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ECONOMICS AND POLICY

THE EFFECT OF PUBLIC EXPENDITURE ON ECONOMIC GROWTH: THE CASE OF KENYA

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Abstract

World-wide governments including the Kenyan government incur expenditures to pursue a variety of objectives, one of which is economic growth. This study sought to examine the relationship between public expenditure and economic growth in Kenya using a time series data covering the period 1980-2010. Four key sectors were selected for this study, namely: health, education, agriculture and infrastructure. To understand the nature of the association between the economic growth as dependent variable and the public spending as the explanatory variable, the study made use of correlational research design. However, in order to avoid spurious estimates on the part of the time series, unit root test was conducted on each variable data to test for stationarity using Augmented Dickey-Fuller (ADF) technique, after which cointegration test was conducted. Error correction model was later estimated to determine the relationship dynamics. The study findings revealed that public spending on agriculture and infrastructure promote economic growth where as the public expenditure on health and education were found to be negatively related to economic growth.

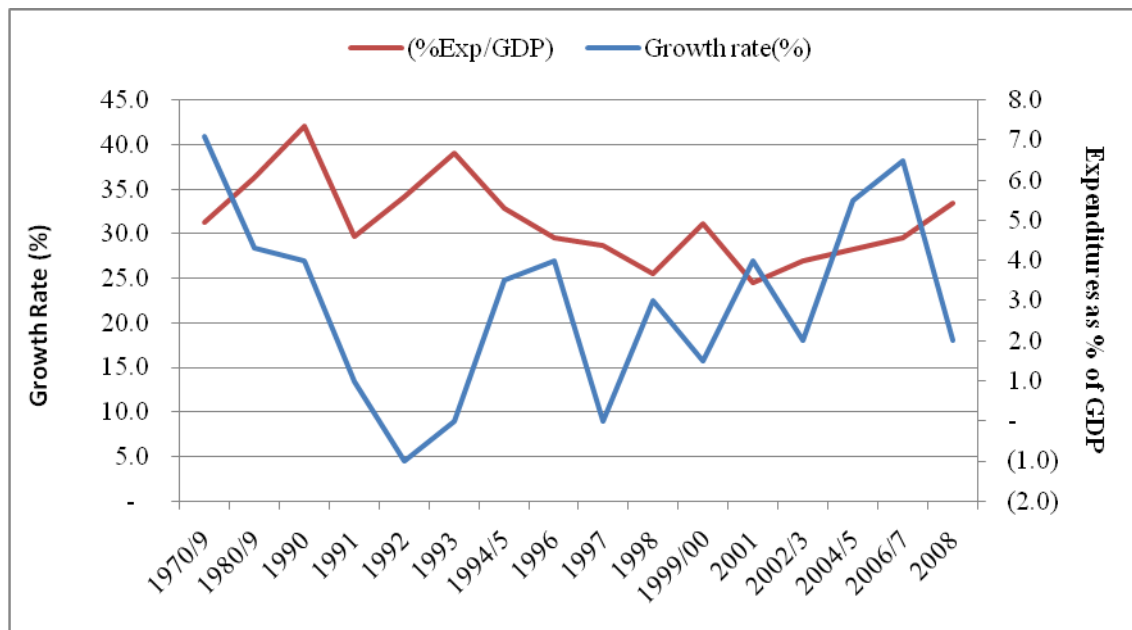
Key words: public spending, economic growth, agriculture, infrastructure, health and education.

Introduction

Sustained and equitable economic growth is a predominant objective of public expenditure policy. Many public programs are specifically aimed at promoting sustained and equitable economic growth. Public expenditures can—and have—played an important role in physical and human capital formation over time. Appropriate public expenditures can also be effective in boosting economic growth, even in the short run, when limits to infrastructure or skilled manpower become an effective constraint to an increase in production. Therefore, the effect of public expenditures on economic growth may be a comprehensive indicator of public expenditure productivity (Posner, 1977). On the other hand, a variety of empirical studies, based on time-series or cross-country data, have aimed at estimating the contribution of public expenditures to economic growth. However, much of the empirical studies has yielded conflicting results. Many have, nevertheless, supported the hypothesis that there is positive relationship between the aggregate public expenditures and economic growth.

Others focus on the relationship between certain expenditure components, such as public investment, education or health expenditures, or their components, and economic growth (Ram, 1986). Rosto and Musgrave (Taiwo, 2011), for instance, posit that public expenditure is a prerequisite of economic development. According to them, the public sector initially provides economic infrastructure such as roads, railways, water supply and sanitation. As economic growth take place, the balance of public investment shift towards human capital development through increased spending on education, health and welfare services. In this model, the state is assumed to grow like an organism making decision on behalf of the

citizens. Society demand for infrastructural facilities such as education, health, electricity, transport etc., grow faster than per capita income. Kenya is no exception in this regard, while pursuing growth objectives, the fiscal expenditure as a tool for economic growth has varied overtime.



Source: Republic of Kenya, 1970–2002, public expenditure review 2003-2009 and World Bank.

Figure 1: Government expenditure and the economic growth rates, 1970-2008

Statement of the Problem

The economic growth impact of public spending has been of particular interest to the economists. For so long, they have been trying to understand the factors that cause countries to grow at different rates and achieve different levels of wealth. One of the possible explanations for the differences in wealth which has been presented is how much governments spend and what they spend it on (Daimond, 1989). For instance, basing his argument on growth, which is the major goal of any government, Daimond contends that policy-makers need to know the relative contribution of various components of expenditure to their country’s economic growth and performance.

However, much as most of the studies so far paid more attention to the developed economies (Biswas, B. and Ram, R. 1986; Devarajan, et al, 1996; Landau, D. ,1986; Zagler, M. and Dürnecker, G. ,2003, etc), and in the case of the developing countries cross-country studies were done (Guseh, J. S. 1997; Yasin, M. 2003; Mansouri, B. 2008, etc), the effect of government spending on economic growth remains an unresolved matter. This signifies that the empirical outcomes are likely to differ from country to country and time to time, hence making the examination of the Kenya case, net of the rest of the developing countries, timely. Thus far, this study attempts to investigate the relationship between the public spending on selected sectors and economic growth in Kenya

Literature review

There are no generally accepted economic theories capable of explaining, with any degree of success, the process of economic growth. As in research on other aspects of growth, empirical research on the relationship between government spending and economic growth is hampered by the lack of good economic theory. As Carr (1989) notes, theory is unable to settle the debate about the precise role the government spending plays in the economic growth process. Hence, the issues involved have been increasingly viewed as empirical, with inconclusive outcomes. In essence, economic theory postulates a rationale for government provision of goods and services based on the failure of markets to provide the desired level of public goods and services, to internalize externalities and to cover cost when there are significant economies of scale (Stiglitz, 1988).

In the traditional Keynesian macroeconomic model, growth theory maintains that public spending contributes positively to economic growth. For instance, a high level of government consumption is likely to increase employment, profitability and private investment through the multiplier effect on aggregate output. Government spending raises aggregate demand, leading to an increase in output, depending on the size and effectiveness of the expenditure multiplier (Branson, 1989). In a simple open macro-economy, the Keynesian aggregate output accounting framework is represented as follows:

$$Y = C + I + G + (X - M) \dots\dots\dots(1)$$

Where Y is the aggregate output, G is the autonomous government expenditure, X is the exports, M is the imports, (X - M) is the net exports, and C is the consumption, which consists of an autonomous and induced part, that is:

$$C = a + bY_d \dots\dots\dots(2)$$

Where a is the autonomous consumption and Y_d is the disposable income.

Totally differentiating Equation (1):

$$dY = da + b dY + dI + dG + d(X - M) \quad (3)$$

$$dY - b dY = da + dI + dG + d(X - M) \quad (4)$$

Assuming da, dI and d(X-M) are constant:

$$dY = [1/(1-b)]dG; \quad (5)$$

$$dY/dG = (1/(1-b)) m \quad (6)$$

Where m is the basic expenditure multiplier.

Thus, the argument in favor of increasing expenditure is that expenditure injections such as government consumption or investment expenditures will give impetus to other economic activities such as employment creation. The basic rule for the growth-promoting public sector is that its activities should complement rather than compete with those of the private sector (avoiding the crowding-out effect). Thus an important role for the government is to provide certain investments in human capital such as education, public and primary healthcare, and infrastructure. In addition, certain expenditures on agriculture are necessary since the economy of the country is still agriculture, so that the agricultural products remain competitive in the international markets.

On the imperial front, the impact of fiscal policy on growth has generated large volume of empirical studies with mixed findings. Some of these studies are country-specific while others are cross-country. The most recent empirical literature mainly based on panel data regressions show that economic growth is significantly affected by fiscal policies, although there remains some lack of agreement on the sign of the effects. Some arguments suggest that fiscal multipliers are more likely to be positive when economies are relatively closed, government debt is low and fiscal expansion focuses on spending. There is also some evidence of negative fiscal multipliers which is no clear consensus on the precondition for such an outcome. The results, hence, are varied as different analysis techniques and data samples are adopted.

Model Specification

Since the main objective of the study was to analyze the impact of government spending on economic growth and how some of the components of government expenditures affect economic growth in Kenya; for the purpose of this study a framework analogous to model used by Loto (2011) to estimate the impact of public expenditure on economic growth for Nigeria was adopted.

The model that was estimated in this study is specified below in log linear form:

$$\ln \text{RGDP}_t = \beta_0 + \beta_1 \ln \text{EXPH}_t + \beta_2 \ln \text{EXPAGRI} + \beta_3 \ln \text{EXPINF} + \beta_4 \ln \text{EXPE} + \epsilon_t$$

Where:

RGDP- Real Gross Domestic Product; EXPH- Expenditure on Health; EXPE- Expenditure on Education; EXPAGRI-Expenditure on Agriculture; EXPINF-Expenditure on infrastructure; ϵ_t = error term.

In the empirical analysis, the investigation was carried out using Ordinary Least Square method. However, since OLS regression sometimes gives spurious results especially when there is autocorrelation and multicollinearity among the variables, a way of guiding against this is to test for the presence of unit roots using the Dickey Fuller- Augmented approach of the form:

$$\Delta X_t = \alpha_0 + \alpha_1 X_{t-1} + \alpha_2 \Delta_{t-1} + \alpha_3 t + e_t$$

Where ΔX_t = First difference operators

The test on the coefficient of X_{t-1} in the regression equation is the test for unit root. The Mackinnon critical values give the critical values for the determination of the order of integration. The null-hypothesis of the existence of a unit root is given as:

$$X_0: X_{t-1}$$

Results and discussion

Before estimating the model developed, various statistical tests were undertaken. The tests included stationarity test and co-integration test.

Stationarity test

The results presented in Table 1 indicate that except the GDP, all other variables are stationary at its first difference. However, since the natural log of GDP was found to be non-stationary in its first difference the data was then subjected to second differencing and *Augmented Dickey-Fuller Tests* (ADF-Tests). The results are shown in table 2. The findings from the second differencing indicate that all the variables are stationary, given that the McKinnon values are greater in all cases than the ADF-test statistic.

Co integration Test

The next step involved testing for the existence of a possible co-integrating relationship between the GDP and explanatory variables. Here, two steps were taken. Firstly, OLS was carried out; then, the residuals from this regression was then saved and tested for stationarity (using ADF method).

OLS Regression Analysis

The regression results are provided based on the model specified in Table 3 shows the results from the regression analysis.

Augmented Dickey-Fuller Tests

Results from the regression analysis (Table 3) indicate that the expenditure on agriculture and roads impact negatively on economy ; while the expenditure on health and education have positive impact.. The probability F- statistic is 0.000000 (< 0.05), indicate that the explanatory variables are jointly significant in explaining the model, and therefore a good model ($R^2 = 79\%$). Nonetheless, the Durbin Watson statistic was found to be very low. (0.882274), implying the existence of serial correlation.

Residual Stationarity test

ADF method has been used to test the stationarity of the residual from the regression analysis (Table 4). As indicated in the table 4, the residual was found to be stationary at all levels of significance. Consequently, one can rightly say that there is a relationship among all the variables used in the equation. However, since there is a serial correlation (the DW above in the OLS regression table is equal to 0.882274), error correction mechanism was constructed to improve on it and also to check on the relationship dynamics between the dependent and the explanatory variables.

Table 1 unit root test results at first difference

VARIABLES	ADF-Test Statistic (Intercept)	ADF-Test Statistic (Trend and Intercept)	Level of Integration
DLN_GDP	-2.975803 (-3.6852)* (-2.9705)** (-2.6242)*** Durbin-Watson Stat: 2.022172	-2.939110 (-.3226)* (-.5796)** (-3.2239)*** Durbin-Watson Stat: 2.025533	I(0)
DLN_HE	-4.438357 (-3.6852)* (-2.9705)** (-2.6242)*** Durbin-Watson Stat: 2.030621	-6.292803 (-4.3226)* (-3.5796)** (-3.2239)*** Durbin-Watson Stat: 2.038313	I(0)
DLN_RD	-4.129193 (-3.6852)* (-2.9705)** (-2.6242)*** Durbin-Watson Stat: 1.959270	-4.493305 (-4.3226)* (-3.5796)** (-3.2239)*** Durbin-Watson Stat: 1.974820	I(0)
DLN_AG	-3.907877 (-3.6852)* (-2.9705)** (-2.6242)*** Durbin-Watson Stat: 2.003429	-8.159932 (-4.3226)* (-3.5796)** (-3.2239)*** Durbin-Watson Stat: 2.000188	I(0)
DLN_ED	-3.793854 (-3.6852)* (-2.9705)* (-2.6242)* Durbin-Watson Stat: 2.005609	-3.754575 (-4.3226)* (-3.5796)** (-3.2239)*** Durbin-Watson Stat: 2.004826	I(0)

Critical values: * = 1% **= 5% ***= 10%

Table 2 Unit Root Results at Second Difference

VARIABLES	ADF-Test Statistic (Intercept)	ADF-Test Statistic (Trend and Intercept)	Level of Integration
DDLN_GDP	-4.317212 (-3.6959)* (-2.9750)** (-2.6265)** Durbin-Watson Stat: 1.991763	-4.219117 (-4.3382)* (-3.5867)** (-3.2279)*** Durbin-Watson Stat: 1.990036	I(1)
DDLN_HE	-6.435480 (-3.6959)* (-2.9750)** (-2.6265)** Durbin-Watson Stat: 2.192250	-6.305473 (-4.3382)* (-3.5867)** (-3.2279)*** Durbin-Watson Stat: 2.193332	I(1)
DDLN_RD	-7.377035 (-3.6959)* (-2.9750)** (-2.6265)** Durbin-Watson Stat: 2.280686	-7.227524 (-4.3382)* (-3.5867)** (-3.2279)*** Durbin-Watson Stat: 2.282858	I(1)
DDLN_AG	-6.408388 (-3.6959)* (-2.9750)** (-2.6265)** Durbin-Watson Stat: 2.139421	-6.281141 (-4.3382)* (-3.5867)** (-3.2279)*** Durbin-Watson Stat: 2.140992	I(1)
DLN_ED	-5.944733 (-3.6959)* (-2.9750)** (-2.6265)** Durbin-Watson Stat: 2.191804	-5.833604 (-4.3382)* (-3.5867)** (-3.2279)*** Durbin-Watson Stat: 2.195811	I(1)

Critical values: * = 1% ** = 5% *** = 10%

Table 3 Results from OLS regression analysis

Regression results

Dependent variable : LN_GDP

Independent variables:
 LN_AG
 LN_ED
 LN_HE
 LN_RD

Regression model : $\ln \text{RGDP}_t = \beta_0 + \beta_1 \ln \text{EXPH}_t + \beta_2 \ln \text{EXPAGRI}_t + \beta_3 \ln \text{EXPINF}_t + \beta_4 \ln \text{EXPE}_t + \epsilon_t \dots$

Variable	Coefficient	T-statistics	Probability	Probability (F-statistic)	R ²	Adjusted R ²	D. W
C	27.94155 (0.201727)	138.5114	0.0000				
LN_AG	-0.113241 (0.048869)	-2.317227	0.0286	0.000000	0.786057	0.67385	0.8822 74
LN_ED	0.215072 (0.082112)	2.619253	0.0145				
LN_HE	0.085320 (0.038820)	- 2.197846	0.0371				
LN_RD	-0.062932 (0.077339)	-0.813712	0.4232				

*Figures in parenthesis are the standard errors of the coefficients.

Table 4: Results for the ADF test on the residual

ADF-Test Static	McKinnon Critical Values		
-5.125948	1%	5%	10%
	-3.6852	-2.9705	-2.6242

Error Correction Mechanism (ECM)

The Error Correction Model was estimated by lagging the second difference of the natural log of GDP as the dependent variable and the second differences of the natural logs of education, roads, agriculture and health.

After lagging different periods, as indicated in the table, there is positive relationship between the expenditure on agriculture and the economic growth. On the other hand, the expenditure on education and health were found to be negatively related to the GDP. Added to that, the results of the error correction model as contained in table 5, provided evidence that the equilibrium is restored after short-run disturbances. The coefficient of the error correction term in the model carries the correct sign (-0.638); with the speed of convergence to equilibrium at 63% of the past year. However, the fact that the t-statistic is not significant indicates that there is no long term relationship between the variables. With R² of 74.328%, the changes in the dependent variable (Gross Domestic Product) can be explained by the change in the expenditure on the infrastructure, agriculture, health and education.

Table 5: Summary Statistics of Error Correction Model

Dependent Variable: DDGDP					
DDGDP= DDAG(-1) + DDED(-3) + DDHE(-2) + DDRD + RES(-1) +AR(1)+ C					
Variable	Coefficient	T-statistics	R ²	Adjusted R ²	D. W
C	0.000108	0.019615	0.743288	0.710525	1.89686
DDAG(-1)	0.010997	2.689360			
DDED(-3)	-0.002594	-3.676840			
DDHE(-2)	-0.009599	-4.142095			
DDRD	0.010730	3.219401			
RES(-1)	-0.638498	-1.033125			
AR(1)	0.402151	1.860841			

Conclusion

The consequences of the above results are of significance as policy makers can foster economic growth through proper initiatives or policies that can create an appropriate environment conducive to nurturing government spending on capital formation, agricultural development, education and health. It should be stressed however, that given the limited scope of the study and the short period the data covers as well as the peculiarities surrounding the economies in transition, further research in the future when more data are available should target the underlying relationships.

Recommendation

The results as to the impact of government spending on the specified sectors of the economy, and also their individual impacts on economic growth create awareness and provide information that is very valuable. Allocation of public funds can now be checked and attention needs to be given to the crucial sectors such as education, health, agriculture and infrastructure. The assumption is that these sectors have bearing on the economic growth.

The policy repercussion of the results is important especially for this country, as the policy making bodies can create an appropriate policy environment. On the other hand, much as an increased outlay on, for instance, health and education was found by this study to be significant but negatively related to economic growth; the study hesitates to recommend reduced government expenditure on these two sectors.

The reason for the adverse finding in these two sectors could be attributed to inefficiencies, slow adoption of technology, corruption & embezzlements, brain drain etc which all have negative effect on the economy. In addition to that, development of human capital is a time-consuming process which accounts for gestation lags. These gestation lags vary across countries depending upon the state of the socioeconomic and administrative structure in the countries concerned.

However, the researcher resorts to existing priorities to recommend increased spending in these sectors which remain important pillars of the economy. Government expenditure on health and education could lead to economic growth in the sense that human capital is essential to growth. A healthy labor force that's educated can enhance productivity and promote economic growth. It therefore behooves the economic authority to be persistent in allocation of resources for the development of the education and health sectors.

Nevertheless, it is never over emphasizing to say that the realized effect of the allocated resources in the education and health sectors, or any sector for that matter, would depend largely on good governance and the efficiency of the institutions, as well as the skill of the manpower of the country. In order to reap all the benefits of such spending, the government should ensure a supportive and efficient socioeconomic structure for efficient utilization of resources.

On the public spending on agricultural, the findings show that it has positive impact on economy and given that the impact is statistically significant, the study thus recommends that more resources should be channeled to the agricultural sector to make it more productive. Agriculture is arguably one of the most sang engine driving the economy of this country and hence based on the findings from this study and the economy rationale, this study recommends more outlays to this sector.

On the other hand, since the findings show that there is a positive and significant relationship between the expenditures on infrastructure and the economic growth; the study recommends an increase in the outlay on the infrastructure expenditure since it brings about reduction in production costs and hence profitability thereby fostering economic growth.

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INVESTIGATING THE RELATIONSHIP BETWEEN GOVERNMENT EXPENDITURE AND TAXATION: EMPIRICAL EVIDENCE FROM KENYA

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Abstract

The principle objective of the study was to establish the nexus between government expenditure and taxation and find out the relationship that exists between the two variables for the case of Kenya. Using empirical evidence, the study focused on establishing the causal flow between government expenditure and taxation and the long-run relationship between the two variables in a manner to gauge the sustainability of the fiscal policy regime in place. The study uses time series annual secondary data covering the period 1980 to 2012 and data analysis was done using E-views 7 software. To determine the causal relationship, Granger causality tests were conducted within the Vector Error Correction Modelling (VECM) environment. The statistical techniques used include the Augmented Dickey Fuller (ADF) test to check for stationarity of all the time series variables in their first differences i.e. $I(1)$. The Johansen-Jesulius Maximum Likelihood Method of Co integration was employed to establish whether the variables are cointegrated by interpreting the Trace statistics and the Maximum Eigen-value output. The results show stationary at first difference and cointegrated with one co-integrating vector. Granger causality tests conducted to establish the nature and direction of the causality within the estimated model indicated the presence of unidirectional long-run causal flow running from government expenditure to tax revenues and a bi-directional short-run relationship between government expenditure and tax revenue implying a two way causal flow such that changes or alterations on either variable causes an instantaneous reaction on the other. The long run uni-directional finding gives credence to the spend – and – tax hypothesis suggesting a government system that determines how much to spend and then later design the tax measures and policy actions to finance that level of spending. It is, therefore, imperative for the government to pursue expenditure-targeting reforms with proper costing framework for all outlays while improving tax collection and utilization to mitigate effects of fiscal imbalance to achieve sustainable levels of aggregate spending and expenditure.

Keywords: Causality, Fiscal policy, Cointegration, Vector Error Correction Model.

Introduction

Fiscal policy is generally defined as the management of the nation's economy by use of fiscal tools where it involves the use and adjustment of government expenditure and taxation to influence the economy to the desired direction. It is based on the Keynesian economics as postulated by J.M. Keynes that a national government can guide and influence macroeconomic performance through its taxation and expenditure policies.

Harvey and Gayer (2010) in demonstrating the economic role of several governments using data from OECD countries in the year 2008, pointed out that with almost a third of the Gross Domestic Product (GDP) of the United States of America (USA) going through the public sector, government is an economic force. Other selected countries compared with USA in

terms of government expenditure as a percentage of GDP are France, Sweden, United Kingdom, Germany, Canada, Japan and Australia indicating 52, 51, 46, 43, 40, 36 and 34 percent respectively. Comparatively, data on government spending expressed as a percentage of GDP in the year 2011 for some African countries such as Kenya, Uganda, Ethiopia and South Africa show a percentage of 30.1, 17.8, 19.4 and 25.7 respectively (Index of Economic Freedom, 2011).

The Index on Economic Freedom (2011) puts the revenue arising from taxation as a percentage of GDP for the financial year 2010/2011 at 20.9 percent for Kenya with other African countries in the same region indicating a slightly similar percentage. In addition, for the case of Kenya, tax revenues as a proportion of GDP grew from 10 percent in the 1960s to around 20 percent by early 80s (Karingi et al, 2004) and later increasing to 24.6 percent in the financial year 1995-96 following the introduction of the Tax Modernization Programme (TMP) in 1986 and the formation of a tax agency, KRA, in July 1995 (Institute of Economic Affairs, 2012).

The major components of tax revenues in Kenya are made up of; Income tax, Value-Added-Tax (VAT), Pay-As-You-Earn (PAYE) tax, Excise Duty and Customs or Import Duty. Other sources of finances for public spending and investment include; levies, proceeds from privatization, royalties, fines, remittance, dividends and donor funds (grants and loans) (Republic of Kenya 2012). According to a document commissioned by the Institute of Economic Affairs, it established that the total tax revenue collected by the government over the last decade between the year 2000 and 2011 was largely contributed by income tax at about 40% followed by VAT at 28%.

Using the MTEF framework of budgeting and planning, the government allocates available resources in the provision of goods and services to the following spending sector categories; Agriculture and Rural Development (ARD); Energy, Physical Infrastructure and ICT; General Economic and Labour Affairs; Health; Education; Governance, Justice, Law and Order (GJLOS); Public Administration and International Relations (PAIR); National Security; Social Protection, Culture and Recreation; and Environmental Protection, Water and Housing (Republic of Kenya, 2012).

