EFFECT OF FISCAL POLICY ON FOREIGN DIRECT INVESTMENT INFLOWS IN KENYA

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EFFECT OF FISCAL POLICY ON FOREIGN DIRECT INVESTMENT INFLOWS IN KENYA

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Abstract

Purpose: The purpose of this study was to assess the impact of fiscal policies on Kenya's foreign direct investment inflows. The independent variable included fiscal policy with external public debt, domestic debt, infrastructure and tax.

Materials and Methods: The research attempts to explain the FDI inflows in Kenya and was calculated quarterly on the basis of FDI inflows in the nation. For 20 years (January 1998-December 2017) secondary data were gathered annually. In order to investigate the association between the variables the study utilized a descriptive research methodology using a time series model. For data analysis objectives, Python software was utilized.

Results: Regression of coefficients results shows that government expenditure on infrastructure and FDI are positively and significantly. It was also revealed that external debt and FDI are negatively and significantly related. Domestic debt and FDI are negatively and significantly related. The results regression results showed that taxation measured as tax revenues and FDI are positively and significantly related.

Unique contribution to theory, practice and policy: The study findings validate the internalization theory. Findings indicate that the theory is applicable in the study of investments. In addition, the findings may in future serve as platform for additional studies in the same subject for other academics, students and researchers. Investors would benefit from the recommendations set out in this study to attract more FDI investment by implementing trade-balanced actions, limiting corruption, implementing income-collection tax policies and promoting international trade to ensure competitiveness in Kenyan products.

Key words: Fiscal Policies, Foreign, Direct Investment Inflows
1.0 INTRODUCTION

To encourage FDI, the company's corporation tax rate has reduced in the last several years. In January 2008, Germany decreased its corporation tax rate (government cost and necessary duties), from 25% to 15%, from around 39% to approximately 30%. In April 2008, England reduced its income tax rate from 30% to 28%. Between 2004 and 2008, the Czech Republic, Poland, Slovakia, Hungary and other countries that joined the EU lowered their business income tax rates, presently at about 20 percent their real Corporate Tax Rates. Throughout the meanwhile, their corporate income tax rates have fallen in Asia, as in Hong Kong, Singapore and other nations, which is adding to the decline in corporate income tax rates globally. It is crucial to note, however, that several countries have expanded their tax bases to cut corporate income tax rates. For example, Germany and the UK enlarged their tax bases by revising their deteriorating standards to curb the decline in tax revenues when corporate duty rates fell (Chaves, 2010).

Fiscal policy is the use of taxation and consumption government income for beneficial effects on the economy. Government taxes, domestic debt, foreign debt and government spending are the principal instruments of fiscal policy. In order to achieve the economic objectives of price stability, full employment and economic growth, a government employs fiscal policies to implement the level of aggregate demand in the economy. Keynesian economy advises that increased government spending and lower taxes should be the optimum way to spark global demand and reduce government expenditure and taxes following the currency boom (Nsouli, 2003). In architecture, the Kenyan administration has a mixed fate in terms of budgetary results. Public debt, which shapes the image of countries on international markets is one of the key macroeconomic indicators (Christensen, 2007). It is one of the factors of the flow of foreign direct investment. As a result of increasing internationalization and globalization, the flow of transnational investment in the globe has grown dramatically.

In Kenya, several people have not only blamed bad management and corruption of hindering economic progress but have also increased public debt. Expanding public debt has real macroeconomic problems that can lead to a nation's low social and financial condition (Government of Kenya, 2010). It is apparent from the findings that since 1980, the proportions of public debt to GDP and of public debt to GDP have fluctuated. In all events, the highest proportion of public debt (131.90) was recorded in 1993, with the lowest proportion (21.24) recorded in 2008. Then in 1994, there was again the highest proportion of public debt administration to the GDP (12.33) and in 2010, the lowest proportion (1.00).

FDI is the dependable investments which are outside the investor’s physical or monetary limits (Hill, 2005). The recipient nation of FDI is outfitted with capital stream just as innovation stream that will help in its improvement. At the point when a nation tries to put resources into another, the advantage it seeks to accomplish must be higher than the dangers it must deal with. (UNCTAD, 2015) depicts three unique kinds of FDI: reinvested income, value capital and other capital which for the most part comprise of intercompany loans. FDIs make new job positions open up after setting of the business, enrollment and preparing of local people in the host nation.
is embraced moving abilities and innovative expertise just as giving occupations. As per (Ryan, 2016), FDI speak to long haul responsibilities to the host nation. It is a favored type of speculation since it has no commitments to the host nation. The fundamental entry modes of FDI incorporate green field interests in which a parent organization makes an auxiliary in another nation and mergers and acquisitions which consolidations includes a mix of two organizations to frame one while acquisition is the taking over of one organization by another.

Kenya is the East African business center point for many multinational businesses. This means reliance of FDI for capital inflow that thus thinks about provision of employment and an economy that is developed by these remote ventures. Kenya’s FDI normal percentage rate of growth in the years 2007 and 2015 was forty percent (40%) with the inflows basically diverted into retail and consumer products, innovation, media and communications, minerals, oil and flammable gas sector for the most part from the UK, USA and India (Ernst & Young, 2015). This development rate earned Kenya the status of a FDI hotspot joining other African Countries like Ghana, Tanzania, Zambia, Uganda, Nigeria, Mozambique, and Rwanda. In 2015, FDI inflows were at USD 1076.9 million (KES 105.29 billion), up from USD 670 million (KES 65.51 billion) a year prior which is a sixty per cent (60%) increase. This capital mainly went to oil, gas and the manufacturing enterprises (UNCTAD, 2015).

As indicated by economic theory, public debt is useful for a nation’s economic growth. Nevertheless, this is only conceivable up to a specific level past which its effects are hostile to an economy. The concept of debt overhang as described evidently (Krugman, 1988) establishes how accrual of high public debt prompts low FDI inflows resulting into low economic growth of a nation. In regard to (Krugman, 1988) debt overhang denotes to circumstances where the current external debt is very huge. The theory recommends that external investors will be hesitant from investing in a country that has huge external debt as a portion of their proceeds channeled towards servicing the debt by implementing high rates of tax. Conversely, the theory states that reducing debt obligation leads to an increase in both local and foreign direct investment therefore reducing the likelihood of debt default.

