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**RELATIONSHIP BETWEEN EXTERNAL DEBT AND PRIVATE INVESTMENTS
IN KENYA**

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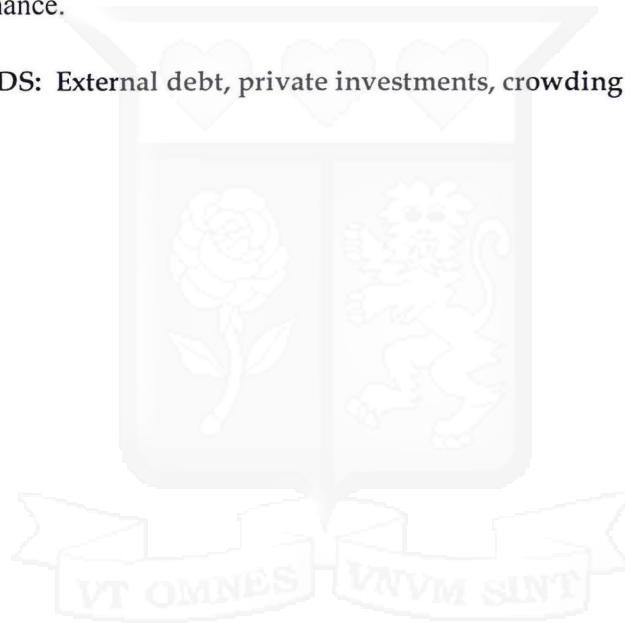
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ABSTRACT

The purpose of this study is to find out the effectiveness of external debt in boosting economic growth in Kenya and its impact on private investment. This study uses an AutoRegressive Distributive Model (ARDL) to estimate the long run impact of external debt on private investments in Kenya. Time series data is used for the period 1971-2016. The main hypothesis in this study is that the large accumulation of external debt cripples investments in the private sector. The results of the model showed that external debt has a negative impact on private investments although it is statistically insignificant both in the long run and in the short run. Meaning that the relationship between the two cannot be determined to be a result of anything but mere chance.

KEY WORDS: External debt, private investments, crowding out, economic growth



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INTRODUCTION

BACKGROUND

According to World Bank total external debt is the sum of publicly guaranteed and private nonguaranteed long-term debt, use of IMF credit and short-term debt.¹ It is basically debt owed to non-residents repayable in currency, goods or services. It comprises of multilateral debt, bilateral debt, export credits and international sovereign bonds. Many developing countries resort to external borrowing to bridge the domestic resource gap in order to accelerate economic development (Nassar & Fatokun, 2006) the main aim of acquiring capital from foreign countries is to increase wealth in order to finance growth and expansion. (Vasishtha, 2007) Proposes that countries that are characterized by poorly developed capital markets or supply of domestic savings may be forced to borrow in foreign markets. Also, (Beaugrand, Loko, & Mlachila, 2002) purport that the financial costs of highly concessional loans are likely to be smaller over the long run in spite of risks inherent to foreign currency borrowing as compared to internal borrowing. However, governments may resort to domestic market borrowing in order to help mobilize domestic savings and develop domestic financial markets.

Investment is defined as the rate of adjustment of the gap between the desired capital stock and existing capital stock according to the neoclassical view (Hassan & Salim, 2011). Output level, real interest rates, public investment, external debt and rate of inflation are some of the determinants of private investments. (Hassan & Salim, 2011) An increase in level of output and a decrease in the level of interest rates both have the effect of improving or increasing private investments.

The effect of public investment on private investment is somewhat ambiguous. On one hand, government spending in infrastructure can suggest the long-term commitment of government to restructure the economy and thereby creating an investment friendly environment for the private sector by reducing uncertainty (Hassan & Salim, 2011) Conversely,(Devarajan & Swaroup, 1996) assert that it is possible that the

¹ [http://databank.worldbank.org/data/Views/Metadata/MetadataWidget.aspx?Name=Short-term%20debt%20\(%20of%20total%20external%20debt\)&Code=DT.DOD.DSTC.ZS&Type=S&ReqType=Metadata&ddlSelectedValue=IDN&ReportID=54582&ReportType=Table](http://databank.worldbank.org/data/Views/Metadata/MetadataWidget.aspx?Name=Short-term%20debt%20(%20of%20total%20external%20debt)&Code=DT.DOD.DSTC.ZS&Type=S&ReqType=Metadata&ddlSelectedValue=IDN&ReportID=54582&ReportType=Table)

expenditures which are mainly considered productive could become unproductive especially if there is an excess of them. More specifically, capital expenditures that are often thought to be the main drivers of development have been excessive in developing countries rendering them unproductive at the margin. The impact that external debt is said to have on private investments is still at a moot point till today. (Hassan & Salim, 2011) Postulate that the foreign resources can increase private investment because of the conditionality attached to them and the conditionality being to privatize the public-owned enterprises while (Acosta & Loza, 2005) state that a high debt level may be an indicator of over-indebtedness, signaling the lack of viability and sustainability of current macroeconomic policies in the long run, and most likely impacting investors' expectation negatively due to the increase in the degree of uncertainty on future policies. (Hassan & Salim, 2011) Assert that high debt level also reduces the future returns to investment because a substantial amount of future return will have to be used service the prior loan. The rate of inflation has a negative relationship with private investments. Inflation erodes the purchasing power of money so there is little incentive for people to save money in the banking system therefore leads to reduction of funds available for investment purpose through the banking system (Hassan & Salim, 2011).