This point to scenario where it is not clear which causes the other and what relationship exists between the two variables. The growth in government expenditures is as a result of an increase in the demand for security, provision for fiscal decentralization and devolved administrations, continued funding of human capital and infrastructure development, increased payment in service charges on outstanding debts and obligations and among others, with close to 80% of the budget being financed from internal sources (Republic of Kenya, 2012)

The logic behind this study is thus motivated and guided by the main objective of establishing the relationship between government expenditure and taxation in Kenya using time series econometric methodology. The specific objectives to expound the research was to establish the long-run relationship between government expenditure and tax revenue and whether a causal relationship exists between government expenditure and taxation (i.e. is it uni-directional, bi-directional or none). It is against this background that the research through its findings targets to reduce this gap.

Literature Review

Government spending and taxation nexus and how they are interlinked have been discussed in the context of four different and competing hypotheses, namely, the tax – and – spend hypothesis, the spend – and –tax hypothesis, the fiscal synchronization hypothesis and the institutional separation hypothesis.

Tax – and – spend hypothesis: The tax – spend hypothesis as championed by Friedman (1978) indicates that government would spend all its revenues and therefore raising revenue collection would lead to higher government expenditures. Empirical results under this hypothesis tend to show unidirectional causality running from government revenues to government expenditures. On this basis, Friedman favours a reduction in taxes to initiate spending cuts and austerity measures.

Moreover, a plethora of studies provide support for the tax and spend hypothesis and a few among such studies are: Eita and Mbazima (2008) for Namibia; Darrat (1998) for Turkey; and Fuess, et al (2003) for Taiwan. In the study for Turkey, Darrat (1998) employed the Granger causality test within an error correction modeling framework (Aregbeyen and Baba, 2013). Wolde and Rufael (2008) investigated the nexus of public expenditure and public revenue based on the experiences of thirteen African countries and found out the case of Ethiopia, Ghana, Kenya, Nigeria, Mali and Zambia support the tax and spend hypothesis. The study utilized the Toda and Yamamoto (1995) modified version of the Granger causality test within a multivariate framework (Aregbeyen and Baba, 2013).

Spend – and -tax hypothesis: This hypothesis postulates that governments determine the level of spending and then design the tax policy to accommodate the desired spending level. Advanced by Peacock and Wiseman (1961, 1979), it states that changes in public expenditure bring about changes in public revenue such that , for instance, a crisis situation such as wars, natural disasters or deep recession call for an immediate response by increasing the expenditure thereby increasing tax levels. Such increases, however, may become permanent and hence affecting the size of government even after the crisis has passed, a situation often referred to as the displacement effect (Bhatia, 2003 and Chang, 2009). Barro (1974, 1979, 1986) in his extensive empirical evidence concludes that government spending is considered as an exogenous variable to which taxes adjust and further argues that the inter-temporal budget constraints require a matching increase in future taxes as a result of current increase in expenditures. He maintains that taxpayers are sophisticated and are rational enough to interpret the increase as delayed form of taxation and are expected to capitalize the future tax liability. Other studies that provide support for the spend-and-tax hypothesis that used different econometric techniques include the studies by: Von Furstenberg, et al (1986) for the United States of America; Hondroyiannis and Papapetrou (1996) for Greece; Wahid (2008) for Turkey; and Carneiro, et al (2004) for Guinea-Bissau.

Fiscal synchronization hypothesis: The Fiscal synchronization hypothesis, associated with Musgrave (1966) and Meltzer and Richard (1981), is based on a fiscal regime where the government outlines the amount of spending programs alongside with the revenues required.

Institutional separation hypothesis: This hypothesis, as advocated by Baghestani and McNown (1994) , maintains that independent institutions participate in the budget process to determine the level of spending and taxation after arriving at a consensus on the fundamentals. While there are no much available empirical results that support this hypothesis, Nyamongo et al. (2007) , using Vector Autoregressive (VAR) approach, found

out that that revenue and expenditure for some African countries are linked bi-directionally in the long run.

Research Design and Model Specification

The study adopted a causal research design and employed the Vector Error Correction Model (VECM) to investigate the relationship between expenditure and taxation growth in Kenya. During univariate analysis, the time series data for each variable was converted to their natural logs to normalize the data and to avoid the problem of Heteroscedasticity.

To establish the integrational properties of the series i.e. stationarity of the variables and what level, the conventional Augmented Dickey and Fuller (ADF, 1979) test were used to check whether the variables have unit root to avoid the problem of spurious relationships.

The ADF test is as defined below:

$$\Delta Y_t = Y_0 + \alpha t + \Phi Y_{t-1} + \sum \Phi_i Y_{t-1} + \epsilon_t \dots \dots \dots (1)$$

$$\Delta Y_t = Y_t - Y_{t-1} \dots \dots \dots (2)$$

Where:

Y_t = Dependent variable, Y_0 = Constant term, t = Trend Variable, ϵ_t = Stochastic disturbance term,

Hypotheses used to test series:

$$H_0 = \Phi = 0 \text{ (} Y_t \text{ is non-stationery) , } H_1 = \Phi \neq 0 \text{ (} Y_t \text{ is not non-stationery).}$$

The study applied the Johansen-Juselius (1990) method of Maximum Likelihood of Cointegration to test for cointegration and long-run relationship. The methodology is given by;

$$\Delta X_t = \sum_{i=1}^{p-1} \Gamma_i \Delta X_{t-1} + \Pi X_{t-1} + \epsilon_t \dots \dots \dots (3)$$

Where :

X_t is the (2x 1) vector (Expenditure , Revenue), Δ is a symbol of difference operator, ϵ_t is a (n x 1) vector of residuals, Γ_i and Π are the estimated parameters to determine about the short-run and long-run adjustments to X_t under the VECM environment, ΠX_{t-1} is the error correction term and Π can be factored into two separate matrices α and β , such as $\Pi = \alpha\beta'$, where β' denotes the vector of cointegrating parameters while α is the vector of error correction coefficients measuring the speed of convergence to the long-run steady state.

The VECM model is a system of equations and as such separate VECM equation was formed for each variable and causality tests done for each.

$$\Delta GEXP_t = \sum_{i=1}^n \beta_i \Delta GEXP_{t-i} + \sum_{i=1}^{p-1} \alpha_i \Delta TREV_{t-i} + Z1*EC1_{t-1} + \epsilon_{1t} \dots \dots \dots (6)$$

$$\Delta TREV_t = \sum_{i=1}^n \delta_i \Delta GEXP_{t-i} + \sum_{i=1}^{p-1} \lambda_i \Delta TREV_{t-i} + Z2*EC2_{t-1} + \epsilon_{2t} \dots \dots \dots (7)$$

Where :

β_i , α_i , δ_i , and λ_i are the short – run coefficients, EC1 and EC2 are the error correction terms, ε_{1t} and ε_{2t} are the residuals in equation (6) and (7) respectively, $EC1_{t-1}$ is the lagged value of the residuals obtained from the cointegrating regression of GEXP (government expenditure) on TREV (Tax revenue) and $EC2_{t-1}$ is the lagged value of the residuals obtained from the cointegrating regression of TREV (Tax revenue) on GEXP (government expenditure).

Research Findings and Discussions

Augmented Dickey-Fuller tests

Table 1: Unit root test at level (expenditure)

Null Hypothesis: LN_GEXP has a unit root		
	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-0.176571	0.9315
Test critical values:		
1% level	-3.661661	
5% level	-2.960411	
10% level	-2.619160	

Table 2: Unit root test at level (tax revenue)

Null Hypothesis: LN_TREV has a unit root		
	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-0.479763	0.8826
Test critical values:		
1% level	-3.653730	
5% level	-2.957110	
10% level	-2.617434	

*MacKinnon (1996) one-sided p-values.

The natural log of tax revenue and the natural log of government expenditure indicated non-stationery in its level form by accepting the null hypothesis of the results that there is unit root .This is because the ADF- Test statistics of all the variables were greater than the McKinnon critical values at 5 percent levels of significance.

Table 3: unit root test results at first difference (expenditure)

Null Hypothesis: D(LN_GEXP) has a unit root		
	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-8.250490	0.0000
Test critical values:		
1% level	-3.661661	
5% level	-2.960411	
10% level	-2.619160	

Unit root test results at first difference (tax revenue)

Table 5 Unit root test results at first difference (tax revenue)

Null Hypothesis: D(LN_TREV) has a unit root		
	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-4.829212	0.0005
Test critical values:		
1% level	-3.661661	
5% level	-2.960411	
10% level	-2.619160	

*MacKinnon (1996) one-sided p-values.

The results indicate that there is no presence of unit root at first difference of the natural log of tax revenue because the McKinnon critical value at 1 percent level of significance was greater than the ADF-Test statistic.

Johansen – Jesulius cointegration test

Table 6 Unrestricted Co integration Rank Test (Trace)

Hypothesized	Eigen value	Trace Statistic	0.05	Critical	Prob.**
No. of CE (s)			Value		
None *	0.455396	18.34988	15.49471		0.0181
At most 1	0.003958	0.118977	3.841466		0.7301

* denotes rejection of the hypothesis at the 0.05 level, **MacKinnon-Haug-Michelis (1999) p-values

The Trace test indicates one cointegrating equation At Most 1 at the 0.05 level and the hypothesis at None is rejected since it has a significant probability value of less than 0.05.

Table 7: Unrestricted Co integration Rank Test (Maximum Eigen Value)

Hypothesized	Eigen value	Max-Eigen	0.05	Critical	Prob.**
No. of CE(s)		Statistic	Value		
None *	0.455396	18.23091	14.26460		0.0112
At most 1	0.003958	0.118977	3.841466		0.7301

The Maximum Eigen value tests indicate one cointegrating equation at the 0.05 level because the hypotheses at None is rejected since it has a probability value of less than 0.05.

The results indicate a long-run stable relationship between government expenditure and tax revenue. These implies that the two variables move together such that as expenditure grows revenues also grows and vice versa. It points to a situation of fiscal policy sustainability giving credence to a budget that is supported 80% (Republic of Kenya) through local resources but at the same time subject to other macroeconomic decisions and variables.

Granger causality (VECM)

After both variables have been found to be stationary at first difference and cointegrated, Granger causality test within the Vector Error Correction Model was estimated. Separate VECM equations lagged by two (2) periods each were estimated for log of government expenditure (GEXP) as the dependent variable while log of tax revenue (TREV) as the independent variable and a reverse model was also estimated where the log of tax revenue (TREV) was the dependent variable while log of government expenditure (GEXP) as the independent variable.

Causality test from tax revenue to government expenditure (2 lags)

Table 8: Causality test from tax revenue to government expenditure

Dependent Variable: D(LN_GEXP)				
Independent Variable: D(LN_TREV)				
	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	0.303322	0.225839	1.343093	0.1918
C(2)	-1.206945	0.346838	-3.479856	0.0019
C(3)	-0.380403	0.317440	-1.198346	0.2425
C(4)	0.675775	0.276031	2.448186	0.0220
C(5)	0.028305	0.267799	0.105693	0.9167
C(6)	0.255682	0.050164	5.096901	0.0000

C (1) which is the one period lagged residual of the co integrated equation and a probability value of 0.1918 which is more than 0.05 therefore it is not significant meaning that there is no long run directional causality from tax revenue to government expenditure.

Short – run causality from tax revenue to government expenditure - Using the Wald Test The coefficients of tax revenue (TREV) which are C(4) and C(5) were restricted to zero and the result of the Chi-square probability value (0.0490) was found to be less than 5 percent which indicated that the coefficients jointly influence government expenditure hence short run causality from tax revenues to government expenditure although the proximity of the results to the Chi-square probability value of 5% threshold may suggest a weak or slow causal link.

Breusch- Godfrey serial correlation LM test (2 lags) - The Probability Chi-Square value for the observed R-squared was 0.2667 which is more than 5 percent meaning that we fail to reject null hypothesis that there is no serial correlation in the model.

Heteroscedasticity test: ARCH (2 lags) - The Probability Chi-Square value for the observed R- squared is 0.1179 which is more than 5 percent meaning that we accept the null hypothesis that there is no ARCH effect in the model.

Causality test from government expenditure to tax revenue (2 lags)

Table 9: Causality test from government expenditure to tax revenue

Dependent Variable : D(LN_TREV)				
Independent Variable: D(LN_ GEXP)				
	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.722687	0.185658	-3.892561	0.0007
C(2)	1.027633	0.223772	4.592320	0.0001
C(3)	0.301945	0.217098	1.390821	0.1770
C(4)	-1.327846	0.281173	-4.722515	0.0001
C(5)	-0.835911	0.257342	-3.248254	0.0034
C(6)	0.246771	0.040667	6.068094	0.0000

C(1) which is the one period lagged residual of the co integrated equation with a coefficient value of -0.722687 and a significant probability value of 0.0007 less than 0.05, suggesting that there is long run uni-directional causality from government expenditure to tax revenue. This therefore means that government expenditure returns to equilibrium with tax revenue at the rate of 72 percent every year.

Short – run causality from government expenditure to tax revenue

Table 10: Short – Run Causality from Government Expenditure to Tax Revenue

Wald Test:			
Test Statistic	Value	df	Probability
F-statistic	11.28822	(2, 24)	0.0004
Chi-square	22.57643	2	0.0000
Null Hypothesis: C(4)=C(5)=0			

Using the Wald Test , the coefficients of government expenditure (GEXP) which are C(4) and C(5) were restricted to zero and the result of the Chi-square probability value (0.0000) was found to be less than 5 percent which indicated that the coefficients jointly influence tax revenues hence short run causality from government expenditure to tax revenues. Breusch-Godfrey serial correlation LM test (2 lags)- The Probability Chi-Square value for the observed R-squared was 0.2187 which is more than 5 percent meaning that we cannot reject null hypothesis that the desirability of the model was good since there is no serial correlation in the model. Heteroscedasticity test: ARCH (2 lags)- The Probability Chi-Square value for the observed R- squared is 0.4672 which is more than 5 percent suggesting that we accept the null hypothesis in that the model does not suffer from ARCH effect.

This study finds dominant hypothesis of spend and tax (Peacock and Wiseman 1961, 1979) in Kenya with evidence of long – run unidirectional causality from government expenditure to tax revenues. The findings also gives credence to the fiscal synchronization hypothesis associated with Musgrave (1966) and Meltzer and Richard (1981) albeit in the short-run perspective . The finding is contrary to the work of Wolde and Rufael (2008) where they found the case of tax and spend hypothesis in Kenya when they investigated the nexus of public expenditure and revenue based on the experiences of thirteen African countries.

Conclusion and Recommendations

Government expenditure and tax revenue have been found to be cointegrated and move together in the long-run. Uni-directional long-run causality running from government expenditure to tax revenue was also established. The results also indicate a bi-directional short-run causality between the two variables. Based on the results we are able to accept the spend-and-tax hypothesis which can best be explained by a government system where the expenditure programmes are chiefly determined beforehand which then subsequently inform the design of the tax framework and measures to finance the expenditure outlays. Moreover, the existence of a bi-directional short-run causal link implies that changes in either of the variables causes an instantaneous reaction by the other variable.

Going forward and for fiscal policy to be sustainable and to contain budget deficits that arise from fiscal imbalance that usually results to high debt levels, it is imperative to initiate, as a policy priority, expenditure-targeting reforms with comprehensive cost-benefit analysis framework as a guiding tool. Since expenditure causes tax revenues in the long-run, gradual reduction in the size of government and shifting of recurrent provisions for more development outlays is recommended. With oil revenue expected to improve government transfers and grants in the future, both National and County governments should be encouraged to adopt and pursue a balanced budget approach with additional borrowings channeled towards developmental projects as they simultaneously seek to revitalize and monetize rural economies.

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DETERMINANTS OF TEA EXPORT EARNINGS IN KENYA, 1980-2011

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Abstract

Fluctuation of tea export earnings affects the profitability of firms in the sector and therefore farmers' earnings (bonus). To this end, there is dire need for stabilizing the earnings to farmers hence need to know the key factors which could be targets for policy and hence the need for this study. The dependent variable was tea export earning while the independent variables were real exchange rate, foreign income and inflation. The specific objectives included exploring the effect of real exchange rate on tea export earnings; the effect of inflation rate, as well as establishing the effect of foreign income of major trading partners on tea export earnings. The traditional ADF test was carried out for all variables and PP test was particularly used for the inflation variable to ascertain that it was indeed intergrated of order zero I (0). Long run analysis was carried out to investigate the long run relationship of these stationary economic variables. Cointegration was tested through ADF Test of the normal regression residual series. Further, Johansen's cointegration multivariate procedure is used to establish whether the variables are cointegrated in the long run. Error correction model is used to deduce the shortrun dynamics. All variables were found to have positive coefficients with the exception of foreign income. There is a significant relationship between tea earnings and real exchange rate, inflation, tea price, export of goods and services, agriculture value addition. The study recommends tea exporters to hedge against foreign exchange risk through derivative markets; it encourages stakeholders to engage in marketing and value addition. Finally, strong monetary policies are recommended to enhance price stability and tea export earnings.

Keywords: Export earnings, real exchange rates, inflation, tea prices, value addition.

Introduction

As an open economy, Kenya considers exchange rate as key macroeconomic policy instrument that ensures export promotion and economic growth. The magnitude of the international flow of goods, services and assets is impossible to ignore (Chechetti, 2008). Despite experiencing mixed results over the years, agriculture remains the mainstay of the Kenyan economy. Ministry of Agriculture (2009) further indicates that Cross-country estimates show that GDP growth originating from agriculture is at least twice as effective in reducing poverty as GDP originating outside agriculture. Kenya Vision 2030 (2007) strategy has identified agriculture as one of the six key economic sectors expected to drive the economy to a projected 10 percent economic growth annually over the next two decades through promotion of an innovative, commercially-oriented and modern agriculture.

The role of exports in economic development has been widely acknowledged. Ideally, export activities stimulate growth in a number of ways including production and demand linkages, economies of scale due to larger international markets, increased efficiency, adoption of superior technologies embodied in foreign-produced capital goods, learning effects and improvement of human resources, increased productivity through specialization and creation of employment (Were et al., 2002). Generally, Kenyan exports have been constrained by unfavorable international terms of trade. Developed countries in particular, continue to

impose prohibitive tariff and non-tariff barriers. These include declining commodity prices, biased trade agreements and the use of agricultural subsidies in support of farmers in developed economies. Additionally, international trade negotiations such as those under World Trade Organization and the Economic Partnership Agreements (EPAs) have been slow and have achieved little progress in the last decade (Ministry of Agriculture, 2009). According to (Ministry of Agriculture, 2009), Kenyan farmers export semi-processed, low-value produce, which accounts for 91 percent of total agriculture-related exports. Writing in the same vein, Were et al. (2002) asserts that Kenya’s exports are still dominated by primary agricultural products.

Tea is sold in USD spot through automated public auction in Mombasa (TBK, 2012). East Africa Tea Trade Auction (EATTA) runs the Mombasa tea auction that is the second largest tea auction in the world after the Colombo auction. Of the tea exported globally, 32% passes through the Mombasa auction (EATTA, 2012). Kenyan tea is sold to the world market in bulk and used for blending lower quality teas from other countries (Tea Research Foundation Kenya, 2009). Therefore, this results in lower prices for Kenyan tea. The industry has remained stable, with increases in production levels and therefore earnings from exports.

Kenya is the largest producer of tea in Africa, and it has quadrupled its exports over the last decade. Currently, Kenya prides itself as one of the world's leading black Tea producers with Pakistan, the UK and Egypt being the biggest buyers (Tea Board of Kenya, 2012). Computations indicate that Major tea trading partners considered herein include UK, Egypt and Pakistan which command 66.65% of the export share as computed from 1994 to 2011. According to Tea Research Foundation Kenya (2011), Kenya is ranked third in annual tea production after China and India. The tea produced in Kenya accounts for about 10% of the world production and about 22% of the export share. As regards tea exports, Kenya has been second largest exporter in 2004 (after Sri Lanka), the same constellation that prevailed in 1985 (Kenya Vision 2030, 2007). It is therefore considered to be a major exchange earner for the country and contributes significantly to the country’s GDP. The graph below demonstrates substantial contribution of tea exports to the country’s GDP. 1981 recorded a low of 1.97% while 1993 recorded a high of 5.6%.



Figure 1: Tea Export Earnings/ GDP 1980-2011

Tea export earnings over the period 1980 - 2011 have experienced fluctuating upward trend. This consequently affects the profitability of firms in the sector and therefore farmers' earnings (bonus). To this end, there is dire need for stabilizing the earnings to farmers hence need to know the key factors which could be targets for policy and hence the need for this study. This study gives an account of various determinants of tea export earnings in Kenya. Given the problem of fluctuation of economic variables, the objective and purpose of this study is to investigate how such fluctuations affect the value of tea exports in Kenya which is the chief foreign exchange earner for the Kenyan economy. The broad objective of the study is to investigate the determinants of tea export earnings in Kenya. The specific objectives are:

- i. To explore the effect of real exchange rate on tea export earnings.
- ii. To establish the effect of inflation rate in Kenya on tea export earnings.
- iii. To establish the effect of foreign income of major trading partners on tea export earnings

Literature review:

The most commonly held belief is that greater exchange rate fluctuation generates uncertainty thereby increasing the level of riskiness of trading activity and this will eventually depress trade (Todani and Munyama, 2005). Johnson (1969) and Kihangire (2004) as cited by Wesseh and Niu (2012) assert that the birth of this new system of exchange rate has engendered a 'hot' and extensive theoretical and empirical debate regarding the impact of exchange rate variability on foreign trade. Policy makers in many developing countries are puzzled whether they should concentrate on formulating policies that are designed to be export-promotion oriented or import-substitution oriented. If export growth could contribute to economic growth, the former policies are advocated (Oskooee et al., 2005). Ogun (1998); Klaassen (1999); Whitley, (1994); Ndung'u and Ngugi, (1999); Alemayehu, (1999); Balassa et al., (1989); Branchi et al., (1999), Mckay et al., (1998) as cited in Were, et al. (2002) note that conventional commodity models usually incorporate the real foreign income (of trading partners) and real exchange rate (proxy for relative prices) as explanatory variables in the estimation of the export supply functions in general (among others). This study adopts a similar approach.

Foreign Income: Income of trading partners is used as an indicator of potential demand for our tea exports. However, the study indicates that GDP, disposable income or any other national income measure for major trading partners can be used as a measure of income. The real foreign income is a weighted average of the real GDP of respective trading countries. Real GDP is calculated by dividing the nominal GDP of each country by the GDP deflator with base year 2000 of the respective countries. The weight used is as calculated above (Ragoobur and Emamdy, 2011).

Real exchange rate (proxy for relative prices): Bilateral trade between two countries depends upon, among other things, exchange rates and the relative price level of the two partners (Todani and Munyama, 2005). Writing in the same vein, Rowlatt (1992) indicate that the price competitiveness of one economy's goods compared to those of another is indicated by the real rate which the currencies are.

Inflation: De Grauwe (1996) point out that one of the mechanisms in the flexible exchange rate system which could in principle have stimulated inflation, have been stressed. One is ratchet effect the other is discipline effect.

Real tea exports: This study depicts real tea exports by the value of earnings from tea exports. According to Todani and Munyama (2005) real exports are constructed as nominal exports deflated by the CPI. Following Aziakpono, et al. (2005) and Sekantsi (2007) this study express Kenya tea exports in real terms by deflating them using the CPI of major tea trading partners (UK, Pakistan and Egypt). Although, economic theory requires that quantity rather than value be used, we use this in value terms in order to determine earnings from tea exports.

Methodology and Estimation:

This is a longitudinal research time series aimed to achieve the broad objective of the study which is to investigate the determinants of tea export earnings in Kenya over the period 1980 to 2011.

Model specification

This section gives a brief discussion of the econometric model to be used in estimating the determinants of tea export earnings in Kenya. Control variables applied in the study are the unit prices of tea exports; export of goods and services (current USD); and agriculture value added (current USD). To this end, the following equation is to be estimated:

$$\text{LN_Xt} = \beta_0 + \beta_1 \text{LN_Yt} + \beta_2 \text{LN_RERt} + \beta_3 \text{LN_INFt} + \beta_3 \text{LN_Pt} + \beta_3 \text{LN_AGVt} + \beta_3 \text{LN_XGSt} + \epsilon_t$$

Where:

LN_Xt = Natural logarithm of Kenya's Real tea export (nominal exports deflated by CPI)

LN_Yt = Natural logarithm of real foreign income (UK, Egypt's and Pakistan's GDP deflated by CPI). This is used as an indicator of demand for tea export.

LN_RERt = Natural logarithm of real exchange rate computed as $\text{RRX} = \text{RX} (\text{P}/\text{Pw})$; Where: RRX = Real Exchange rate, RX = Nominal exchange rate, P = domestic CPI, and Pw = US CPI

LN_INFt = Natural logarithm of Kenya's inflation rate

LN_Pt = Natural logarithm of unit prices of tea exports

LN_AGVt = Natural logarithm of agriculture value added (current USD).

