

TIME SERIES ANALYSIS OF THE RELATIONSHIP BETWEEN GDP GROWTH RATE AND EXTERNAL DEBT IN KENYA

Fredrick T. Mweni 

DBA Candidate, United States International University – Africa, Kenya

fmweni@gmail.com

Amos Njnguna

Associate Professor of Finance, United States International University – Africa, Kenya

Timothy Oketch

Associate Professor of Economics, United States International University – Africa, Kenya

Abstract

The purpose of this paper is to examine the relationship between GDP growth rate and external debt over the period of 1964-2012. The study used time series data obtained from Government of Kenya published statistics, IMF International Financial Statistics, and World Bank reports. To ensure that the data does not violate the assumptions of classical linear regression model, Augmented Dickey-Fuller was used to test for stationarity. Other diagnostic tests were: multicollinearity, the lag length of each variable used in the analysis, unit root, heteroskedasticity, autoregressive conditional heteroskedasticity, auto correlation and normality tests. After conducting the tests, a macroeconomic debt growth model was estimated using ordinary least square to estimate the relationship between GDP growth rate and external debt. The study reveals a negative association between GDP growth and external debt, implying that an increase in GDP growth leads to a reduction in the level of external debt stocks. In terms of the regression analysis, it was established that there is no statistically significant relationship between GDP growth and external debt. The study recommends that the government should focus on policies that encourage economic growth as a way of becoming more self sufficient while ensuring that borrowed funds are utilized in productive investments to enhance the capacity of the country to meet debt repayment obligations.

Keywords: External Debt, GDP, Interest Rates, Time Series, Least Developing Countries

INTRODUCTION

Sustainable economic growth is a predominant concern to all economies (Shabbir, 2013). The most effective tool for economic growth is sound macroeconomic policies focusing on both private and public investment to generate wealth, increase productivity, national income and employment, reduce inflation, and finance public service provision (Saungweme & Mufundaedza, 2013). However, most countries are unable to collect enough revenue to finance national budgets rely on domestic and external debt to finance economy growth and expansion (Ali & Mustafa, 2009; Boboye & Ojo, 2012), making public debt one of the major economic policy issues confronting governments today. Increasing external debt is one of the major economic policy issues today (Maana, Owino, & Mutai, 2008; Shabbir, 2013).

The 2008/2009 global financial crisis created concern about the risk of debt crisis in developing countries, with international finance institutions such as the World Bank and IMF stressing the importance of managing external debt obligations (World Bank, 2013). The global financial crisis and the ensuing economic recession created a debt crisis in developed countries, characterized by soaring public debt in the United States, sovereign debt crisis in Europe, and contagion effects in Asia, Africa, and Latin America (Miller & Foster, 2012). The debt ratio in the United States rose from 60 % to almost 100 % of GDP. In Japan, the debt ratio rose by 50% of GDP. In the United Kingdom, the debt ratio rose by 40% in 2007 and increased to 84% of GDP by the end of 2011 (Nautet & Meensel, 2012). In the euro area, the debt ratio is set to rise from 66% in 2007 to 88 % in 2011 (Nautet & Meensel, 2012), while Ireland recorded almost 90% of GDP. Greece which already had the highest debt ratio in the euro area before the crisis recorded a 50% of GDP. Similarly, in Spain and Portugal the debt to GDP ratio has expanded considerably, by over 30%. In 12 euro countries, public debt ratios exceeded the maximum reference value of 60% of GDP stipulated by the Maastricht Treaty by the end of 2011 (Nautet & Meensel, 2012).

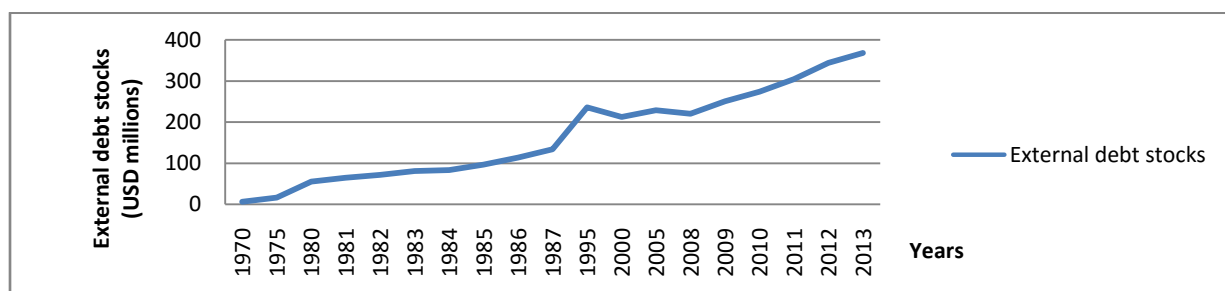
Developing countries have also been the subject of frequent debt crises characterized by low credit ratings and high sovereign spreads (Balassone *et al.*, 2010). The increase in external debt in developing countries has been attributed to loss of revenue during recession and financial intervention in the aftermath of the financial crisis (Nautet & Meensel, 2012). Increased borrowing to fund development projects is also attributed to the inability to raise adequate revenue through taxation (Baldacci, Gupta, & Granados, 2009; Checherita & Rother, 2010). The process of capital formation and industrialisation require heavy investments in infrastructure like roads, railway lines, irrigation channels and power houses. Speedy industrialisation also necessitates heavy import of capital goods such as machinery and equipments and technical know-how from abroad (Nelasco, 2012). External borrowing is seen

as a desirable and an indispensable tool that supplements domestic revenue, funds productive activities, and accelerates economic growth and prosperity (Nelasco, 2012).