This study will primarily focus on the probable link or connection between external debt and private investments in Kenya. One view is that high levels of external debt which is justified by heavy investment in infrastructure (an injection to the economy) through the multiplier effect leads to an increase in output and income; thus it eventually leads to increase in private investments. The opposing view is that the heavy investment in infrastructure which is financed by external debt leads to a decrease in private investments because when public investment increases, aggregate demand also increases which leads to higher money demand and interest rates. Leading to less incentive in the private sector. The question this study seeks to answer is where Kenya

lies in this debatable issue.

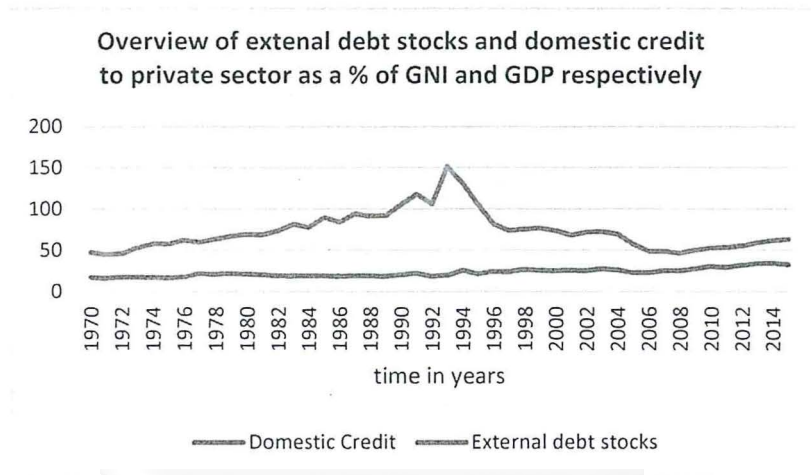


Figure 10 Overview of external debt and private investments

STATEMENT OF THE PROBLEM

(Fajana, 2003) Proposes that there is nothing wrong with external debt or foreign borrowing. He believes borrowing is desirable and also unavoidable because external borrowing is the first order condition for bridging the domestic gap. The Second order condition is such that the funds must be invested in viable projects whose rate of return is higher than that of the interest rate of the loan.

Despite the positive impact that external debt is intended to have in developing countries this is not always the case. Some studies have found presence of crowding out of private investments due to heavy external debt (Borensztein, 1990) and (Iyoha, 1999). However, others argue that external debt has a positive impact on private investments (Akina & Celebi, 2007)

In Kenya, infrastructure developments have been on the rise from 13.1% in 2014 to a 13.6% in 2015 according to Deloitte's Economic Outlook. This is because infrastructure development is considered to be a key component of Kenya's goal of becoming a middle income economy by 2030, which requires attaining an economic growth greater than 10%. The heavy investment in infrastructure is financed by a lot of external borrowing which explains why the external debt has also been on an upward trajectory. According to the (Treasury, 2016) total public and publicly guaranteed external debt increased from Ksh 1,138,505 million in June 2014 to Ksh 1,423,252 which is just a 25% increase in one year.

The challenge that this paper aims to counter is the particular lack of knowledge on the link between a growing external debt which is justified by heavy investment in infrastructure and the private sector in Kenya. Given that we know of a possibility that heavy investment in capital may become unproductive especially if there is an excess of them.

RESEARCH OBJECTIVES

The general objective of the study is to determine the relationship between external debt and private investments in Kenya. The specific objective is:

1. To analyse the relationship between external debt and private investments in Kenya.
2. To analyse the relationship between private investments and growth.

RESEARCH QUESTIONS

1. What is the long-term effect of external debt on private investments in Kenya?
2. What is the sign of the relationship between external debt and private investments in Kenya?

SIGNIFICANCE OF THE STUDY

Most of the studies carried out so far in this area have focused on the impact of external debt on economic growth especially trying to check for the existence of the debt overhang in Kenya. Although relevant, most literature has failed to take into account the fact that Kenya's debt is actually sustainable according to the Debt Sustainability Analysis (Annual Public Report Management Report 2014/2015) It further states that significant effort has been made to improve the institutional arrangement of debt management as well as capacity to assess risk. Thus, given that Kenya faces a low risk of external debt distress we should therefore refocus our attention to testing whether the heavy public investments in Kenya will have impact on private investments.

The study will specifically be of importance to policy makers in order to know whether the borrowed funds are being used efficiently.

SCOPE AND ORGANISATION OF THE STUDY

The study is divided into five sections. Chapter two reviews both theoretical and empirical literature on previous studies done. Chapter three will entail the data sources and the methodology the study aims to use. Chapter four will discuss the study's

empirical findings while chapter five will encompass the conclusions of the study's results and their subsequent implications.



