ANALYZING THE DETERMINANTS OF PRIVATE SAVINGS IN KENYA OVER THE PERIOD 1993-2013

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ABSTRACT

The main aim of this study was to investigate the determinants of private savings in Kenya over a period of 21 years from 1993 to 2013. Private saving is the amount of disposable income remaining after households meet their consumption demand. The determinants of private saving considered in the study include dependency ratio, per capita income, financial deepening, inflation rate, and real interest rate. The research methodology employed in the study is desk research using time series data bank of the World Bank. The data are subjected to time series data examination including the Augmented Dickey Fuller test for unit root which establish that the non-stationary variables become stationary after differencing once. The cointegration test shows that the OLS residuals are not stationary implying absence of cointegration suggesting nonexistence of long run relationship among the variables. The analytical method employed in the study is the OLS regression technique which is appropriate for short run relationships. The model was subjected to diagnostic tests for OLS estimation. One of the key findings of the study is that increase in inflation will decrease private savings contrary to the theory of precautionary motives for saving. This finding suggests that lower inflation in Kenya raises growth which in turn increases savings in the country. All the other determinants of the private saving considered in the study were statistically significant according to theoretical expectations except for the real interest rate which was statistically insignificant. These findings can be important in formulating policies and strategies for refocusing attention to the growth of private savings in the country.

Keywords: Determinants of private saving, life-cycle hypothesis, permanent income hypothesis, unit root test, cointegration, regression analysis model.

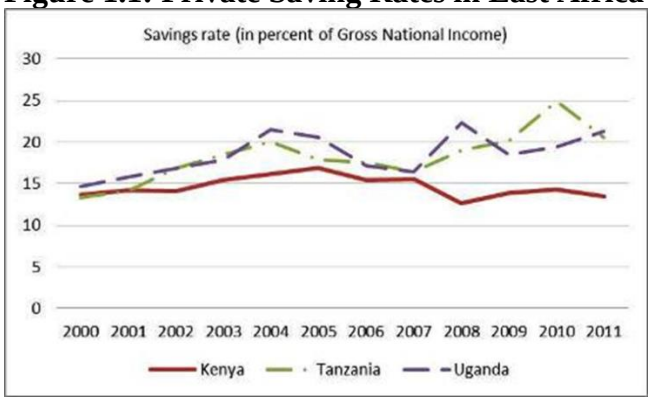
INTRODUCTION

Saving represents a decision not to consume income. Three key motives leading to such a decision include retirement, precautionary, and bequest. There is also target saving for the acquisition of tangible assets. The saving motives are not mutually exclusive. In both developed and developing countries, private saving is critical as it allows households to smooth consumption in the face of volatile incomes besides supporting investments in human and physical capital.

Since 1990s, private saving rates have been stable in some countries but vary widely around the world (Loayza, Schmidt-Hebbel, and Serven, 2000). According to the world Bank (2013), the standing of private saving rates for some selected countries as a percentage of gross domestic product is as follows: China 50.4 %, United Kingdom 15.1 %, United States of America 16.3 %, India 18.4 %, Kenya 11 %, Nigeria 19.8 %, Ghana 10.8 %, Uganda 19.6 %, Tanzania (%)and so on. On average, East Asia saves more than 30 % of gross national

disposable income (GNDI) while Sub-Sahara Africa (SSA) saves less than 15 % due to inadequate financial services (World Bank, 2013). In the last one and half decades, private savings in Kenya have depicted erratic trend and have remained low compared to the savings of the neighbouring countries, Tanzania and Uganda, as Figure 1.1 illustrates.

Figure 1.1: Private Saving Rates in East Africa



Source: World Development Indicators, World Bank

LITERATURE REVIEW

Neoclassical Economic Theories of Saving

The two most recognized neoclassical theories of saving are the life cycle hypothesis (Ando & Modigliani, 1963; Modigliani & Ando, 1957; Modigliani & Brumberg, 1954), and the permanent income hypothesis (Friedman, 1957). These theories treat individuals and households as being concerned with long-term consumption opportunities and explain saving and consumption in terms of expected future income. These models view saving as an important way for smoothing out consumption in the face of income fluctuations. Consumption is shaped by expected lifetime resources instead of current resources, such that over short durations (e.g., a year), saving is expected to reflect departures of current income from average life resources. When current income drops below anticipated average lifetime income, saving decreases, and individuals and households may even borrow to finance consumption. When current income exceeds expected average life resources, individuals and households save.