External Debt in Sub-Saharan Africa

In Sub-Saharan Africa, the 1950s and 1960s were described as the 'Golden Years', characterized by high and internally generated economic growth (Muhanji, 2010). External debt was comparatively small until the transition to debt-led growth began in the 1970s primarily as a result of the oil crisis (Boboye & Ojo, 2012). The 1973/74 oil price increase by Organization of Petroleum Exporting Countries (OPEC) led to general deterioration in the external payments position of the oil importing developing countries and forced many developing countries to borrow heavily, leading to an increase in the volume of international indebtedness and debt servicing liabilities (Boboye & Ojo, 2012). The 1973 oil price shock also triggered a worldwide inflation and pushed industrial economies deeper into a recession. The decision to fight inflation by using contractionary monetary policies in the rich industrial economies led to an increase in real interest rates. The resultant slow-down in growth dampened the demand for commodity imports from developing countries. Prices for exportable commodities weakened while prices of imports worsened the terms of trade SSA countries (Muhanji, 2010). Countries began borrowing heavily from the international money market leading to a rapid increase in external debt stocks (Muhanji, 2010). In 1970, the external debt in SSA stood at US \$6.1 billion. By 1980, external debt had increased to US \$ 55.3 billion. By 1988, the external debt problem was recognized during the Group of Seven countries meeting at the June 1988 Toronto summit and at the World Bank meeting which recognized the need for debt relief for low income countries. Under the debt relief, low income-countries would be able to reschedule their debt over longer periods at low interest rates, or receive partial debt relief to reduce the debt burden (Greene, 1989). However, this did not stop the increase in external debt stocks. By 1995, the external debt stock had increased to US\$ 235.7 billion as shown in Figure 1.

Figure 1: External debt stocks in Sub-Saharan Africa (1970-2013)



Source: International Debt Statistics (2015)

With the new millennium, external debt levels continued to rise, from US\$212 billion in 2010 to US\$273.4 billion in 2010 and US\$367.5 billion in 2013, as reported in the International Debt Statistics (2015). Table 1.2 shows the increase in external debt stocks from 2000 to 2013.

Iyoha (1999) noted that the increasing of external debt levels was also accompanied by poor economic growth, high inflation, unemployment, rising fiscal deficits and capital flight. According to Boyce and Ndikumana (2012) the 1980s and 1990s were the 'lost decades', characterized by increasing external debt and low GDP growth per annum. In addition to external debt, SSA countries also experienced large scale capital flight, losing a total of \$814 billion. This was higher than the amount of official aid (\$659 billion) and foreign direct investment (\$306 billion) received between 1970 and 2010 (Boyce & Ndikumana, 2012).

The macroeconomic effects were exacerbated by domestic structural weaknesses in the economies, the heavy dependence on the exportation of a narrow range of primary products. The external factors reflected an increasingly hostile international economic environment characterized by low and falling primary commodity prices, declining terms of trade, soaring global interest rates, rising protectionism in the industrialized countries, and dwindling capital flows into African countries that have resulted in mounting current account and balance-of-payments deficits, and an escalating external debt stock (Iyoha, 1999). One disturbing aspect of the macroeconomic management of sub-Saharan African economies in the 1980s was their failure to respond favourably to the ministrations of structural adjustment programmes (SAPS). Structural adjustment programmes were recommended by the World Bank and IMF to restore stabilization in the short term and facilitate sustainable growth in the medium to long term (Boyce & Ndikumana, 2012).

A majority of SSA countries adopted SAPS in the 1980s. Unfortunately, in virtually all sub-Saharan African countries, SA has meant a period of austerity, declining income and living standards, mounting unemployment, and increasing poverty (ILO, 1996). Devaluation, which featured in virtually all SAPS, led to an increase in total debt and debt service payments denominated in domestic currency. The deflation required by the SAPS led to a fall in domestic product and a reduction in national income available for consumption, provision of public services and investment. A reduction in investment meant a fall in economic growth (Boyce & Ndikumana, 2012). Meanwhile, foreign investment, which was expected to increase on the adoption of SAPS failed to materialize, due to a lethal combination of political instability, poor macroeconomic policies, weak economic performance and the debt overhang syndrome. In addition, heavy debt service payments have been shown to also "crowd out" foreign investment. Indeed, aid and other foreign investment were routinely diverted into debt service payments

mainly to pay the multilateral institutions (World Bank and IMF) as debt owed to the multilateral institutions cannot be rescheduled or written off (Iyoha, 1999).

