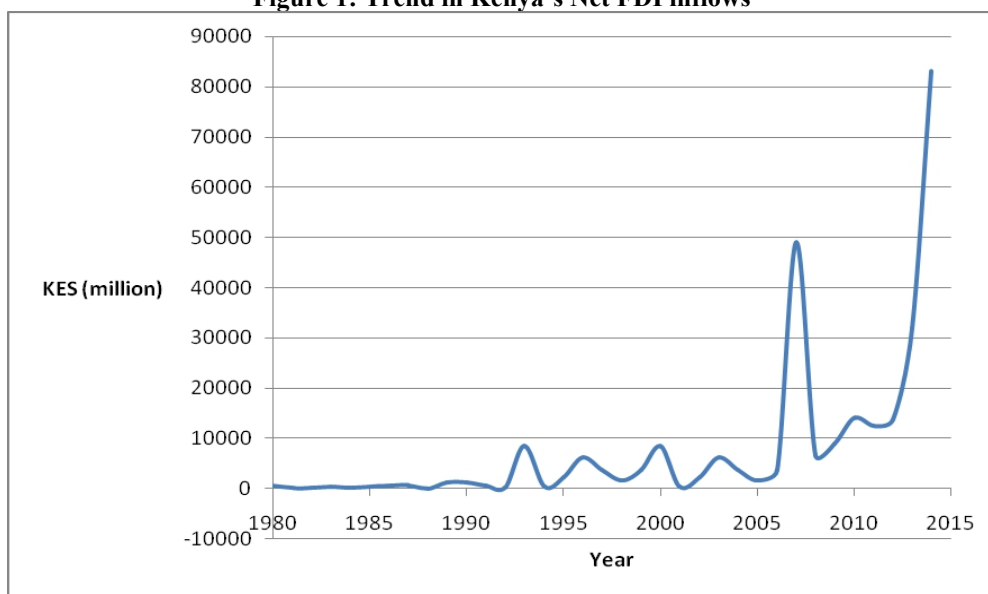
Source: *World Bank data base, 2016*

From figure 1, it is evident that Kenya's net FDI inflows were not stable for the period running from 1980 to 2014. The period is characterized by increases and decreases in net FDI inflows volumes.

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Kenyan government has been involved in the provision of public goods since her independence in 1963.The public goods which include infrastructure, education, healthcare and security are important for the economic growth in the country. However, the government's fiscal supply cannot meet all the requirements of the country's needs, an indication that foreign debt is important in bridging the gap. For instance, Kenya has relied on foreign debt to finance her agricultural and industrial sectors. These sectors are important for the country since they are the main producers of exports which attract foreign currency that is used to finance the external debt (Were, 2001).

Kenyan economy showed an impressive growth in 2014 by registering a growth of 5.3 percent. However, despite the impressive growth, budget deficit widened from Kenya shillings(KES) 182.0 billion in 2013 to KES 213.9 billion in 2014. In addition, debt service increased from KES1533 billion in 2013 to KES 1924.9 billion in 2014 (National Treasury, 2016). An increase in external debt has serious macroeconomic problems which can result to poor social, economic and political status of a country (Government of Kenya, 2012). Generally, Kenya recorded an increase in external debt as depicted in figure 2.

