EFFECT OF LENDING INTEREST RATE ON DOMESTIC PRIVATE INVESTMENT IN KENYA

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ABSTRACT

Domestic private investment is the engine of growth in any economy. It is a major source of employment besides positively contributing to national output. Several policies in Kenya have been devised by the government in mobilization of domestic resources aimed at promoting economic growth and development through investment. Despite this, domestic private investment has been growing slowly over the years. The main aim of this study was to analyze the effect of interest rate on domestic private investment level in Kenya over the period between 1963 and 2014. The investment model was modified to capture various factors relevant to Kenya in determining the level of the growth of private domestic investment. The research design adopted for the study was causal research design that helped in investigating the relationship between the variables studied. Annual secondary time series data spanning from 1963 to 2014 obtained from the CBK, World Bank and KNBS was used. Non-probability purposive sampling technique was employed to select the sample of 44 years' time series data for the period 1971 to 2014. Unit root test (ADF test) was used to check the integration order of variables. The Johansen co-integration was employed to establish the relationship among variables. The unit root test revealed that deposit interest rate, lending interest rate and real exchange rate are I(1) while real interest rate and inflation rate are I(O).The findings showed that deposit ,lending and real interest rates negated domestic private investment in Kenya. The results of the study would be very important for policy formulation that would help spur domestic private investment to promote and sustain long term economic growth. Data results would also help policy makers to assess how private sector responds to government policies.

Keywords: Lending Interest Rate and Domestic Private Investment

INTRODUCTION

Background of the Study

Domestic private investment involves the use of productive resources by domestic firms to produce other goods and services in the expectation of returns in the form of profits. The Investment Promotion Act (IPA, 2004) defines domestic investment as the contribution of local or foreign capital by an investor, including the creation of, or the acquisition of business assets by or for business enterprises and includes expansion, restructuring, improving or rehabilitating of a business enterprise for economic growth. Domestic private investment leads to increase in employment opportunities, increase incomes, technological and infrastructure development.

Domestic private investment has been decreasing due to variation in interest rates. Interest rate has fundamental implications for the economy either influencing the cost of capital or influencing the availability of credit through increased savings. The policy interest rate is an interest rate that the Central Bank of Kenya (CBK) sets in order to influence the evolution of the main monetary variables in the economy (e.g. consumer prices, exchange rate or credit expansion, among others).

Lending interest rate in Kenya was stable after independence until 1970 and rose steadily between 1971 and 1980 but steeply rose between 1980 and 1998 averaging 22%, this is due to economic conditions in1992, the lending interest rate stood at 21.1 while it rose by 9% in 1993. The lending interest rate further rose to 28.8% in 1995. The rate rose to 33.8% again and finally to 30.2% in 1997. However, from 1998 the lending interest rate declined drastically up to 12.5% in 2004. Since then it experienced a slight steady lending rate that stood at 15% in 2011 and rose to 19.7% in 2015 (Central Bank of Kenya Annual Report, 2015)

Domestic investment levels in Kenya has been teetering below 16% while domestic private investment rose in Nigeria since the deposit rate increased from 4% in 1975 to 9.5% in 1986, while the lending interest rate rose from 6% to 10.5% within the same period. However, the low rates of interest that prevailed could not be sustained. The low and sometimes negative real interest rates discouraged savings, increased the demand for loanable funds. The demand for credit soon exceeded the supply of funds while essential sectors of the economy were starved of funds. Thus, the government devised investment-friendly interest rates to grow the economy (Obute, Asor and Idoko, 2012).

MATERIALS AND METHODS

The study employed a causal research design where the researcher intended to identify whether a cause-effect relationship existed between domestic private investment and lending interest rate. Causal research design helped in explaining how the independent variables result into a change in the dependent variable. Thus, the design was appropriate for the study in order to establish the long term and causal dynamic relationships between the variables studied. The data was obtained from World Bank, Kenya National Bureau of Statistics and Central Bank of Kenya