The 'life-cycle' hypothesis (LCH) suggests that consumption and saving will mirror an individual's age or stage in the life cycle. This model underlines saving for retirement as a primary incentive for postponed consumption. A more complicated LCH model views the desire to leave a bequest and the need to prepare for difficult times as potential saving motives. Young households are likely to have negative saving typically because they have relatively low earnings and incur debt for education, the purchase of homes, and other expenses. In the mid period of the life cycle, saving is expected to be positive since individuals settle their debts and begin to save for retirement. Upon retirement, dissaving is likely to occur again. Therefore, variations in consumption and saving among households are supposed to be somewhat the outcome of age differences and the pattern of saving and dissaving gives rise to an inverted U-shaped pattern across age categories and/or over time (Ando & Modigliani, 1963; Modigliani & Ando, 1957; Modigliani & Brumberg, 1954).

The permanent income hypothesis (PIH) was put forward by Friedman (1957) and is linked to the Relative Income Hypothesis through the previous highest levels of income. Like the life cycle hypothesis, the permanent income hypothesis (PIH) is built on the assumption that

long-term income is the main determinant of consumption. Thus, the PIH focuses on permanent and transitory income rather than life resources and current income. The hypothesis stipulates that consumption, understood as including consumer durables, is a function of a non-observed variable called permanent income. The permanent income is understood as being the present value of lifetime income, whereas transitory income is the gap between measured income and permanent income. Friedman (1957) asserted that household consumption will react to changes in permanent but not transitory income. Observed variations in household saving and consumption are thought to reflect, in part, variances in the relative portions of transitory and permanent income.

Per Capital Income Growth

Using a sample of ten developing countries, Giancarlo et al. (1992) estimated individual household saving functions by combining time-series and cross-country observations. The study tested households' responses to income and growth, rates of return, monetary wealth, foreign saving, inflation, interest rate and demographic variables. The results show that income and wealth variables affect saving positively, foreign saving and monetary assets have the contrary effects on saving, while inflation and the interest rate variables did not show clear effects on saving. Loayza, et al. (2000) studied the determinants of saving rates in developing countries by paying special attention to the connection between growth and saving as well as the impact of specific policies on saving rates using both qualitative and quantitative approaches. The results indicate that while the economies of China, India, and East Asia have generally experienced an increase in their saving rates, countries such as South Africa, the former Soviet Union as well as the Baltic States had experienced the reverse.

Agrawal et al. (2010) explored the determinants of savings behaviour in India for the period 1962 to 2004 by use of co-integration procedures and found that greater access to banking facilities and higher income per capita, significantly improved savings in India during the period under consideration. The study also established that foreign savings and public savings have negative effects on private savings while the income per capita causes had the opposite effect. The authors concluded that there is need for higher rates of growth in order to boost and generate greater domestic savings in the economy. Sandri et al. (2012) used panel data of advanced economies to study precautionary saving motive during Great Recession and found that greater labour income uncertainty was significantly associated with higher household savings. The authors explain that the sharp increase in household saving rates can be attributed to the precautionary savings motive. Their findings support the theory of "forced saving" in the literature.

Özcan et al. (2003) investigate the determinants of private savings for Turkey during the 1968-1994 period and found that the income level positively affect private savings but the growth rate of income is not statistically significant and that life expectancy negatively affect savings. Doshi (1994) studied the role of life expectancy saving performance and found that life expectancy was statistically significant and important factor affecting savings levels in Least Developed Countries.

Inflation

Lipumba et al. (1999) examined the developments in saving and investment in Namibia over a period of seventeen years using co-integration and error correction approaches and found

that private saving in Namibia was significantly influenced by real income and that real lending rates, inflation, real income and government investments were significant in determining investments in Namibia. Using data set for Ghana over the period 1960-1992, Aryeetey (1995) studied the determinants of savings in Ghana and found that real deposit rates had no significant influence on rural household saving in Ghana. The author concluded that depression and uncertainty of the investment climate, together with high rates of inflation had a weighty effect in determining savings in the country.