LITERATURE REVIEW

INTRODUCTION

In this chapter, the study delves into the theoretical issues surrounding external debt and private investments. The determinants of private investments, the crowding-out debate from the point of view of the Classical economists and Keynesian economists is also discussed. The section concludes by highlighting empirical literature on the relationship between external debt and private investments in developing countries.

THEORETICAL LITERATURE

DETERMINANTS OF PRIVATE INVESTMENTS

(Hassan & Salim, 2011) Defines investment as the rate of adjustment between the desired capital stock and existing capital stock. $(K)^*$ is the capital stock that private business sector would like to have in the long run. $(K-1)$ is the amount of capital at the end of the last period. The desired capital stock is dependent on rental cost of capital and level of output (Y)

$$K^* = f(rc, Y)$$

The desired capital stock is negatively related with rental cost of capital and positively with level of output. The flexible accelerator/gradual adjustment gives the adjustment between desired capital stock and actual capital stock.

$$I = \lambda(K^* - K_{-1})$$

Where:

I= investment

λ = amount of discrepancy between desired and actual capital stock.

We can therefore infer that the factors that affect the capital stock also affect investment in the same way.

1. Real interest rate

In the Keynesian IS-LM model the investment demand function is given as

$$I = \bar{I} - b_i$$

Where I is investment

\bar{I} is autonomous investment

I is real interest rate

b is responsiveness of investment to changes in real interest rate

Therefore investment and real interest rate are inversely related.

2. Public investment

Public investment can boost private investment by increasing private return through the provision of public goods such as law, order and security. Government spending may also suggest the long-term commitment of government to restructure the economy and thus creating an investment friendly environment for the private sector by reducing uncertainty and incredibility. In this case private and public investments are positively correlated.

However, in the standard IS-LM model, an increase in public investment leads to a decrease in private investment.

3. Terms of trade

External shocks to an economy may have adverse effects on current account which may have negative effects on private investments. Terms of trade may affect private investments in two ways through import price/decrease in export price. If import price is increased domestic price level will increase demand for money and interest rates which will reduce interest rates. Also, a reduction in the export prices will lead to a reduction of the investment in the export economy.

4. External debt

Foreign resources can increase private investments because of the conditionality attached to them and the conditionality being to privatize the public owned enterprises. (Acost & Loza, 2004) Note that a high debt level may be an indicator of over-indebtedness signalling the lack of sustainability of macroeconomic policies and most likely impacting investor's expectation negatively due to the increase in degree of uncertainty on future policies. The author also proposes that an increase in debt level reduces the future returns to investments because a substantial amount of future return will be used to service prior loans.

5. Inflation

Inflation enters into the investment model from two theoretical perspectives. First, it has been used as a proxy for uncertainty in the economy. Second, inflation erodes the purchasing power of money therefore there is little incentive for people to save money in the banking system leading to a reduction of funds available for investment purposes through the banking system. Thus, a negative relationship is expected between rate of inflation and private investment.

DEBT OVERHANG HYPOTHESIS

(Krugman, 1988) Describes a country to have a debt overhang problem when the expected value of potential future resources transfers is less than its debt. The author further explains it as the presence of an existing inherited debt sufficiently large that creditors do not expect with confidence to be fully repaid. He compares a debtor country to a debtor firm whereby at any given time, the creditors of a firm view that firm as having a probability distribution over streams of future earnings out of which the debt service can be paid. If the present value of the stream of earnings is expected to be less than the firm's debt then creditors will not be expected to be fully repaid. (Sachs, 1989) Asserts that the debt overhang exists when the country's debt service burden is so heavy that a large portion of the current output accrues to foreign lenders and consequently creates disincentive to invest.

(Clements, Bhattacharya, & Nguyen, 2003) Purport that debt service is considered an implicit tax therefore discouraging investment and stifling economic growth thus making it virtually impossible for highly indebted countries to escape poverty. (Pattillo, Poirson, & Ricci, 2002) Also mention the same that as the stock of public debt increases there may be expectations that the government's debt service obligations will be financed by distortionary measures for example inflation tax. (Pattillo, Poirson, & Ricci, 2002) Discuss discouraging of domestic and foreign investments as another effect of the debt overhang. This is attributed to the fact that there is some likelihood in the future that external debt will be greater than a country's repayment ability. (Daniel & Wijnbergen, 1995) Say that another effect of the rapid accumulation of the debt can also be accompanied by increasing capital flight if the private sector fears imminent devaluation or increase in taxes to service the debt.

A lot of research has been done testing for the presence of the debt overhang in Kenya. Although relevant, many researchers are missing the point and looking at the problem all wrong. The attention should be refocused to test for efficiency of external debt in Kenya since we know that the external debt in Kenya is sustainable following the Annual Debt Management Report 2014/2015.

EMPIRICAL LITERATURE

The following section provides a review of some of the empirical literature that has been done in the areas of external debt, private investments and growth.

PUBLIC INVESTMENTS, PRIVATE INVESTMENTS AND GROWTH

As mentioned earlier in this chapter, there are two main schools of thought when it comes to the crowding-out debate. One school of thought asserts that there is a positive impact of public investments on private investments. The other school of thought says that external debt has a negative impact on private investments. This sections highlights the studies that have put this theory to test.