The analysis was done with help of e-views and ox- metrics for analysis. Additional terms or length of the lags in the first differences were based on the Akaike Information Criterion [AIC] and the Schwarz Information Criterion [SIC] to whiten the noise process. Determination of the optimal length of the lag was based on the minimum value of AIC and SIC. In other words extra lags [t-1, t-2, t-3 …… t-n] were added until the autocorrelation disappears. Data was log linearlized and Unit root test was then conducted using Augmented Dickey Fuller test (ADF) to test the stationarity of the data. Here the researcher compared the test statistic with Mackinnon critical value of standard Nyman Pearson framework to determine the stationarity status. Skewness goodness of fit test was used to determine the normality of the data. According to Aczel & Sounderpadian (2002), data is normal and unbiased when skewness statistic is between the range of ±3. Skewness statistic proves that the bell-shaped curve is stretched or not stretched to one side. Granger causality was tested to determine the type of causality that exists between the variables. Cointegration test was carried out to determine whether there exist long – run equilibrium between the variables. Cointegration test involves testing stationarity of the model estimate residuals. The existence of cointegration led to the estimation of the error correction model using the Ordinary Least Square (OLS) method.

The researcher carried out diagnostic tests on the model to ascertain whether the assumptions of the ordinary Least Square holds. They include autocorrelation, multicollinearlity and heteroscedasticity tests. Mulitcollinearlity is the general intercorrelation among explanatory variable (Gujarati, 2003).. Multicollinearlity was detected using coefficient of determination (R^2). If R^2 is high in excess of 0.8 or very low with few significant t – ratios, then multicollinearlity is present. Multicollinearlity leads to large variances and standard errors of OLS estimators which makes it more difficult to estimate the true value of the estimator. Multicollinearlity is eliminated by transforming the variables.

Heteroscedasticity occurs when the variance of the error term is not constant in each period and for all values of the independent variable. In this study, heteroskedasticity was tested by use of residual plots. The plot is a graph of regression standardized residuals against regression

standardized predicted variables. Heteroscedasticity is present when the width of the residuals increases or decreases as the predicted variables increases.

Autocorrelation occurs when the variances of the error term are sequentially interdependent. Autocorrelation is detected by use of Durbin Watson (DW) test. A DW of zero implies that there exist positive autocorrelation, while DW equal to four implies high negative correlation level. A DW of value between 2 and 2.5 implies that there is no correlation.

The equation will be as follows in terms of econometric analysis:

$$lnDI_t = \beta_0 + \beta_1 lnLIR_t + \beta_2 D_{1t} + \beta_3 D_{2t} + E_t$$

$lnDI$= Natural logarithm of domestic private investment in time *t*

$lnLIR_t$=Natural logarithm of lending interest rate in time *t*

D_{1t}=Dummy variable representing interest rate liberalization in time t, which takes on the value of zero before 1992, and one from 1992 onwards.

D_{2t} =Dummy variable representing the political environment in time t in the form of governance. It takes on the value of one from 1963-1978, zero from 1979-2002 and one from 2003-2013.

β_0=This is the coefficient representing other factors that influence domestic private investment in the absence of lending interest rates, time deposit interest rates, real interest rates, real exchange rates and inflation.

$(\beta_1, \beta_2, \beta_3,)$= These represent the elasticity parameters of the independent variables

E_t = The error term representing other independent variables that affect domestic private investment but not examined in the model in time *t*

t represent time in years

RESULTS AND DISCUSSIONS

Normality Test

1 <u>Descriptive statistics</u>

Variables	Lending interest rate
Mean	16.8058
Median	14.5227
Maximum	36.2400
Minimum	9.0000
Std. Dev.	6.9461
Skewness	1.2026
Kurtosis	3.7351
Jarque – Bera	5.5955
Probability	0.0030
Observations	44

R-squared	0.627498	Mean dependent var	0.20045
Adjusted R-squared	0.019810	S.D. dependent var	0.197120
S.E. of regression	0.20765	Akaike info criterion	0.000348
Sum squared resid	0.298334	Schwarz criterion	0.504790
Log likelihood	13.00597	Hannan-Quinn criter.	0.173136

Since the value of skewness for the data of all the variables was in the range of ±3, it implies that the data of all the variables was normal and unbiased. Skewness statistic proves that the bell-shaped curve is stretched or not stretched to one side.