Figure 2: Trend in Kenya external Debt
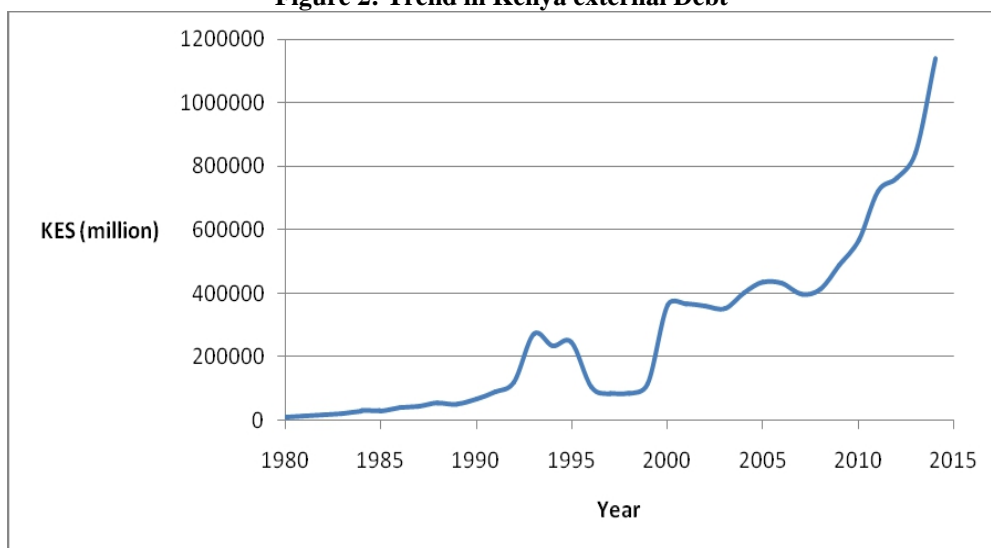
Source: Various Kenya National Bureau of Statistics economic Surveys

From figure 2, Kenya's external debt increased from KES 9948 million in 1980 to KES 1138504.71 million. The figure further shows that there was a smooth increase in external debt from 1980 to 1993 and started to decline to 1996 and remained stable up to 1999. From 2000 to 2014 there was a a postive trend but with fluctuations. This increase in external debt translated to an increase in external debt service as shown in figure 3.

Figure 3: Trend in Kenya External Debt Service
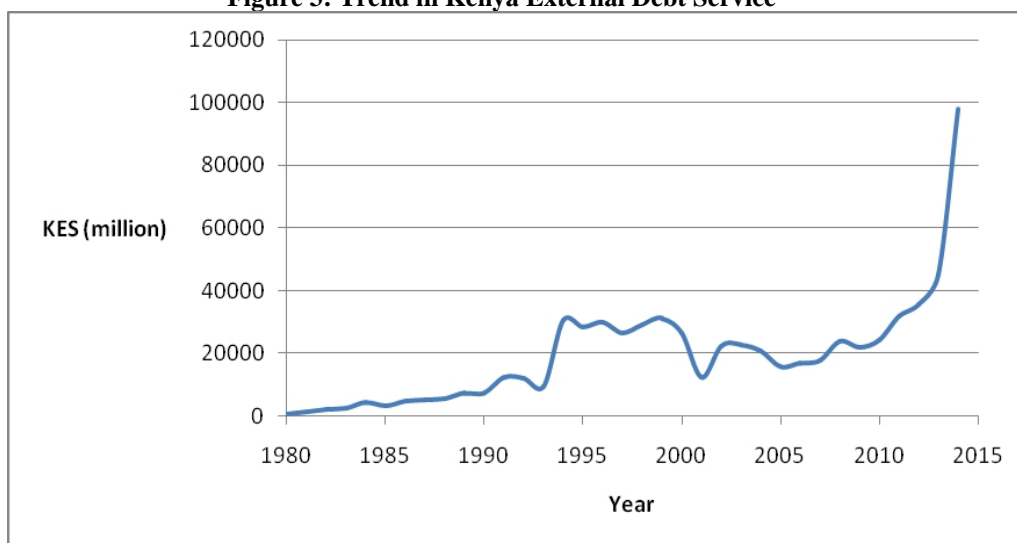
Source: Various Kenya National Bureau of Statistics economic Surveys

From figure 3, it is evident that there was an increase in external debt service from 1980 to 2014 but with fluctuations. The figure further illustrates a sudden increase in external debt service from 2009 to 2014.

Problem Statement

The public debt of Kenya is about 53 percent of GDP of which about 30 percent of the GDP is external debt (Government of Kenya, 2015).The subject of public debt has received tremendous attention both in theory and practice.This is largely due to the effect of external debt on country's economic growth. Empirical investigation gives contradictory findings. Proponents of external debt indicate that external debt is important in bridging budget deficit thus enabling governments to provide public goods which are good for economic growth of countries. On the other hand, scholars indicate that external debt is bad for economic growth. According to them, higher external debt results to increased external debt service which discourages foreign investors. According to them, level of external debt service enters into the objective function of foreign investors. This is because high external debt service translates to higher taxes in the economy which eats into their profits.