Olusoji (2003) found that savings in Nigeria was being affected by income, growth rate, government deficit and inflation rate and that exchange rate seemed to be the most significant determinant while interest rate had no effect. Özcan et al. (2003) studied the determinants of financial saving in Nigeria with special emphasis on inflation and found that inflation had a positive effect on private savings. Kudaisi (2013) studied the determinants of domestic savings in West Africa during 1980-2006 anchored on Hall hypothesis of consumption and found that the dependency ratio and interest rate had negative and insignificant effects on domestic savings, the GDP growth rate had positive and statistically insignificant effect, while the government budget surplus and inflation rate were statistically significant determinants of savings.

Epaphra (2014) examined the factors affecting savings in Tanzania over the 1970-2010 period using time series data and Granger Causality test and found that real GDP growth rate, as well as the disposable income, life expectancy and population growth had positive impact on savings in Tanzania while inflation had a negative impact.

Financial Deepening

Financial deepening relates to the overall increase in the ratio of money supply to GDP or some price index and is a measure of how much opportunities for continued growth exists in an economy (Wikipedia, the free encyclopedia). Husain (1996) studied the long-run behaviour of saving in Pakistan and found that financial deepening contributed significantly to the rise in private saving. Chete (1999) studied the macroeconomic variables affecting private savings in Nigeria and established that private saving was affected by the ratio of broad money (M2) to GDP. Studies on interest rate reforms, financial deepening and savings in Tanzania concluded that there was no strong proof that real interest rate had effect on national savings but that reforms in interest rate had positive effect on financial deepening which eventually affected the saving rate (Odhiambo ,2008; Ndanshau, 2012; and Lipumba et al., 1990).

Nwachukwu and Odigie (2009) studied the determinants of private saving in Nigeria between 1970 and 2007 using Error-correlation technique and found that the saving rate rose together with both the growth rate of disposable income and the real interest rate on bank deposits. The study also found that public saving tends not to overcrowd private saving suggesting that government policies directed at increasing fiscal balance had the capacity to bring about a considerable increase in the national saving rate; while the degree of financial depth had a negative but insignificant impact on saving behavior in Nigeria.

Essien and Onwioduokit (1998) employed the Error-Correction Methodology to study the impact of financial development on savings mobilization in Nigeria and found that there was no long-run relationship between financial depth and domestic resource mobilization. Mwega (1997) did a comparative analysis of average private saving rates in 15 African countries over

the period 1970-1993 and found that there was a negative and highly statistically significant coefficient on fiscal balance implying that fiscal balance and private saving were exact match for each other.

Tiriongo (2005) studied the determinants of aggregate domestic private savings in Kenya over the reform period 1980 to 2003 using Ordinary Least Square procedure. The study was motivated by the existence of substantial fluctuations in the ratio of aggregate domestic private savings to GDP. The study found that aggregate private savings in Kenya were significantly determined by the current account deficit, the ratio of M2 money to GDP, real gross per capita income growth, deposit rate and the old age dependency ratio.

Real Interest Rate

Horioka et al. (2007) used panel data for China over the period between 1995 and 2004to analyze the determinants of the household saving rate. Income growth rate, inflation rate, and real interest rate were found to be important determinants of saving rates in China over the period under consideration. These findings provide support for the life cycle hypothesis as well as the permanent income hypothesis. Using time series data for Nigeria over the period 1970 to 2010, Nwachukwu (2012) studied private saving based on co-integration procedures within the framework of the Life Cycle Hypothesis. The author found that the saving rate increased with both the real interest rate on bank deposits and the growth rate of disposable income whereas financial debt had an adverse effect on saving behaviour in Nigeria.

Ogaki, Ostry and Reinhart (1996) studied the determinants of household saving behaviour for Low-and Middle-income developing countries in Africa and found that saving was affected by the real interest rate. Uremadu (2007) used ordinary least square (OLS) regression technique to study the determinants of financial saving in Nigeria and found that per capita income, broad money supply, debt service ratio, GDP, and interest rate spread, were the major factors that affected financial saving in Nigeria.

Dependency Ratio

Kibet et al. (2009) used entrepreneurs, teachers, and smallholder farmers, in rural areas of Kenya to investigate the determinants of household saving using the OLS regression method and found that household saving was influenced by the dependency ratio, level of education, transport costs, service charge, credit access, and type of occupation, household income, gender and age of household head.