Unit Root test

Unit root test was done using ADF in e-views and the following results were obtained

Variable	Estimation level	ADF test statistic	ADF critical value (5%)	Status
LNDPIV	1st difference	-6.394726	-3.5217	Stationary
LNLIR	1st difference	-3.792280	-3.5217	Stationary

ADF value of the first differenced data on deposit interest rate and domestic private investment which are -4.506525,-6.394726 , -3.792280 and -3.907869. Data on all variables first differenced are less than the macKinnon critical value at 5% significance level. The unit root test for DPIV and LIR had to be differenced twice to become stationary. The ADF value for the second differenced data .This value was less than the MacKinnon value of -3.5217, hence stationary.

Cointegration Test

Cointegration test is done through the use of Engle – granger (EG) approach and the Johansen Juselius approach. This study used Engle – granger (EG) 2 step approach. The test involved estimating the variables using OLS and then testing whether the residuals of the results are stationary. The results were presented as below

Variables	Statistic	Lag 0	Lag 1	Lag 2	Status
	AIC	-7.484	-7.516	-7.552	
LIR& DPI	t-ADF	-5.010	-4.615	-3.351	Stationary
	AIC	-7.324	-7.353	-7.275	

The results indicated that a lag length of 1 minimized the AIC (Akaike information criterion) value. The ADF value at a lag length of 1 for the residuals was -4.615 which less than the mackinon critical value was. Hence the residuals were stationary. This implied existence of cointegration between LIR and Domestic Private Investment.

Diagnostic Tests

Autocorrelation Test

Existence of autocorrelation is not a problem; the problem is the strength of the autocorrelation. A DW of zero implies that there exist positive autocorrelation, while DW of 4 implies high negative correlation level. A DW of value between 2 and 2.5 implies that there is no autocorrelation. A DW value of 2.911 indicated weak negative autocorrelation since the value lies between 2.5 and 4.

Multicollinearlity Test

Existence of multicollinearlity is not a problem; the problem is the occurrence of strong multicollinearlity. A coefficient of determination of 0.639447 and all significant coefficients implied that multicollinearlity is absent.

Error Correction Model

The results of Cointegration tests indicated that there exists a long – run relationship between all the variables. This allowed for estimation of the error correction models. According to (Gujarati, 2003), the model estimates variables that have long – run equilibrium relationship. A lag length of 1 was used since it minimized the AIC and Schwarz SC value. The results were summarized as below.

Variable	Coefficient value	Std error	t-value	p-value
Constant	-0.00548236	2.571e-18	-2.003e+14	0.0000
LNDPI	0.00359031	1.353e-18	2.679e+15	0.0000
D_{1t}	0.00643700	3.828e-18	1.964e+15	0.0000
Residuals	1.16472e-16	1.435e-18	0.823	0.4204

R-squared 0.6439177

Table above indicates that the coefficient of domestic private investment is 0.00359031 and the coefficient of the dummy for political stability is 0.00643700. The value of R-squared was 0.6439177 and adjusted R-squared was 0.022510. This indicates that the domestic private investment levels predicted 64.39% of the lending interest rate level. The remaining 35.61% was predicted by the error term. The model was represented as below.

$$\Delta\Delta DLNDPIV = -0.0785405 - 0.108643DLNLIR - 2.33802e - 017D1 + 5.13237e - 017D2$$

This model implies that there exists a negative relationship between domestic private investment and lending interest rate. A one unit increase in the lending interest rate would decrease domestic private investment by 0.108643 and a unit decrease in the lending interest rate would increase domestic private investment by 0.108643. This is because lending interest rate influence the cost of capital and availability of credit to domestic private investors.

From the model there exists a negative relationship between domestic private investment and interest rate liberalization .The more the interest rate liberalization the more the decrease in domestic private investment by 2.33802e-017 and the less the interest rate liberalization the more the increase in domestic private investment by 2.33802e-017. This model implies that there exists a positive relationship between domestic private investment and the political environment. The more stable a political environment is the more increase in domestic private investment by 5.13237e-017 and the more unstable a political environment is the greater the decrease in the domestic private investment by 5.13237e-017.

CONCLUSION

The study concluded that increase in lending interest rate has a significant decrease in domestic private investment and 64.39% of would predict private at 5% significance level. The study recommended that government should decrease the lending interest rate into so as to increase the domestic private investment in Kenya, since there is a significant positive relationship between the domestic private investment on economic growth.

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