The subject of external debt service and FDI inflows has not been widely investigated in Kenya. For instance, Musyoka (2011) studied effect of external debt service and economic growth using OLS model. Fosu (2010) studied external debt servicing constraint and public expenditure composition in Sub-Saharan Africa using panel data. Elbadawi et al. (1997) studied the impact of debt service on investment in Sub Saharan Africa using panel regression model. This study therefore bridges the existing knowledge gap by

investigating the effect of external debt service on FDI inflows in Kenya. This study therefore sought to respond to the following questions;

- What is the effect of external debt service on FDI inflows in Kenya?
- What policy recommendations can arise from the study findings?

Objective of the Study

The study's objective is to estimate the effect of external debt service on Kenya's FDI for the period running from 1980 to 2014.

Literature Review

Abala (2014) studied the relationship between economic growth and FDI in Kenya using OLS model. One of the study objectives was to estimate the determinants of FDI in Kenya. The findings showed the coefficients of external debt service and openness of the economy to be negative and insignificant. This implies that external debt service and openness of the economy are not important determinants of FDI in Kenya. The coefficients of real GDP and infrastructure were revealed to be positive and significant implying that the two variables are important determinants of FDI in Kenya. The study further showed the coefficients of market size, return on investment and real interest rate to be negative and insignificant meaning market size, return on investment and real interest rate are not important determinants of FDI in Kenya.

Ostadi and Ashja (2014) investigated the effect of external debt service on FDI in Development cooperation among 8 Developing Countries using panel regression model. The coefficients of external debt service and government size were revealed to be negative and significant an indication that external debt service and government size are important determinants of FDI. On the other hand, the findings revealed the coefficient of government size to be negative and significant.

Khrwash and Siam (2010) studied the determinants of FDI in Jordan using OLS model. The results revealed the coefficients of debt service share in GDP, current account share in GDP and exchange rate to be positive and significant. This implies that debt service GDP, current account and exchange rate are important determinants of FDI in Jordan.

Udo and Obiora (2006) studied the effect of FDI on economic growth among the West African Monetary zone using panel regression model. One of the objectives of the research was to determine the factors which affect FDI. The results revealed the coefficient of political instability and external debt service share in GDP to have a negative and significant. On the contrary, coefficient of government spending on infrastructure and GDP were found to be positive and significant.

Elbadawi et al. (1997) probed the effect of debt service on investment in Sub-Saharan Africa using panel regression model. The results showed the coefficient of debt service to be negative and significant. This implies that debt service is an important determinant of investment in the region.

Methodology and Estimation
Theoretical Framework

The study of the effect of external debt service on FDI inflows is anchored on basic traditional investment model. The general form of the traditional investment model was given by:

$$k = f(y, r) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.1$$

Where k is the preferred capital stock, y is the output and r is the real cost of capital in a host country. The basic traditional investment model refers to the traditional determinants of investment for domestic investors (Udo & Obiora, 2006).

Empirical Model

As foreign investors make decision on where to invest, other factors apart from the ones in the basic investment model become important. According to literature, these factors include openness of the economy, inflation rate, exchange rate, political stability and infrastructure. With this modification, we arrived at an augmented foreign direct investment model specification as follows:

$$fdi = f(ext, exch,, inve, inf, gdp) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 2$$

Where fdi shows FDI inflows, ext shows external debt service, $exch$ shows exchange rate, $inve$ shows gross fixed capital formation, inf shows inflation rate and gdp shows GDP. An assumption is made of linear relationship between FDI inflows and external debt service. In this case the estimated model was specified as follows:

$$fdi = \beta_0 + \beta_1 ext + \beta_2 exch + \beta_3 inve + \beta_4 inf + \beta_5 gdp \ldots 3$$

Results

In the study, data on FDI inflows and external debt service was obtained from various economic surveys published by the Kenya Bureau of Statistics. Data on inflation rate, exchange rate, GDP and gross fixed capital formation was obtained from World Bank World Development Indicators. Descriptive statistics and pre-estimation tests are discussed below.