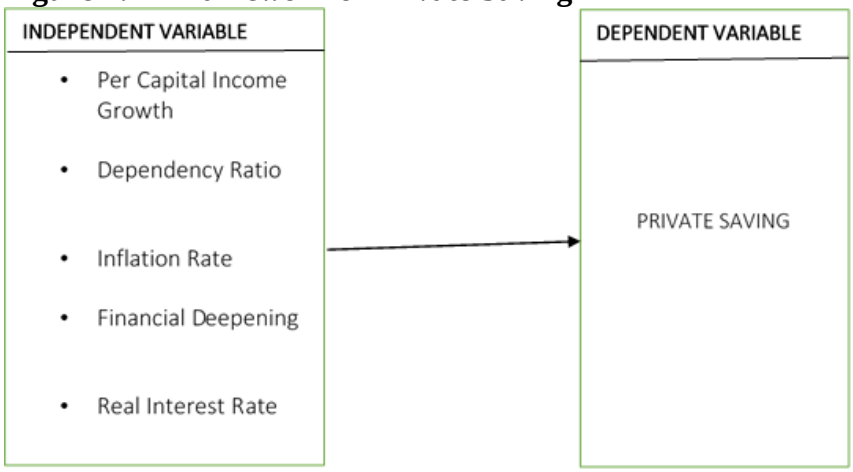
Gedela (2012) investigated the factors affecting saving behaviour in rural and tribal households in India using regression analysis models and found that saving was influenced by sex, age of the head of the household, dependency ratio, income and medical expenditure supporting the findings by (Kibet et. al. 2009). Elbadawi and Mwega (2000) studied private domestic savings in Sub-Saharan Africa and other regions including East Asia, Caribbean, and Latin America, and found that the growth of gross private domestic income per capital, the growth in the term of trade, and gross private domestic income had positive effects on the rate of saving in the countries studied whereas public savings negatively affected the private savings. The authors found also that government consumption had a positive and significant coefficient suggesting that private sector relied to a large extent on government consumption. The authors concluded that the key element influencing savings in Asian economies were increase in public saving, young dependency ratio and income per capital.

METHODOLOGY

Conceptual Framework

The conceptual framework of the study is a modification of the private saving framework of Nwachukwu (2012) and Loayza et al. (2000). Private saving as a dependent variable is influenced by the independent variables including per capita income growth, dependency ratio, inflation rate, financial deepening as measured by broad money (M2) as a proportion of GDP, and real interest rate as illustrated in Figure 2.

Figure 2: A Framework of Private Saving



Source: Own Formulation Based on Nwachukwu (2012) and Loayza et al. (2000)

The analytical procedure employed in the study is the regression analysis model using the OLS technique. The model specification is given as follows:

$$PSR = \beta_0 + \beta_1 RIR + \beta_2 M2 + \beta_3 DR + \beta_4 PCI + \beta_5 IFR + \varepsilon$$

Where

PSR ➔Private saving rate
RIR ➔Real interest rate
M2 ➔Broad money as a proxy for financial deepening
DR ➔Dependency ratio
PCI ➔Per capita income
IFR ➔Inflation rate
$\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ ➔are the regression coefficients to be estimated.
ε ➔Random error term

The hypothesis tested in the study is the null hypothesis that none of the explanatory variables is important in explaining private savings in Kenya. Thus,

H_0: Real interest rate, financial deepening, dependency ratio, per capita income and inflation rate are not statistically significant in determining domestic private savings in Kenya

The private savings variable is the domestic private saving as a percentage of GDP. The inflation rate is computed as a percentage change in the Kenyan GDP deflator. Per capita income growth is calculated as percentage change in the ratio of gross domestic income to the total population, while broad money supply (M2) is measured as a percentage of GDP. The real interest rate refers to an interest rate that has been adjusted to remove the effects of inflation to reflect the real cost of funds to the borrower, and the real yield to the lender. Dependency ratio is a measure of dependents, people less than 18 or more than 64 years to

the working-age population computed as the proportion of dependents per 100 working-age population.