LN_XGSt = Natural logarithm of export of goods and services (current USD)

β_0 = intercept parameter

ϵ_t = stochastic error term

Data source

This research study sources secondary data from TBK, KNBS, and World Bank database. These institutions are custodians of authentic data that is used by economists and other researchers. KNBS publications such as the Economic Survey and Statistical Abstract, over the period of study, are used to extract data required. Whilst TBK provide data on the destination of Kenya tea 1994 – 2011; this helps to ascertain the tea export share of major trading partners. Data required for the success of this study empirical analysis include the nominal exchange rate KES/ USD, CPI Kenya, Egypt, UK and Pakistan that was used to compute real exchange rate. The GDP Egypt, UK and Pakistan were used to compute foreign

income using their respective ratios. Another important data variable used is domestic inflation rate.

Empirical results and analysis

The use of nonstationary variables in the time series analysis leads to misleading inferences. To avoid spurious model due to trending variables, unit root test was carried out. This study uses the traditional Augmented Dicker Fuller (ADF) test to check for the unit root in each variable and thereby determine the order of integration (see Table 1 below).

Table 1: Order of Intergration

Variable	ADF Test Variable in Levels	ADF Test On First Difference
X	-	I(1)
Y	-	I(1)
INF	I(0)*	-
P	-	I(1)
AGV	-	I(1)
XGS	-	I(1)

* Further tests were carried out on the INF variable using PP Tests for stationarity and the results reflected the PP Test variable in levels. This confirms that indeed the variable is stationary. Real tea exports, real exchange rate, foreign income, unit price of tea exports, agriculture value added and export of goods and services are integrated of order 1.

Long-run Analysis

With D-W stat of 2, it shows that there is no serial correlation and therefore the model gives a good description of the variables. Results shows that 1% increase in foreign income causes 0.36% decrease in tea export earnings. This shows there is an inverse relationship between foreign income and tea export earnings. t statistic is -1.02 which is less than 2; showing that foreign income is insignificant. 1% increase in RER results to 0.3% decline in tea export earnings. t statistic is -0.8 meaning RER is an insignificant variable in determination of tea export earnings. 1% increase in inflation causes 0.07% decline in tea export earnings. t statistic is -1.5 which is less than 2, indicating that inflation is insignificant in determination of tea export earnings.

Engel- Granger two step procedure

The next step is to examine whether the integrated variables are cointegrated. Modeling using variables in the first difference to achieve stationarity leads to loss of long-run information. The concept of cointegration implies that if there is a long-run relationship between two or more non-stationary variables, deviations from this long-run path are stationary. The results indicate stationarity at levels. Therefore, there is cointegration.

Johansen’s cointegration test:

Johansen’s cointegration multivariate procedure is used to establish whether the variables are cointegrated in the long run. The results show that there are at most 4 cointegrating variables in the long run. They have long run association such that they move together. According to

the study by Were et al. (2002), in the case of tea, the results were found to be inconsistent—no co integration and therefore no error correction model.

Error Correction Model

This paper further used the ECM representation to investigate the short run dynamics. With D-W stat of 2.0, it shows that there is no serial correlation and therefore the model gives a good description of the variables. There was about 74%, 0.9%, and 60% of disequilibrium “corrected” annually by changes in real exchange rate, inflation and foreign income respectively. Further, all variables have positive coefficients with the exception of foreign income. There is a direct relationship between tea earnings and the following variables: real exchange rate, export of foods and services, tea price, agriculture value addition. On the other hand, there is an indirect relationship between tea earnings and income of major trading partners. All variables regressed are significant with the exception of inflation.

Conclusion and Policy Implication

Like studies of similar nature, the paper acknowledges that non-price factors (costs of inputs, labour costs, access to credit, etc) play a vital role in production and export supply response. Nonetheless, the results of this study are quite informative and arguably point out several issues of policy concern. The research questions answered in the investigation include exploring the effect of real exchange rate on tea export earnings; establishing the effect of inflation rate in Kenya on tea export earnings; as well as, establishing the effect of foreign income of major trading partners on tea export earnings.

Relationship between tea export earnings and real exchange rate is positive in the short run. This means that increase in real exchange rate caused by depreciation of the Kenya shilling against the USD results in high tea export earnings. Appreciation of the Kenya Shilling against the dollar as a result of decline in the real exchange rate leads to a decline in tea export earnings. This is a significant variable in realization of tea export earnings. However tea prices at the Mombasa tea auction are significant both in the short run and in the long run.

The results suggest that there is a negative relationship between tea exports and foreign income both in the long run and short run. This means that an increase in foreign earnings result to a decline in tea export earnings. Increase in the national income of UK, Egypt and Pakistan may result to diversion of spending to other priority sectors of the respective economies other than tea imports. This is a significant variable in realization of tea export earnings. In addition, agriculture value addition is significant in the realization of tea export earnings.

There is a direct relationship between tea export earnings and domestic inflation in the short run whereas there is an inverse relationship in long run. Continued inflation will result to high cost of production due to pricy inputs. Given that the tea fertilizer is imported, gains earned from exporting are equally offset causing tea export earnings to decline. Models used indicate that inflation is an insignificant variable in tea earnings. Noteworthy, like in the literature especially for developing countries, there are some inconsistencies—most econometric time series studies often fail to find robust estimates—for example wrong signs and insignificant price coefficients (Were et al., 2002).

Exchange rate is a significant variable in determination of tea export earnings. Fluctuation of exchange rate may result to an anticipated loss for the Exchange rate risk takes several forms

and, in the absence of fixed exchange rates or monetary union, firms must take action to protect themselves against that risk. The need for sophisticated risk management in the face of highly volatile exchange rates provides one of the principal reasons for the growth of derivatives markets. These allow firms to hedge risk by taking out contracts in derivatives markets, which carry the opposite risk to that faced in the underlying markets such as the forex markets. The two principle types of derivatives are futures and options. The Nairobi Securities Exchange is in the process of launching futures. This is an opportunity for tea exporters to hedge against foreign exchange risk.

With advances in economic integration, particularly the EAC and COMESA, together with African Growth Opportunity Act (AGOA), there are potential export opportunities that can be explored to Kenya's advantage, including promotion of value addition for Kenyan tea. The study shows that an increase in income of major tea trading partners results to decline in tea export earnings. This signals to key stake holders in the sector that value addition is significant to ensure sustainability in the long run. TBK and the country's commercial attachees to Pakistan, Egypt and the UK should engage in marketing of Kenyan tea in these respective countries. This would particularly be significant if carried out during the boom economic cycle. To this end, need to diversify tea products and the need to develop technologies for value addition so as to enhance farmers' earnings. These measures are also expected to open up new market niches for Kenyan tea

Establishment of strong macroeconomic policies result to macroeconomic stability in the country. It ensures price stability and curbs the issue of inflation. The authorities need to be able to respond to any such disequilibrium with short-term intervention in the market as well as adjusting longer term monetary and fiscal policy. This will help to ensure sustainability and subsequent growth in the tea export earnings.

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FACTORS INFLUENCING ADOPTION OF INTERNET BANKING AS A COMPETITIVE ADVANTAGE: A CASE OF KENYA

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Abstract

Competition in the banking industry is intense, with new financial service providers emerging all the time. Most bank branches at present are equipped with main core banking applications supported by a central computer system. The objective of this study was to examine the effect of product/service differentiation on adoption of internet banking as a competitive advantage at Co-operative Bank of Kenya Limited. Descriptive statistics was used to describe samples of the study, analyze qualitative data from the questionnaires and draw conclusions about the study population. The study employed both primary and secondary data to analyze the relationships between variables. Primary data was obtained through questionnaires while secondary data was obtained from reviews, journals and books on electronic banking. Quantitative data was analyzed by the use of descriptive statistics using SPSS and presented through percentages, means and frequencies. From the findings product/service differentiation influences adoption of internet banking as a competitive advantage to a very great extent. The product/service differentiation enables customers gain greater control over the management of their finances; helped firms better manage of banking services through monitoring of customers' feedback and complaints; innovativeness in the organization has led to more productivity for the bank. The study recommends that the management should review and formulate cost of internet banking based on the prevailing market rates to enhance customer retention and loyalty. The management should conduct regular market analysis to establish the changing customer trends to differentiate its products/services to meet specific customers' needs. The study recommends that the management should consider the flexibility of the adoption internet banking.

Keywords: Internet banking, Adoption, Competitive Advantage, Product/service differentiation

Introduction

The information and communication technologies are revolutionizing the banking sector over the years. The rapid development and commercialization of Information and Communication Technologies (ICTs) banking industry has prompted banks to increasingly adopt these technologies (Parasuraman, et al., 1998). Internet Banking means communication with the Bank and/or performance of transactions through the international network, thus allowing the client to perform transactions in relation to the bank and to obtain other information in the scope shown at the website of the bank. "Internet Banking" can also be defined as "systems that enable bank customers to access accounts and general information on bank products and services through a PC or other intelligent device " or "any banking activity held on Internet (from promotion to sale)" (Mathias & Sahut, 1999). Adoption means the process of accepting the initiation, implementation and use of a particular technological innovation, especially those that are regarded as new in an organization. Technological developments particularly in the area of Telecommunications and Information Technology are revolutionizing the way

business is done. Electronic commerce (e-commerce) is the activity in which consumers get information and purchase products using Internet technology (Olson and Olson 2000).

Computerization in the Kenyan banking industry got off to a slow start and only picked up momentum in the 2000's. The increasing volume of banking transactions was the inevitable motivator for the introduction of computers in Kenyan commercial banks. Then, by linking up technological developments in telecommunications and Information Technology, real-time on-line electronic funds transfer came into existence. A large part of the electronic funds transfer process takes place within the banking premises and thus may be invisible to the layperson (Manjau 2005).

The banking sector has embraced changes occurring in Information Technology with most banks having already achieved branchless banking as a result of the adoption of communications options. According to The Central Bank Annual Supervision report (2010), the increased utilization of modern information and communications technology has for example led to several banks acquiring ATMs as part of their branchless development strategy measures. Several banks have also entered into the Internet Banking and established websites. Internet banking however is still at its infancy and more in terms of utilization is expected in this sector (Manjau 2005).

The fundamental concept of Competitive Advantage can be traced back to Chamberlin (1933), but Selznick (1957) can be attributed with linking advantage to competency. While a CA can result either from implementing a value-creating strategy not being employed by current or prospective competitors or through the superior execution of a strategy which is also being employed by competitors (Bharadwaj, 2000), it is sustained when other firms are unable to duplicate the benefits of this strategy.

The Resource Based View of CA, which examines the link between a firm's idiosyncratic attributes and performance (Barney 1991), is based on using its internal strengths to take advantage of opportunities and counter threats in the market, with an aim to create SCA through the acquisition, utilisation, and exploitation of firm-specific resources and capabilities (Rose 1999). It means that explanations for why some firms ultimately succeed and others fail can be found in understanding their resources and capabilities, which influence both the strategic choices that managers make and the implementation of those chosen strategies (Johnson, and Scholes 2002).

Diffusion of Innovation theory

DOI is a theory of how, why, and at what rate new ideas and technology spread through cultures, operating at the individual and firm level. DOI theory sees innovations as being communicated through certain channels over time and within a particular social system (Rogers 1995). Individuals are seen as possessing different degrees of willingness to adopt innovations, and thus it is generally observed that the portion of the population adopting an innovation is approximately normally distributed over time (Rogers 1995). Breaking this normal distribution into segments leads to the segregation of individuals into the following five categories of individual innovativeness (from earliest to latest adopters): innovators, early adopters, early majority, late majority, laggards (Rogers 1995). The innovation process in organizations is much more complex. It generally involves a number of individuals, perhaps including both supporters and opponents of the new idea, each of whom plays a role in the innovation-decision. Based on DOI theory at firm level (Rogers 1995), innovativeness is related to such independent variables as individual (leader) characteristics,

internal organizational structural characteristics, and external characteristics of the organization. (a) Individual characteristics describes the leader attitude toward change. (b) Internal characteristics of organizational structure includes observations according to Rogers (1995) whereby: “centralization is the degree to which power and control in a system are concentrated in the hands of a relatively few individuals”; “complexity is the degree to which an organization’s members possess a relatively high level of knowledge and expertise”; “formalization is the degree to which an organization emphasizes its members’ following rules and procedures”; “interconnectedness is the degree to which the units in a social system are linked by interpersonal networks”; “organizational slack is the degree to which uncommitted resources are available to an organization”; “size is the number of employees of the organization”. (c) External characteristics of organizational refer to system openness.

Product/Service Differentiation

A business can choose to focus its efforts along several dimensions to achieve competitive advantage. These include low cost or price, outstanding service, high flexibility and variety, continuous innovation, and superior quality. Service differentiation is now recognized as a powerful strategic weapon. Service differentiation is judged by the customer. All product and service attributes that connote value to the customer and lead to customer satisfaction and preference must be addressed appropriately. Value, satisfaction, and preference may be influenced by many factors throughout the customer's overall purchase, ownership, and service experiences. This includes the relationship between the company and customers- the trust and confidence in products and services-that leads to loyalty and preference (Pousttchi and Schurig, 2004).

Customer-driven quality is thus a strategic concept. It is directed toward market share gain and customer retention. It demands constant sensitivity to emerging customer and market requirements, and measurement of the factors that drive customer satisfaction. It also demands awareness of developments in technology, and rapid and flexible response to customer and market requirements. The concept of quality includes not only the product and service attributes that meet basic requirements, but also those that enhance and differentiate them from competing offerings. However, not every firm needs to compete along the same dimensions of quality (Furst et al 2002).

The banking industry has already been depicted (Parasuman et al., 2001) as exhibiting little market orientation and fulfilling services with little regard to customer needs as well as including branches dissimilar in efficiency. Long lines, limited time for customer servicing, transaction errors, excessive bureaucracy, and security and network failures have been said to be the most frequent problems using banking services (Smith, 1999). This highly lowers customer’s perception on the quality of service offered and hence reduces customer satisfaction and the bank’s profitability and credibility.

The small business segment (retail and corporate services) has not been an easy one for the main banks to target and a number of studies have highlighted imperfection in service provision and problems regarding service quality and customer satisfaction (Smith, 1999). Particular problematic areas include knowledge and understanding, providing explanations for decisions, queuing, charges, collateral requirements, network failure and insecurity. Due to this, customer satisfaction levels are at all time low, dragging the bank’s image, credibility and staff morale down (Dierickx 2009).

Mukulu (2005) in the review of banking sector trends indicates that banks are investing heavily in technological innovations due to competition, in particular ATM and e-banking. Many have taken up international franchises for money transfers like Western Union and Money gram. Retail banking is currently undergoing a great deal of change as new technologies and new ways of delivering banking services are being introduced. Some of these changes have provided more choices and variety for consumers. As the importance of innovation in developing countries increases, so does the need for research on the subject. Evidence from the literature reviewed above shows that existing discourse on diffusion of IT innovation in banking sector has failed to focus on the underlying factors affecting internet banking technology adoption among commercial banks in Kenya. Among other studies include relative importance of technology in service delivery in banking (Avlonitis et al., 2005) which concluded that technology provides a different type of value and the benefits to be gained are largely efficiency based. Migunde (2002) also attest that researches have been done on areas of service excellence and customer satisfaction in the banking industry. However, there is no study in Kenya especially in cooperative bank that has looked at factors influencing adoption of internet banking as a competitive advantage at Co-operative Bank.

Research Design

This research was conducted through a case study. It sought to investigate factors affecting internet banking technology adoption among commercial banks in Kenya a case study of Co-operative Bank. Case study is chosen as it enabled the researcher to have an in-depth understanding of the area of study. A case study design is most appropriate where a detailed analysis of a single unit of study is desired as it provides focused and detailed insight to phenomenon that may otherwise be unclear. The case study provided the researcher with in depth information, which assists in meeting the objectives of the study.

Population

The target population of this study were the staff working at Co-operative Bank-head Office in Nairobi whose number is 170.

Sampling Design

This study adopted stratified sampling. It involved dividing the population into three significant strata based on management levels. Sample of responding staff was drawn from a population of 170 top, middle and lower level managers working at Co-operative Bank- Head office. The sampling frame was the employees in various categories as per their job description to get a sample of 52 respondents.

Data Collection Instrument

The study collected primary data from the respondents. The data collected was both quantitative and qualitative. Qualitative data is a categorical measurement expressed not in terms of numbers, but rather by means of a natural language description. Quantitative data is a numerical measurement expressed in terms of numbers. The study utilized a questionnaire to collect data.

Data Analysis

The descriptive statistical tools helped the researcher to describe the data and determine the extent to be used. The findings were presented using tables and charts. The Likert scale was used to analyze the mean score and standard deviation, this helped in determining the extent to which adoption of internet banking in Co-operative Bank of Kenya Limited has enhanced its competitive advantage. Data analysis used SPSS and Microsoft Excel to give percentage, means scores, and frequencies.

RESULTS AND DISCUSSION

The research was conducted on a sample of 52 respondents from top, middle and lower level management to which questionnaires were administered. However, out of the issued questionnaires, 40 were returned duly filled in making a response rate of 76.9%, which was sufficient for statistical reporting. The results were computed to produce percentages, frequencies, mean and standard deviation for efficiency in interpretation. Qualitative analysis was conducted to supplement the quantitative analysis. The qualitative data collected was analyzed using narrative analysis.

Product /service differentiation and adoption of internet banking

The study sought to establish whether product/service differentiation is key in adoption of internet banking as a competitive advantage at Co-operative Bank (see figure 1).

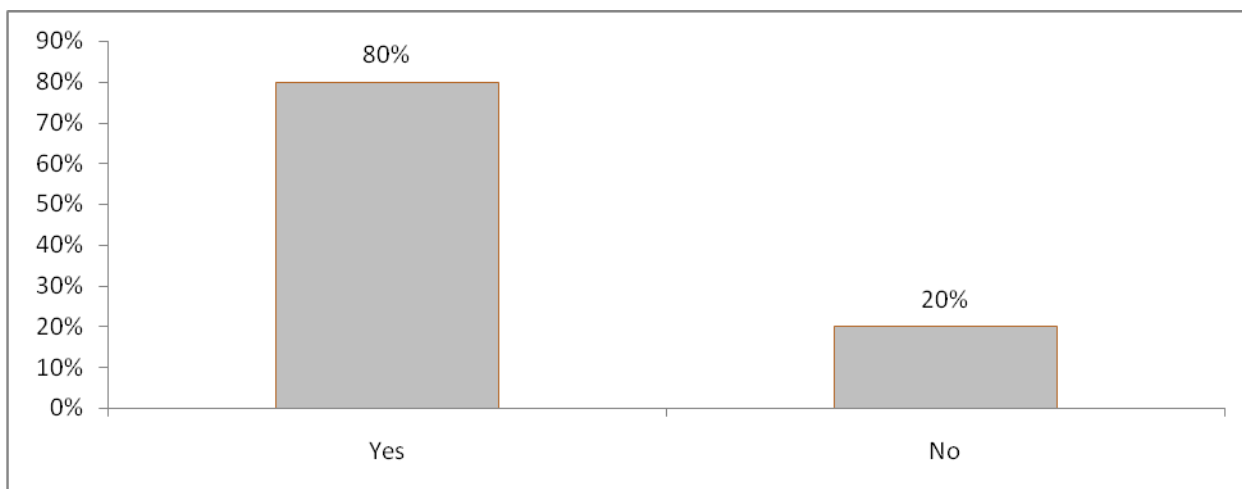


Figure 1: Product /service differentiation and adoption of internet banking

The study finding indicate that majority (80%) of the respondents indicated that product/service differentiation is key in adoption of internet banking as a competitive advantage at Co-operative Bank. This implies that product/service differentiation is a key to be considered in adoption of internet banking to enhance competitiveness of the organization.

Further, 30% of the respondents posited that product/service differentiation influences adoption of internet banking as a competitive advantage to a very great extent, 27.5% to a moderate extent while 22.5% posited that it influences adoption of internet banking to a great extent. However 20% of the respondents indicated that product/service differentiation does not influence adoption of internet banking as a competitive advantage to any extent.

Therefore product/service differentiation influences adoption of internet banking as a competitive advantage to a great extent.

Table 1: Product /service differentiation and adoption of internet banking

	Mean	Std. Deviation
In e-commerce convenience of shopping at any time is important because customers see that they can save time spent contacting different organizations.	2.731	0.231
Banks gain advantage by providing customers with the convenience of being able to perform banking transactions electronically (or online) at any time without having to leave home or office	3.934	0.1245
Banks that make innovative use of IT gain a favorable image and hence increase their value	2.234	0.1245
Innovativeness lead to more productivity for the bank	4.006	0.4652
Internet banking services gives customers greater control over the management of their finances	4.2312	0.2132
Monitoring of customers' feedback and complaints on a regular basis would ensure better management of banking services.	4.146	0.9652
This is a cost-efficient way of yielding higher productivity as internet banking achieve higher productivity per period of time than human tellers	3.982	0.6924
Internet banking increase accessibility of the bank products (ATMs. Loan faacilities) to the customers	3.9912	0.9867
Internet market potential is significant because banks have the opportunity to target most segments in the industry both locally and internationally	2.066	0.6783

From the study findings in table above, majority of the respondents agreed that internet banking services gives customers greater control over the management of their finances (M=4.2312); monitoring of customers' feedback and complaints on a regular basis would ensure better management of banking services (M=4.146); innovativeness lead to more productivity for the bank (M=4.006); this is a cost-efficient way of yielding higher productivity as internet banking achieve higher productivity per period of time than human tellers (M=3.982); internet banking increase accessibility of the bank products (ATMs, Loan facilities) to the customers (M=3.9912); and banks gain advantage by providing customers with the convenience of being able to perform banking transactions electronically (or online) at any time without having to leave home or office (M=3.934) respectively. However, majority of the respondents disagreed that in e-commerce convenience of shopping at any time is important because customers see that they can save time spent contacting different organizations (M=2.731); banks that make innovative use of IT gain a favorable image and hence increase their value (M=2.234); and that internet market potential is significant because banks have the opportunity to target most segments in the industry both locally and internationally (M=2.066) respectively.

This depicts that product/service differentiation has enabled customers gain greater control over the management of their finances; helped firms better manage of banking services through monitoring of customers' feedback and complaints; innovativeness in the organization has led to more productivity for the bank. The bank has also yielded higher productivity through internet banking than human tellers; as well as increase accessibility of the bank products via adoption of internet banking.

Conclusion

The study concludes that the product/service differentiation is key in adoption of internet banking as a competitive advantage at Co-operative Bank. This implied that product/service differentiation is a key to be considered in adoption of internet banking to enhance competitiveness of the organization. The product/service differentiation influences adoption of internet banking as a competitive advantage to a very great extent. Therefore product/service differentiation influences adoption of internet banking as a competitive advantage to a great extent.

The study concludes that product/service differentiation enables customers gain greater control over the management of their finances; helped firms better manage of banking services through monitoring of customers' feedback and complaints; innovativeness in the organization has led to more productivity for the bank. The bank has also yielded higher productivity through internet banking than human tellers; as well as increase accessibility of the bank products via adoption of internet banking.

Recommendations

The study established that maintaining customers through internet banking is challenging. Therefore the study recommends that the management of the Cooperative Bank of Kenya should review and formulate cost of internet banking based on the prevailing market rates to enhance customer retention and loyalty. The study found out that the banks were poor in targeting most segments in the internet banking industry both locally and internationally. The study recommends that the management should conduct regular market analysis to establish the changing customer trends to differentiate its products/services to meet specific customers' needs. The study revealed that flexibility in operations which affected the design of training intervention was not considered in adoption of internet banking. The study therefore recommends that the management should ensure that the internet technology adopted is flexibility to meet the diverse customer needs. The study further found out that the organization lacked adequate IT specialists to enhance the adoption of internet banking. The study therefore recommends that the bank should invest more in hiring the IT specialists to enhance timely adoption of technology to fast-track the banks competitiveness in the banking sector. Similar study should be done in other financial institutions like the micro finance institutions (MFIs) in Kenya for comparison purposes and to allow for generalization of findings on the factors influencing adoption of internet banking as a competitive advantage.

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SUPPLY-SIDE FACTORS LIMITING FINANCIAL INCLUSION IN KENYA

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Abstract

Access and use of mainstream financial services is recognized as significant since many economic exchanges are mediated through financial institutions. Without access to the financial system, individuals and households find it difficult to undertake financial transactions. The objectives of the study were to establish the effects of price, conditions attached to financial products and distance from nearest branch in limiting financial inclusion in Kenya. The study used descriptive design in collecting data. The target population was drawn from the 43 licensed commercial banks. Primary data for the study was collected using questionnaires and complemented by desk research. The research study established that access to bank accounts is important in accessing other financial services such as credit and carrying out financial transactions while cost of running a bank account contributes to financial exclusion since high account charges keep off part of the population from accessing and using bank accounts. Conditions attached to products such as requirement for minimum use of accounts often dissuade people from using financial services. Finally, the distance to financial services contributes to financial exclusion especially for people in remote rural areas and deprived urban areas. The study recommended the need for the Central Bank of Kenya to provide the commercial banks with incentives to operate in rural and deprived areas like slums, provide the necessary incentive and policies that support and encourage banks to design appropriate loan products for poor and low-income households. Banks should also design, and adopt account and loan application procedures that are simple and easily accessible

Key Words: Financial inclusion, Condition exclusion, Geographical exclusion, Price exclusion, Kenya

Background

Financial inclusion refers to a process that ensures the ease of access, availability and usage of the formal financial system for all members of an economy. It facilitates efficient allocation of productive resources and thus can potentially reduce the cost of capital. An inclusive financial system can help reduce the role of informal sources of credit which are often exploitative.