A number of academics have demonstrated enthusiasm for studying the effect of external debt on the economic development of the growing economies. Those supporting external debt contend that governments that depend on external debts are in a position of eliminating bottlenecks in their economies thus utilizing fully their resources. Maximum utilization of the resources has a direct connection to economic growth. Those against external debt contend that such decisions by developing nations, economies are likely to tamper with economic growth through its harmful effect on economic growth grips (al, 2013) Increased external debt service is also expected to prompt an increase in taxes which promotes evasion of taxes. The increased taxes also deject foreign direct investors since they are not ensured of good returns to their investments. Decrease in foreign direct investments and increased tax avoidance are elements for hindered economic growth (Habimana, 2005)

The function of tax enticements in advancing foreign direct investments has been the subject of numerous studies, yet their relative effect has not been plainly determined ( Voorpijl, 2011). A study by (Zolt, 2002) contends that tax incentives are both awful in principle in developing
nations since they have a negative effect on the investment choices. Their goals are not really achievable since they are deemed as corrupt. It is along these lines, that a recommendation from the study that the government needs to routinely assess its adequacy and limit odds of attracting corruption in order to improve their likelihood of accomplishment.

Statement of the Problem

Kenya has a long-standing rich history with foreign firms dating back to the 1960s. For quite a long time Kenya has been viewed as a striking destination for foreign investors looking to invest in the larger East and Central Africa region. Notably, the nation has likewise observed global organizations that had well reputable operations in the country bowing out in unexplained circumstances and this has had an adverse impact on FDI inflows into the nation. Sameer Africa bowed out in September 2016, denouncing low-priced and subsidized imports, in 2014, Eveready East Africa shut down its Nakuru assembling plant to import batteries from its related party in Egypt following tough competition from low-priced banned imports. Two weeks later, Cadbury Kenya called it quits in the Kenyan market. The different organizations that have since left Kenya for other markets include Bridgestone, Unilever, Procter and Gamble, Reckitt Benckiser, Johnson and Johnson, and Colgate Palmolive. Specialists have ascribed these departures to fiscal policy and increased taxes which strained most businesses and led to the deterioration of the economy. Clearly, most companies could not stand the tough economic weather.

Experimental proof is to a great extent conflicting and quite diverse on the effect of fiscal policy on foreign direct investments. According to (Ashja, 2014) external debts adversely affect FDIs and an increase in foreign debt destroys the vision of the investor and yields negative insights about the future economic situation which correspondingly decreases the country’s investment. (Bamire, 2004) and (Azam, 2010) discovered positive relationships between GDP, exchange rates, inflation and FDI, and a negative relationship with taxation. However, Mwega and Ngugi (2007) argued that FDI is dictated by the economic growth rates, openness to trade, external debt ratio and the worth of institutions.

Locally, Kinaro (2006) found that Kenya’s FDI is impacted by human capital, transparency, inflation, FDI in the prior periods and real exchange rate. A study by Opolot, Mutenyo and (Kalio, 2008) determined that receptiveness to trade, market potential, urbanization, rate of return on investment and infrastructure positively influence FDI inflows to Sub-Saharan Africa, while foreign direct investment is negatively affected by macroeconomic instability. Using panel data for countries, Kenyan included, (Otieno, 2012) studied locational determinants of FDI in Kenya and discovered that FDI has a longstanding relationship with exchange rate, direct taxes, GDP, fixed capital formation and openness of the economy. The majority of the current observational proof has clarified the effect of different variables on foreign direct inflows to Kenya while still others researched on the result of foreign direct investments on growth in the economy. In any case, there exist few studies if any on the effect of fiscal policy on foreign direct investment inflows in Kenya and this is the gap the current study anticipates to fill.
Theoretical Review

Internalization Theory

Internalization theory was established by Hennart (1982). It states that the company at MNC level is subject to exclusive checks on an intangible, learning-based and corporate benefit. The idea says companies minimize their risk exposure through investment in vertical FDI specialty assets. The theory also states that cost-benefit analysis of key elements in the nation where the firm moves into overseas investment will impact the potential of the country. The choice on investment as defined in this theory depends both on projected rates of return and on precise characteristics of one nation, such as political stability, product demand, entry barriers, production and capital costs and economies of scale (Casson, 1976), (Rugman, 2010).

Corporations might invest in nations that are less costly to produce crude material and work when combined with other countries so that expenses are minimized (Carbaugh, 2000). This might partly be the reason why direct investment shifts more to Asia in India and China, where labor is cheaper than other countries worldwide.

The theory of internalization deems it suitable for FDI when it is possible to overweigh the benefits of internalization. MNC is crucial to success with technology or management knowledge and is also protected in its internal market. International market growth indicates that additional operations and activities should arise, but the holding firm manages and controls them. Although this idea is most significant in terms of manufacture and licensing, it may be regarded as a way of keeping the position and establishing quality standards on the foreign market in terms of real estate (Cassion, 1983).

FDI can also be used to obtain control over contributions and hence to close the new opponents according to (lemman, 2002)International theory stated that companies don't subcontract their process because they have to control potential hazards and have a larger part of the market. Furthermore, it is obvious that multinational companies rely on FDI as a technique to achieve and preserve advantages in terms of internationalization. The relations of the enterprise, its incorporation, change in prices and centralization of economies lower costs via the use of FDI, as compared to the external markets. Our theory is crucial for this study, since it defines the elements that an MNC considers before making investment decisions in foreign countries and therefore influence the amount of FDI inflows into a given country.

Research gap

An empirical research on fiscal and foreign direct investment was carried out both internationally and locally. The fact that the many experts are not in agreement about the influence of fiscal policy on FDI is a reason sufficient to examine the subject further. The views of an investor and the unfavorable impressions of the future economic situation are being affected by both domestic and external debt (2014) and by the growth in the foreign debt, which is also reducing investments. The positive links between GDP, exchange rates, inflation and openness and FDI, and tax negative links have been identified by (Ayanwale and Bamire (2004) and Azam (2010), 2007)found FDI to be determined by growth rates, trade openness. It is ample cause to study the matter further given the numerous experts do not agree on the impact of fiscal policy on FDI.
Both domestic and external (2014) debt and external debt growth are affecting the opinions of an investor and the adverse perceptions of the future economic condition, which are also limiting investment. (Ashja O. &., 2014)) While (Ayanwale and Bamire (2004) and Azam (2010), 2007), 2004) and Mwega and Ngugi (2007) showed that the FDI is characterized by growth rates and trade openness, the positive linkages between GDP, exchange rates, inflation, and openness and FDIs and tax negative associations were noticed.