Descriptive Statistics

Descriptive statistics of the variables used in the study is illustrated in Table 1. Distribution of a series can be obtained by evaluating diverse measures as illustrated in Table 1.

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Fdi	35	7962.1	16333.6	7	83027.3
Ext	35	19740.7	17892.9	838.8	98014.3
inve	35	18.5	1.9	15.4	22.9
Inf	35	12.6	8.8	1.6	46.0
Exch	35	51.8	28.6	7.4	88.8
gdp	35	18213.4	15616.7	5751.8	60990.6

Source: *Author's Computation based on various Economic Surveys published by KNBS and World Bank Database*

A total of 35 observations were considered with six variables of which five are independent variables. Range is the difference between the maximum value and minimum value. In this case, FDI inflow has a maximum of KES 83027.3 million and a minimum of KES 7 million which gives a range of KES 83020.3 million. The standard deviation illustrates the spread of the values from the mean and is used for comparison purposes. From Table 1, external debt service has a bigger spread as compared to other variables. FDI inflows have a spread of 16333.6, gross fixed capital formation has 1.9, inflation rate has 8.8 and exchange rate has 28.6.

Testing for Serial correlation

The study applied Breusch Godfrey test to test for presence of serial correlation. The outcome is illustrated in Table 2.

Table 2: Serial correlation

Breusch-Godfrey test for autocorrelation			
lags(p)	**chi2**	**Df**	**Prob> chi2**
1	0.507	1	0.4764
H_0: no serial correlation			

Source: *Author's Computation based on various Economic Surveys published by KNBS and World Bank Database*

Since the probability (p) value is insignificant at 10%, 5% and 1% significance level, we do not reject the null hypothesis an indication that there is no serial correlation.

Stationarity Test

Stationarity test is performed so as to avoid spurious regression and also ensure the estimates are consistent. Augmented Dickey Fuller test was used in testing for stationarity of the variables used in the study. Stationarity results are as shown in Table 3.

Table 3: Testing for Stationarity at levels

Variable	Test statistic	1% critical level	5% critical level	10% critical level
Foreign Direct Investment Inflows	-1.995	-3.689	-2.975	-2.619
External Debt Service	1.702	-3.689	-2.975	-2.619
Gross Fixed Investment(% of GDP)	-2.063	-3.689	-2.975	-2.619
Exchange Rate	-0.942	-3.689	-2.975	-2.619
Inflation rate	-3.341	-3.689	-2.975	-2.619
GDP	5.408	-3.689	-2.975	-2.619

Source: *Author's Computation based on various Economic Surveys published by KNBS and World Bank Database*

From Table 3, it is evident that all variables are not stationary at levels. This implies that the variables have at least one unit root. To ascertain the number of unit root(s) for each of the variables, the series was subjected to first differencing. The results are shown in Table 4

Table 4: Test for Stationarity at First Difference

Variables	Test statistic	1% critical level	5% critical level	10% critical level
D1Foreign Direct Investment Inflows	-5.812	-3.696	-2.978	-2.620
D1External Debt Service	-2.259	-3.696	-2.978	-2.620
D1Gross Fixed Capital Investment(% GDP)	-5.663	-3.696	-2.978	-2.620
D1 Exchange Rate	-5.438	-3.696	-2.978	-2.620
D1 Inflation Rate	-6.540	-3.696	-2.978	-2.620
D1GDP	-2.322	-3.696	-2.978	-2.620

Source: *Author's Computation based on various Economic Surveys published by KNBS and World Bank Database*

From Table 4, the figures illustrate that all variables except GDP have one unit root. To confirm the number of unit roots for GDP, second differencing was carried out and the results are shown in Table 5.