Data sources and treatment

The study employed annual macroeconomic time series data for Kenya over the period 1993-2013 obtained from the World Bank World Wide Web. Regression involving non-stationarity data often leads to spurious results which, appearing to be statistically significant under standard hypothesis testing procedures such as the t tests and F tests, are evidence of accidental correlations rather than meaningful causal relationships (Harries and Sollies, 2003). To address the problem of spurious regression, the data must be tested for stationarity. The study employed the Johansen-Juselius cointegration approach to model stationarity properties of the data. The approach involves two fundamental tests: the unit root test to establish the order of integration for each variable and the cointegration test to establish existence of long-run equilibrium among variables.

Unit root test

The study employed the Augmented Dicky Fuller (ADF) unit root testing procedure. Variables found to be non-stationary are differenced to make them stationary. If a variable must be differenced d times to make it stationary, it is said to have d unit roots, i.e., integrated of order d, denoted I(d). The ADF unit root test uses autogressive equations given as follows.

1. ADF with both trend and intercept

$$Y_t = \alpha + \beta T + PY_{t-1} + \Sigma\delta_i Y_{t-l} + u_t$$

2. ADF with an intercept but no trend

$$Y_t = \alpha + PY_{t-1} + \Sigma\delta_i Y_{t-l} + u_t$$

These equations are used to test the hypotheses:

H_0: p = 1, existence of unit root, i.e., the data series, Y_t, is non-stationary.

H_1: p<1, the data series, Y_t, is stationary.

Cointegration test

The procedure for testing for cointegration is similar to that of testing for the order of integration of variables. If two variables are integrated of order d and b, i.e., I(d, b), the two data series are said to be co-integrated and have a stationary linear combination (Horries and Sollies, 2003). Cointegration implies existence of long-run relationship among variables which may drift apart from each other in the short run but remain converged to each other in the long run. OLS model is not appropriate for cointegrated data but rather the vector error correction model is, whereas the OLS model is appropriate for short-run estimation. The study employed Johansen cointegration test procedure.

Diagnostic tests

These are tests designed to measure the suitability of the regression analysis model. The tests are carried out after the regression estimation of the function to ascertain if the data fit the model and include the following:

1. The fitness test where the regression line must be fitted to the data strongly. The test is met when the value of R-squared is more than 60%. The higher the R-squared, the better the data is fitted.
2. The test of significance which requires that most of the independent variables should be significant to explain the dependent variable. The independent variables should also be jointly significant to influence the dependent variable.
3. The test for serial correlation which requires that the residuals are not auto-correlated. The test is carried out using Breusch-Godfrey serial correlation LM test.
4. The heteroskedasticity test which is designed to ensure that the variance of the residual is homoscedastic using the use the Breusch-Pegan-Godfrey Test.
5. The normality test designed to ensure that the residuals follow normal distribution. The JarqueBera statistics is used to test for normality of residuals.

RESULTS

Descriptive statistics

In this section, the general descriptions of all the variables used in the study are provided. The statistics on the mean, the maximum and the minimum values for each variable are stated.

Table 4.1: Descriptive statistics

	DR	IFR	M2	PCI	PSR	RIR
Mean	0.874286	11.96667	37.89524	0.938095	12.94476	9.233333
Maximum	1.01	46	42.2	5.5	20.73	21.1
Minimum	0.81	1.6	34.6	-2.8	7.84	-8.1
Observations	21	21	21	21	21	21

Source: World Bank Data for various issues

Unit root tests

This study employed a widely accepted test for stationarity, the Augmented Dickey-Fuller (ADF) unit root tests to formally test for stationarity of the variables. Table 4.2 presents the results.

Table 4.2: ADF Unit Root Tests

Variable	Intercept	Critical Value	Trend & Intercept	Critical value	Verdict
PSR	-3.633797	-3.052169	-3.430087	-3.658446	Non-stationary
1st difference	-5.839710	-3.029970	-5.514066	-3.673616	Stationary
DR	-6.550690	-3.020686	-2.419064	-3.658446	Non-stationary
1st difference	-3.075752	-3.029970	-4.066560	-3.673616	Stationary
M2	-3.208321	-3.052169	-3.634798	-3.710482	Non-stationary
1st difference	-6.206032	-3.029970	-6.186162	-3.673616	Stationary
IFR	-5.219545	-3.020686	-4.812095	-3.658446	Stationary
PCI	-3.414473	-3.020686	-4.140503	-3.658446	Stationary
RIR	-3.301689	-3.020686	-3.685586	-3.658446	Stationary

Source: Own compilation based on the World Bank Data

The results show that Inflation rate, Real Interest Rate, and Per Capital Income Growth are stationary at levels, hence are I(0). However, Private Saving Rate, Dependency Ratio, and Ration of broad Money to GDP are non-stationary at levels.