2.0 METHODOLOGY
The research adopted a quantitative descriptive design. Data was collected through secondary data. Data were gathered and analyzed over a quarterly period of 20 years (January 1998-December 2017). Time series analysis has been used to analyze the figures collected. In the assessment, Python Software was used. The report used an unconstrained autoregressive vector (VAR) model to assess the connection between foreign inflows and indirect variables: government external debt, domestic debt, government infrastructure expenditure, and taxation. An assumption is made of linear relationship between fiscal policy and foreign direct investment inflows. In this case the estimated model is specified as follows:

$$\log(FDI_t) = b + b_1TR_t + b_2EPD_t + b_3GE_t + b_4DD + e_t$$

Where;

$b's=$ are coefficients to be estimated

Log FDI= Foreign direct investments as measured by percentage change in FDI inflows on a quarterly basis

TR =log of Tax revenue collected in a calendar year.

EPD = log of External debt borrowed annually

GE= log of Gross allocation of spending on infrastructure

DD = log of Domestic debt borrowed annually

$e =$Error term

3.0 RESULTS
Descriptive Statistics for all the Variables
Table 1 below provides the descriptive statistics for the FDI inflows, the government expenditure on infrastructure, the tax revenue, domestic debt, and the international debt. The descriptive statistics that were considered include the mean, the median, mode, the sample variance, the standard deviation, the kurtosis and skewness.
Table 1 provides the descriptive statistics of FDI inflows into Kenya over the past 20 years. The table shows that there was an average of Ksh. 50,341,358,218.33 of foreign direct investment into the country. The table also shows that the data had a skewness of 0.7434, which indicates that it is normally skewed. The kurtosis on the other hand, is equal to -1.0281 which shows that the data is too flat. The value also shows that the data lighter tails than those of a normal distribution.

Table 1 also contains the descriptive statistics for Kenya’s government expenditure on infrastructure. The table shows that the on average Kenya spends Ksh. 1.08918E+12 on infrastructure projects over the past twenty years. The table also shows that the data has a very high variance, which indicates that the data has fluctuations across the period. The dataset also has a skewness of 1.0167, which indicates that the data is positively skewed and thus its tails are longer towards the right. The kurtosis, on the other hand is equal to 0.2132, which shows that the distribution is too flat. The value of the kurtosis also shows that the distribution has lighter tails than those of a normal distribution.
Table 1 also contains the descriptive statistics of Kenya’s total annual tax revenue. The table shows that on average, over the past 20 years, the Kenyan government has collected taxes that are equal to Ksh. 6.05059E+11. The data set also has a very high standard deviation and variance, which show that the data set has had significant fluctuations over the years. The data set has a skewness of 0.4181, which indicates that the distribution is normally skewed. On the other hand, the distribution has a kurtosis of -1.0091, which indicates that the distribution is too flat and that it has lighter tails than a normal distribution.

The table also provides the descriptive statistics of Kenya’s domestic debt over the past 20 years. The data has a mean value of Ksh. 8,770,474,132, over the period. The data also has a skewness of 1.1412, which shows that the distribution is positively skewed and thus its tails are longer towards the right. Its kurtosis, on the other hand, is equal to 0.3912, which indicates that the distribution has peaks that are too flat and that its tails are lighter than those of a normal distribution.

Finally, table 1 provides the descriptive statistics of Kenya’s international debt over the past twenty years. The table shows that on average, Kenya borrows about Ksh. 8,946,348,349 from international lenders. The table also shows that the international debt has high fluctuations since it has significantly standard deviation and sample variance values. The data also has a skewness of 1.7558 which means that it is positively skewed and thus has elongated tails towards the right. It also has a kurtosis of 2.4945 that indicates that the distribution is too peaked.

### 3.2 Analyzing the Time Series Characteristics

Time series data have unique characteristics that make their analysis different from other data types. To analyze the time series, the data was divided into three components, namely; Trend, Seasonality, and randomness. These components are important in the time series analysis since they form the basis of future forecast and are also important in improving it.

#### 3.2.1 Analyzing the Trend and Seasonality

The FDI inflows, Government expenditure on infrastructure, International debt, tax revenue and domestic debt have a trend over time which is either increasing or decreasing throughout the period as depicted below.

#### 3.2.1.1 Government Expenditure on Infrastructure

The study sought to establish the trend in the movement of government expenditure measured as expenditure on infrastructure in Kenya over the study period. The findings were as shown in the Figure 2. Figure 2 indicated that government debt expenditure has been gradually rising over the years. From 1998Q1, there was sharp increase but in 2001-2002 there was a decline which was later followed by a steady increase.
3.2.1.2 External Public Debt

The study sought to establish the trend in the movement of external public debt measured as funds borrowed from foreign lenders in Kenya over the study period. The trend line is as shown in the Figure 3. Figure 3 indicated that external public debt has been gradually rising over the years.
3.2.1.3 Domestic Debt
The study sought to establish the trend in the movement of domestic debt over the study period. The trend line is as shown in the Figure 4. Figure 4 indicated that domestic public debt has been increasing over the years.

![Figure 4: Domestic Debt from 1998Q1 to 2017Q4](image)

4.2.1.4 Taxation
The study sought to establish the trend in the movement of tax revenue measured as tax revenue on foreign firms in KES in Kenya over the study period. The trend line is as shown in the Figure 5. Figure 5 indicated that average taxation on foreign firms has been gradually rising over the years. However in 2008 there was a drastic drop.

![Figure 5: Taxation on foreign firms in KES million](image)
3.2.1.5 Foreign Direct Investment

The study sought to establish the trend in the movement of FDI measured as net inflows as percentage of GDP in Kenya over the study period. The trend line is as shown in the Figure 4.5. Figure 4.5 indicated that foreign direct investment was higher in the last quarter of 2006 but later dropped drastically in the wake of 2007. The FDI was highest in 2015 quarter.

3.3 Diagnostic tests

Prior to running a regression model diagnostic tests were conducted. The tests conducted in this case were the unit root tests test (Stationarity test), multicollinearity test, normality test, Heteroscedasticity test and Autocorrelation test. This is usually performed to avoid spurious regression results from being obtained.

3.3.1 Testing for heteroscedasticity

Heteroscedasticity test was run in order to test whether the error terms are correlated across observation in the time series data. The error terms from a regression model must have a constant variance called Homoskedastic.