Table 5: Test for Stationarity at First Difference

Variables	Test statistic	1% critical level	5% critical level	10% critical level
D2GDP	-7.971	-3.702	-2.980	-2.622

Source: *Author's Computation based on various Economic Surveys published by KNBS and World Bank Database*

From Table 5, it is evident that GDP has two unit roots since the series became stationary after second differencing. Since all variables are non-stationary, there was need to investigate whether there was long-run relationship or not meaning the study could employ Vector Error Correction Model (VECM) or Vector Autoregressive(VAR) model respectively.To obtain this, cointegration test was done using Johansen Cointegration test. However, before proceeding to Johansen Cointegration Test,there was need to identify the number of lags. The results for the number of lags is illustrated in Table 6.

Lag length Selection

To ascertain the number of lags to be used, an unrestricted VAR lag length selection criterion was employed. The results are shown in Table 6.

Table 6: Vector Autoregressive (VAR) Lag Selection Criteria

Selection-order criteria Sample: 1987 - 2014					Number of Observation = 28			
Max rank	LL	LR	Df	Prob	FPE	AIC	HQIC	SBIC
0	-1304.1		.		2.1e+29	84.5	84.6147	84.8
1	-1142.3	323.7	36	0.000	6.4e+25	76.4	76.4054	77.0
2	-1104.5	75.6	36	0.000	7.6e+25	76.3	76.2909	77.5
3	-1060.5	88.0	36	0.000	1.1e+26	75.8	75.7749	77.5
4	-790.3	540.42*	36	0.000	3.7e+20*	60.7*	60.7*	62.9*

Source: *Author's Computation based on various Economic Surveys published by KNBS and World Bank Database.*

From Table 6, LR criteria indicated that 4 lags should be considered. FPE criterion showed that 4 lags should be chosen. Regarding AIC, HQIC and SBIC, the principle is that the least value gives better the model. In this case, AIC, HQIC and SBIC showed that we choose 4 lags. The five criteria suggested choice of 4 lags implying that the study considered 4 lags in the Johansen test of cointegration and VAR or VECM framework.

Johansen Test of Cointegration

After identifying the lag length, presence or absence of cointegration was investigated using Johansen Cointegration test. The results are as shown in table 7.

Table 7: Johansen Test for Cointegration (Trace statistics Model)

Trend: Constant			Number of observation = 31		
Sample:1984-2014				lags = 4	
Maximum rank	**parms**	**LL**	**eigenvalue**	**Trace statistic**	**5% critical Value**
0	114	-1079.8	.	579.1	94.2
1	125	-889.6	1.0	198.6	68.5
2	134	-837.6	0.96	94.7	47.2
3	141	-814.0	0.8	47.5	29.7
4	146	-797.5	0.7	14.4*	15.4
5	149	-791.3	0.3	1.9	3.8
6	150	-790.3	0.06		

Source: Author's Computation based on various Economic Surveys published by KNBS and World Bank Database.

From Table 7, it is evident that there is at least a cointegrating vector between the variables. This is because at maximum rank 0, the null hypothesis of no cointegration is rejected because trace statistic of 579.1 is greater than 5% critical value of 94.2. The results revealed presence of four cointegrating vectors since it is at this point that null hypothesis of four cointegrating vectors is not rejected since the trace statistic of 14.4 is less than 5% critical value. Having identified presence of cointengration, VECM framework was adopted and the results are as shown in Table 8.

Table 8: Regression Results for Vector Error Correction Model

	Coefficient	**Standard Error**	**z**	**P>z**
D_fdi				
_ce1 L1.	2.66	2.29	1.16	0.245
Fdi				
LD.	-3.72***	2.02	-1.85	0.065
L2D.	-2.95**	1.41	-2.08	0.037
L3D.	-1.19***	0.65	-1.81	0.070
Ext				
LD.	-1.83	1.14	-1.60	0.110
L2D.	-2.21**	1.12	-1.97	0.049
L3D.	-0.99	0.77	-1.28	0.200
Exch				
LD.	-211.92	1180.89	-0.18	0.858
L2D.	-2028.88	1369.92	-1.48	0.139
L3D.	-1566.68	1084.86	-1.44	0.149
Gdp				
LD.	3.55	3.93	0.90	0.367
L2D.	-0.25	4.21	-0.06	0.952
L3D.	-13.37*	4.42	-3.02	0.002
Inf				
LD.	535.94	946.79	0.57	0.571
L2D.	676.15	625.74	1.08	0.280