The tests establish that the non-stationary variables become stationary after differencing once that is are I(1)s. To establish whether the non-stationary variables are cointegrated, the next section outlines the cointegration test results.

Cointegration test

The Johansen cointergration test was used where OLS estimation is performed on the equation given as follows:

$$DPSR = ß_0 + ß_1\ DM2 + ß_2\ DDR + u_t$$

The dependent variable (PSR) was an 1(1) so that the cointegration test was performed including only the two variables that were I(1)s, which are dependency ratio (DR) and financial deepening (M2). Table 4.3 presents the results of the cointegration test.

Table 4.3: Johansen Cointegration Test Results

Sample (adjusted): 1995 2013
Included observations: 19 after adjustments
Trend assumption: Linear deterministic trend
Series: DR PSR M2
Lags interval (in first differences): 1 to 1
Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.491392	21.31595	29.79707	0.3382
At most 1	0.265715	8.470468	15.49471	0.4165
At most 2	0.127991	2.602162	3.841466	0.1067

Trace test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

The results show that the residuals of the OLS estimation of the 1(1) variables are not stationary, implying absence of cointegration suggesting absence of a long run relationship among variables.

OLS estimation results

Table 4.4 presents the results of the OLS estimation of the private savings model of the Kenya economy.

Table 4.4: The OLS estimation results

Dependent Variable: PSR
Method: Ordinary least squares regression
Date: 08/28/15 Time: 22:49
Sample (adjusted): 1994 2013
Included observations: 20 after adjustments

Explainable Variables	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	4.169124	1.154005	3.612743	0.0028
DR	148.0897	61.95092	2.390436	0.0314
M2	-0.631969	0.177405	-3.562304	0.0031
IFR	-0.308209	0.062952	-4.895908	0.0002
PCI	0.745399	0.270168	2.759019	0.0281
RIR	0.037669	0.083019	0.453744	0.6570

R-squared	0.803644	Mean dependent var	-0.486500
Adjusted R-squared	0.733517	S.D. dependent var	2.933992
S.E. of regression	1.514586	Akaike info criterion	3.911486
Sum squared resid	32.11559	Schwarz criterion	4.210206
Log likelihood	-33.11486	Hannan-Quinn criter.	3.969799
F-statistic	11.45980	Durbin-Watson stat	1.761845
Prob(F-statistic)	0.000151		

To establish whether this model best fits the data; diagnostic tests are performed and the results are presented in Table 4.5.

Diagnostic tests

To check if the model meets the requirement for OLS estimation, six conditions for Ordinary least square (OLS) regression were examined.

The regression line must be fitted to the data strongly. This condition is met when the value of R-square is more than 60%. The higher the R-square, the better the data is fitted. The R-square of this model is 80.3%, meaning that the regression line is fitted to data strongly.

Most of the independent variables should be significant to explain the dependent variable.
In this model, four out of the five independent variables (IFR, DR, PCI and M2) are significant hence an indicators that this data fits OLS model of private saving.

Independent variables should be jointly significant to influence the dependent variable. This is measured using F-test. The results of the F-test is 0.000151, which is less than 5% we reject the null hypothesis that all the independent variables cannot jointly influence the dependent variable hence asserting that the data is fit for the model.

Residuals are not auto-correlated. Breusch-Godfrey serial correlation LM test is used to test this. A P-value of 32.55% reported in Table 4.5 is above 5% implying that the residual of the values is not serially correlated or auto-correlated and hence fits for regression model.

Variance of the residual is homoscedastic. To check if the residual is homoscedastic, we use the Breusch-Pegan-Godfrey test presented in Table 4.5. The observed R-squared is 1.582599 and the corresponding P-value is 90.3%. So we cannot reject the null hypothesis which says that the variance of the residual is homoscedastic implying that the model fits for regression analysis.