United Nations (2006) defines financial inclusion as the “access to the range of financial services at a reasonable cost”. Basic financial services include savings, credit, leasing and factoring, mortgages, insurance, pensions, payments, local money transfers and international remittances (Mamunet al 2011). These services need to be available when and where desired, and products need to be tailored to specific individual or group needs. Services offered need to be affordable, taking into account the indirect costs incurred by the user, such as having to travel a long distance to a bank branch. World Bank (2006) notes that efforts to improve inclusion should also make business sense, translate into profits for the providers of these services, and therefore have a lasting effect. Access to safe, easy and affordable credit and

other financial services by the poor and vulnerable groups, disadvantaged areas and lagging sectors is recognised as a pre-condition for accelerating growth and reducing income disparities and poverty. By creating equal opportunities, access to a well-functioning financial system enables economically and socially excluded people to integrate better into the economy and actively contributes to development and protects themselves against economic shocks.

It is estimated that globally, over two billion people are currently excluded from access to financial services (United Nations, 2006). The financially excluded are disadvantaged by their isolation from the financial system (Bhanot, Bapat & Bera, 2012). They face the financial risks associated with cash, their access to normal consumer credit is limited and their general inability to save threatens their financial security (Carbo, Gardener, & Molyneux, 2005). Lack of access to financial services may bar people from accessing vital services and activities, including employment, as some companies pay their employee's wages by electronic transfer only

Demirguc-Kunt and Klapper (2012) lists basic financial services considered essential to daily life: a bank account to receive income; a transaction account to make payments from; a savings account to store money; and access to unsecured credit to manage temporary cash shortages and unexpected expenses. Access to banking (and transaction banking services in particular) is considered a basic necessity in most developed countries (Aduda & Kalunda 2012). The provision of transaction banking services is key to accessing other financial services such as credit and savings.

Kempson and Whyley (1999) identified six key factors that contribute to financial exclusion, and they included: Access exclusion which consist of the restriction of access through the processes of risk assessment; Geographical exclusion consisting of lack of access to branches of banks and savings institutions and to cash machines; Condition exclusion is where the conditions attached to financial products make them inappropriate for the needs of some people; Price exclusion consist of where some people can only gain access to financial products at prices they cannot afford; Marketing exclusion is whereby some people are effectively excluded by targeting marketing and sales; and Self-exclusion is whereby people may decide that there is little point applying for a financial product because they believe they would be refused. Sometimes this is a result of having been refused personally in the past, sometimes because they know someone else who has been refused, or because of a belief that they don't accept people who live round here.

In most developing countries, a large segment of society, particularly low-income people, has very little access to financial services, both formal and semi-formal. As a consequence, many of them have to necessarily depend either on their own or informal sources of finance and generally at an unreasonably high cost (Capital Development Fund, 2012). The situation is worse in most least developed countries (LDCs), where more than 90 per cent of the population is excluded from access to the formal financial system (United Nations, 2006). A large section of population which remains financially excluded belongs to low-income households (World Bank, 2008). In Kenya, only 22.6 percent of the population is banked while 40.5 percent has access to formal financial services (FinAccess 2009).

Objectives of the study

The main objective of the study was to examine the supply-side factors limiting financial inclusion in Kenya.

The specific objectives are as follows:

- i. To evaluate the influence of the cost of running a bank account in limiting financial inclusion in Kenya
- ii. To investigate the effect of the conditions attached to financial products in limiting financial inclusion in Kenya
- iii. To examine the influence of distance from the nearest bank branch in limiting financial inclusion in Kenya

Methodology

Primary research was conducted and the study used descriptive approach in collecting data. The target population was drawn from the 43 licensed commercial banks with the study respondents consisting of 66 managers drawn from the commercial Banks. This study used both primary and secondary data. The study used descriptive statistics and regression statistics to analyze the study demographic details of the respondents and study variables of cost of running bank account, conditions attached to financial products and distance to the nearest bank branch.

Overview of Financial Inclusion Kenya

The financial sector in Kenya comprise of 43 commercial banks, 1 mortgage finance company, 7 Deposit Taking Microfinance companies (DTMs), some 3,500 active Savings and Credit Cooperatives (SACCOs), one postal savings bank - Kenya Post Office Savings Bank, 4 representative offices of foreign banks, Deposit-Taking Microfinance Institutions (DTMs) foreign exchange bureaus, a host of unlicensed lenders, and an Association of Microfinance Institutions (AMFI) with 56 members (Central Bank of Kenya, 2011).

Since 2005 Kenya has experienced a period of significant bank branch expansion with a 46 percent increase in three years from a total of 581 branches in 2006 to 849 branches in 2008 (Central Bank of Kenya, 2007 and 2009). While more bank branches are located in urban areas, the growth rate in rural areas has been higher than in urban areas since 2005. Nevertheless, the regional insurance and banking centre of Nairobi also saw significant growth in bank branches, despite experiencing lower growth rates than for rural areas (Central Bank of Kenya, 2011).

Despite the abundance of financial institutions, the financial sector in Kenya is highly concentrated thus entrenching aspects of exclusion. Four financial institutions; Equity, Bank, Cooperative Bank, Kenya Post Office Savings Bank and Kenya Commercial Bank, account for two thirds of all bank accounts which numbered 14 million by mid-2012. In the traditional microfinance sector, than 70% of the market is made up of Kenya Women Finance Trust, Faulu Kenya and Jamii Bora. In addition, similar high levels of concentration are seen with SACCOs

Findings of FinAccess surveys conducted, in 2006 and 2009, showed that the percentage of totally excluded adults had reduced from 38.4% to 32.7%, whilst the percentage of the adult population included in the banking sector had increased from 18.9% to 22.6%. The survey shows the use of formal services had increased, particularly those of banks and MFIs, and the percentage of adults excluded from the banking system had significantly decreased. This pattern is partly explained by the rapid expansion of institutions focused on the mass retail sector, notably Equity Bank, and the two microfinance institutions, Kenya Women Finance Trust and Faulu Kenya

These surveys (FinAccess, 2006, 2009) also indicated that a range of factors affect poor people's ability to use financial services – particularly formal ones. Obviously cost is a factor so that minimum deposits, fees and charges mean that holding a bank account, for example, is too expensive for many. In addition to these financial costs, the cost of reaching a bank is also important - hence distance from a bank implies transport costs or at least travel time and inconvenience. In addition, the analysis has also highlighted the non-financial costs that people may incur in accessing banks such as the difficulties of understanding and completing forms for those who are not literate or the social barriers of status experienced in dealing with bank staff.

But factors that affect access to services also extend beyond those of income, wealth and education. It is well known for example that women are less likely to use banks than men and this is rooted in gender relations related to control of income and assets such as land (especially with respect to borrowing) (Trandafir, Beck, Cull, Fuchs, Getenga, Gatere&Randa, 2010). Use of SACCOs related to cash crops such as tea, coffee and dairy may also be more extensive amongst men given historically gendered patterns of control over these agricultural activities. On the other hand women often make more extensive use of group-based financial mechanisms such as ROSCAs compared with men. These differences are rooted in deeper social and cultural traditions of the way in which women co-operate in community groups and gendered patterns of access to and control of income and expenditure responsibilities. Moreover, the extent to which ROSCAs and group-based mechanisms are used differs among ethnic groups who have different social and cultural traditions (Cracknell 2012).

Findings

Cost of Running a Bank Account and Financial Inclusion

Regression results indicates that the degree to which the cost of running a bank account is related to Financial inclusion is expressed in the positive correlation coefficient (r) = 0.789, coefficient of determination (r^2) = 0.622 indicating 62% probability that the rate of financial inclusion is influenced by the cost of running a bank account and B coefficient = -0.538, while the computed t-value ($t=2.001$) is smaller than the critical t-value ($t=2.015$). This then indicates that there is a significant relationship between cost of running a bank account and financial inclusion and that cost of running a bank account affects financial inclusion. The study confirms the views of Anderloni and Carluccio, (2006) and Klapper et al (2012) who observe that barriers of affordability arising from high costs of opening and maintaining accounts, interest rates, balances fees, withdrawal charges including high administrative regulations and procedures exclude many people from the mainstream financial services.

Bank conditions and financial inclusion

The degree to which Bank Conditions is related to financial inclusion is expressed in the positive correlation coefficient (r) = 0.865, (r^2) = 0.748 (indicating 74.8% probability that the rate of financial inclusion is influenced by the bank conditions) and B coefficient = -0.228. It can be observed that the computed t-value ($t=-2.013$) is smaller than the critical t-value ($t=2.015$) while the p-value of 0.189 is larger than the significance level of 0.05. This then indicate that there is a relationship between Bank Conditions and financial inclusion and that bank conditions affects the financial inclusion. The findings are in line with the views of Johnson and Nino-Zarazua (2011) that banks require a range of personal identification, including proof of address and photographic identification, before they could open a bank

account, while other requirements include minimum balance to open and maintain an account, regular use of the accounts.

Distance from the nearest bank branch

The degree to which the distance from the nearest bank branch is related to the dependent financial inclusion is expressed in the positive correlation coefficient (r), = 0.770, (r^2) = 0.593 (indicating 59% probability that the rate of financial inclusion is influenced by the distance from the nearest bank branch) and B coefficient (B = -0.784). The computed t-value (t = -2.202) is smaller than the critical t-value (t = 2.015), while the computed p-value of 0.889 is larger than the significance level of 0.05. This indicates that the relationship between the distance from the nearest bank branch and financial inclusion is positive (the distance from the nearest bank branch affects the financial inclusion). The findings of the study confirm the observations of Thrift and Leyshon (1995) that geographic isolation leads to the complete absence of financial services, condemning especially rural dwellers to exclusion from formal savings, transaction and loan products irrespective of their material wealth and demand for services.

Regression of independent and dependent variables

Regression showing the relationship between the cost of running a bank account, bank conditions and distance from the nearest bank branch as independent variables and financial inclusion (as a dependent variable) is expressed in the positive correlation coefficient (r), = 0.748, (r^2) = 0.560 and B coefficient (B = -0.541). The computed t-value (t =2.012) is smaller than the critical t-value (t = 2.015), while the p-value of 0.128 is larger than the significance level of 0.05. This indicates that there is a relationship between independent variables (cost of running a bank account, bank conditions and distance from the nearest bank branch) and the dependent variable (financial inclusion) hence cost of running a bank account, bank conditions and distance from the nearest bank branch influence financial inclusion. This affirms the views of Beck and Demirgüç-Kunt, (2008) who indicated that financial products will be considered appropriate when their provision, structure and costs do not lead the customer to encounter access and/or use difficulties.

Conclusion

Costs associated with running and maintaining a bank account and accessing specific financial services, such as: cash withdrawal, cheque use, debit card use, loans and payments negatively impact on the financial inclusiveness of people with low income and who come from deprived areas

Many banks have requirements to be met before accessing their financial services and these include: documentation requirements required from individuals and businesses to: open an account and request for a loan, due to the fact that banks are obliged by bank regulations or internal policies to request for certain legal or commercial documents to prove the identity and economic resources of the person concerned, like passport, proof of address and proof of income; and a minimum account balance requirement or fee for opening checking or savings account. Apart from the documentation, collaterals must be considered, such as guarantees or having a good credit history, in case of credit services. Consequently, many lower income people face difficulty in meeting such stringent requirement and are therefore excluded from financial services

Some people especially in rural areas and slum areas in urban centres are located at great distances from bank branches hence they are forced to incur both travel time and transportation costs. The high transport cost and opportunity costs in the form of a day's labour that the client may need to forgo for people to bank with formal financial institutions become a hindrance to financial inclusion

Recommendation

The study recommended the need for the Central Bank of Kenya to provide the commercial banks with incentives to operate in rural and deprived areas like slums, provide the necessary incentive and policies that support and encourage banks to design appropriate loan products for poor and low-income households. Banks should also design, and adopt account and loan application procedures that are simple and easily accessible.

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EFFECTS OF MONETARY POLICY ON MACROECONOMIC PERFORMANCE IN KENYA

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Abstract

Using quarterly data from January 2001 to December 2011, the study determines the effects of monetary policy using both recursive and structural vector auto regressions (VAR). The objective of the study was to evaluate the effects of monetary policy using monetary policy tools such as money supply, nominal exchange rate and credit to the private sector on employment, output and inflation. The findings indicated that an increase in money supply did not have significant change in employment. Money supply however affected output and inflation positively in the short run. Moreover the study found that an increase in exchange rate in short run had insignificant change in employment and output but had significant change to inflation. Furthermore the study found that an increase in credit to the private sector in the short run had insignificant change in employment. It however had a positive impact to output and inflation. The weak effects of monetary policy to employment could have been attributed to structural rigidities in the financial sector. Some of these structural factors cited are existence of high levels of non-performing loans and high operation costs which make the cost of money to be high. The study recommends that Kenyan government should continue to undertake structural reforms aimed at addressing the weaknesses in the financial sector, including improving governance of the Central Bank of Kenya, strengthening regulatory framework, as well as enhancing legal framework, with a view to improving the effectiveness of monetary policy in Kenya.

Key words: Monetary Policy, Employment, Inflation and Output

Introduction

Kenya's quest for economic prosperity has been articulated in various policy documents. Recent policy documents such as Vision 2030 are geared towards moving Kenya from its present low income status to middle income economy by the year twenty thirty. Accordingly, several policy interventions have been pronounced towards attaining this goal. One of these policy interventions was to endeavour to steer the economy onto a growth path of an average 10 percent Gross Domestic Product (GDP) growth rate per annum. This was the critical mass needed for us to attain the much needed development by 2030.

However, GDP growth rates in the recent past have been below the targeted 10 percent level due to both domestic and external factors. According to the Medium Term Plan (MTP) 2008-2012 of Kenya Vision 2030, the country's economy was targeted to grow at 8.3 percent in 2009/2010, and to reach a level of 10 percent per annum by 2012. In 2009, the economy registered a moderate growth rate of 2.6 percent. This growth rate, though below the MTP target, represented a slight improvement over the subdued growth of 1.6 percent realized in 2008. The dismal economic performance recorded in 2009 is attributed to the internal and external macroeconomic shocks that the country faced.

In order to stimulate growth despite these financial crises, the Central Bank amended its CBK Act in 2008. Apart from maintaining price stability, fostering liquidity, solvency and

proper functioning of a stable market system it extended the policy mandate to include objectives for growth and employment as specified by the government (Republic of Kenya, 2008). This followed an expansionary monetary policy by lowering the Central Bank Rate as well as cash ratio requirements. This was in support of the Governments fiscal stimulus packages aimed at spurring domestic demand and by lowering the interest so as to support credit to the private sector. In addition since May 2010, the bank did not engage in any mop up of liquidity from the market as this would have contradicted the expansionary monetary policy .However, liquidity injections through reverse repos were undertaken in the period.

Problem Statement

According to vision 2030, it was projected that Kenya economic growth should be about 10 percent by 2012 so that Kenya's realises it middle income level by 2030. However it's far from achieving 10 percent GDP growth because, GDP growth stabilized at 4.6 percent in 2012. Central bank of Kenya aims to keep inflation at a government target of 5 percent but as at the end of 2012, the inflation rate was about 9.5 percent (Republic of Kenya, 2013).The projections for employment creation according to MTP of vision 2030 was that by 2012, 904,000 jobs were supposed to added to the economy (Republic of Kenya, 2011). However a total of 659,400 jobs were created as per the end of 2012, (Republic of Kenya, 2013). Applied monetary policy aiming to achieve a GDP growth of 10 percent, overall inflation of about 5 percent and job creation of about 904,000 as per the end of 2012 has been below target, why? Is it because monetary policy does not effectively affect these macro-economic variables? The expanding of Kenya's economy needs an efficient monetary policy regime not only for stable, sustainable and low-inflation growth of Kenya's economy but also for fostering sound and stable growth of the East African economy. This is true because Kenya's economy is the largest in East Africa and most of the landlocked countries such as Uganda and Rwanda depend on it for economic sustainability. To improve the effectiveness and efficiency of Kenya's monetary policy, it is important to explore the effects of monetary policy in the real economy. This helps to establish a market oriented and highly effective monetary policy system so as to attain the double digit growth need to drive vision 2030 into a reality.

Objectives

The objectives of the study are:

- a) To determine how a change in money supply affects macro-economic performance in the Kenyan economy
- b) To determine how fluctuations in the exchange rate affects macro-economic performance in the Kenyan economy
- c) To determine how credit to the private sector affects macro-economic performance in the Kenyan economy

Research Questions

- a) How does a change in money supply affect macro-economic performance in the Kenyan economy?
- b) How does a fluctuation in the exchange rate affect macro-economic performance in the Kenyan economy?
- c) How does credit to the private sector affect macro-economic performance in the Kenyan economy?

Hypothesis of the study

H₁₀: there is no relationship between money supply with macro-economic performance in Kenya.

H₁₁: there is a relationship between money supply with macro-economic performance in Kenya

H₂₀: there is no relationship between fluctuations in exchange rate with macro-economic performance in Kenya

H₂₁: there is a relationship between fluctuations in exchange rate with macro-economic performance in Kenya

H₃₀: there is no relationship between credit to the private sector with macro-economic performance in Kenya

H₃₁: there is a relationship between credit to the private sector with macro-economic performance in Kenya

Conceptual Framework

Variable interaction between interdependent variable and dependent variables

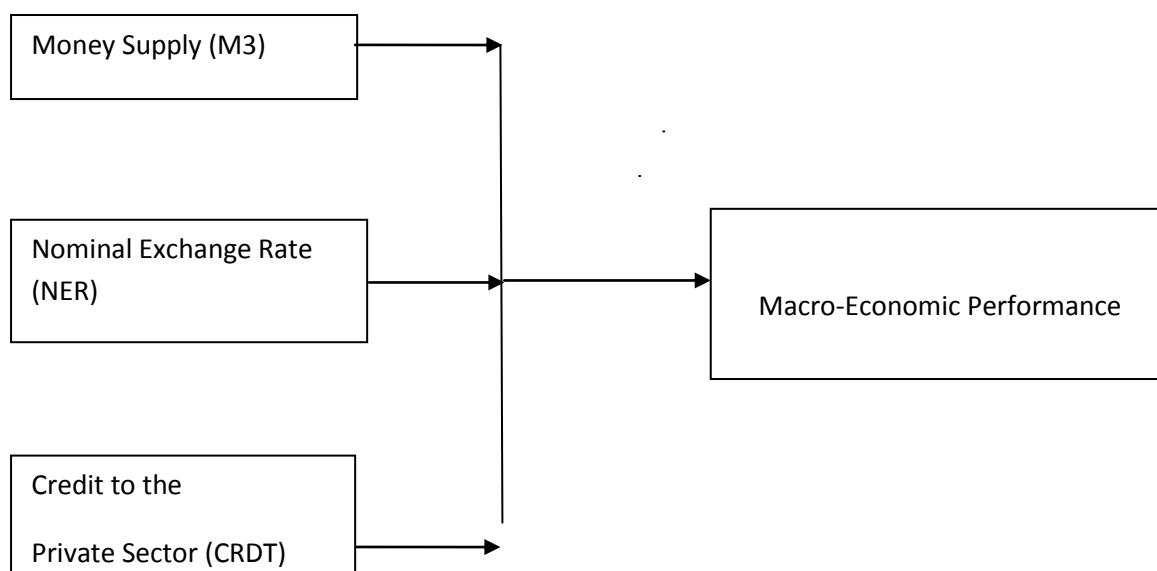


Figure: 2.0. Conceptual framework of monetary policy transmission

Empirical Literature

Effects of money supply on macro-economic performance

Mishkin studied different monetary transmission mechanisms in the context of South African. These included the money channel, the credit channel, the stock market channel and exchange rate channel. He discovered that money supply can be highly effective in reviving a weak economy even if the short term interest nears zero (Mishkin F. S., 1996).

In Kenya, few studies have been done on effects on monetary policy transmission mechanisms. For example, Cheng, used VAR methodology with Kenyan data covering the period 1997-2005 explored the effects of monetary policy shock on output, prices and

exchange rate. He found out that an exogenous increase in the short-term interest rate was followed by a decline in prices and appreciation of the nominal exchange rate. He also discovered that a monetary policy shock had insignificant impact on output. Variations in the short-term interest rate accounts for significant fluctuations in the nominal exchange rate and prices (Cheng, 2006). Using a similar methodology but using quarterly data covering the period 1993-2001, Oduor in 2009 found that the exchange rate channel of monetary policy transmission is effective in Kenya (Oduor, 2009).

Effects of nominal exchange rate (ner) on macro-economic performance

Chowdhury and Dao investigated the relationship between money, prices, output and the exchange rate in Bangladesh for the sample period 1974-1992, using a multivariate VAR model. The results indicated that there a bi-directional relationship between broad money supply and inflation. There was a uni-directional relationship running from inflation to narrow money supply. They saw that monetary policy in Bangladesh had a significant impact on real output. The study also discovered that the monetary policy stance, together with inflation, account for significant fluctuations in the foreign exchange rate and that monetary shocks have a temporary impact on inflation (Chowdhury & Dao, 1995).

Berument and Dog̃an employed the VAR methodology and highlighted that the degree of openness influences the impact of Turkish monetary policy on output and inflation. In that an increase in openness, had a negative impact on output and prices over the sample period January 1987 to January 2001 (Berument & Dogan, 2003).

Golinelli and Rovelli used a simultaneous equation model to build a small structural macro-model for the Czech Republic (January 1993 to January 2001), Hungary and Poland (January 1991 to January 2001). They studied the relationship between the output gap, inflation, real interest rate and the exchange rate, and emphasized interest rate and exchange rate channels in determining expected inflation. Their findings suggest support for monetary policy for inflation targeting in these economies (Golinelli & Rovelli, 2005).

Effects of credit to the private sector on macro-economic performance

Friorentini and Tamborini tested long-run bank lending channel effects for Italian economy by using an inter-temporal macroeconomic equilibrium model and found that there were permanent effects of credit variables on employment and output (Friorentini & Tamborini, 1999).

Epstein and Heintz ascertained that monetary policy must be coordinated with financial sector reforms in order to generate poverty-reducing employment. They used the VAR model using quarterly data for periods of 2000 to 2004 for Ghana and found that a more expanding monetary policy can have positive impacts on economic growth but by itself cannot solve the problem of low growth, employment and poverty (Epstein & Heintz, 2006).

Moscarini and Postel-Vinay estimated a structural VAR featuring the small cap excess return for the U.S., the Federal Funds Rate (FFR), the CPI inflation rate, and the unemployment using quarterly data over the 1979-2009 periods. They found that the response of unemployment to an FFR shock which tends to be negative, although quantitatively negligible (Moscarini & Postel-Vinay, 2010).

Birgül and Simay considered the effects of monetary policy shock on employment and output. In that context, they found that there is an immediate response to all macro economic variables to the money supply shock. The responses showed that the loan, employment and output variables are sensitive to the money supply variable. Therefore, the results of empirical findings indicated that there are some effects of the bank lending channel on employment and output (Camazoglu & Karaalp, 2012).

Summary and Research Gap

Previous researches have tried to answer a few questions on the channels of monetary transmission mechanism, and they looked mostly at developed countries. Monetary policy is also relevant for developing countries particularly in judging the effectiveness of monetary. The study on Kenya, a country which has had a turbulent macro-economy characterised by devaluations and interest rate rises and cuts, adds to the relatively small literature on effects of monetary policy in developing countries.

In this regard, the study differs from a recent study on Kenya by Cheng (Cheng, 2006) in two important ways: The study uses a VAR framework that uses a new inflation series and quarterly GDP data that has been released by the Kenya National Bureau of Statistics since the study was undertaken. This study also focuses on other channels such as the credit and exchange rate channel unlike him who only considered the interest channel. The study differs from Oduor's work (Oduor, 2009) by the fact that Oduor study covered a period of 1993-2001 while the study is for the period 2001-2011 and he only considered the exchange rate channel only. Both researchers also did not factor in the effects of monetary policy on creation of employment.