And thus to ensure whether the residuals meet this criteria the study will used the Breusch-Pagan test for Heteroskedasticity where the null hypothesis under this test is that residuals are Homoskedastic. If the p-value is >0.05, there is constant variance. The null hypothesis was therefore not rejected at a critical p value of 0.05 since the reported value was 0.1012. Thus the data did not suffer from heteroscedasticity as shown in Table 2.
Table 2: Heteroskedasticity Test: Breusch-Pagan-Godfrey

<table>
<thead>
<tr>
<th></th>
<th>F-statistic</th>
<th>Obs*R-squared</th>
<th>Prob. F(4,76)</th>
<th>Prob. Chi-Square(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
<td>5.332026</td>
<td>16.51327</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prob. F(4,76)</td>
<td></td>
<td></td>
<td>0.1012</td>
<td></td>
</tr>
<tr>
<td>Obs*R-squared</td>
<td></td>
<td></td>
<td></td>
<td>0.0024</td>
</tr>
<tr>
<td>Prob. Chi-Square(4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: Research Data 2021*

### 3.3.2 Testing for Randomness

The researcher first carried out a test to check if the data is random since a random data set would not exhibit a structure in the lag plot. As depicted in figure 2 below, each of the series depicted a fairly similar trend pattern over the years except for government expenditure on infrastructure which recorded a rise from 2015 to 2017. The time series plot also clearly indicates some kind of relationship among the series. The linear shape of the lag plot suggests that an AR model is a better choice. There is also no outlier in the data set. Moreover, the data set showed a linear pattern, which indicates the presence of auto-correlation.

*Figure 7: Test for Randomness*
3.3.3 Autocorrelation Test

The Breusch-Godfrey test was conducted in order to test for the existence of autocorrelation in the time series data in the study. The null hypothesis is that no first order serial /auto correlation exists. Based on the results achieved in the study, the p value 0.1247 indicated that the null hypothesis for the study was not to be rejected. This was an indication that the data was not suffering from the autocorrelation and that no cure for the same was required as indicated in table 3 below.

Table 3: Breusch-Godfrey Serial Correlation LM Test

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
<td>2.425631</td>
</tr>
<tr>
<td>Prob. F(2,78)</td>
<td>0.1247</td>
</tr>
<tr>
<td>Obs*R-squared</td>
<td>4.873269</td>
</tr>
<tr>
<td>Prob. Chi-Square(2)</td>
<td>0.0875</td>
</tr>
</tbody>
</table>

3.3.4 Testing for Stationarity using the Augmented Dickey-Fuller Test (ADF)

The dataset was split into two parts that include the training and the testing datasets to avoid overfitting the model. The training dataset was 75% while the testing dataset was 25%. Since the VAR models require the time series that one wants to forecast to be stationary, it is customary for a researcher to check all the time series in the system for stationarity. A stationary time series is a time series whose characteristics such as the variance and the mean do not change over time (Ningrum and Surono, 2008). In case a time series is found to be non-stationary, the data analyst makes it stationary by differencing the series once and repeating the test and following this process until the time series becomes stationary. Since differencing reduces the length of the series by 1, and since all the time series has to be of the same length, one needs to difference all the series in the system if one chooses to difference any of the series. Various tests, which are referred to as unit-root tests are used to test for stationarity. They include the Augmented Dickey-Fuller Test (ADF Test), KPSS test, and the Phillip-Perron Test. For the purpose of this study, the ADF test was used. The output for the first ADF is depicted in table 4 below:
Augmented Dickey-Fuller Test on "FDI inflows"
Null Hypothesis: Data has unit root. Non-Stationary.
Significance Level = 0.05
Test Statistic = 1.2423
No. Lags Chosen = 5
Critical value 1% = -4.665
Critical value 5% = -3.367
Critical value 10% = -2.803
=> P-Value = 0.9963. Weak evidence to reject the Null Hypothesis.
=> Series is Non-Stationary.

Augmented Dickey-Fuller Test on "Government Expenditure on Infrastructure"
Null Hypothesis: Data has unit root. Non-Stationary.
Significance Level = 0.05
Test Statistic = -0.8072
No. Lags Chosen = 3
Critical value 1% = -4.332
Critical value 5% = -3.233
Critical value 10% = -2.749
=> P-Value = 0.817. Weak evidence to reject the Null Hypothesis.
=> Series is Non-Stationary.

Augmented Dickey-Fuller Test on "Total Tax Revenue"
Null Hypothesis: Data has unit root. Non-Stationary.
Significance Level = 0.05
Test Statistic = 4.9322
No. Lags Chosen = 5
Critical value 1% = -4.665
Critical value 5% = -3.367
Critical value 10% = -2.803
=> P-Value = 1.0. Weak evidence to reject the Null Hypothesis.
=> Series is Non-Stationary.

Augmented Dickey-Fuller Test on "Domestic Debt"
Null Hypothesis: Data has unit root. Non-Stationary.
Significance Level = 0.05
Test Statistic = 4.7736
No. Lags Chosen = 0
Critical value 1% = -4.069
Critical value 5% = -3.127
Critical value 10% = -2.702
=> P-Value = 1.0. Weak evidence to reject the Null Hypothesis.
=> Series is Non-Stationary.

Augmented Dickey-Fuller Test on "International Debt"
Null Hypothesis: Data has unit root. Non-Stationary.
Significance Level = 0.05
Test Statistic = 0.9037
No. Lags Chosen = 5
Critical value 1% = -4.665
Critical value 5% = -3.367
Critical value 10% = -2.803
=> P-Value = 0.9931. Weak evidence to reject the Null Hypothesis.
=> Series is Non-Stationary.

<table>
<thead>
<tr>
<th>Table 4: Test for non-stationary.</th>
</tr>
</thead>
</table>

As depicted in table 4 above the ADF test confirms that none of the time series is stationary. The researcher then decided to difference all of the time series and check again for stationarity. At the first difference, the majority of the variables were found to be non-stationary. Therefore, the researcher was left with the option of either proceeding with the first differenced series or...
difference all the series one more time. The researcher thus decided to rerun the ADF test on the
time series, and finally found that all the series were now stationary.