(Ghani & Din, 2006) Explore the role of public investment in the process of economic growth using a vector autoregressive approach for the time period 1973 to 2004 in Pakistan. The VAR consists of four variables namely public investments, private investments, public consumption and Gross Domestic Product. The authors justify the breakdown of investment into public and private by stating that it sheds light on whether or not public investment crowds out private investments. The results indicate that growth is largely driven by private investments and no strong inference was made about effect of public investments and public consumption on growth. Public investments is said to have a negative though significant impact on output thus raises concern about efficiency of public investments. Public investments is said to crowd out private investments which is contrary with the popular view that public investment complements private investments. I included this study in my literature because I intend on using the same methodology employed in this study.

(Akina & Celebi, 2002) This study uses the co-integrating VAR to examine the relationship between economic growth, public investment and private investment in

Pakistan from 1964 to 2000. The three variables of interest in the study were private fixed formation, public fixed formation and gross domestic product at market prices. The study presents evidence that past government investment has had a positive impact on private investments. The results also indicate that growth in the economy generates investments of both types. And that economic growth is the most important source of investment growth. Also, the conclusion highlights that different kind of government investment will have a different impact on private sector. However, the author fails to clearly highlight which government investment would yield which effect in the private sector. The difference in the results obtained by the author and (Ghani & Din, 2006) could be attributed to the different time periods used in the two studies.

(Khan & Kumar, 1997) The study examines a number of key issues concerning the extent to which public and private investments exert a differential effect on long-run growth of developing countries. The empirical analysis uses a sample of 95 developing countries for the period 1970 to 1990. The author justifies the large sample by stating that it allows for consideration of the hypothesis that there are significant differences in the differential effects of the two components of investment.

In order to focus on the role of private and public capital only these two forms of capital are distinguished in the theoretical model which also identifies the role of population growth, technical change, determinant of growth of real per capita income. The results establish that there is a substantial difference in the impact of private and public investment on growth with private investments having a much larger impact than public investment. This study is relevant because it brings to light the fact that it is not only the total level of investment that matters when policymakers are concerned with growth but also how the total investment is split between public and private investments is.

EXTERNAL DEBT AND PRIVATE INVESTMENTS

(Borensztein, 1990) The Study attempts to test the existence of a debt overhang effect directly for Philippines. It uses a standard neoclassical investment demand function and then adds a term representing the extent of debt overhang and continues to test its significance. Thus, seeks to obtain a measure of the impact of the debt overhang that is not tainted by other influences. This approach attempts to isolate the reduction in

investment stemming directly from the potential taxation due to foreign debt rather than from interest rate effects.

The empirical estimates found that it is possible to discern a debt effect as a factor depressing private investments. The estimates indicate that a \$1.3 billion bank debt reduction would increase investment demand by something between a half and two percentage points of Gross National Product. This study is relevant because it clearly states the direct effect of the debt overhang on private investments in the Philippines

(R., Nassar, Fatokun, & Gidado, 2006) Closer home, in Nigeria, a study is done to examine the causality between external debt and foreign private investment using time series data from 1970 to 2003. The main variables of interest were foreign private investments and external debt. Stationarity tests were performed using the ADF and PP test, which shows that the variables are of I (1) series. Cointegration test was also carried out to determine the long run relationship of the variables but the result of the analysis rejected the null hypothesis of cointegration at both 5% and 1% significance level. The absence of cointegrating equations determines the use of unrestricted vector autoregressive model, which gives the result of the causality. A bidirectional relationship was found between external debt and foreign private investments in Nigeria. Which means that both external debt and foreign private investments lead to one another. However, the study fails to consider the impact of this causality towards the Nigerian economy. What effect does this causality have on the economy and how should policymakers take care of it?

(Kamundia, Gitahi, & Mwilaria, 2015) This study seeks to find out the effect of public debt on private investments and economic growth in Kenya using an Ordinary Least Square estimation for the period 1980 to 2013. The study also aims to find out the direction of the causality between private investments and public debt. The study is informed by the consistent rising of the public debt levels while the private investments have remained lower than what is stipulated to make Kenya a newly industrializing middle- income economy by the year 2030. The results show the presence of a unidirectional causality between debt-GDP ratio and private investment. Meaning that public debt levels have predictive power on the level of private investments. The results also indicate that debt has a negative effect on private investments. Given that the study takes OLS as its estimation model it assumes that government policy and other variables used in the equation are exogenous which could lead to inaccurate

results. There is also no mention of a stationarity test before manipulating the data which could also lead to inaccurate results. This study will take a different approach from this one. It will seek to investigate the relationship between external debt and private investments as compared to this study which compares public debt to private investments.

EXTERNAL DEBT AND ECONOMIC GROWTH

The relationship between external debt and growth is mainly through the investment channel and this section gives a highlight of studies that test the relationship or the impact of external debt on economic growth.

(Iyoha, 1999) This study seeks to investigate the impact of external debt on economic growth in Sub-Saharan countries using a small macroeconomic model for the period 1970 to 1994. The basic macroeconomic simulation consists of three equations of which two are stochastic and one is an identity. The two stochastic equations relate to the production function and an investment demand equation incorporating a debt overhang variable in addition to a variable to capture the crowding out effect of debt service payments. The third equation is debt account identity.