Data Collection Procedure

The research uses six endogenous variables. These variables are employment (EMP), real GDP, price level (CPI), money supply (M3); the short-term interest rate (REPO); the nominal exchange rate (NER). In addition, exogenous variables $X' = [\text{USRGDP}, \text{Oil}, \text{Fedrate}]$. The US real GDP is included as it strongly correlated to performance of the economies of Kenya's trading partners such as those in Europe, the U.S. Federal Funds rate (Fed) is used as proxy for foreign interest rates and is included in order to capture changes in the global financial conditions. The world oil price is included in the data vector as exogenous variable in order to control for its effect on inflation. This variable is included in the data vector since consumer prices in Kenya are significantly affected by movements in the variable through increases in transport and energy costs. The exogenous were included to control for changes in overall global economic stance, and fluctuations in energy prices and commodity prices of Kenya's main exports. Secondary data was used for this study. The following data was collected from various reports.

Model Specification

To analyse the effects of monetary policy on these macroeconomic variables, the variables are specified in a framework using VAR model. VAR allows for simultaneous-equation modelling as several endogenous variables are considered together, allowing for delayed responses. Each variable is explained by its own lagged values, plus other endogenous variables and the lagged values of all other variables in the system.

The economy can be described by a structural system of equations:

$$G(L)Y_t = \varepsilon_t \tag{3.1.1}$$

Where $G(L)$ is a matrix polynomial in the lag operator, Y_t is $n \times 1$ vector of structural disturbances with $\text{var}(\varepsilon_t) = E(\varepsilon_t \varepsilon_t') = \Lambda$. Λ is a diagonal matrix with the diagonal elements corresponding to variances of the structural disturbances. The structural disturbances are assumed to be mutually uncorrelated.

The reduced form VAR:

$$Y_t = B(L)Y_t + \mu_t \tag{3.1.2}$$

Where $B(L)$ is a matrix polynomial (excluding the constant and deterministic term) in lag operator L and $\text{var}(\mu_t) = \Sigma$. The study uses two methods to recover the parameters in the structural form equation from the reduced form equation. The study uses Cholesky decomposition (Sims, 1980). This approach to identification assumes that the first variable included in the VAR system is not affected contemporaneously by any of the remaining endogenous variables while the second one is affected contemporaneously by the first and so on. However, the identification procedure does not ensure that the constraints on the coefficient matrix of the structural innovations are in line with economic theory.

A generalized method Structural VAR in which non-recursive structures is allowed while imposing restrictions only on contemporaneous structural parameters (Parrado, 2001). The structural VAR allows for identification of variables to be based on economic theory. Let G_0 be the contemporaneous coefficient matrix (non-singular) in structural form $G(L)$, and let $G^0(L)$ be coefficient matrix in $G(L)$ without contemporaneous coefficient G_0 , that is ,

$$G(L) = G_0 + G^0(L) \tag{3}$$

The parameters in the structural form equation and those in the reduced form equation are related by

$$B(L) = -G_0^{-1}G^0(L) \tag{3.1.4}$$

Furthermore, the structural disturbances and the reduced form residuals are related by $\varepsilon_t = G_0 \mu_t$, which implies that

$$\Sigma = (G_0^{-1})' \Lambda (G_0^{-1}) \tag{3.1.5}$$

The maximum likelihood estimates of Λ and G_0 can be obtained by computing the sample estimates of the Σ . The right hand of $\Sigma = (G_0^{-1})' \Lambda (G_0^{-1})$ has $n \times (n+1)$ free parameters to be estimated. There is at least $n \times (n+1) / 2$ restrictions because Σ has $n \times (n+1) / 2$ parameters. If there is normalization the n diagonal elements of G_0 to 1's, there is need at least $n \times (n+1) / 2$ restrictions on G_0 to achieve identification. If Cholesky decomposition is used in the VAR, G_0 is assumed to be lower triangular and exactly identified. However, in structural VAR approach G_0 can take any structure as long as there are adequate restrictions.

Findings

The study found out that an increase in money supply did not affect employment positively in the short-run. Money supply however affected output and inflation positively in the short run. These findings were consistent with Maturu and Maana (Maturu, Maana, & Kisinguh, 2010) and Cheng (Cheng, 2006).

Moreover the study found that an increase in exchange rate (NER) in short run had insignificant change in employment and output but had significant change to inflation. The findings are similar to Chowdhury (Chowdhury & Dao, 1995) and Golinelli (Golinelli & Rovelli, 2005). Furthermore the study found that an increase in credit to the private sector (CRDT) in the short run had insignificant change in employment. It however had a positive impact to output and inflation. The findings were similar to Maturu and Maana (Maturu, Maana, & Kisinguh, 2010) .

Conclusions

The study has investigated the effect of monetary policy on employment, output and inflation in Kenya. Literature was reviewed and a descriptive statistical analysis was used to identify and document the relationship between employment, output and inflation with some selected monetary policy instruments. From the empirical analysis using econometric methods there was a short-run equilibrium relationship between the monetary policy with macro-economic performance in Kenya.

Recommendations

The weak effects of monetary policy to employment could be attributed to structural rigidities in the financial sector .Some of these structural factors cited are existence of high levels of non-performing loans and high operation costs which make the cost of money to be high. The Kenyan government should continue to undertake structural reforms aimed at addressing the weaknesses in the financial sector, including improving governance of the CBK, strengthening regulatory framework, as well as enhancing legal framework, with a view to improving the monetary transmission mechanism to the real sector.

Poor data quality, particularly the employment and output data, is a concern. Specifically, given the large size of the informal sector, national accounts statistics may not capture important activities that are influenced by the monetary policy stance. This should be addressed so as to help improve monetary policy formulation.

Finally, future research on this issue should look at effect of monetary policy on small and medium enterprises (SMEs). This is because they are the drivers of the economy and creators of employment especially among the youth.

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INCIDENCE OF INDIRECT TAXES ON HOUSEHOLDS IN URBAN KENYA: AN EX-ANTE ANALYSIS OF VAT BILL 2013

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Abstract

Governments raise revenue and spend it on various projects like health, infrastructure and education. However, questions abound on who benefits from government spending and who bears the tax burden. Therefore, knowledge about the distribution of the burden and benefits of taxes, as measured by their progressivity and their inequality impacts is crucial for tax policy choices. Tax is a major instrument of fiscal policy employed by government to achieve desired macroeconomic objectives. Value Added Tax (VAT) has played a pivotal role as a source of revenue and a tool of addressing inequality and the objective of the study was to establish tax incidence in the proposed VAT Bill 2013. The study used tax incidence analysis as a tool of identifying who bears the tax burden by simulating how the incidence is distributed across different income groups and how this is likely to impact on incomes for various urban households in Kenya. The analysis is useful as an ex-ante evaluation to determine whether the proposed Bill will produce the desired results. The analysis was based on Kenya Integrated Household Budget Survey (KIHBS) for the period 2005-06. This was the most recent national representative household dataset with detailed consumption expenditure. The analysis found that the proposed reforms in the VAT Bill would introduce a bringing more goods and services into tax threshold and would improve welfare of the urban society. However the additional tax burden is not progressively distributed among the different income groups since it favours the middle over the lower income groups. To make the Bill more progressive and pro-poor, amendments would be necessary by starting with defining what a basic commodity is and ensuring that such commodities are either zero-rated or exempted. Expenditure programmes targeting the lower income earners would further compliment government efforts to cushion them from the negative effects of tax policy reforms.

Key words: Incidence, VAT, progressive, household

Introduction

Tax reforms in Kenya have been necessitated by public expenditure programmes whose funding depends on the revenues raised mainly through taxes. With these reforms, the government can increase revenues through expansion of the tax base while at the same time enhancing compliance. In the financial year 2011/12, major changes were proposed on the VAT law. The changes were aimed at addressing challenges in the current VAT Act that included among other issues; (i) develop a simplified and modern VAT legislation which would enhance compliance (ii) develop a VAT structure which is broad based thus making it possible in future to reduce the standard rate of 16% (iii) streamline an already inefficient VAT system and (iv) reduce the current list of exempt and zero rated items and cushion the needy through expenditure programmes. VAT system has undergone tremendous changes since 1990 when it was introduced to replace sales tax. Among the changes as highlighted by Muriithi and Moyi (2003) were that retail-level sales taxes was changed to manufacturer-level VAT including business services while tax point was moved from manufacturer to retail level. Goods were redefined to exclude the supply of immovable

tangible and all intangible property and rental or immovable property. Coverage of service sector was expanded to include business services. To rationalize VAT, standard rate was revised from 18% to 16% and the minimum turnover for compulsory registration was raised. Stiffer penalties were introduced for late filing of returns, failure to keep proper books and failure to issue VAT invoices.

At the introduction of VAT, only a few items were exempt but the number has in the recent years increased significantly to stand at 416 for exempt items while those granted zero rated status stands at 417 in the current VAT Act. Exempting and zero rating a high number of items imply that the government loses revenue and also make compliance difficult. This argument has necessitated the review of the current VAT Act because VAT compared to other taxes is steadier since it targets consumption which has a more stable base. Raising individual income tax is not seen as a viable option since majority of Kenyans feel that they are already overtaxed. An increase in corporate income tax means that Kenyan firms become uncompetitive in the international market. The prudent option has, therefore been to reform the VAT Act.

Among the factors leading to complexity in the current VAT Act is the long list of goods and services that are either exempt or zero rated. As a result of numerous refunds, the government is unable to meet both obligations of processing the refunds and giving services to the public. However, in an attempt to reform the VAT tax system, concerns have been raised as to whether the proposed reforms in VAT Act will be able to surmount the shortcomings in the current Act or will it, if implemented in the current form, exacerbate the situation by targeting to tax basic commodities which constitute a bigger proportion of expenditure by the low income earners. Whereas any tax reform is aimed at raising extra revenue, the welfare of the society is equally important and a good tax system ought to be progressive with the ability to redistribute wealth.

Enactment of a new Constitution brought changes in the taxation system for instance it provides that the tax burden shall be shared fairly and that the public finance system shall promote an equitable society by ensuring that there is fair sharing and equity in the allocation of public revenue. The problems inherent in the current VAT Act are complex in that tax refunds make business incur losses while the taxman has to incur costs while processing these refunds. The costs of administering the Act are high as compared to other forms of taxes. Compliance has also been a challenge making the country rank poorly in terms of ease of doing business. The country ranked 164 out of 185 economies surveyed in terms of paying taxes according to World Bank 2013 report on ease of doing business.

The proposed reforms in VAT Act are aimed at enhancing revenue productivity; firstly, by making it easy to comply; secondly, removing exemptions and widening the pool of taxable goods and services; and finally, reducing zero rated supplies which would lower VAT claims on input tax.

The proposal to tax basic commodities like bread and maize flour and certain farm inputs such as fertilizer is likely to impact on the prices of these basic commodities in the same proportion making the cost of living go up. There is also a proposal to scrap VAT remissions previously granted to critical sectors of the economy like the acquisition of capital goods, manufacturing and hotel sector and low cost housing projects, a move likely to impact negatively on sectors which are necessary for growing the economy and the achievement of Vision 2030.

Literature Review

Theoretical Background on Taxation

Tax incidence refers to the impact of a tax on the welfare of an individual or a society. The standard theory of optimal taxation posits that a tax system should be chosen to maximize a social welfare function subject to a set of constraints. A social planner chooses a tax system that maximizes consumer welfare, knowing that the consumer will respond to whatever incentives the tax provides. Ramsey (1928) showed that taxes should be imposed in inverse proportion to the consumer’s elasticity of demand for the good, so that commodities which experience inelastic demand are taxed more heavily. A lump-sum tax can be used to achieve what a social planner wants. This is because, in the absence of market imperfection such as externalities, it is best not to distort the choices of a consumer. It is important for the social planner to understand the heterogeneity in taxpayers’ ability to pay.

According to Sahn and Younger (2003) to estimate the effect of taxes on household we use survey data to determine individual households’ loss, and then describe how that loss is distributed across the households in the sample. When measuring the household loss we use basic duality theory. $y = e(p,u)$, is the minimum amount of money that must be spent to generate utility level u given a vector of prices p for all goods and services consumed. A household’s compensating variation for a tax increase is the amount of income that it would need to just keep its utility constant in the face of any price changes caused by the tax:

$$CV = e(p_1, u^0) - e(p_0, u) \dots\dots\dots 1$$

where subscript 0 indicates the initial state and subscript 1 indicates the state after the tax change.

Compensating variation can be estimated if we could be able to estimate the household’s expenditure function, but this is complex and tiresome and thus we avoid it by estimating the compensating variation. Consider for the moment the case in which the tax change affects only one price, p_i . According to Shepard’s lemma, the derivative of the expenditure function with respect to p_i is the compensated demand function for good i , the Taylor expansion of equation (1) is

$$CV \approx x_i^c(p^0, u^0) \Delta p_i + \frac{1}{2} \Delta p_i^2 \frac{\partial x_i^c(p^0, u^0)}{\partial p_i} \dots\dots\dots 2$$

where $x_i(p^0, u^0)$ is the compensated demand function and Δp_i is the change in the price of p_i caused by the tax increase. The first term gives the change in expenditure that the household would have to undertake to keep utility constant without changing its demand for good i . The compensating variation of a marginal change in the price of a good is simply the change in the consumption budget that is necessary to keep the consumption basket constant.

Methodology.

This study primarily used the Kenya Integrated Household Budget Survey (KIHBS 2005/06) to measure the incidence of the proposed VAT Bill. KIHBS provides data consumption

expenditure on various household commodities while CPI gives weights of these commodities in the consumer basket of different income groups.

Tax -incidence Analysis

To compute the incidence of proposed VAT reforms taxable commodities were classified as exempt, zero rated or standard rated as listed in the first and second schedule of the proposed VAT Bill. The classification enabled the determination of effective VAT rate as a percentage of expenditure and therefore the tax burden. Consumption is used to measure welfare as opposed to income since it is not affected by short-term fluctuations. Moreover, the KIHBS 2005/06 does not have data on income. Ranking people’s wellbeing on consumption is more stable for households that have fluctuating incomes. Such incomes could be dependent on agriculture which is susceptible to weather and other factors. The income groups were classified in deciles depending on their expenditure patterns based on the 2005/6 KIHBS.

The dataset includes basic demographic characteristics and household expenditures. The CPI assigns weights to different commodities that are considered in the consumer basket. Each commodity is given a weight that reflects the expenditure on that item compared with total expenditure on all items. People spend more on some items than others. A price increase on flour would have more impact than that of salt. Weighting ensures that the CPI reflects the importance of the various items in the average shopping basket.

The new CPI that used 2009 as the base year has categorized items in 12 major different categories that include food & non-Alcoholic drinks, alcoholic and beverages, tobacco and narcotics, clothing and footwear, housing, water, electricity, gas and other fuels, furnishings, household equipment and routine household maintenance, health, transport, communications, recreation and culture, education, restaurant and hotels, miscellaneous goods and services.

Main Results

Estimation of VAT Paid

The first step in VAT estimation is to compute the net expenditure since the expenditure in deciles provided by the KNBS is gross expenditure. Using table 4.1 below, we disaggregate the percentages of goods in the four categories i.e. exempt, zero rated, standard rated and non-VATable. Only commodities that are specified in the consumption basket are included in the VAT estimation.

Table 4.1: Percentage of VATable goods and services in each category in urban income groups

	CURRENT VAT ACT			PROPOSED VAT BILL		
	Lower	Middle	Upper	Lower	Middle	Upper
Exempt	65	67.8	54	51.2	54.4	42.7
Zero rated	19.8	12	7.2	1.4	1.3	1
Standard rated	13.7	17.5	36.6	45.8	42.4	55
Non-VATable	1.4	2.7	2.4	1.6	1.9	1.3
Total	100	100	100	100	100	100

The analysis of the VAT tax burden as computed using the income groups i.e. lower, middle and upper class shows that the current Act does not have a wide tax base as compared to the Proposed Bill. Only 36.6% of commodities are standard rated on the upper income group compared to the proposed VAT Bill which imposes more tax on the upper income group at 55% while the middle income group has 17.5% of their consumption standard rated in the current Act and 42.4% in proposed Bill. However, consumption expenditure in the lower income group will be affected since standard rate tax will be applicable to 45.8% as compared to 13.7% in the current Act. Both exempt and zero rate goods are reduced significantly in the proposed Bill. The exemptions are reduced from 64.8%, 67.8% and 54% to 51.2%, 54.4% and 42.7% for lower, middle and upper income groups respectively. The zero rated commodities are also drastically reduced from a high of 19.8%, 12% and 7.2% to a low of 1.4%, 1.3% and 1% for lower, middle and upper income groups respectively.

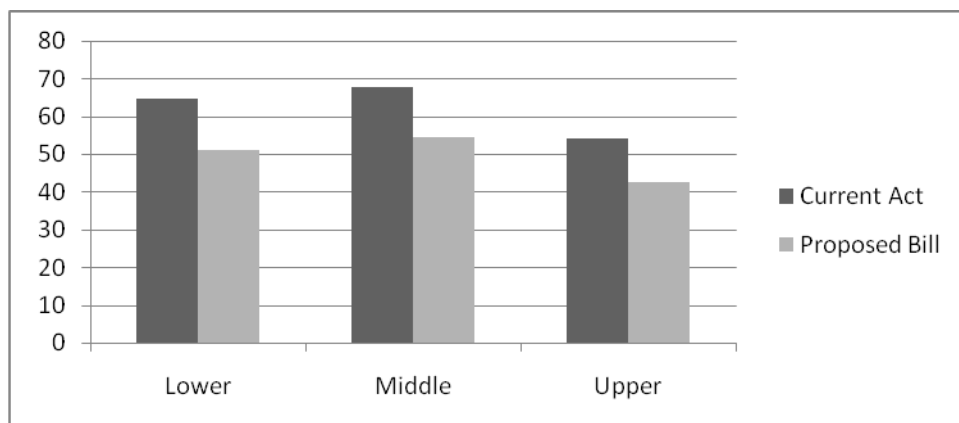


Figure 3: Share of exempt consumption expenditure for the current Act and proposed Bill

From figure 3 it is evident that the share of exempt consumption has decreased in the proposed Bill across the three income groups. Reduced exemption may enable the government to raise more revenue that can be channeled to targeted social programmes that favours the lower income group.

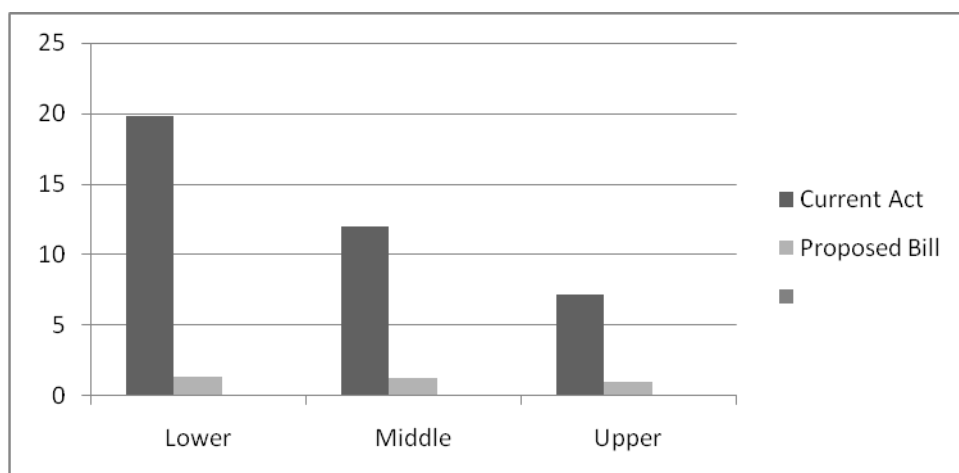


Figure 1: Share of zero-rated consumption expenditure for the current Act and proposed Bill

From Figure 4 it is evident that more goods and services are zero-rated in the current VAT Act than in the proposed VAT Bill. Zero-rating allows suppliers of such goods to claim input tax on these commodities and this allows the final consumer to enjoy cheaper prices. However, zero-rating comes with administrative challenges in processing refunds and could introduce additional cost to businesses especially those with limited capital. The proposed Bill is likely to address the problem as claims on input tax would reduce significantly.

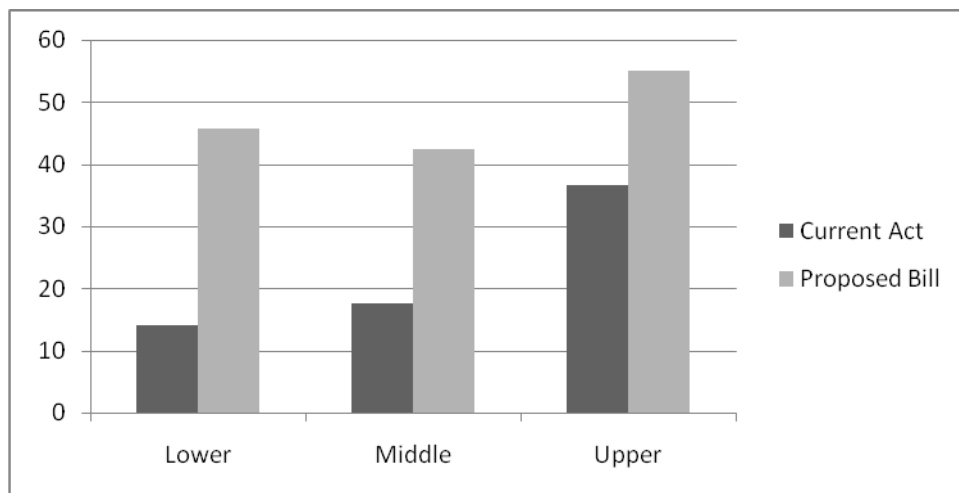


Figure 5: Share of standard rated consumption expenditure for the current Act and proposed Bill

Figure 5 shows that the proposed Bill will bring more goods and services under the tax bracket and this would increase revenue to the exchequer. Imposing a 16% VAT on basic commodities will make them unaffordable to the lower income groups. However, standard rating allows an increase in revenue which provides an opportunity for the government to spend more on welfare enhancing programmes.

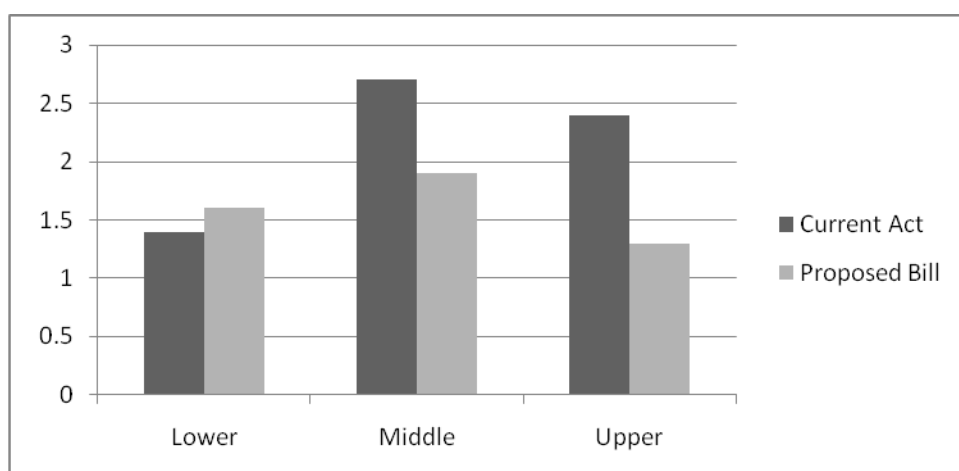


Figure 6: Share of non-VATable consumption expenditure for the current Act and proposed Bill

Non-VATable commodities are higher in the middle income group and this would impact on the overall tax burden. These commodities include hair cut, women hair dressing and traditional brew among others. The middle income group appears to have a bigger proportion of their expenditure on these items as compared to the lower and upper income groups.

The following formula was used to derive the tax paid on each expenditure item:

$$T_{i,j} = t_{VAT,j} p_{j} x_{i,j}$$

Where

$T_{i,j}$ = household i 's VAT payment on good j

$p_{j} x_{i,j}$ = net expenditure on good j

$t_{VAT,j}$ = VAT rate

Table 4.2: Average Rural and Urban Expenditure by decile, 2005-06

Decile	2005-06		Urban Expenditure	Percentage
	Rural Expenditure	Percentage		
1(Poorest)	466	2%	1110	2%
2	813	4%	1888	3%
3	1038	5%	2404	4%
4	1244	6%	2955	5%
5	1458	7%	3578	6%
6	1719	9%	4288	7%
7	2039	10%	5009	9%
8	2473	12%	6058	10%
9	3147	16%	8202	14%
10(Richest)	5741	29%	22823	39%

Source: World Bank, based on 2005/06 KIHBS

Table 4.2 shows an average monthly expenditure as per income group in deciles whereby 10% of the richest urban households spend 39% of urban spending while the 10% poorest urban households account for only 2%. In the rural setting, the rural 10% poorest households account for 2% while the 10% richest rural household account for 29% of the total expenditure.