<table>
<thead>
<tr>
<th>Test on “FDI inflows”</th>
<th>Null Hypothesis: Data has unit root. Non-Stationary.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significance Level = 0.05</td>
<td>Test Statistic = -1.0306</td>
</tr>
<tr>
<td>No. Lags Chosen = 4</td>
<td>Critical value 1% = -4.939</td>
</tr>
<tr>
<td>Critical value 5% = -3.478</td>
<td>Critical value 10% = -2.844</td>
</tr>
<tr>
<td>=&gt; P-Value = 0.7419. Weak evidence to reject the Null Hypothesis.</td>
<td>=&gt; Series is Non-Stationary.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test on “Government Expenditure on Infrastructure”</th>
<th>Null Hypothesis: Data has unit root. Non-Stationary.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significance Level = 0.05</td>
<td>Test Statistic = -11.9123</td>
</tr>
<tr>
<td>No. Lags Chosen = 0</td>
<td>Critical value 1% = -4.223</td>
</tr>
<tr>
<td>Critical value 5% = -3.189</td>
<td>Critical value 10% = -2.73</td>
</tr>
<tr>
<td>=&gt; P-Value = 0.0. Rejecting Null Hypothesis.</td>
<td>=&gt; Series is Stationary.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test on “Total_Tax_Revenue”</th>
<th>Null Hypothesis: Data has unit root. Non-Stationary.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significance Level = 0.05</td>
<td>Test Statistic = -8.9277</td>
</tr>
<tr>
<td>No. Lags Chosen = 4</td>
<td>Critical value 1% = -4.939</td>
</tr>
<tr>
<td>Critical value 5% = -3.478</td>
<td>Critical value 10% = -2.844</td>
</tr>
<tr>
<td>=&gt; P-Value = 0.0. Rejecting Null Hypothesis.</td>
<td>=&gt; Series is Stationary.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test on “Domestic_Debt”</th>
<th>Null Hypothesis: Data has unit root. Non-Stationary.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significance Level = 0.05</td>
<td>Test Statistic = 1.0436</td>
</tr>
<tr>
<td>No. Lags Chosen = 4</td>
<td>Critical value 1% = -4.939</td>
</tr>
<tr>
<td>Critical value 5% = -3.478</td>
<td>Critical value 10% = -2.844</td>
</tr>
<tr>
<td>=&gt; P-Value = 0.737. Weak evidence to reject the Null Hypothesis.</td>
<td>=&gt; Series is Non-Stationary.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test on “International_Debt”</th>
<th>Null Hypothesis: Data has unit root. Non-Stationary.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significance Level = 0.05</td>
<td>Test Statistic = -5.0849</td>
</tr>
<tr>
<td>No. Lags Chosen = 4</td>
<td>Critical value 1% = -4.939</td>
</tr>
<tr>
<td>Critical value 5% = -3.478</td>
<td>Critical value 10% = -2.844</td>
</tr>
<tr>
<td>=&gt; P-Value = 0.0. Rejecting Null Hypothesis.</td>
<td>=&gt; Series is Stationary.</td>
</tr>
</tbody>
</table>

**Table 5. ADF Test.**
3.3.5 Multicollinearity Test

Multicollinearity is a statistical phenomenon in which two or more predictor variables in a multiple regression model are highly correlated, the undesirable situation where the correlations among the independent variables are strong. A set of variables is perfectly multicollinear if there exists one or more exact linear relationship among some of the variables. Tolerance of the variable and the VIF value were used where values more than 0.2 for Tolerance and values less than 10 for VIF means that there is no multicollinearity. In case any sets of data could be having higher value than that will have to be cured by omission of such variables.

For multiple regressions to be applicable there should not be a strong relationship among variables. Statistics used to measure multicollinearity include tolerance and variance inflation factor. From the findings, all the variables had a tolerance values >0.2 and VIF values <10 as shown in table 6 indicating that there is no multicollinearity among the independent variables.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreign Direct investment</td>
<td>0.341</td>
<td>1.245</td>
</tr>
<tr>
<td>Government Debt Expenditure on Infrastructure</td>
<td>0.460</td>
<td>1.421</td>
</tr>
<tr>
<td>Budget surplus/Deficit</td>
<td>0.692</td>
<td>1.362</td>
</tr>
<tr>
<td>Taxation Revenue</td>
<td>0.611</td>
<td>1.873</td>
</tr>
</tbody>
</table>

*Table 6: Multicollinearity test for Tolerance and VIF*

3.4 Optimal Lag Selection Order

To select the right order of the VAR model, the researcher iteratively fit increasing orders of the VAR model and picked the orders that gave a model with the least Aikake Information Criteria (AIC). Although the usual practice is to look at the AIC, researchers can also check other best option fit comparison estimates of BIC, FPE, and HQIC (Ningrum and Surono, 2018). The output is depicted in table 6 below. Based on the results provided in table 6 below, the order of lags that was selected is order 4. This was based on the fact that lag order 4 gives the lowest absolute value for both the final prediction error and AIC as compared to the next best alternative lag order 0 that had the best FPE but a very high AIC value as recommended by Liew (2004).
### Table 6. Lag Order.

#### 3.5 Test for Co-integration

A co-integration test is used to establish if there is a correlation between several time series in the long term. According to (Narula and Dunning, 2010) co-integration test helps a researcher to establish the presence of a statistically significant connection between two or more time series. The Engle-Granger cointegration test is highly sensitive to the choice of lag length and the poor performance of conventional lag selection criteria such as standard information criteria in selecting appropriate optimal lag length for the implementation of the Engle-Granger cointegration test is well-established in the statistical literature. Testing for cointegration within the framework of the residual-based Engle-Granger cointegration methodology is the same as testing for the stationarity of the residual series via the augmented Dickey-Fuller test, which is well known to be sensitive to the choice of lag length.
The order of integration provides the number of differencing that is required to make a non-stationary time series to become stationary (Akran, 2010). In cases where one has two or more time series, and there exists a linear combination of the time series which has an order of integration that is less than that of the individual series, then the collection of the series is said to be co-integrated. Moreover, when two or more time series are co-integrated, it means that they have a long run statistically significant relationship. The co-integration output is depicted in Table 7 below.

<table>
<thead>
<tr>
<th>Name</th>
<th>Test Stat &gt; C(95%)</th>
<th>=&gt;</th>
<th>Signif</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDI inflows</td>
<td>124.33</td>
<td>&gt; 60.0627</td>
<td>True</td>
</tr>
<tr>
<td>Government Expenditure on Infrastructure</td>
<td>62.35</td>
<td>&gt; 40.1749</td>
<td>True</td>
</tr>
<tr>
<td>Total Tax Revenue</td>
<td>14.12</td>
<td>&gt; 24.2761</td>
<td>False</td>
</tr>
<tr>
<td>Domestic Debt</td>
<td>1.21</td>
<td>&gt; 12.3212</td>
<td>False</td>
</tr>
<tr>
<td>International Debt</td>
<td>0.0</td>
<td>&gt; 4.1296</td>
<td>False</td>
</tr>
</tbody>
</table>

**Table 7. Co-integration test.**

Based on the output provided in Table 7 above, the FDI inflows time series as well as the government expenditure on infrastructure time series have a statistically significant and co-integrating relationship with all the other time series over the long run.