The four identities in the dynamic simulation were for debt accumulation, debt to Gross National Product ratio, debt-service ratio and lagged value of per capita investment. The results indicate that there is a significant debt overhang effect as well as a crowding out effect. Thus, the large stock of external debt and heavy debt service payments have had a depressing effect on investments in Sub-Saharan Africa. The author suggests that heavily indebted countries in Sub-Saharan Africa need to articulate creative strategies for bringing about debt reduction so that the high debt stock and a crushing debt service would not have such a negative impact on economic growth.

(Ayadi & Ayali, 2008) The study represents a comparative exploration of the efficiency in which external debt funds have been utilized and whether countries could sustain its rapidly growing external debt profile with efficiency. The study specifically analyses how annual growth rate of output is affected by debt stock and its service indicators. The study uses time series data for the period 1980 to 2007 employing macroeconomic variable such as gross investment, exports, foreign debt stock, debt service variables, debt service indicators, and real GDP and debt stock indicators. Both

OLS and GLS approaches are employed in the study which follow the Solow-type neoclassical growth model.

The results show that there is a negative impact of debt in both Nigeria and South Africa. However, South Africa performs better than Nigeria in the application of external loans to promote growth. Also, external debt contributes positively to growth up to a point after which its contribution becomes negative in Nigeria. This paper is relevant because it chooses two great economies in Africa that is Nigeria and South Africa which have great potential for improving poverty levels in the African continent.

Lastly, In Nigeria, (Ezeabasili, Isu, & Mojekwu, 2011) A study is done to investigate the relationship between external debt and economic growth between 1975 and 2006. The study uses an OLS equation two stage approach with external debt, lagged GDP 1 year, external debt service, government expenditure, consumption, trade balance and capital formation as independent variables and capital formation as independent variables. In the first stage long-run OLS equation was conducted. The OLS estimates the long-run coefficients. Presence of cointegration was found among the variables thus an error correction model for growth was employed. Where the lag of all variables was set to two and deleting of the insignificant parameters until a parsimonious representation of the models contains only parameters that are statistically significant.

The results indicate that there is a negative short run relationship between external debt and economic growth in Nigeria. Also, the granger-causality test reveals that unidirectional causality exists between external service payment and economic growth at the 10% level of significance. This results confirm the results of (Iyoha, 1999)

METHODOLOGY

INTRODUCTION

In this section, the techniques and procedures followed in carrying out the empirical analysis of the relationship between external debt and private investments is discussed. The section also highlights the data sources of the study and the model specification

RESEARCH DESIGN

This research employs a quantitative approach to test the hypothesis. The study uses time series data covering the period between 1971 and 2015 for the following variables: Gross Domestic Product, Public Investment, Private Investments, External debt and real interest rate. Data collected from secondary sources including the World Bank. An autoregressive distributed lag (ARDL) model is employed to test the long run and short run impact of external debt on private investments undertaking time series property tests on the data collected.

MODEL SPECIFICATION AND ESTIMATION

Theoretical Underpinning

The variables used in this model are developed into the flexible accelerator model which was developed by (Blejer & Khan, 1984) to incorporate some of the institutional and structural characteristics of a developing economy.

This is whereby the long-run representation of the accelerator model, the desired stock of capital can be assumed to be proportional to expected output:

$$KP_t^* = aYR_t^e$$

Where:

KP^* is the capital stock that the private sector wishes to have in place in future periods and YR^e is the corresponding expected level of output. The variable a remains constant while KP^* is allowed to be affected by changing economic conditions so that the model does fit into the flexible accelerator mode.

Lags in the adjustment of actual investment that arise because of the time it takes to plan, build and install new capital can be introduced through a partial adjustment mechanism for the capital stock whereby the actual stock of capital is assumed to

adjust to the difference between the desired stock in period t and the actual stock in the previous period.

$$\Delta KP_t = \beta(KP_t^* - KP_{t-1})$$

Where ΔKP is net private investment and β is the coefficient of adjustment $0 \leq \beta \leq 1$. The above equation is in terms of net private investment whereas the data on investment are only available in gross terms. Thus, this equation must be transformed into gross investment terms to enable derivation of an equation that can be empirically estimated.

Gross private investment IP_t is defined as equal to net investment plus depreciation of the previous period's capital stock:

$$IP_t = \Delta KP_t + \delta KP_{t-1}$$

Where δ is the rate of depreciation.

MODEL ESTIMATION

Based on the theoretical framework presented, this study adopts a linear model. The independent variables used in this research are external debt, GDP, public investment, and real rate of interest.

$$\ln Pinv_t = \beta_1 + \beta_2 \ln gdp_t + \beta_3 \ln ED_t + \beta_4 rir + \mu_t$$

Where $\ln Pinv$ refers to real gross domestic private investments, $Pubicinv$ to public investments, $\ln gdp$ to real gross domestic product (GDP), $\ln ED$ refers to external debt and rir is the real rate on interest. All variables are in log form except the real interest rate and public investments. μ_t denotes the stochastic error term which satisfies all usual properties and t refers to time subscript.

(Hassan & Salim, 2011) Inflation rate is omitted as real interest rate is included in the model. Political and Social factors have also not been considered for their non-availability in specific magnitude and frequency.