L3D.	555.78	394.66	1.41	0.159
Inve				
LD.	2951.23	2825.48	1.04	0.296
L2D.	1071.58	2171.86	0.49	0.622
L3D.	315.59	2067.42	0.15	0.879
R-Squared = 0.8718 P>chi2 = 0.0001*				

Source: *Author's Computation based on various Economic Surveys published by KNBS and World Bank Database.*

Interpretation and Discussion of the Results

From Table 8, *, **, *** implies 1%, 5% and 10% level of significance respectively. The findings showed that regression performed well in terms of goodness of fit and overall significance with an R-squared of 0.8718 and probability value of 0.0001. The coefficient of determination (R-Squared) indicates that the variables considered in the model explain 87.18% of the variation in FDI inflows in Kenya. The Probability value shows that explanatory variables are jointly significant in explaining FDI inflows at 1% level of significance.

The coefficient of the error correction term (2.66) is positive and insignificant meaning that there is no long run causality running from the explanatory variables to dependent variable.

However, the results showed significant short run causality running from individual explanatory variables to the dependent variable. The results revealed coefficient of lag one of FDI inflows to be negative and individually significant at 10 percent level of significance an implication that the variables are important in determining foreign FDI inflows in the short run. The coefficient of lag three of FDI inflows is negative and individually significant at 10 percent level of significance implying that the variable is important in influencing FDI inflows in the short run. The coefficient of lag two of FDI inflows is positive and in isolation significant in determining FDI inflows. Further, the coefficient of lag two of external debt is negative and individually significant at 5 percent level of significance meaning lag two of external debt service is important determinant of FDI inflows in Kenya. This finding conforms to economic theory since high external debt servicing increases the cost of doing business through increased taxes in the economy. Since the cost of doing business is factored in investment decision by foreign investors, they consider destination with low cost of doing business. This finding is also in agreement with earlier studies for instance, that of Abala (2014), Ostadi and Ashja (2014), Udo and Obiora (2006) and Elbadawi et al. (1997). This finding however contradicts that of earlier study by Khrwash and Siam (2010) who found the coefficient of external debt service to be positive and significant in

determining FDI inflows. Lastly, the coefficient of lag three of GDP is negative and individually significant at 1 percent level of significance in determining FDI inflows in Kenya. This implies that lag three of GDP is important in determining FDI inflows in Kenya. This finding contradicts that of earlier study by Abala (2014) who showed the coefficient of real GDP to be positive and significant in determining FDI inflows in Kenya.

Conclusion and Recommendations

Kenya registered an impressive economic growth in 2014 where the economy grew by 5.3 per cent. Country's budget increased from KES 182 billion in 2013 to KES 213.9 billion in 2014. The increase in budget deficit resulted to an increase external debt which translated to an increase in external debt service by KES 391.9 billion during the same period.

FDI inflows are important for any developing country's economic growth. This is because most of the developing countries lack adequate savings for investment and they therefore rely on FDI inflows as source of funds for investment. Kenya's FDI inflows fluctuated between 1980 and 2014. Economic theory indicates that high debt service is harmful to an economy since it results to an increase in taxes which discourage foreign investors. Empirical investigation on this area has shown contradicting findings. This study therefore sought to investigate the effect of external debt service on FDI inflows in Kenya for the period running from 1980 to 2014.

The control variables used in the study were: gross fixed capital formation, inflation rate, exchange rate and real GDP. The study applied OLS in estimating long run cointegrating equation. The findings revealed that the coefficient of lag one and lag three of FDI inflows are negative and significant at 10 percent. In addition, the coefficient of lag two of external debt service was revealed to be negative and significant at 5 percent level of significance. This implies that external debt service is important in determining country's FDI inflows. Further, the coefficient of lag three of GDP was revealed to be negative and significant at 1 percent level of significance implying that real GDP is important determinant of country's FDI inflows. The study recommends that Kenyan government should not heavily rely on external debt which leads to high external debt service. The government should instead reduce her expenditure programs so as to reduce external debt service hence attracting FDI inflows.

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