Table 5 above tests for co-integration by comparing the test statistic and the critical value. If the test statistic is greater than the critical value, this indicates that the null hypothesis should be rejected. If it is greater, this indicates that the null hypothesis should not be rejected. In this case, for the FDI inflows, the test statistic is greater than the critical value, indicating that the null hypothesis should be rejected (124.33 > 60.0627). Since the null hypothesis is rejected, more co-integration tests were carried out to determine the number of co-integrating models. The second co-integration test depicted that the null should not be rejected (30.6 < 24.44). Therefore, the mode has one co-integration equation.

The researcher then determined the direction of the relationship between the FDI inflows and all the fiscal policy determinants. The results showed that the correlation between FDI inflows and government expenditure on infrastructure, tax revenues, domestic debt, and international debt is 0.70, 0.73, 0.68, and 0.59 respectively. Therefore, there is a positive and statistically significant relationship between FDI and all the determinants of fiscal policy. The associations derived from this data are depicted below;

First, there was a positive and statistically significant relationship between FDI inflows and government expenditure in infrastructure. Second, there was a positive and statistically significant relationship between FDI inflows and domestic debt. Third, there was a positive and statistically significant relationship between FDI inflows and external debt and fourth, there was a positive and statistically significant relationship between FDI inflows and taxation revenues.
3.6 Test for Correlation

In the test for correlation, the study employed the correlation coefficient approach to investigate how the variables are correlated. The results indicated that FDI and Tax were positively correlated to each other. Domestic debt was found to negatively correlate with the other variables while infrastructure was found to negatively correlate with all the other variables except for Domestic debt. The results on the correlations are provided in the table below:

<table>
<thead>
<tr>
<th></th>
<th>FDI</th>
<th>TAX</th>
<th>Ext Debt</th>
<th>Domestic Debt</th>
<th>Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDI</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TAX</td>
<td>0.599577</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ext Debt</td>
<td>0.610154</td>
<td>0.986379</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domestic Debt</td>
<td>-0.57613</td>
<td>-0.72835</td>
<td>-0.75124</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Infra</td>
<td>-0.65583</td>
<td>-0.74149</td>
<td>-0.74983</td>
<td>0.666724</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 8 Correlation Results

3.7 Vector Auto Regression (VAR) Model Fitting

Vector auto regression (VAR) is a forecasting algorithm that is used whenever two or more time series influence each other (Bouvet, Brady and King, 2013). A model is considered to be an autoregressive model when each variable (time series) is modelled as a function of the past values (Bouvet, Brady and King, 2013). The predictors are the lags (time delayed values) of the series. Therefore, it is used when the relationship between the time series is bi-directional. There are two basic requirements that researchers need to consider when using VAR. They include; the study should have a minimum of two time series and the time series should influence each other (Gasana, 2013). VAR models are different from other autoregressive models such as ARIMA, ARMA, and AR. The main difference between them is that the other models are uni-directional, where the predictors influence the Y-variables and not vice versa (Fagbola, Adegbite and Oke, 2020). Therefore, whereas vector auto regressive variables are bi-directional, which means that they influence each other, ARIMA, ARMA, and AR are uni-directional, which means that only the independent variables influence the dependent variables.

The researcher conducted the analysis by analyzing the time series characteristics, testing for causation amongst the time series, and testing for the stationarity of the data. Moreover, the researcher transformed the series to make it stationary where necessary, found the optimal order (p), prepared, trained, and tested the data sets and the model, and rolled back the transformations if any. The dataset included five variables that include; domestic debt, international debt, government expenditure on infrastructure, taxation, and FDI inflows.

3.7.1 Summary of Vector Auto Regression Model

Table 9 below provides the vector auto regressions models that show relationship between the lags of the five time series at lag order 4.
Summary of Regression Results

Model: VAR
Date: Fri, 12, Mar, 2021
Time: 22:59:15
Optimal lag: 4

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-89.1104</td>
<td>8.00000</td>
<td>-97.1855</td>
<td>408.855</td>
<td>-1.54542e-49</td>
<td>-90.1531</td>
<td>-2.46892e-52</td>
</tr>
</tbody>
</table>

Results for equation FDI inflows

<table>
<thead>
<tr>
<th></th>
<th>coefficient</th>
<th>std. error</th>
<th>t-stat</th>
<th>prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>const</td>
<td>0.000064</td>
<td>389.906292</td>
<td>0.000</td>
<td>1.00</td>
</tr>
<tr>
<td>L1.FDI inflows</td>
<td>-0.292745</td>
<td>0.000000</td>
<td>-15025311.439</td>
<td>0.000</td>
</tr>
<tr>
<td>L1.Government_Expenditure_on...</td>
<td>0.521792</td>
<td>0.000000</td>
<td>65194934.904</td>
<td>0.000</td>
</tr>
<tr>
<td>L1.Total_Tax_Revenue</td>
<td>0.324464</td>
<td>0.000000</td>
<td>6347225.410</td>
<td>0.000</td>
</tr>
<tr>
<td>L1.Domestic_Debt</td>
<td>-0.003026</td>
<td>0.000006</td>
<td>-515.765</td>
<td>0.000</td>
</tr>
<tr>
<td>L1.International_Debt</td>
<td>-0.004313</td>
<td>0.000000</td>
<td>-1051.602</td>
<td>0.000</td>
</tr>
<tr>
<td>L2.FDI inflows</td>
<td>-0.295667</td>
<td>0.000000</td>
<td>-23569108.920</td>
<td>0.000</td>
</tr>
<tr>
<td>L2.Government_Expenditure_on...</td>
<td>0.147337</td>
<td>0.000000</td>
<td>-17637212.267</td>
<td>0.000</td>
</tr>
<tr>
<td>L2.Total_Tax_Revenue</td>
<td>-1.376357</td>
<td>0.000000</td>
<td>-43668170.730</td>
<td>0.000</td>
</tr>
<tr>
<td>L2.Domestic_Debt</td>
<td>-0.006457</td>
<td>0.000004</td>
<td>-2546.482</td>
<td>0.000</td>
</tr>
<tr>
<td>L2.International_Debt</td>
<td>0.000013</td>
<td>0.000000</td>
<td>6.952</td>
<td>0.000</td>
</tr>
<tr>
<td>L3.FDI inflows</td>
<td>-0.359899</td>
<td>0.000000</td>
<td>-9892990.294</td>
<td>0.000</td>
</tr>
<tr>
<td>L3.Government_Expenditure_on...</td>
<td>0.147337</td>
<td>0.000000</td>
<td>-17637212.267</td>
<td>0.000</td>
</tr>
<tr>
<td>L3.Total_Tax_Revenue</td>
<td>0.171336</td>
<td>0.000000</td>
<td>3058135.525</td>
<td>0.000</td>
</tr>
<tr>
<td>L3.Domestic_Debt</td>
<td>0.003176</td>
<td>0.000004</td>
<td>512.334</td>
<td>0.000</td>
</tr>
<tr>
<td>L3.International_Debt</td>
<td>0.033088</td>
<td>0.000002</td>
<td>14002.372</td>
<td>0.000</td>
</tr>
<tr>
<td>L4.FDI inflows</td>
<td>-0.415320</td>
<td>0.000000</td>
<td>-11037803.658</td>
<td>0.000</td>
</tr>
<tr>
<td>L4.Government_Expenditure_on...</td>
<td>0.033204</td>
<td>0.000000</td>
<td>-1558604.200</td>
<td>0.000</td>
</tr>
<tr>
<td>L4.Total_Tax_Revenue</td>
<td>0.277726</td>
<td>0.000000</td>
<td>4973612.593</td>
<td>0.000</td>
</tr>
<tr>
<td>L4.Domestic_Debt</td>
<td>-0.015739</td>
<td>0.000004</td>
<td>-3944.646</td>
<td>0.000</td>
</tr>
<tr>
<td>L4.International_Debt</td>
<td>-0.066790</td>
<td>0.000002</td>
<td>-42220.744</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Table 9. Log of FDI inflows VAR model.