Data analysis procedure

The data will be analyzed using computer software, specifically the econometric tool Eviews.

The Augmented Dickey Fuller (ADF) test is going to be used to determine the stationarity of the variables. The ADF employs the following equation:

$$\Delta y_t = c_1 + c_2 + \omega y_{t-1} + \sum_{i=1}^r d_i \Delta y_{t-1} + v_t$$

The null hypothesis is that there exists a unit root in the time series (non-stationary time series), which is $H_0: \omega=0$ against the alternative hypothesis that the time series is stationary (no unit root) or $I(0)$ which is $H_1: \omega < 0$

After establishing the stationarity of the variables an ARDL model will be estimated using Eviews upon which diagnostic checks will be performed. Thereafter, a bound test is performed to test for the presence of a long run relationship.

JUSTIFICATION OF THE ARDL APPROACH

The ARDL was chosen for this study for two reasons. The first is that the approach yields precise estimates of both short and long run parameters and valid statistics even in the presence of endogenous variables. This was particularly helpful in this study. Finally, the ARDL model allows for the use of different optimal lags that could be used with limited data, making it quite suitable for this study as well.

DEFINITION AND MEASUREMENT OF VARIABLES

Variable	Measure	Source
Private investments (Pinv)	An injection of capital into a business from a private investor. The study will employ domestic credit to private sector as its measure. It is the dependent variable.	World Bank
Gross Domestic Product (GDP)	Total value of goods and services provided in a country in one year	World Bank
External Debt (ED)	The stock of resources borrowed externally by the Government. It is measured	World Bank

	by external debt stock as a % of GNI. It is expected that an increase will lead to a reduction in private investments.	
Real Interest Rate (RIR)	Rate of interest which has been adjusted for inflation. It is expected that an increase will lead to a reduction of private investments.	World Bank

Table 1: Description and measurement of variables

DATA AND CHOICES OF DATA

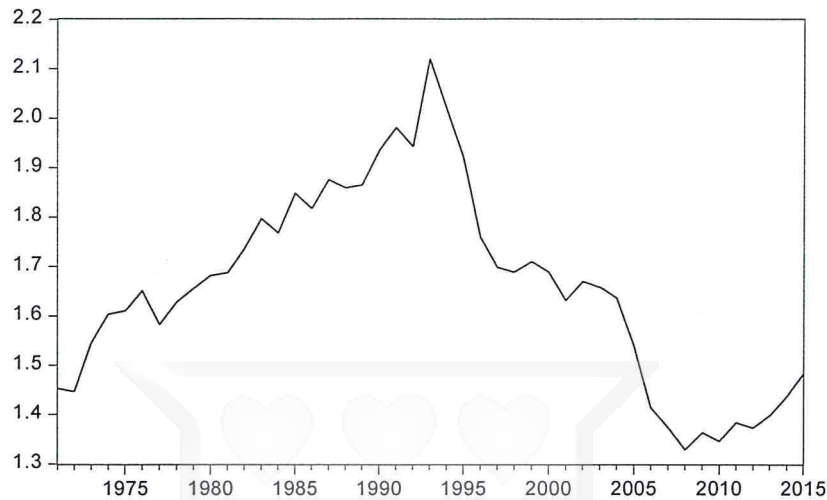
The study makes use of secondary sources of data for the analysis covering the period 1971 – 2015.

The data on GDP, external debt, private, real interest rates and public investments is retrieved from the World Bank, Africa Development Indicators database because it includes data on all these different variables for the specified time period. The World Bank can also be seen as a relatively reliable source.

RESEARCH FINDINGS AND DISCUSSION

DESCRIPTION OF KEY VARIABLES

ED



Series: ED	
Sample 1971 2015	
Observations 45	
Mean	1.658467
Median	1.658690
Maximum	2.120242
Minimum	1.329540
Std. Dev.	0.201503
Skewness	0.163702
Kurtosis	2.288530
Jarque-Bera	1.150092
Probability	0.562679

Figure 2: Description of external debt

According to Kenya Economic Policy and Trade Practices 1994, Kenya's balance of payments situation remained poor in 1993 owing to inadequate foreign exchange to finance imports, the high cost of imports and the depressed state of the economy. Tourism earnings stagnated due to sporadic violence in tourist regions. The capital account performed poorly and for the first time history, capital outflows exceeded inflows in 1992 which severely drained the country's foreign exchange reserves and the Kenyan government defaulted on external debt repayments.