Table 4.3 shows the tax incidence of the Current VAT Act on urban households classified into deciles. The lowest decile has an average monthly expenditure of Ksh 1,110.00 which is about 2% of the total expenditure and pays about Ksh 24.30 in VAT which accounts for about 1.1% of the total VAT paid. The uppermost decile spends on average Ksh 22,823.00 on monthly basis and pays a VAT of about Ksh 1336.50. The expenditure of the uppermost decile accounts for almost 39% of the total expenditure while the amount paid as VAT accounts for about 60%.

Table 4.3: Urban tax Incidence of VAT by deciles, Current VAT Act

Decile	Average Expenditure (Ksh)	Average VAT (Ksh)	Cummulative VAT (%)
1	1110	24.3	1.1
2	1888	41.4	3.0
3	2404	52.7	5.4
4	2955	64.8	8.3
5	3578	78.4	11.9
6	4288	94.0	16.2
7	5009	109.8	21.1
8	6058	169.6	28.8
9	8202	229.7	39.3
10	22823	1336.5	100

Table 4.4: Urban tax Incidence of VAT by deciles, Proposed VAT Bill

Decile	Average Expenditure (Ksh)	Average VAT (Ksh)	Cumulative VAT (%)
1	1110	81.3	1.8
2	1888	138.4	4.8
3	2404	176.2	8.7
4	2955	216.5	13.5
5	3578	262.2	19.3
6	4288	314.2	26.2
7	5009	367.1	34.3
8	6058	411.0	43.4
9	8202	556.4	55.7
10	22823	2008.4	100

Table 4.4 shows the tax incidence of the Proposed VAT Bill on urban households classified into deciles. The lowest decile pays an average monthly VAT of Ksh 81.30 which is about 1.8% of the total VAT payable. The uppermost decile pays a VAT of about Ksh 2008.40 which accounts for about 44.3% of the total VAT payable. This is way below the 60% payable under the current VAT Act.

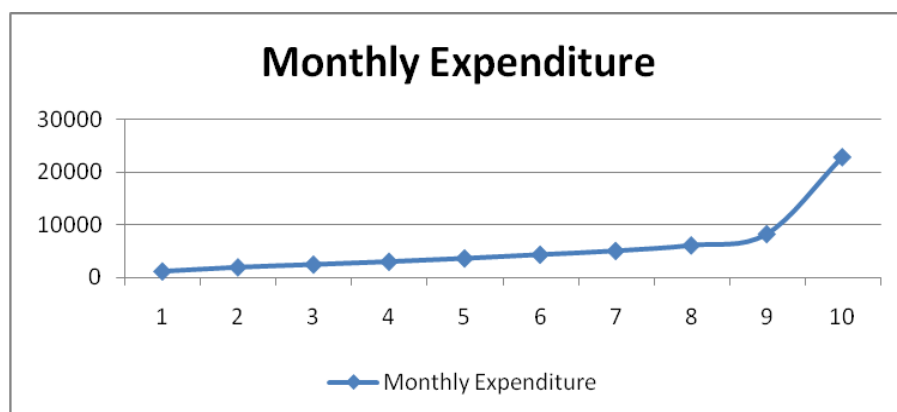


Figure 7: Ranking Urban Households by Monthly Expenditure

Figure 7 ranks urban households by monthly expenditure. The expenditure rises progressively up to the ninth decile where it has a kink and suddenly becomes steeper. This is the cut-off between the middle income group and the upper income group. This is associated with the high propensity to consume by the upper income group.

Conclusion and Recommendations

The proposed tax is less regressive compared to the current VAT Act and this could be attributed the fact that expenditure on food items proposed for value added tax accounts for only 7.8% of the total household expenditure. The urban middle income group enjoys less tax burden when compared with the lower income group. This is mainly due to a higher percentage of non-VATable goods that the middle income consumes relative to both lower and upper urban income groups.

The proposed Bill provides an opportunity to tax administrators to implement and solve the problem of tax refunds. A simplified tax regime will improve on compliance and cut costs on businesses by reducing time required to file tax returns and improve on environment for doing business. The Bill also broadens the tax base and is instrumental in instituting reforms in the country's taxation regime. Tax incentives aimed at netting the informal sector would further broaden the tax base.

Recommendations

The government can use expenditure targeting whereby compensating social programmes designed to reach the most vulnerable are implemented. This would go a long way in making the proposed changes more responsive and pro-poor and enable the government to expand the revenue base. By expanding the revenue base, the government, may in future be able to reduce the standard rate of 16% which would further reduce the tax burden on consumers.

Among the interventions that the government can adopt to make the tax more progressive is through in-kind subsidies where the government subsidizes the consumption of specific goods. For example the government can purchase text books which have been priced 16% VAT and distribute to poor students. By so doing, the rich pay the taxes on such text books which were previous zero-rated and boost tax revenue for the government. Vouchers can also be used to allow the poor to purchase goods at reduced prices. Those suppliers that sell goods through the vouchers then cash them at their face value. Another common method that may be used by the government to target the low income groups is through cash grants to cushion them against advance economic circumstances. In all these interventions according to Weimer and Vinning (2011), policy makers while designing them, must take cognizance of trade-off between transferring income and discouraging people from working.

Proper implementation of the reforms and definition of basic commodities for the purposes of tax exemptions would be necessary if the Bill is to achieve fairness and equity. These basic commodities may be defined as those essential goods that support life and those that meet the basic needs. Identifying items with incidence in the consumption basket of lower income groups and zero rating them would further make proposed VAT Bill progressive. Zero rating is superior to exemptions if the tax is intended to cushion the very poor since it makes the supplies cheaper as dealers in these goods and services can claim back input tax incurred in the course of their business. By removing exemptions from unprocessed agricultural and horticultural product the taxman brings on board all businesses dealing with

these types of goods into the tax net a move likely to shift the tax burden to the final consumer.

Finally, as Demery (2003) notes, incidence analysis only makes sense if spending decisions are based on outcomes and impacts. Understanding the needs and preferences of the citizenry is also critical. The full impacts of the proposed changes can only be realized once the law is implemented and therefore this analysis would serve as guide to policy makers to appreciate ex-ante evaluation based on the available data.

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THE EFFECT OF FINANCIAL DEVELOPMENT ON ECONOMIC GROWTH IN KENYA

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Abstract

The principle objective of this study was to establish how economic growth has responded to financial development in Kenya and to find out if a causal relationship exists between financial development and economic growth. The study focuses on the effect of Net Domestic credit, Broad money supply and Gross capital formation on economic growth in Kenya. It uses annual time series data for a 36 year period from 1975 to 2011. Data analysis was done by the use of E-views 7 software using the Johansen co integration and Error Correction Mechanism (ECM) to assess the impact of financial development on economic growth and Pair wise Granger causality tests to test for the direction of causality. Significant short run effects were established between proxies of financial development and economic growth. A long run relationship was established between the proxies of financial development and economic growth. A unidirectional causal flow was established running from broad money to GDP. No causal flow was found between Net domestic credit and GDP and Gross capital formation and GDP. Broad money and Gross capital formation have been found to have had positive contributions to GDP but at a very slow rate. Net domestic credit has been found to be operating below equilibrium and returning to equilibrium at different rates after certain periods. This therefore means that the financial sector in Kenya has not yet been tapped to its full potential to contribute significantly to economic growth and more alterations are needed.

Key Words: Financial development, Gross domestic product, Error correction, Granger causality.

Introduction

Financial development is considered by many economists to be of paramount importance for output growth and numerous views have been expressed by scholars on the nature of this relationship. Before we consider these views we have to gain understanding of what financial development is and what it characterizes. Financial development mainly involves and is concerned with reducing the costs incurred in the financial system. It is the process of reducing costs of acquiring information, enforcement of contracts and execution of transactions which results in the emergence of financial contracts, intermediaries and markets. Khan and Senhadji (2000) argue that “if market conditions are actually less than perfect, the economic exchange is costly, and if it is sufficiently costly, it may not occur at all. Financial intermediaries make these exchanges affordable, thus offsetting the underlying market imperfections and frictions (IMF working paper, 2000).” According to Drexter et al (2012), improvement efforts need to be driven by local level reforms so as to ensure that appropriate financial systems are in place which will help in extending prosperity to all.

Drexter et al (2012), assert that the effects of the financial crisis continue to be felt by both advanced and emerging economies around the world. Europe continues to be plagued by debt overhang, high unemployment, political divisiveness and general lack of competitiveness.

The United States faces political gridlock in a time of fiscal uncertainty and increasing public debt. The traditional emerging market powers such as China and Brazil are experiencing an economic slowdown which may have significant ramifications for global trade.

Recent studies in Africa on the field of financial development and economic growth include Ghirmay (2004) where he explored empirically the causal link between the level of financial development and economic growth in thirteen Sub-Saharan African countries. The investigation was carried out using Vector Auto Regression framework and found evidence in support of finance led growth in eight of thirteen Sub-Saharan countries investigated. Similarly, Agbetsiafa (2004) found unidirectional causality running from financial development to economic growth in seven African countries therefore strengthening the finance-led growth hypothesis. Abu-Bader and Abu Qarn (2008) in their study of six Middle Eastern and North African countries using a quadivariate vector auto regressive framework also provided evidence supporting finance led growth in Egypt, Morocco and Tunisia. Deogratias (2010), in his study of Rwanda for the period 1964 to 2005 using the Vector Auto Regression framework found a significant positive effect of financial deepening on economic growth. Odhiambo (2007) found conflicting results for three Sub-Saharan African countries investigated. His evidence supported the demand-following hypothesis in Kenya and South Africa while in Tanzania supply-leading hypothesis was supported. Also Baliaoune-Lutz (2008) got mixed results for North African Countries. However, Atindehou et al (2005) found weak causal relationship in almost all the twelve West African countries included in their study.

Recent studies in Kenya on the field of financial development include Odhiambo (2007) who studied Sub-Saharan African countries using three proxies of financial development against real GDP per capita (a proxy of economic growth) and covers the period 1968 to 2002 concludes that although the causality between financial development and economic growth in Kenya is sensitive to the choice of measure for financial development, the demand following hypothesis tends to predominate. Odhiambo (2008) using a tri-variate causality model found that there is a distinct unidirectional causal flow from economic growth to financial development and that economic growth Granger causes savings while savings drive the development of the financial sector in Kenya. Metha (2010) in his study found that Kenya's financial sector has shown some growth and while the level of GDP did not rise the financial sector has the potential to contribute more. The main objective of this study is to determine the effect that financial development has on economic growth in Kenya and the nature of their relationship using time series econometric methodology for the period 1975 to 2011.

Literature Review

Financial Development

Financial development can be broken into two components; financial sophistication and financial deepening. Financial deepening refers to the measure of the size of financial intermediaries. McKinnon and Shaw (1973) and King and Levine (1993) define financial deepening to be the process involving banking liberalization from state control, abolition or reduction of credit rationing and marketization of financial parameters of financially repressed economies. Tufano (2002) defines financial sophistication as the act of creating and popularizing emerging financial instruments as well as new financial technologies, markets and institutions. The innovation can be divided into two: product or process innovation. Product innovation involves the creation of new contracts, derivatives, corporate

securities or new forms of pooled investment products. Process innovation involves emergence of new ways of distributing securities and new means of pricing or processing transactions and using the extensively.

Financial Liberalisation and Financial Repression

Kaminsky and Schmukler (2003) define financial liberalization as consisting of deregulation of the foreign sector capital accounts, the domestic financial sector and the stock market sector viewed separately from the domestic financial sector. Proponents of financial liberalization theory include McKinnon (1973) and Shaw (1973) who hold the view that financial repression needs to end in emerging countries and that financial liberalization must be advocated for. According to them, for a country to increase its real growth it needs to develop its financial sphere. Financial repression refers to a series of constraints which include the necessity for banks to have reserves in the central bank which are not remunerated, very low interest rates for savers, etc. which are so strong that development in the financial sector is so infringed. McKinnon (1973) and Shaw (1973) argue that financial repression leads to a situation where domestic agents may prefer to have unproductive assets or non monetary assets instead of depositing assets in the bank. This means that there will not be enough money to lend in the economy thus less investment and growth. Therefore, only free markets can lead to an optimal saving allocation.

According to McKinnon (1973) financial saving is essential for investment and growth. In emerging markets saving resources are there but are badly managed. There is a greater possibility of having less productive investments in emerging economies because of fragmentation. Due to high inflation rate and too low nominal interest rates which may lead to negative real interest rates, capital accumulation is therefore discouraged. Because of limited capital supply by the banking sector and specialized credit services, people will have to finance their investments themselves or borrow capital from the informal sector.

McKinnon (1973) argues that financial liberalization does lead to unified financial markets and what should be done is to let the interest rates to freely fluctuate. In this case capital scarcity and information costs about the borrower will be reflected by the interest rates. Also high interest rates will discourage low yield investments. Therefore authorities should concentrate on ensuring low inflation and promotion of financial sector development.

According to Shaw (1973), financial liberalization allows for the centralization of the funds market which is an essential pre-requisite for economic development and that financial repression has negative consequences for the economy. He argues that financial liberalization affects growth positively due to optimal allocation of resources with saving price reflecting scarcity and also by unifying the domestic financial system. He further argues that financial liberalization reduces the unemployment rate, leads to a better financial credit offer and the entry of foreign capital.

According to Weiss and Stiglitz (1981), financial repression is not the sole cause of credit rationing and that it may occur due to information asymmetry, monopolistic banks and other market imperfections. Arestis and Glickman (2002), argue that in some countries financial markets were liberalized prematurely due to a failure to recognize their imperfect characteristics and that indeed in many cases all those attempts led to financial crises. According to Devereux and Smith (1994), when countries share endowment risk via international capital markets, saving rates and growth rates can be lower in financial openness than in autarky. Arestis and Demetriades (1997) argue that there may be a reverse

causation between financial liberalization and economic growth and that there could be a case where faster growing economies are more likely to choose to liberalize their economies rather than financial liberalization causing economic growth. Other views by critics of financial liberalization theory include the arguments that financial repression may be the only choice for financing governments when there is no government bond market or no efficient tax system, the relation between interest rates, savings and investment is not so obvious and that a market oriented financial system may increase the quantity of investment but not necessarily its quality.

Relationship Between Financial Development and Economic Growth.

There are three possible relationships between financial development and economic growth: Finance led growth/ supply leading hypothesis, growth driven finance/ demand leading hypothesis, and the two way causal relationship (feedback).

Finance led growth/ Supply leading hypothesis

The supply leading hypothesis holds that financial sector deepening leads to economic growth. Those who subscribe to this hypothesis argue that financial development stimulates the economy. Levine (1997) argues that financial development has five functions through which it stimulates economic growth: easing exchange of goods and services, monitoring firms and exerting corporate governance, mobilizing and pooling of savings, trading, diversification and management of risk, producing cheaper information about possible investment and allocating capital. These views were also held by Bodie et al (2008).

Growth driven finance/ Demand leading hypothesis

Demand leading hypothesis argues that economic growth leads to increased financial development. However, this view has not received much consensus among researchers. According to Robinson (1952) and Friedman and Schwartz (1963), development of the financial sector is due to economic growth and comes as a result of higher demand for financial services. Robinson supports the view that economic growth creates supply of financial services which in turn leads to financial development. According to Levine (2001), economic growth may reduce the fixed cost of joining financial intermediaries and as more people join the financial sector may be caused by improvements in economic growth.

Feedback/ Two-way causal relationship

Two-way causal relationship means that both financial development and economic growth influence each other positively. According to Lewis (1995), a two way relationship exists between financial development and economic growth. This means that the financial sector develops due to economic growth which in turn feeds back as a stimulant to real growth. Some studies that have noted this type of relationship include Patrick (1966), Wood (1993), Greenwood and Bruce (1997) and Luintel and Khan (1999).

Financial Development in Kenya

According to Drexter et al (2012), Kenya entered the financial development index in 2012 and was ranked 54th worldwide. They argued that Kenya's factors, policies and institutions

are quite weak, and particularly the business environment and financial stability pillars which are ranked 57th and 54th worldwide respectively. They further said that Kenya's business environment is hindered by a weak human capital pool (54th), underdeveloped infrastructure (56th) and a high cost of doing business (58th). In terms of financial stability they argue that Kenya's high risk of sovereign debt crisis (55th) is attributed to low local (53rd) and foreign currency sovereign ratings (53rd) and also low aggregate macroeconomic indicator score which is ranked 52nd.

Financial intermediation also remains less than optimal for Kenya as it ranks 57th and 56th in the banking financial services and financial market pillars respectively. They conclude that although there are clear areas for improvement, Kenya's performance is relatively well in insurance (23rd), commercial access (33rd), banking system stability (32nd) and 38th on legal and regulatory issues sub-pillars (World Economic Forum, 2012).

According to Kenya's Financial Sector Stability Report 2011, issue number three, Kenya's financial sector maintained its strong performance in 2011 with profits before tax rising by 20.5 percent as revenue inflows grew much faster. Total NPLs (Non-Performing Loans) declined by 10.1 percent while stress test results indicated that Kenya's banking sector was stable and able to absorb substantial negative shocks. The value of money transfers via mobile phones rose by 59.7 percent while the number of users grew by 17.1 percent from 16.4 million customers in December 2010 to 19.2 million customers in December 2011 (Central Bank of Kenya, 2011).

Methodology

Most macroeconomic time series data are non-stationery and have unit roots which may lead to spurious regressions if the method of Ordinary Least Squares (OLS) is employed. It is due to this that this study adopted the use of Johansen co integration and Error Correction Mechanism first used by Sargan and popularized by Engle and Granger in its analysis of the impact of financial development on economic growth. Granger causality tests were employed to find out the nature of the relationship between financial development and economic growth. Studies that have used Granger causality in the field of financial development and economic growth include Odhiambo (2008), Vuranok (2009) and Deogratias (2010). A univariate analysis was conducted and the data was converted into their natural logs to make the data normally distributed and eliminate heteroscedasticity. Variables included in the model are: GDP (Constant LCU) as proxy for economic growth, Broad Money (M3) as a ratio of GDP (Levine, 1997), Net Domestic Credit as a ratio of GDP and Gross Capital Formation as a ratio of GDP as proxies of financial development. Augmented Dickey-Fuller tests were conducted to check for stationery of the data.

The ADF test can be defined as:

$$\Delta Y_t = Y_0 + \alpha t + \Phi Y_{t-1} + \sum \Phi_i Y_{t-i} + \varepsilon_t$$

$$\Delta Y_t = Y_t - Y_{t-1}$$

Where: Y_t is the dependent variable, Y_0 the constant term, t the trend Variable, ε_t the stochastic disturbance term.

Hypotheses used to test series:

$$H_0 = \Phi = 0 \text{ (} Y_t \text{ is non-stationery) } H_1 = \Phi \neq 0 \text{ (} Y_t \text{ is not non-stationery)}$$

Johansen long run co integrating equation was estimated. Johansen's methodology emanates from the Vector Auto Regression (VAR) of order p given by;

$$Y_t = \mu + B_1 Y_{t-1} + \dots + B_p Y_{t-p} + \varepsilon_t$$

Where Y_t is a $(n \times 1)$ vector of variables that are integrated of order one and ε_t is a $(n \times 1)$ vector of innovations.

The Error Correction Model (ECM) was then estimated. The Error Correction Model can be specified as:

$$\Delta Y_t = \alpha_0 + \alpha_1 \Delta X_t + \alpha_2 \mu_{t-1} + \varepsilon_t$$

Where Δ refers first to difference, ε_t the random error term, μ_{t-1} is $(Y_{t-1} - \beta_1 - \beta_2 X_{t-1})$ One period lagged value of the error from co integrating equation.

Breusch-Godfrey LM tests were conducted to check for serial correlation in the model and the Harvey test to check for the presence of heteroscedasticity. Normality of the residual was also tested.

Pair wise Granger Causality tests were conducted to see whether there exists a unidirectional, bidirectional or no causal relationships between the proxies of financial development and GDP. Granger causality tests are conducted by regressing each variable on lagged values of itself and the other variable. The granger causality model is specified as:

$$Y_t = \beta_0 + \sum_{j=1}^J \beta_j Y_{t-j} + \sum_{k=1}^K \gamma_k X_{t-k} + U_t$$

We can use the F-test or the probability to examine the null hypothesis. What is most critical is the choice of lags J and K and this is because insufficient lags yield auto correlated errors and incorrect test statistics and too many lags reduce the power of the test. To determine the causal relationship we can estimate the reverse model:

$$X_t = \beta_0 + \sum_{j=1}^J \beta_j Y_{t-j} + \sum_{k=1}^K \gamma_k Y_{t-k} + U_t$$

The data used for this study was obtained from World Development Indicators and Global Development Finance data base published by World Bank on 28th September 2012.

Results and Discussions

Table 1. Unit root tests at level

VARIABLES	ADF-Test Statistic (Intercept)	Level of Integration
LN_GDP	-1.206722 (-2.9484)** Durbin-Watson Stat: 1.535145	I(0)
LN_BM	-0.611049 (-2.9458)** Durbin-Watson Stat: 2.105173	I(0)
LN_NDC	-1.695155 (-2.9458)** Durbin-Watson Stat: 2.129233	I(0)
LN_GCF	-2.933878 (-2.9458)** Durbin-Watson Stat: 2.134643	I(0)

*McKinnon Critical value at 1 percent level of significance, **McKinnon Critical value at 5 percent level of significance, LN_ - Natural log of

The natural logs of GDP, Broad money, Net domestic credit and Gross capital formation were all found not to be stationery in their level form because the ADF- Test statistics of all the variables were greater than the McKinnon critical values at 5 percent levels of significance.

Table 2. Unit root tests at first difference

VARIABLES	ADF-Test Statistic (Intercept)	Level of Integration
DGDP	-3.402982 (-2.9484)** Durbin-Watson Stat: 1.545261	I(I)
DBM	-6.296622 (-3.6329)* Durbin-Watson Stat: 1.898048	I(I)
DNDC	-6.981004 (-3.6394)* Durbin-Watson Stat: 1.956162	I(I)
DGCF	-8.285341 (-3.6329)* Durbin-Watson Stat: 2.081645	I(I)

*McKinnon Critical value at 1 percent level of significance, **McKinnon Critical value at 5 percent level of significance, D – First difference

The natural log of GDP was found to be stationery in its first difference because the ADF-Test statistic was a lesser negative than the McKinnon critical value at 5 percent level of significance. There was no presence of a unit root on the first difference of the natural log of broad money because the McKinnon critical value at 1 percent level of significance was greater than the ADF-Test statistic. The natural log of net domestic credit was found to be stationery in its first difference because the ADF-Test statistic was a lesser negative than the McKinnon critical value at 1 percent level of significance. The first difference of the natural log of gross capital formation was found to be stationery because the McKinnon critical value at 1 percent level of significance was greater than the ADF-Test statistic.

Johansen Long Run Co Integrating Equation (5 Lags):

Table 3. Unrestricted Co integration Rank Test (Trace)

Hypothesized number of CE (s)	Eigen value	Trace statistic	0.05 value	Critical	Prob**
None *	0.845900	111.3335	47.85613		0.0000
At most 1 *	0.694584	53.35872	29.79707		0.0000
At most 2 *	0.414427	16.59024	15.49471		0.0341
At most 3	4.30E-06	0.000133	3.841466		0.9923

*Denotes rejection of the hypothesis at the 0.05 level, **McKinnon-Haug-Michelis (1999) P-values

Table 4. Unrestricted Co integration Rank Test (Maximum Eigen Value)

Hypothesized number of CE (s)	Eigen value	Max-Eigen statistic	0.05 value	critical	Prob**
None *	0.845900	57.97481	27.58434		0.0000
At most 1 *	0.694584	36.76848	21.13162		0.0002
At most 2 *	0.414427	16.59010	14.26460		0.0211
At most 3	4.30E-06	0.000133	3.841466		0.9923

*Denotes rejection of the hypothesis at the 0.05 level, **McKinnon-Haug-Michelis (1999) P-values

Both the Trace test and the Maximum Eigen value tests indicate three co integrating equations at the 0.05 level because the hypotheses at None, At most 1 and At most 2 are rejected because they have significant probability values of less than 0.05.

Table 5. Co integrating Vector

1 Co integrating equation: Log likelihood 276.7996			
Normalized co integrating coefficients (Standard error in parentheses)			
LN_GDP	LN_BM	LN_NDC	LN_GCF
1.000000	-0.489835 (0.07839)	-2.159774 (0.06210)	0.432739 (0.07201)

$$LN_GDP - 0.49*LN_BM - 2.16*LN_NDC + 0.43*LN_GCF = 0$$

$$\text{Error Correction Term} = LN_GDP - 0.49*LN_BM - 2.16*LN_NDC + 0.43*LN_GCF$$

Table 6. Stationerity of the Error Correction Term

	T-statistic
Augmented Dickey-Fuller test statistic	-4.526106
Test critical values:	
1% level	-3.626784
5% level	-2.945842
10% level	-2.611531

The Error Correction Model was estimated by lagging by 3 periods the first difference of the natural log of GDP as the dependent variable and the first differences of the natural logs of Broad money, Net domestic credit and Gross capital formation as independent variables.