The VAR model with log of FDI inflows as the dependent variable and the fiscal policy proxies as the predictor variables is provided in table 8 above.

The model is depicted below;
\[ \log(FDI_t) = b + b_1 TR_t + b_2 GEPD_t + b_3 GE_t + b_4 DD_t + e_t \]

FDI inflows = 0.000064 + 0.033204 Government Expenditure on infrastructure + 0.2777 Tax revenue - 0.015739 Domestic Debt + 0.06679 International Debt

The findings of the study are in line with some of the studies that were reviewed in the literature review section, and they disagree with other studies. The study revealed that government debt expenditure measured as expenditure on infrastructure and FDI growth are positively and significantly related \((b= 0.033204, p=0.0000)\). This means that a unit increase expenditure on infrastructure by 1unit leads to a subsequent increase in FDI by 0.033204units. The results agree with Simuyu (2016) that government development expenditure on infrastructure had a significant positive effect on FDI inflows to Kenya. The results are also in agreement with Wekesa, Wawire and Kosimbei (2016) who conducted a study on effects of infrastructure development on foreign direct investment in Kenya and established that improved transport infrastructure, communication infrastructure are important determinants of FDI inflows into Kenya. According to Bose et al., (2003) who investigated the effect of government expenditure examining economies of thirty developing countries over the decades of the 1970s and 1980s indicated a positive and significant correlation between the share of government capital expenditure in GDP and economic growth. Shahabadi and Mahmood (2005) established that infrastructure, natural resources, human capital positively influence FDI inflows. The findings are also in line with a study by Shah and Iqbal (2016) who examined government expenditure as a determinant of inward FDI for Pakistan. Their findings indicate that government health, education and development expenditure have a positive and significant long run relationship with the FDI. On the contrary, the findings disagree with a study by Anwar (2017) in Middle East and North Africa that found a negative association between public expenditure and inward FDI at the 0.05 level of significance.

In addition, the results revealed that external government debt and FDI are negatively and significantly related \((b =-0.066790, p=0.0000)\). This means that a unit increase external government debt by 1units leads to a subsequent decrease in FDI by -0.066790units. The results agree with Shahabadi and Mahmood (2005) who examined the determinants of foreign direct investment in Iran and indicated external debt negatively influences FDI inflows. Additionally, the results of the research disagree with findings by Ajisafe, Nassar, Fatokun, Soile and Gidado (2006) who examined external debt and foreign private investment in Nigeria by carrying out a test for causality between 1970 and 2003. Co-integration test showed that the variables are not related in the long run using the likelihood ratio as a measure of significance.

Regression coefficient shows domestic debt and foreign direct investment are both negatively and significantly related \((b=-0.015739, p=0.0000)\). This means that a unit increase of domestic debt leads to a subsequent decrease in FDI growth by -0.015739 units. The results disagree with Udo and Obiora (2006) who investigated the determinants of foreign direct investment and economic growth in the West African monetary zone using panel data and found that domestic debt, external debt service ratio and political instability negatively influence foreign direct investment inflows.
Further, regression results showed that tax revenue and FDI are positively and significantly related (b= 0.277726, p=0.0000). This means that a rise in the units of tax revenue by one unit leads to an increase in FDI by 0. 0.277726 units. The results are in contrast Akinwunmi et al (2017) that there is an inverse relationship between multiple taxes and Foreign Direct Investment (FDI); which implies that the higher the taxes, the less the FDI inflows into the country. The results also contrast Rădulescu and Druica (2014) who did a study on impact of fiscal policy on foreign direct investments in Romania and established that direct taxes seem to play a less important role, being relevant only in the long-term. On the other hand, the findings are in line with a study by Klemm and Parys (2009) where they conducted an empirical study to investigate how effective tax incentives are in attracting investments. FDI and private gross fixed capital formation were used as the dependent investment variables and tax as the independent variable. Their result revealed a significantly positive relationship between tax incentives and FDI.

3.8 Post-Estimation Procedures

The study used various post-estimation procedures that include the test for the granger causality and the test for residual correlations.

3.8.1. Testing for Causation using Granger’s Causality

The basis behind the vector auto regression model is that each of the time series in the system influence each other (Hossain, 2005) Therefore, one can predict the series with past values of itself along with other time series in the system. Using the Granger’s Causality test, it is possible to test this relationship even before building the model. The Granger’s Causality test tests the null hypothesis, which states that the coefficients of past values in the regression is zero (Morana) In simpler terms, the past values of time series (X) do not cause the other series (Y). Therefore, if the p-value obtained from the test is less than the significance level of 0.05, then you can safely reject the null hypothesis.

The researcher carried out the Granger’s Causality test and checked all possible combinations of the time series. The rows are the responsive variable while the columns are the predictors. The values in the table are the p-values as depicted in table 9 below. The p-values are less than the significance level of 0.05 which implies that the null hypothesis that states that the coefficients of the corresponding past values is zero, that is the X does not cause the Y to be rejected. If a given p-value is less than the significance value of 0.05, then the corresponding X series (column) causes the Y (row). Looking at the p-values in the table 10 below, it is evident that all the variables (time series) in the system fall below the significance level.
FDI inflows y  
Government Expenditure on Infrastructure x  
Total Tax Revenue x  
Domestic Debt x  
International Debt x

<table>
<thead>
<tr>
<th></th>
<th>FDI inflows y</th>
<th>Government Expenditure on Infrastructure x</th>
<th>Total Tax Revenue x</th>
<th>Domestic Debt x</th>
<th>International Debt x</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDI inflows y</td>
<td>1.0</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Government Expenditure on Infrastructure y</td>
<td>0.0</td>
<td>1.0000</td>
<td>0.0000</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total Tax Revenue y</td>
<td>0.0</td>
<td>0.0124</td>
<td>0.9999</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Domestic Debt y</td>
<td>0.0</td>
<td>0.0000</td>
<td>0.0000</td>
<td>1.0</td>
<td>0.0</td>
</tr>
<tr>
<td>International Debt y</td>
<td>0.0</td>
<td>0.010</td>
<td>0.0000</td>
<td>0.0</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Table 10. Granger’s Causality test.