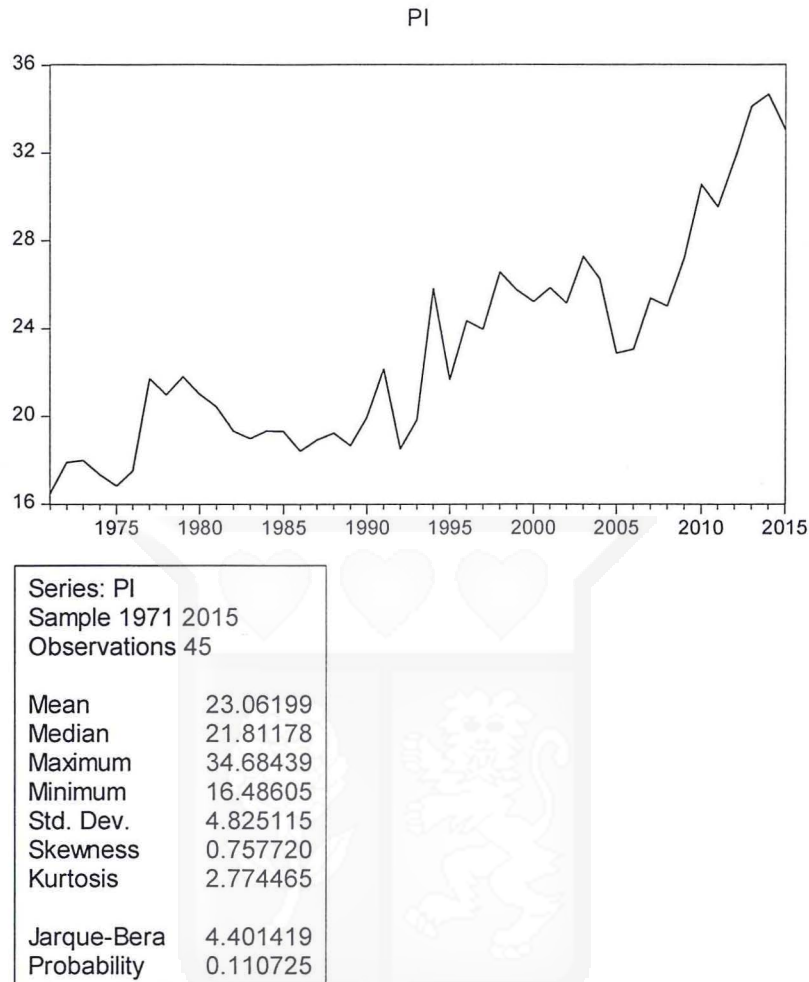


Figure 3: Description of private investments

There was a sharp decline in investment in 1992 which can be attributed to the political instability brought about by the multi-party elections that caused uncertainty which may have discouraged private investments.

In 1993, the Kenyan government began major economic reforms where the government eliminated price controls and import licensing and introduced conservative fiscal and monetary policies which led to economic growth and investment growth.

El Nino rains in 1997 destroyed critical infrastructure while violence before the elections forced some investors to relocate to areas which were much safer while at the same time discouraging potential investors. Investments also reduced in this period

due to budgetary cuts, poor infrastructure, reduced donor funding and high interest rates, (Republic of Kenya, 1998)

STATIONARITY TEST

When non stationary data is used in estimation, it produces unreliable t-statistics of the estimated coefficients which have theoretically infinite variances which leads to spurious results. The study therefore made use of the Augmented Dickey Fuller test and Phillips-Perron test to test for the non-stationarity properties of the time series.

Variable	ADF Test Stat	ADF Critical Value	PP Test Stat	PP Critical Value	Stationarity
Log of ED	-5.467	-2.930	-5.449	-2.929	Stationarity at I(1)
Log of GDP	-4.655	-2.933	-4.484	-2.929	Stationarity at I(1)
Log of PI	-6.704	-2.931	-8.864	-2.929	Stationarity at I(1)
RIR	-4.248	-2.929	-4.496	-2.928	Stationarity at I(0)

Table 2: Unit Root Results

Table 1 shows that all variables are integrated order I(1) except for RIR which is stationary at level. The decision is made clear especially with regard to 5% significance level. This implies that an ARDL could be used to estimate the model given that all the dependent variables are I(1) and the independent variables are either I(1) or I(0).

ARDL RESULTS

The table below represents the ARDL model, as run by Eviews 9. Eviews automatically selected the lags for each variable, setting a maximum lag of 2 in both the dependent lags and the regressors.

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LNPI(-1)	0.469213	0.114121	4.111545	0.0002
LNED	-0.040215	0.028075	-1.432418	0.1598
LNGDP	0.085037	0.025200	3.374471	0.0017
RIR	0.002405	0.000689	3.489637	0.0012
C	-0.081938	0.182857	-0.448097	0.6565

Table 3: ARDL (2) results

It can be seen that Real Interest Rates, Gross Domestic Product and the previous period's investments can explain the current period's private investments since they are all statistically significant. They also have a positive impact on current private investments.

Diagnostic Checking

Checking For:	Test performed:	P value:	Conclusion:
Serial Correlation	Lm Test	0.7285	No presence of serial correlation
Heteroskedasticity	Breusch-Pagan	0.506	No presence of heteroskedasticity
Normality	Jarque-Bera	0.192	Data is normal

Table 4: diagnostic results

BOUND TEST RESULTS

Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	4.096346	3

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.72	3.77
5%	3.23	4.35
2.5%	3.69	4.89
1%	4.29	5.61

Table 5: Bound Test Results

The F statistic 4.096346 is higher than the critical value at level I(0) bound. Therefore, we reject the null hypothesis meaning that an equilibrating relationship exists between the variables.