Table 7. Error Correction Model results

Dependent variable: DGDP				
Independent variables: DBM, DNDC, DGCF				
Variable	Coefficient	Standard error	T-statistic	Probability
DGDP(-1)	0.524123	0.185307	2.828406	0.0101
DBM	0.068628	0.056300	1.218970	0.2364
DBM(-3)	0.115103	0.051227	2.246901	0.0355
DNDC(-1)	-0.172357	0.083539	-2.063176	0.0517
DNDC(-2)	-0.097527	0.061054	-1.597396	0.1251
DNDC(-3)	-0.119469	0.049584	-2.409424	0.0252
DGCF	0.050006	0.023447	2.132737	0.0449
DGCF(-1)	0.112148	0.033792	3.318801	0.0033
DGCF(-2)	0.048814	0.033166	1.471795	0.1559
DGCF(-3)	0.066841	0.026135	2.557496	0.0183
ECT(-1)	-0.092054	0.044207	-2.082338	0.0497
C	2.736390	1.303021	2.100034	0.0480
R-squared 0.65				
Adjusted Rsquared 0.47				
Probability F-statistic 0.005811				
Durbin-Watson statistic 2.088625				

The results of the above error correction model indicate that the coefficient of DBM (-3) is 0.12 with a significant probability value of 0.0355 which means that in a period of 3 years broad money grows by 0.12 percentage points resulting in GDP growth by 1 percent. DNDC (-1) with a coefficient of -0.17 and a significant probability value of 0.0517 means that Net domestic credit corrects for disequilibrium in GDP at the rate of 0.17 percent every year. DNDC (-3) has a significant probability value of 0.0252 and a coefficient of -0.12 which means that in a period of three years net domestic credit corrects for disequilibrium with GDP at the rate of 0.12 percent. The coefficient of DGCF is 0.05 with a significant probability value of 0.0449 which means that a 0.05 percentage increase in gross capital formation leads to one percentage growth in GDP. DGCF (-1) has a coefficient of 0.11 and a significant probability value of 0.0033 which means that in a period of one year gross capital formation grows at 0.11 percent resulting in one percent growth in GDP. The coefficient of DGCF (-3) is 0.07 with a significant probability value of 0.0183 meaning that in three years gross capital formation increases at the rate of 0.07 percent resulting in one percentage growth in GDP. The coefficient of the Error Correction Term is -0.09 which is a negative and lies between zero and negative one and has a significant probability value of 0.0497 means that there is a long run relationship between the proxies of financial development and economic growth and that all the proxies of financial development jointly correct for disequilibrium in GDP at the rate of 9 percent every year.

Table 8. Breusch - Godfrey LM Test results (2 lags)

F-statistic	0.260100	Prob. F (2,19)	0.7737
Obs* R-squared	0.879429	Prob. Chi-Square (2)	0.6442

The Probability Chi-Square value of the observed R-squared is 0.6442 which is more than 5 percent meaning that the null hypothesis that there is no serial correlation in the model is not rejected.

Table 9. Test results for Heteroscedasticity (Harvey Test)

F-statistic	1.634277	Prob. F(11,21)	0.1604
Obs*R-squared	15.22031	Prob. Chi Square(11)	0.1726
Scaled explained SS	12.25981	Prob. Chi Square(11)	0.3444

The Probability Chi-Square value for observed R-squared is 0.1726 which is more than 5 percent meaning that the null hypothesis that there is no heteroscedasticity in the model is accepted. The probability value of the residual is 0.130906 which is more than 0.1 meaning that the residual series is normally distributed.

Table 10. Pair wise Granger causality results (5 lags)

PAIRWISE HYPOTHESIS	OBS.	F-statistics	P-value	Decision	Type of causality
DBM ≠ DGDP	31	3.08593	0.0318	Reject H ₀	Unidirectional causality
DGDP ≠ DBM	31	0.43890	0.8161	DNR H ₀	Unidirectional causality
DNDC ≠ DGDP	31	1.26856	0.3159	DNR H ₀	No causality
DGDP ≠ DNDC	31	1.15810	0.3636	DNR H ₀	No causality
DGCF ≠ DGDP	31	1.73079	0.1736	DNR H ₀	No causality
DGDP ≠ DGCF	31	0.61532	0.6895	DNR H ₀	No causality

Alpha (α) = **0.05**

Decision rule: **reject H₀ if P-value < 0.05**

Key: **DNR = Do not reject;**

≠ : Does not Granger cause

A unidirectional causal flow was established from Broad money to GDP since the probability value was less than 0.05 and therefore the null hypothesis that there is no causal relationship is rejected. No causal relationship was found from GDP to Broad money. There was no causal relationship established between GDP and Net domestic credit and also between GDP and Gross capital formation since there was no significant probability values observed, therefore the null hypothesis that there is no causal relationship is not rejected.

This study finds no dominant hypothesis in Kenya but finds evidence of Finance led growth/ Supply leading hypothesis where broad money Granger causes GDP. This finding is contrary to Odhiambo (2007) in his study of financial development in different Sub-Saharan African countries where his evidence supported the growth driven finance/demand leading hypothesis in Kenya. This hypothesis is also supported by Odhiambo (2008) where he found a unidirectional causal flow from economic growth to financial development.

Conclusions

Broad money and Gross capital formation have been found to have had positive contributions to GDP but at a very slow rate. Net domestic credit has been found to be operating below equilibrium and returning to equilibrium at different rates after certain periods. This therefore means that the financial sector in Kenya has not yet been tapped to its full potential and there is more work to be done for it to contribute significantly to economic growth. Although a causal relationship has been established between GDP and Broad money and no causal relationships between GDP, Gross capital formation and Net domestic credit, these relationships are dependent on the various fiscal and monetary economic policies conducted by economic policy makers in Kenya.

Recommendations

The financial sector is one of the sub-pillars of the economic pillar of Kenya's development framework Vision 2030. The findings of this study indicate that there is a need for the review of Kenya's monetary and fiscal policies. While making adjustments to these policies or coming up with entirely new policies considerations should be made towards giving more thrust to Broad money and Domestic credit available locally which will in turn impact positively on Gross capital formation.

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AN INVESTIGATION INTO THE EFFECTIVENESS OF MONETARY POLICY IN CONTROLLING INFLATION IN KENYA, 1999-2012

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Abstract

The principal mandate of the Central Bank of Kenya is to formulate and implement monetary policies directed at achieving and maintaining stability in the general level of prices. Changes made to the monetary policy serve as mechanism to control inflation over time, and this action affects financial markets and everyone else in Kenya. Some writers argue that inflation is directly tied to money supply. Others reject this notion by saying that inflation is not the same thing as a change in the money supply. An expansion of the monetary base does not automatically count as inflation. They argue that monetary policy acts with a lag. Flowing from the foregoing, there is little agreement not only on transmission mechanisms of those changes but also the speed of transmission and the ultimate effect on the long-term interest rates. In trying to establish the effectiveness of monetary policy in controlling inflation, this study looked at five variables (GDP, Inflation, Money stock, T-bill Rate and Exchange rate) and has employed the Structural Vector Autoregression Model to test for transmission lags. The VAR models were estimated in levels using quarterly data between 1999 and 2012. By estimating the VAR in levels, implicit co-integrating relationships were allowed in the data. The tests reveal that when the effect of a monetary policy shock on inflation is significant, the inflation responds to a monetary shock. An unexpected and temporary rise in the T-Bill rate tends to be followed by a response in inflation, with the effect fading 6 to 8 months after the shock. The study concludes that an exogenous, unexpected, and temporary rise in the T Bill rate tends to be followed by nominal appreciation, with impact on output being insignificant. In addition, the interest rate channel is an important channel of monetary policy transmission in Kenya.

Keywords: Monetary Policy; SVAR Model; Central Bank of Kenya;

Introduction

Monetary policy can be defined as Central Bank's actions to influence money supply so as to achieve and maintain low and stable prices or inflation in the economy. Most central banks, including, the Central Bank of Kenya, target some measure of the money stock. The monetary policy focuses on a measure of high powered money to affect broad money stock which directly affects inflation or price level in the economy.

For purposes of monetary policy the knowledge of the transmission channels and lags is of primary interest without which monetary policy cannot be successful. This knowledge is important as it is a guide in the design and implementation of appropriate monetary policy measures for attaining their ultimate objectives.

Kevin (2006) lends additional support to the interest rate effect in his work which examines the impact of a monetary policy shock on output, prices and the nominal effective exchange rate for Kenya using a VAR estimation model on monthly data for the period 1997-2005. According to his results, an exogenous increase in short term interest rate leads to a fall in prices and an appreciation of the nominal exchange rate. This seems to confirm Durevall and

Ndungu (1999) earlier conclusion, using Kenya data from 1974 to 1996, that exchange rate has long term effects on prices, while interest rates and money supply have short-term effect

Some writers argue that inflation is directly tied to the money supply. That is to say, they believe a substantial rise in the money supply is the same thing as inflation. (This is one small step removed from Milton Friedman's old assertion: "Inflation is always and everywhere a monetary phenomenon."). Others reject this notion by saying that inflation is not the same thing as a change in the money supply. A dramatic expansion of the monetary base does not automatically count as inflation. It does not automatically mean that inflation is here. They argue that monetary policy acts with a lag. When the Central Bank changes something, you don't always see the result right away and the result isn't always the desired one. According to this group of people it is true that dramatic increases in the money supply eventually lead to inflation (in the vast majority of cases). But the key word here is "eventually." Sometimes it can take a while. The size of the lag depends on general conditions and a very important concept known as "monetary velocity." This study therefore seeks to address the effectiveness of monetary policy in controlling inflation in Kenya.

Objectives

- i. To measure the direct effect of money supply on inflation.
- ii. To measure the indirect effect through the interest rate channel.
- iii. To establish time taken for the full effect of a monetary policy shock on inflation.

Theoretical review / conceptual framework

Monetary policy transmission is a set of sequential causal effects linking up a monetary policy shock with real output and inflation. The set of channels that are operational in a country defines the country's monetary policy transmission mechanism and form the theoretical review. The monetary policy on output, exchange rate and inflation and the transmission mechanism is usually examined in various modified forms of Vector Auto Regressive (VAR) models.

Monetary transmission is a complex and interesting topic because there is not one, but many, channels through which monetary policy operates. The process begins with the transmission of open market operations to market interest rates, through the supply and demand for money. From there, transmission may proceed through any of several channels. There is a long list of comprehensive surveys of the monetary transmission process available in the literature. A few notable contributions in this area are by Cecchetti et al., (2006), Mishkin (1996), and Christiano et al., (1997), although this is by no means an exhaustive list. There are a few elements that are common to all the theories which try to explain how monetary impulses affect the economy. The first concerns the ability of the central bank to control the supply of an asset, outside money, that is demanded by financial institutions and for which no perfect substitute exists. By engaging in open market operations, the monetary authority affects the liquidity of the banking system and the interest rates and in so doing changes prices on a variety of domestic and foreign assets. The second common element relates to the existence of nominal rigidities either in the labour and goods markets or in the financial sector which prevent the price level from fully adjusting in the short-run. A few sources of nominal rigidities have been proposed in the literature: sticky prices, sticky wages and imperfections which limit the ability of households to participate in financial markets.

There is a general consensus among economist that variation in money supply by the

monetary authority invariably influences the general price level and by extension therefore, that, excess money supply is the ultimate cause of inflation. However, the monetary policy transmission mechanism has remained vague in many countries. Several theories and evidences have been put forward to establish the existence of various transmission mechanism or channels through which monetary policy can affect a country's economic activity. However, due to its complexity, monetary transmission mechanism has come to be referred to as black box (Bernanke & Gertler, 1995) because of the numerous channels through which monetary policy simultaneously operates. Monetary policy is employed as a tool to control or influence monetary aggregates such as interest rates, money supply and bank credit, including the exchange rate, with a view to achieving set policy targets such as tackling unemployment, inflation, economic growth, etc. In the pursuit of these goals, the Central Bank sets intermediate objectives for monetary policy. These are goals which relate to using interest rates, growth in money supply and the exchange rate to achieve the ultimate goals of monetary management. In other words, the intermediate goals are regarded as channels through which monetary policy is transmitted to the macro economy with the aim of impacting on the ultimate objectives.

Cannetti and Greene (1991) proposed that several extensions and variations of the conventional IS-LM based interest rate channel of monetary policy transmission are presented in the literature including the exchange rate channel, credit channel, and domestic asset pricing channel. The study focuses on the interest rate channel.

Under the conventional Keynesian interest rates rate channel, an increase in short term interest rates occasioned by the manipulation of policy instrument such as rise in the bank rate increases cost of capital, lowers the demand for credit and depresses spending an assets including investment, albeit increasing saving. Associated with the works of Cotarelli & Kourelis (1994) and Clarida, Gali & Gertler (2000).

Meltzer (1995) and Mishkin (1995) provide discussions of channels of monetary policy transmission. Commonly cited channels include the traditional money channel, the interest rate channel, the exchange rate channel, the broad credit channel comprising the balance sheet and the bank lending channels, the asset price channel and the expectations channel.

Monetary policy transmission mechanism operates in 3 stages;

The first stage is that a change in the official interest rate set by the monetary policy committee will affect other interest rates. Banks and other financial institutions have to react to any official rate change by changing their own savings and loan rates. The exchange rate may change as demand and supply of local currency adapt to the new level of interest rates. Finally there may also be an effect on the expectations of both firms and individuals. They may become more or perhaps less confident about the future path of the economy.

The second stage is that all these changes in the markets will affect the spending patterns of the consumers and firms. Higher interest rates are likely to reduce the level of aggregate demand as consumers are affected by the increase in rates and may look to cut spending. There will also be international effects as the level of imports and exports change in response to possible changes in the exchange rate.

The third stage is the impact of aggregate demand change on Gross Domestic Product. This will tend to depend on the relative levels of aggregate demand and supply. If there is enough capacity in the economy then an increase in aggregate demand may not be inflationary.

However, if the economy is already at bursting point producing as much as it can, then any further aggregate demand increase may be inflationary (Mishkin, 1995).

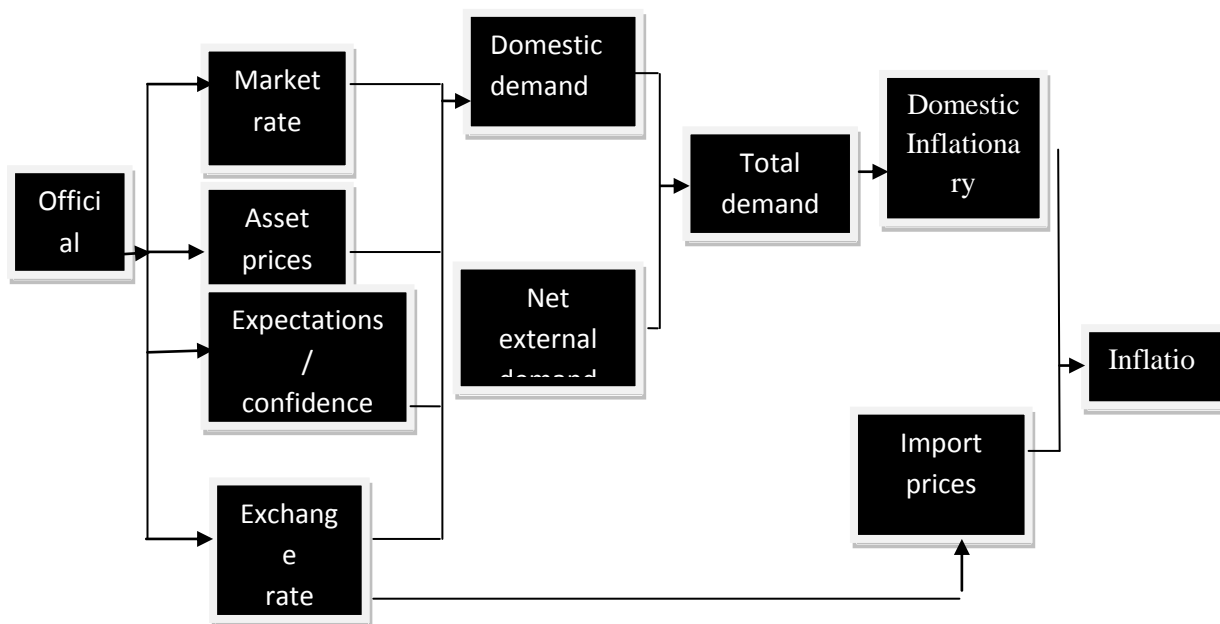


Figure 1: From Interest rates to inflation-the transmission mechanism of monetary policy

Flowing from the foregoing, there is a general consensus among economists that monetary policy actions have some effect on output and inflation. Policy rate changes are followed by changes in short-term interest rates which are then expected to be transmitted to commercial bank retail interest rates. However, there is little agreement not only on transmission mechanisms of those changes but also the speed of transmission and the ultimate effect on the long-term interest rates. Often, when there is disequilibrium in the economy characterized by extreme inflationary or deflationary pressures, central banks face the challenge of determining the length of time required before any policy actions may have effects on macro economic variables mainly, inflation and output. This is in addition to the major challenge of the existence of several transmission channels such as interest rate, exchange rate, expectations and bank lending, among others, through which policy actions are transmitted simultaneously. So far, there has been little agreement on the transmission mechanism of these policy changes and the speed of these transmissions. This paper attempted to fill this gap and foster research in this important area for monetary policy making.

Research Methodology

SVAR can be viewed as a bridge between economic theory and multiple time-series analysis in order to determine the dynamic response of variables to various disturbances, or shocks, that occur in the economy. Consequently, this methodology is sometimes referred to as the analysis of disturbances. They are an extension of traditional Vector Autoregressive (VAR) analysis. How they differ is that within a SVAR an attempt is made to identify a set of independent disturbances by means of restrictions provided by economic theory rather than by the (so-called) atheoretic restrictions used in traditional VARs. VARs have the status of reduced form models and therefore are merely vehicles to summarise the dynamic properties

of the data. Without reference to a specific economic status, such reduced form VAR models are difficult to understand. Sims (1981, 1986), Bernanke (1986) and Shapiro and Watson (1988) put forward a new class of econometric models that is now known as SVAR or identified VAR.

The following assumptions as given in Cheng (2006) were used under the model used in this study

1. It assumed that prices (*INF*) have no immediate effects on output (*GDP*),
2. Money stock (*M*) has no immediate effect on prices,
3. Monetary policy shock (*TBR*) has no immediate effect on the money stock,
4. The nominal effective exchange rate (*NEER*) has no immediate effect on the monetary policy.

The VAR models are estimated in levels using quarterly data between 1999 and 2012. By estimating the VAR in levels, implicit co-integrating relationships are allowed in the data. All variables are seasonally-adjusted and expressed in logarithms, except T-Bill rate and inflation, which are in percentage terms.

In this study, Augmented Dickey Fuller Test (ADF) and Philips Perron (PP) were used to test for unit roots; the unit root results revealed that all series were non-stationary except for inflation and the T-bill rate. The variables are adjusted and expressed in logarithms, except Treasury bill rate and inflation being ratio based measurement expressed in percentage terms.

Var Model Test

Estimation Results

The results of the benchmark model are shown below. The graphs display the impact (the impulse response) of a one-standard deviation monetary policy shock defined as an exogenous, unexpected, temporary rise in the treasury bill rate at $t=0$ on money supply, inflation and exchange rate together with a 95 percent confidence band.

The results are summarized as follows: The effect of a monetary policy shock on inflation appears to be significant, the inflation responds to a monetary shock. An unexpected and temporary rise in the T-Bill rate tends to be followed by a response in inflation, with the effect fading between 6 to 8 months after the shock.

The effect of a monetary policy shock on interest rate channel appears to be significant and fades away between 4 to 6 months after the shock. The full effect of a monetary policy shock on inflation is felt after the sixth month. The effect of monetary policy on output (*GDP*) is not significant. The relative importance of the monetary policy shock for fluctuations in each variable can be gauged through the forecast error variance decompositions. Table below shows the forecast error variance of the inflation, money supply and interest rate at different forecast horizons that can be attributed to the monetary policy shock. What this tells us is that past inflation affects current inflation; we see that 54% fluctuations in inflation are explained by inflation itself. Then 17% of fluctuations in inflation are explained by the Treasury bill rate and 15% by the exchange rate. Hence, consistent with the impulse response analysis, a monetary shock has significant impact on the inflation rate and money supply.

Impulse response graph

The relationship of the VAR describes the dynamic response of the model to identified shocks. The impulse response function traces the effect of each shock on each variable in the VAR for the period under the study (1999-2012). A shock of the *i*th variable through the dynamic structure of the VAR (Enders, 2004)

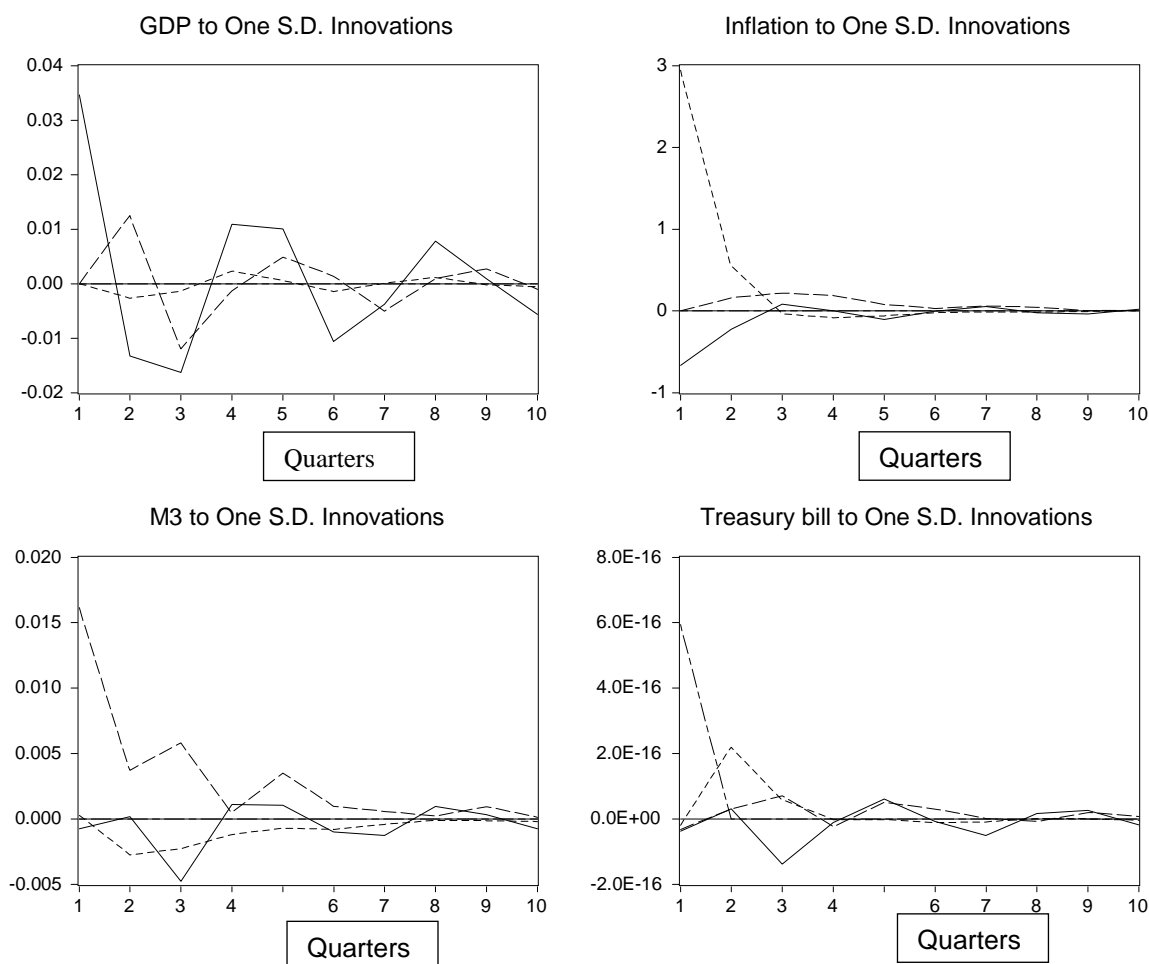


Figure 2: The Effects of a Monetary Policy Shock (Recursive VAR), Estimation Period: January 1999-December 2012

Note: The dotted and broken lines show the 95 percent confidence band

Monetary policy shock is measured in terms of the Treasury bill rate, the effect is maximum at between 2 to 3 months. The effect of monetary policy on output (GDP) is not significant.

Variance decomposition

The forecast error variance decomposition provides complementary function. It tells the proportion of the movements in a sequence due to its own shocks and other identified shocks (Enders, 2004) While the impulse response functions trace the effects of a shock to one endogenous variable on to the other variables in the VAR variance decomposition separates the variation in the VAR. Therefore variance decomposition provides information about the

relative importance of each random innovation in affecting the variables in the VAR. In this case it helps to explain the fluctuations in inflation.