3.8.2 Checking For Serial Correlation of the Residuals Using the Durbin-Watson Statistic

Researchers check whether there is any residual pattern in the residuals or the errors using the Durbin Watson statistic. In case there exists any correlation in the residuals, then this indicates that there is some pattern in the time series, which is left to be explained by the model. Therefore, in such a case, the researcher can either increase the order of the model or induce more predictors into the system. Serial correlation of errors is determined using the Durbin Watson statistic. The value of the statistic may vary between 0 and 4. The closer the value is to the value 2, and then it indicates that there does not exist a significant serial correlation. If the value is closer to 0, this means there is a positive serial correlation and if it is closer to 4, this shows that there exists a negative serial correlation.

Table 11 below depicts the results of the Durbin Watson test.

<table>
<thead>
<tr>
<th>Durbin Watson</th>
<th>Table 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDI inflows</td>
<td>2.1</td>
</tr>
<tr>
<td>Government Expenditure on Infrastructure</td>
<td>2.9</td>
</tr>
<tr>
<td>Total Tax Revenue</td>
<td>2.23</td>
</tr>
<tr>
<td>Domestic Debt</td>
<td>1.46</td>
</tr>
<tr>
<td>International Debt</td>
<td>3.07</td>
</tr>
</tbody>
</table>

Table 11. Durbin Watson test.

Table 8 above shows that the FDI inflows have a Durbin Watson value of 2.1, government expenditure on infrastructure has a Durbin Watson value of 2.9, the tax revenue has a Durbin Watson test of 2.23 and the domestic debt has a Durbin Watson value 1.46, which indicates that the residuals of the FDI inflows, domestic debt, tax revenue, and government expenditure on infrastructure do not have a significant serial correlation. Finally, the international debt has a Durbin Watson value of 3.07, which indicates that it had a negative serial correlation. Therefore,
there was no residual pattern in the error values and thus there was no need to increase the order of the model or induce predictors into the system.

3.8.3 Correlation matrix of residuals

<table>
<thead>
<tr>
<th></th>
<th>FDI inflows</th>
<th>Government Expenditure on Infrastructure</th>
<th>Total Tax Revenue</th>
<th>Domestic Debt</th>
<th>International Debt</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDI inflows</td>
<td>1.000000</td>
<td>-0.515701</td>
<td>0.129930</td>
<td>0.155165</td>
<td>0.492782</td>
</tr>
<tr>
<td>Government Expenditure on Infrastructure</td>
<td>-0.515701</td>
<td>1.000000</td>
<td>0.332006</td>
<td>-0.805237</td>
<td></td>
</tr>
<tr>
<td>Total Tax Revenue</td>
<td>0.129930</td>
<td>0.332006</td>
<td>1.000000</td>
<td>0.883358</td>
<td>-0.310406</td>
</tr>
<tr>
<td>Domestic Debt</td>
<td>0.155165</td>
<td>0.443351</td>
<td>0.883358</td>
<td>1.000000</td>
<td>-0.201811</td>
</tr>
<tr>
<td>International Debt</td>
<td>0.492782</td>
<td>-0.805237</td>
<td>-0.310406</td>
<td>-0.201811</td>
<td>1.000000</td>
</tr>
</tbody>
</table>

Table 12. Correlation matrix.

Table 12 above shows the correlation matrix of the residuals. In circumstances where adjacent residuals are correlated, one residual can predict the other residual. This is referred to as autocorrelation.

5.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Regression of coefficients results shows that government expenditure (infrastructure) and FDI are positively and significantly related (b= 0.033204, p=0.0000). This means that a unit increase government expenditure (infrastructure) by 1 units leads to a subsequent increase in FDI by 0.033204 units. The results also revealed that external government debt and FDI are negatively and significantly related (b =-0.066790, p=0.0000). This means that a unit increase expenditure on infrastructure by 1 units leads to a subsequent decrease in FDI by -0.066790 units. The results also revealed that domestic debt and FDI are negatively and significantly related (b= -0.015739, p=0.0000). This means that a unit increase expenditure on infrastructure by 1 units leads to a subsequent decrease in FDI by -0.015739 units. The results regression results showed that taxation measured as tax revenues and FDI are positively and significantly related (b= 0.277726, p=0.0000). This means that a rise in the units of tax revenues by one unit leads to an increase in FDI by 0.277726 units.

The study concludes that investment on infrastructure affects foreign direct investment in Kenya. Government acquisition of goods and services intended to create future benefits, such as infrastructure investment or research spending, is classed as government investment. Hence, for Kenya to attract more FDI, continued infrastructural development is key since quality infrastructure affords investors a conducive investment climate in which to operate. The study therefore concludes that excessive external & internal borrowing negatively affects foreign direct investment in Kenya. Finally, the study established that tax measured as tax revenues and FDI are positively and significantly related. The study therefore concludes that tax revenue collected affects foreign direct investment in Kenya.
The study recommends that it is vital for the Kenyan government to allocate more funds to key infrastructural projects that will accelerate trade and investments into the country. The study also recommends that the government should also come up with relevant policies that will ensure that FDI continues to flow while at the same time creating room for the local producers to benefit from their operations. Such policies could be in the line of joint ventures with foreign investors making it possible for transfer of skills and technology and sharing out the benefits. The government should as well enact policies geared towards maintaining political stability such that foreign investors do not have to keep adjusting their strategies every time a new political dispensation ensues. The study recommends that the government should also aim at promoting both domestic and foreign investments through appropriate policies and regulations, provision of good infrastructure and other amenities that would boost the growth of GDP, and hence increase tax revenues. This study recommends reduction of government debt in order to maintain favorable balance of trade. This study recommends that there is need for policy makers to regulate the debt levels prevailing in the country bearing in mind that they influence FDI inflows in the country. Deliberate export-oriented approach through product diversification, international trade promotion to ensure that our products can be competitive in the international markets.

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