The table below represents the cointegrating and long run forms of the long run model:

ARDL Cointegrating And Long Run Form

Dependent Variable: LNPI

Selected Model: ARDL(1, 0, 0, 0)

Date: 12/01/17 Time: 05:35

Sample: 1971 2016

Included observations: 45

Cointegrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNED)	-0.040215	0.028075	-1.432418	0.1598
D(LNGDP)	0.085037	0.025200	3.374471	0.0017
D(RIR)	0.002405	0.000689	3.489637	0.0012
CointEq(-1)	-0.530787	0.114121	-4.651093	0.0000

Cointeq = LNPI - (-0.0758*LNED + 0.1602*LNGDP + 0.0045*RIR -0.1544)

Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNED	-0.075765	0.054439	-1.391740	0.1717
LNGDP	0.160209	0.027428	5.841091	0.0000
RIR	0.004532	0.001527	2.967557	0.0050
C	-0.154370	0.336495	-0.458760	0.6489

Table 6 : Cointegrating and long run coefficients

The error correction term is negative and significant indicating long term granger causality running from the dependent to the independent variables. It also implies that about 53% of any movements into disequilibrium are corrected for within one period. Also, indicates that the speed of adjustment is fair given that it is 53%.

Both GDP and RIR have a positive and significant relationship with external debt.

In the long run GDP and real interest rates are seen to be significant and have a positive impact on private investments. However, external debt is found to be statistically insignificant.

The research questions: What is the long term effect of external debt on private investments and the sign of the relationship?

In the short run, external debt impacts private investments negatively however, the relationship between the two is insignificant. This also applies in the long run meaning that any relationship that is found to exist between the two is as a result of mere chance but not due to the presence of a significant relationship.



SUMMARY, CONCLUSION AND RECOMMENDATION.

This section is going to discuss the summary and findings that were communicated and interpreted in the previous chapter of the research. It begins by summarizing what the study entails and proceeds to discuss the objectives.

SUMMARY

The purpose of this study was to examine the relationship between external debt and private investments in Kenya. To address the objectives, time series data was collected from the period 1971 to 2016. An ARDL model was used to specify the short run and long run dynamics of this relationship. The study included real interest rates, external debt and GDP as independent variables. Overall, the study found that the relationship between external debt and private investments is statistically insignificant. Both GDP and RIR are found to have a positive impact on private investments.

CONCLUSION

The first objective is to analyze the relationship between external debt and private investments in Kenya. In the short run and the long run, there is no significant relationship between the two variables which means that private investments can't be determined to be as a result of external debt but rather as a result of mere chance which goes against my expectations that private investments will be influenced by external debt in the long run. This therefore nullifies my hypothesis of extensive external debt crippling private investments.

The other objective is to analyze the relationship between private investments and GDP. In the short run, GDP is a significant variable that explains private investments positively. A one unit change in GDP today will result in a 0.085 unit change in private investments. And in the long run a one unit change in GDP will increase private investments by 0.16 units. Thus, GDP can be used to explain private investments in Kenya.

Contrary to my expectations, external debt does not crowd out private investments. In fact, it is observed that there is no relationship whatsoever between the two variables.

POLICY IMPLICATIONS

This study has shown that economic growth has a positive relationship with private investments. These results suggest that it is important for the country to have stable macroeconomic stability in order to boost growth thus leading to an improvement in private investments. The government can lure private investors by using incentives such as tax free holidays. Macroeconomic stability could be enhanced by ensuring balance of economic relationships such as the balance of payments.

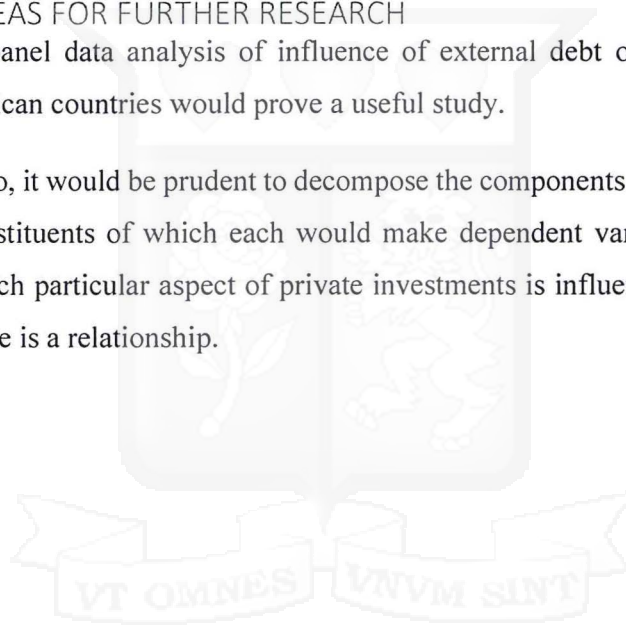
LIMITATION TO THE STUDY

Public investments which was initially a variable that was considered in the model was found to be highly correlated with GDP at 99% which led to the dropping of this variable.

AREAS FOR FURTHER RESEARCH

A panel data analysis of influence of external debt on private investments across African countries would prove a useful study.

Also, it would be prudent to decompose the components of private investments into its constituents of which each would make dependent variables, in order to determine which particular aspect of private investments is influenced by external debt if at all there is a relationship.



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