Table 1: Variance Decomposition

Period	S.E.	D(LOG(GDP	INF	D(LOG(M3))	TBR	D(LOG(NEE
1	2.947664	26.53639	73.46361	0.000000	0.000000	0.000000
2	4.032950	31.47115	67.75956	0.119088	0.154189	0.496014
3	4.438255	32.21286	63.87545	0.269104	0.911625	2.730955
4	4.775896	33.05990	61.50791	0.389390	0.857035	4.185760
5	4.927754	31.23724	58.03577	0.569528	3.394328	6.763135
6	5.332694	27.21842	57.11889	0.674803	7.496712	7.491171
7	5.754979	23.67226	56.45643	1.111560	12.32606	6.433682
8	6.224952	20.46261	56.38436	2.727783	14.01192	6.413321
9	6.614162	18.31364	54.44150	5.226130	12.86061	9.158113
10	6.881702	16.92390	50.68081	7.436902	12.18060	12.77779
11	7.112515	15.90833	47.85208	8.019959	13.99168	14.22795
12	7.394965	14.83234	46.97599	7.453824	17.39015	13.34770
13	7.749518	13.57485	47.44256	7.210241	19.23335	12.53900
14	8.067689	12.56731	47.19269	8.011921	18.72242	13.50565
15	8.305421	11.86363	45.66394	9.231932	17.67137	15.56914

The variance decomposition largely confirms the results obtained in the impulse response analysis. That is inflation (INF) responds negatively to Treasury bill rate (TBR).

To examine the robustness of the main results the VAR framework uses variables other than those in the model monetary policy shock that is defined as a temporary, unexpected, and exogenous rise in the interbank rate, rather than the treasury bill rate the results remain the same as above showing that the main conclusions of the project remains valid.

Summary of findings

Findings from this study suggest that for effective monetary policy management, it is important that a central bank tackles the monetary policy transmission mechanism problem by finding adequate answers to three basic questions, namely, what is the effect of money supply on inflation? What is the effect of monetary policy on interest rate and how long does it take before the full impact of monetary policy is felt in the economy.

The study finds the time taken for the full effect of a monetary policy shock on inflation rate to be at 6 to 8 months when monetary policy is measured in terms of treasury bill or interbank rate. The above results can be compared to a study done by Mugume, (2009) in Uganda that showed that inflation rate responds to the monetary policy within 5 months. Cheng, (2006) found that the inflation rate responds strongly to a monetary shock. The study also finds interest rate channel of monetary policy is operational in Kenya. The results can be compared to study done by Cheng, (2006) that showed short term interest rate accounts for significant fluctuations in the inflation rate and prices, while accounting little for output fluctuations.

Conclusion & recommendation

The study concludes that an exogenous, unexpected, and temporary rise in the T Bill rate tends to be followed by nominal appreciation, with impact on output being insignificant. The study also concludes that interest rate channel is an important channel of monetary policy transmission in Kenya. Because of existence of relationship between monetary policy shock and inflation rate the Kenya Monetary Authority should formulate policies that stabilize prices at desirable levels. The results indicates that there are factors that affect inflation rate other than monetary actions. The government should strive to improve these other factors (supply side factors). The study could further be developed by including more variables to the model and increasing the sample size. These variables may include cash reserve ratio, repo rate and real money. The results of which should be compared with those of this study so as to establish the effect of monetary policy on inflation.

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DETERMINANTS OF EXTERNAL PUBLIC DEBT IN KENYA

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Abstract

Kenya has had several years of debt distress as defined by World Bank and has had episodes of aid freezes and donor withdrawals as the government reneged on its commitments to donors. Some studies conclude rather harshly that Kenya is a suitable candidate of High Indebted Poor Countries (HIPC) relief due to its debt situation and the performance of its economy that has to a large extent not helped distinguish it from other African and underdeveloped countries classified as falling within the HIPC category of debt-relief deserving economies. Over the years much effort has been placed to shift public debt in favour of domestic debt but in spite of efforts to bring down the share of external debt in the public debt composition, Kenya still has a significant share in external public debt. In order to reduce the external debt, there is need to identify the factors that have significance influence on it and have led to its rapid growth, this was the broad objective of the study. The specific objectives were to determine the effects of social sector spending such as education expenditure and general government consumption expenditure; to find out the effects of cost of borrowing and to determine the extent to which foreign exchange earnings affect the level of public debt. Data for the period 1975-2011 was analysed using the ordinary least squares estimation model. The significant determinants were found to be education expenditure, costs of borrowing and foreign exchange earnings. Surprisingly government consumption did not have significant influence over external debt.

Keywords: Public debt, education expenditure, cost of borrowing, foreign exchange earnings.

Introduction

Public debt in developing countries is a major economics policy issue as it can result in an adverse effect on capital accumulation, as well as productivity, and in turn reduce economic growth. Governments borrow in order to finance expenditures on public goods and services that promote growth and increase the nation's welfare. Followers of classical school of thought of economics have the view that public debt should be kept as minimum as possible, however the Keynesian economists are very flexible about borrowing. Public debt is all the government is borrowing from external or domestic sources, this study focus is on external public debt of Kenya a developing country to determine the major factors influencing its growth.

The rapid growth of Kenya's gross external public debt over the years is a cause for concern, as it is a much smaller economy in comparison to economies mentioned above with a much lower ability to absorb economic shocks arising internally and or externally. The country's public debt increased from Ksh. 466,294 million in June 1996 to Ksh. 789,076 million in June 2006 and rose to Sh1.6 trillion in June 2012. Some of this debt is over 50 years old with remote prospects of recovery and over the years the country has resorted to occasional debt rescheduling and expensive short term borrowing to finance government expenditure. In spite of efforts to bring down the share of external debt in the public debt composition, Kenya still has a significant share in external public debt. The desired level of external public debt is

30% of total debt with 70% in domestic financing under the 2009 Medium Term Debt Strategy (MTDS) which outlines the government borrowing policy by evaluating the cost and risk characteristics of both the existing public debt portfolio and alternative borrowing mix. A couple of years down the line much effort has been placed to shift public debt in favour of domestic debt which Were, M (2001) notes 'is almost ten times as expensive as external debt'.

Using data for the years 1975 to 2011 this paper concludes that external public debt management can be most effective where the main determinants of external public debt growth are known for a particular economy which would then determine the strategies to implement to manage and control and possibly employ foreign aid exit strategies. The study uses ordinary least squares estimation model to analyse three areas largely associated with external debt of their impact in Kenyan case; large government social sector expenditure, cost of borrowing, and foreign exchange earnings. The paper will provide essential feedback to the government in various ministries for planning and policy making, the ministry of finance for informing the budgeting process and importantly advise the public debt management strategies for the country.

The paper begins with a highlight of the problem Kenya's currently facing with growth in external public debt, following is literature review containing discussion of causes of growth in external public debt and a section to evaluate a model of external public debt accumulation. Then there is the data analysis followed by conclusions and recommendations presented in the final section

Background Information

A thin line of distinction exists in the definitions of external public debt and foreign aid, Omotola and Saliu (2009) point out that foreign aid is of various forms such as grants, loans, foreign direct investment, joint ventures and technical assistance, and argue that a loan qualifies to be regarded as aid if it is soft in terms of repayment and based on the rate of interest charge on it and as a result, loans cease to be aid if they are commercially motivated and if they seem to be directed towards promoting donors interests. The World Bank defines episodes of debt distress as periods in which any one or more of the following three conditions hold: the sum of interest and principal arrears is large relative to the stock of debt outstanding, a country receives debt relief in the form of rescheduling or debt reduction from the Paris Club of bilateral creditors, or the country receives substantial balance of payments support from the IMF under its non concessional Standby Arrangements or Extended Fund Facilities. The first condition is the basic measure of debt distress: the failure to service external obligations resulting in an accumulation of arrears.

To apply the above two definitions to Kenya's position, to a large extent, the country's public debt would qualify as foreign aid and there are significant periods that Kenya has experienced debt distress. World Bank Economic Review (2006) noted that during the 1970s and 1980s Kenya received balance of payments support in excess of 50 percent of its quota for a total of 10 years, whereas during the 1990s it had four years in which arrears were more than 5 percent of debt outstanding. Finally, it received substantial Paris Club relief in 1994 and again in 2000. This means that in total, between 1970 and 2000, Kenya experienced 17 years of debt distress. Mwega, F (2009) noted that in 1993 the net official development assistance to Kenya decline dramatically, with two major episodes of "aid freeze" and donor withdrawals as the government reneged on its commitments to donors. Were, M (2001) also

states that the exclusion of Kenya from the HIPC debt initiative is likely to have been based on its poor record of reforms and economic performance rather than its ability to attain sustainable levels of external debt, AFRODAD (2005) on the same adds that though Kenya is a not HIPC, its debt situation and the performance of its economy has to a large extent not helped distinguish it from other African and underdeveloped countries classified as falling within the HIPC category of debt-relief deserving economies.

The Annual Public Debt Management report (2006) noted that in 2000 and 2004, Kenya rescheduled debt arrears and flows amounting to US\$ 650 million and some lenders opted to cancel debts amounting to US\$ 30 million. In 2003, Kenya faced challenges relating to debt management which made the Government embark on a five year reform program to strengthen Debt Management as noted on Annual Public Debt Management Report (2011) which further notes as at the end of June 2011, the proportion of external debt with remaining maturities of more than 10 years was 76.9 percent.

Although Kenya may not be as heavily indebted as other HIPCs, its inability to meet its debt obligations may have significant implications on development and debt sustainable objectives in the coming years. In order to reduce the external debt, there is need to have a clear understanding of the factors which have majorly contributed to its rapid growth which could then advise the sustainable external debt levels. This study contributes to public debt knowledge by analysing the relationship of economic variables which have a significant effect on external public debt, which paves way to finding the solutions and proper management of this debt and possibly advise on foreign aid exit strategies.

Theoretical and Conceptual Framework

Two types of debt problems which have occupied debt analysts notes Hjertholm et al (1998) are, the debt capacity problems, in which the debtor is unable or is unwilling to honour debt service obligations as they come due. Evidence of such problems occurs when payment arrears accumulate and debt is rescheduled or forgiven. The other problem is that which occurs when a country's foreign debt is so large as to adversely affect economic development.

Pescatori and Sy (2007) note that Moody's Investors Service defines a sovereign issuer as in default when one or more of the following conditions are met: There is a missed or delayed disbursement of interest and/or principal; There is a missed or delayed disbursement of interest and/or principal, even if the delayed payment is made within the grace period; A distressed exchange occurs, where the issuer offers bondholders a new security or package of securities that amounts to a diminished financial obligation, such as new debt instruments with lower coupon or par value; or the exchange had the apparent purpose of helping the borrower avoid a "stronger" event of default such as missed interest or payment.

Cassimon and Campenhout(2007) note the foreign aid fungibility theory that argues that aid's impact should not be evaluated against the projects said to be 'aid-financed'. This is illustrated as follows; Suppose a government has \$100 million to be allocated between two activities (both costing exactly \$100 million): rehabilitating rural health clinics or buying some military hardware . After some deliberation the government decides to prioritise the health clinics. Subsequently a donor offers the government \$100 million for any development project. Clearly the tanks are not eligible for donor finance, but the health clinics are. So the government may ask the donor to finance the latter, freeing up its own resources to buy the

tanks. The actual impact of the aid (a comparison of with versus without) is therefore to increase military rather than health expenditure.

The debt service ratio is the ratio of debt service payments made by or due from a country to that country's export earnings. The ratio of debt service (interest and principal payments due) during a year, expressed as a percentage of exports (typically of goods and services) for that year. According to the World Bank classification, a country is heavily indebted when the debt to export ratio is above 220% and moderately indebted when the ratio is above 132%.

Hjertholm et al (1998) noted that one of the major concerns in analysing the macroeconomic impact of foreign aid has been the effect of aid on the exchange rate of the recipient country, this is attributed to the Dutch disease phenomenon in a situation where an inflow of foreign exchange in any form, from export earnings, private capital flows or foreign aid, puts upward pressure on the real exchange rate of the recipient country by stimulating more rapid domestic inflation. A large inflow of foreign aid may therefore result in a loss of competitiveness of exports, counteracting other efforts to increase exports.

Social sector spending

Several studies such as Mahdavi (2004) and Hjertholm et al (1998) note that a large part of social expenditure takes place in the form of wages and salaries paid to public servants in the education and health public sectors and continues to state that spending in the functional sectors such as the social sector; health and education, economic services, public investment, or agriculture conveys information about the social-welfare 'preferences' of these countries. Kharas(1988) states that if the government uses most of the borrowed funds for investments in such areas as infrastructure, education, and health services, the sustainable level of debt that the government can take on will depend, not only on the relationship between the marginal social return on these investments and the marginal cost of borrowing, but also on the governments ability to appropriate sufficient domestic resources for debt service.

Kenya's largest share of external public debt over the period has been absorbed by the social sector spending; infrastructure development, agriculture, education and other development such as financing of capital goods and funds borrowed for general development take the remaining share. Some external debt may have probably financed other uses not indicated, however due to aid fungibility as discussed by Cassimon and Campenhout(2007) the aid's impact cannot be conclusively evaluated against the projects said to be 'aid-financed'. For instance, it is not prudent for a government to borrow from external sources to cover shortfalls in salaries and wages, therefore a government may reallocate domestic resources available for infrastructure to salaries and wages then seek external sources to finance the infrastructure projects which qualifies in many lenders programs.

Recent studies in the context of the HIPC initiative suggest that most African countries require still more financial assistance, both to pay off their debt and to promote development notes McPherson and Gray(2000). They state that for most African governments there has been no fundamental reduction in their debt stocks due to their own resource mobilization efforts. All net reductions in external debt have occurred through donor-sponsored programs particularly in the social sectors and infrastructure.

The largest share of external public debt in Kenya from an analysis between 1963 and 2006 had been absorbed by the social sector spending; infrastructure development, agriculture, education and other development such as financing of capital goods and funds borrowed for

general development take the remaining share. Some external debt may have probably financed other uses not indicated in the figure, however due to aid fungibility as discussed by Cassimon and Campenhout(2007) the aid's impact cannot be conclusively evaluated against the projects said to be 'aid-financed'. For instance, it may not be prudent for a government to borrow from external sources to cover shortfalls in salaries and wages, therefore a government may reallocate domestic resources available for infrastructure to salaries and wages then seek external sources to finance the infrastructure projects which qualifies in many lenders programs.

Costs of borrowing

The debt-creating feature of foreign aid or external borrowing and its transition to indebtedness illustrated with the following simplified model as discussed by Mwamba, A (2001). Given the theory that foreign aid finances productive investments then a function of Income (Y) to foreign aid/external borrowing (B) generates the form

$$Y = bB$$

The equation states that increases in external borrowing would generate proportionate growth in income. As the cost in debt service initially start with interest payments.

$$Y = bB - rB$$

Where r is the rate of interest on foreign borrowing and rB the annual interest payments. Given the condition that $Y = bB$, the equation can also be presented as follows, to reflect the cost of debt service on national income:

$$bB = Y - rB$$

For the expression to hold, Y must at the minimum, exceed bB by rB, that is, income should grow at a rate faster than the rate of growth of debt just so as to cover the interest payments. When the principal payments are introduced, the growth in income in a given year must exceed the annual debt service on the accumulated borrowings or debt represented by the annual interest payments and principal payments.

Dias (2010) notes that large imbalances in the net external debt and large net interest payments are a credible early warning signal of rising risks concerning the ability of an economy to successfully meet its external financial obligations, particularly in periods of economic distress or when hit by an external shock. Das et al (2010) note that inappropriate debt structures can lead to higher interest payments and lower-cost debt structures, such as excessive use of foreign currency denominated debt, are subject to higher risk in the event of an unexpected shock, the devaluations lead to a significant increase in the debt stock and consequently to significant debt crisis.

Foreign exchange earnings

External public debt reflects the foreign currency liabilities of the public sector which must be financed out of foreign exchange earnings. To maintain debt capacity, the rate of growth of exports must exceed the rate of interest on debt. When exports grow faster than debt, the borrowing country does not have to contribute any of its domestic resources when servicing debt. The debt dynamics approach stresses the need for adjustments in the trade balance in

order to maintain debt capacity, and it suggests that solvency might be endangered if exports does not grow commensurately with debt obligations. (Hjertholm et al 1998). As borrowing increases or as interest rates on accumulated borrowings rise, debt service, which must be paid in foreign exchange, also rises. This implies that debt service can only be met with export earnings—thus should exports decline or prices of exports fall, or interest rates rise significantly, and exceed the country's export capacity -- the country starts to experience debt difficulties. This was the experience of the highly indebted poor countries as they graduated from aid to the debt crisis notes Mwamba, A (2001)

Cohen (1985) illustrates that if the rate of growth of exports is represented by n , and the interest rate on debt by r , "if $r < n$ then the country's wealth is in present value terms, infinite and there is no solvency problem: any fraction, however small, of its revenues can repay any level of initial debt infinite time". To obtain stability condition: "If the rate of growth of exports exceeds the interest rate, a permanently positive resource gap can be reconciled with a limited debt/export ratio" S. Ibi Ajayi (1991) quotes Simonsen 1985 and goes ahead to explain that we can calculate the rate of unsustainable borrowing as the excess of the percentage of the rate of growth of external public debt over the percentage rate of growth of exports of goods and services.

Research Methodology and Data Analysis

This study uses time series oriented research where external public debt yearly value is analysed as a function of other variables which are expected to have a significant impact on its rate of growth. This study will adopt the methodology of the OLS (ordinary least square) to analyse the impact of variables on external public debt growth.

The basic estimation equation is:

$$ED = f(EE, EX, IP, PA, PR, GC)$$

The study uses log-linear relationships as they perform better than the simple linear relationship, which is in conformity with most empirical studies.

$$LN_ED = C(1)*LN_EE + C(2)*LN_EX + C(3)*LN_GC + C(4)*LN_IP + C(5)*LN_PA + C(6)*LN_PR + C(7)$$

Where: LN_ED = Log transformation of External debt stocks, LN_EE = Log transformation of Education Expenditure, LN_EX = Log transformation of Exports of goods and services, LN_GC = Log transformation of Government Consumption, LN_IP = Log transformation of Interest payments, LN_PA = Log transformation of arrears in Principal Repayments, LN_PR = Log transformation of Principal Repayments

Total external debt is debt owed to non-residents repayable in foreign currency, goods, or services. Total external debt is the sum of public, publicly guaranteed, and private nonguaranteed long-term debt, use of IMF credit, and short-term debt. Interest payments refer to interest paid on long-term debt, IMF charges, and interest paid on short-term debt. Principal in arrears is principal repayment due but not paid, on a cumulative basis. These two variables represent the costs of borrowing in this study. Exports of goods and services represent the value of all goods and other market services provided to the rest of the world. This represents the Foreign Exchange Earnings in this study. Principal repayments on long-term debt are actual amounts of principal paid in foreign currency, goods, or services in the year specified. The study uses Education Expenditure and Government Final Consumption to

represent social sector spending where General government final consumption expenditure includes all government current expenditures for purchases of goods and services (including compensation of employees). It also includes most expenditures on national defense and security. These variables are defined in the World Bank data sets used.

The study adopts the methodology of the Ordinary Least Square to analyse the impact of variables on external public debt. Use of the Durbin-Watson "d" statistic to test for autocorrelation, test of significance of the coefficients using the t statistic and a test of goodness of fit using R(squared). Use of Unit roots test to determine the order of integration of the series using the Augmented Dickey-Fuller (ADF) test.

univariate analysis, the time series data for each variable was converted to their natural logs to normalize the data and to avoid the problem of heteroscedasticity. The test for cointegration using the Augmented Dickey-Fuller (ADF) test was based on the null hypothesis that each variable has a unit root. The results indicate that all variables become stationary after 1st differencing.

Table 1: Summary of Unit Root Test

Variable	Level	ADF	Critical Values		
			1%	5%	10%
LN_ED	I(0)	-2.083	-3.642	-2.953	-2.615
	I(1)	-4.300*	-3.629	-2.947	-2.612
LN_EE	I(0)	-0.562	-3.623	-2.945	-2.611
	I(1)	-4.427*	-3.629	-2.947	-2.612
LN_EX	I(0)	0.171	-3.623	-2.945	-2.611
	I(1)	-5.301*	-3.629	-2.947	-2.612
LN_GC	I(0)	-0.364	-3.623	-2.945	-2.611
	I(1)	-4.437*	-3.629	-2.947	-2.612
LN_IP	I(0)	-2.320	-3.623	-2.945	-2.611
	I(1)	-4.256*	-3.629	-2.947	-2.612
LN_PA	I(0)	-2.980	-3.623	-2.945	-2.611
	I(1)	-5.284*	-3.629	-2.947	-2.612
LN_PR	I(0)	-3.356	-3.623	-2.945	-2.611
	I(1)	-8.354*	-3.629	-2.947	-2.612
RESID01(1)	I(1)	-4.179*	-3.623	-2.945	-2.611

* Denotes rejection of null hypothesis at 1, 5 and 10 percent level of significance.

Social Sector spending was represented by education expenditure and general government consumption whose coefficient was 0.605 and 0.369 in the long run respectively. The general government consumption has a negative co-efficient in the long run while in the short run both the co-efficients of education expenditure and general government consumption were 0.101 and 0.042 implying that a positive relationship existed between external public debt and social sector spending in the short run. The results were in accordance with Kharas(1988) findings that if the government uses most of the borrowed funds for investments in such areas as infrastructure, education, and health services, then debt levels would increase and the sustainable level of debt that the government can take on will depend, not only on the relationship between the marginal social return on these investments and the

marginal cost of borrowing. From the estimations done, education expenditure is significant to external debt growth in the long run but in the short run both education expenditure and general government spending do not contribute significantly to external debt growth.

The examination of costs of borrowing relation to external public debt with the hypothesis that borrowing costs are positively related to external public debt in this study represented by Interest Payments and Public debt arrears whose coefficients are 0.325 and 0.074 respectively in the long run and 0.455 and 0.032 respectively in the short run which imply that they are positively related to external public debt both in the long run and short run. The estimates showed that both interest payments and principal arrears had significant influence over external debt growth as expected. Inappropriate debt structures can lead to higher interest payments and lower-cost debt structures, such as excessive use of foreign currency denominated debt, are subject to higher risk in the event of an unexpected shock. Studies also note that large and increasing gross external debt positions may become a concern for an economy in view of the liquidity risk associated with debt servicing (principal and interest) for instance when low interest rate debt needs to be rolled-over into higher interest debt. In extreme cases, these events may lead to a debt crisis, followed by a usually long and painful process of debt deleveraging and restructuring.

Foreign Exchange Earnings were inversely related external public debt with the co-efficient 0.142 and 0.245 in the long run and short run respectively. The findings implied a positive relationship in the long run which was not significant to external debt but after error correction the exports showed a negative relationship with external public debt in the short run which had significant influence over external debt growth as expected. These findings were also in accordance with Hjertholm et al. (1998) who noted that when exports grow faster than debt, the borrowing country does not have to contribute any of its domestic resources when servicing debt. Maana, Owino and Mutai (2008) noted that various stress tests indicated that the sustainability of the country's public debt was vulnerable to export value growth rates.

Conclusion and Recommendations

In conclusion, the study find the three determinants of external public debt analysed significant to its growth, which left unchecked would result in a debt crisis. Social sector spending increases the dependence on external public debt, the study finds that increase in education expenditure increases external public debt. Increased costs of borrowing are also significant determinants of external public debt as high interest payments contribute to increase in the debt stock, there are high costs of debt rescheduling as well as arrears in principal repayments which attract penalties and higher interest charges. Foreign exchange earnings in the country is also a significant determinant of external public debt, low earnings from exports make it difficult to service debt as external public debt is service using foreign exchange earnings.

In view of world crisis taking place and triggered by unmanageable levels of external debt in many countries including the recent Euro-zone Crisis, Kenya as a developing country requires high sensitisation and awareness on its level of external debt and its significant determinants. There is need of controlled spending within the social sector with the public debt management committee advising the levels of spending that allow for sustainable debt. The government should also negotiate for lower rates of borrowing alongside creating a manageable debt portfolio. It should also increase visibility and well maintained records to

track debt owed and repayment periods. There should also be deliberate effort in increasing the countries foreign exchange earnings through higher exports of goods and services and increasing the countries competitiveness in the global market for instance by providing value addition to products as compared to selling them in raw form.

The study recommends further studies on external debt management strategies such as a study on indicators of exposure to foreign exchange risk including the degree of currency mismatch and the share of foreign currency within the total debt which would inform external debt management strategies. The study also recommends further research on determination of appropriate external debt structure in Kenya to attain sustainable debt as inappropriate debt structures can lead to higher interest payments resulting in default exposing the country to severe debt crisis.

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