Residuals follow normal distribution. The JarqueBera statistics is used to test for normality of residuals and the result is shown in Table 4.5. The P-value is 55.2% implying that the null hypothesis cannot be rejected suggesting that the residuals are normally distributed.

Table 4.5: Diagnostic Test Results of the OLS Estimation Model

Heteroskedasticity Test: Breusch-Pagan-Godfrey	Obs*R-squared	1.582599
	Probability	0.9033
Ramsey RESET Test	t-statistic	0.503852529
	Probability	0.622200452
Breusch-Godfrey Serial Correlation LM Test:	t-statistics	1.063424954
	probability	0.373479316
Jarque-Bera Normality test	t-statistic	1.187129
	Probability	0.552355

Since our model has satisfied the all the conditions for regression model analysis, we can now use the results of the OLS estimation of private saving model presented in Table 4.3 to analyze the determinants of private savings in Kenya.

DISCUSSION

The results of cointegration tests imply that the variables of the model of private savings in Kenya over the period 1993-2013 are not cointegrated suggesting a short run estimation model rather than estimation of long run relationships among variables. The value of the adjusted R-Squared of 0.7335 implies that the explanatory variables in the model account for about 73.4 % of the variations in private savings in Kenya. The F-statistic value of 11.4598 suggest that the model is highly statistically significant as illustrate by the p-value of 0.0002 implying rejection of the null hypothesis in favour of the alternative that a highly statistically significant relationship exists between the private savings in Kenya and the explanatory variables.

The coefficient for the dependency ratio (DR) variable is positive as expected and statistically significant at 3 % level of significance. The finding suggests that an increase in the dependency ratio arising, say, from increase in life expectancy, will lead to an increase in private savings by the labour force in order to cater for the increase in the number of dependent population. The coefficient for financial deepening (M2) is negative and highly statistically significant at 0.3 %. The result implies that increasing money supply will induce inflation and reduction in interest rates suggesting reduction in private savings in the economy. The finding is partly consistent with results of Mwachukwu and Odigie (2009) and Tiriongo (2005). A reduction in interest rates will act as a disincentive for individual and firms to save.

The coefficient of the inflation rate variable (IFR) is negative against expectation and highly statistically significant. This finding contradicts the precautionary saving theory which states that as inflation rises, consumers will spend less so as to cushion for anticipated difficult

times. The coefficient of the per capita income variable (PCI) is positive and statistically significant at 2.8 % level of significance. The result suggests that an increase in per capita income growth will increase private savings in Kenya. The finding is consistent with results of Tiriongo (2005) and Agrawal et al. (2010) as well as the simple Keynesian savings theory. The coefficient of real interest rate variable (RIR) is the only variable in the private saving model that is not statistically significant. The result is consistent with the finding of Ogaki, Ostry and Reinhart (1996) who concluded that real interests do not necessarily improve the level of private savings.

CONCLUSION

The study explored the determinants of private savings in Kenya over a period of 21 years from 1993 to 2013 using OLS estimation. Prior to the model estimation, time series properties of the data were established using Augmented Dickey-Fuller test for unit roots. Three variables including the inflation rate, real interest rate, and per capita income growth are found to be stationary at levels, hence are I(0) while the other three variables includingthe private saving rate, dependency ratio, and financial deepening are non-stationary at levels but become stationary after differencing once prompting a test for cointegration. There was no evidence of cointegration, thus, a short run private savings model is estimated using the OLS method. The estimated model has a good fit as illustrated by the F-statistic, the adjusted R-Squared, and the diagnostic tests. All the 5 explanatory variables, except the real interest rate, are found statistically significant determinants of the private savings in Kenya.

Policy Implications

Private savings in Kenya have significant negative relationship with inflation. The country should pursue policies geared toward reduction of inflation in order to promote growth in private savings and boost investment levels in the economy. Per capita income and financial deepening are other important factors that influence private savings in Kenya. Policy makers can promote growth of per capita income by improving productivity of workers. Further, a strict monetary policy can be pursued to maintain money supply within manageable levels ensuring stable and low inflation rates as well as improvement in real incomes and private savings in the economy.

Dependency ratio is another important factor influencing private savings in Kenya's economy. An important policy recommendation would be focusing on improving the life expectancy, which in turn, would improve the dependency ratio. This would entail improvement of health care provision for the entire Kenyan population.

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