Over the past five years, there are increasing concerns about the possibly adverse consequences of the substantial accumulation of debt by Sub-Saharan African countries. High levels of external debt has led to concerns that debt are starting to hit levels at which it might slow economic growth of low income countries by diverting resources from investment and other productive uses to service debt (Pattillo, Poirson, & Ricci, 2011). There have been concerns that excessive external debt burdens threaten financial stability with adverse consequences for the real economy, and that increases in debt create political pressures that make acceleration of inflation inevitable (Muhanji, 2010). Debt burden can also destabilize the financial system and precipitate a financial crisis (Ezeabasili, Isu, & Mojekwu, 2011).

External Debt in Kenya

In Kenya, despite improvement in revenue performance, data for the period 2009-2013 shows that on average, growth of expenditure at 18.7% outpaces revenue growth rate at 15.5% (IAS, 2014; KPMG, 2014). This deficit has increased reliance to external borrowing to fund the country's development activities (Stiglitz, 2001), hence the need to undertake cautionary austerity measures (IAS, 2014; KPMG, 2014). There are concerns that the rapid increase in external debt has the potential of eroding the country's sovereign rating, particularly if it is not supported by proportionate growth in the size of the economy (Nord, Harris, & Giugale, 2013).

Large capital inflows of foreign capital pose challenges for an economy, especially when exchange rates are fixed. This is all the more so when the inflows come in the form of unhedged short-term debt (Furman & Stiglitz, 1998). Sudden changes in investor sentiment can impose destabilizing capital flows and high interest rates even on countries that have followed prudent macroeconomic policies (Stiglitz, 2001). Short-term debt increases the probability of a crisis, since the ability to repay the short-term foreign-currency-denominated debt is largely tied to the long-term performance of the nontraded sector. Thus, even in cases where the vulnerability to crisis is a result of private decisions, by both foreign lenders and domestic borrowers, the macroeconomic policies pursued by governments create incentives for these decisions (Stiglitz, 2001).

External debt stocks have been increasing since 2000, rising from US\$ 6,189 million in 2000 to US\$ 8,801 million in 2010. There has been also a steady increase from 2011 (US\$ 10,287), 2012 (US\$ 11,569), and 2013 (US\$ 13,471). There is concern among policymakers that the rapid increase in external debt in developing countries such as Kenya has

the potential of eroding the country's sovereign rating, particularly if it is not supported by proportionate growth in the size of the economy (Nord, Harris, & Giugale, 2013).

Table 1: External Debt Data Kenya (In US\$ Millions)

	2000	2005	2008	2009	2010	2011	2012	2013
External debt stocks	6,189	6,483	7,607	8,589	8,801	10,287	11,569	13,471
Ratios								
External debt stocks to exports (%)	219.4	119.7	89.8	113.5	96.4	101.6	103.2	123.6
External debt stocks to GNI (%)	49.1	34.6	25.0	28.0	27.3	30.0	28.9	30.8
Debt service to exports (%)	21.0	10.0	4.9	5.1	4.4	4.3	5.1	5.7
Reserves to external debt stocks (%)	14.5	27.7	38.8	44.8	49.1	41.5	49.4	49.0

Source: International Debt Statistics, 2015

As at end January 2015, the total public and publicly guaranteed debt stood at Kshs 2,601.09 billion or 45.48% of GDP, suggesting an increase of 4.9 % over the end December 2014 position, which has been attributed to increase in both domestic and external debt. External debt increased by Ksh 95.75 billion to stand at Ksh 1,266.45 billion, while the gross domestic debt increased by Ksh 22.68 billion to stand at Ksh 1,334.64 billion in January 2015. The structure of public and publicly guaranteed debt shows that 51.3% of the total debt is domestic debt while 48.7% is external debt.

Table 2: Size of Public Debt in Kenya

Debt category	Kshs (billions)	USD (billions)	Percentage of GDP
Domestic debt	1,334.64	14.56	23.34
External debt	1,266.45	13.82	22.14
Total	2,601.09	28.38	45.48

Source: The National Treasury (January 2015)

Statement of the Problem

The relationship between GDP growth rate and external has been a subject of debate since the 1980s. The Kenyan government has persistently failed to collect adequate resources to finance its budget, and continues to rely on external and domestic debt to finance its developmental activities (Putonoi & Mutuku, 2013). Kenya's public debt surged to 1.9 trillion according to the Quarterly Economic and Budgetary Review (October, 2013), with gross public debt increasing from Sh 1.633 trillion at the end of June 2012 to Sh 1.894 trillion by June 30, 2013, comprising

of 44.5% external and 55.5% domestic debt. There have been concerns among policymakers that the rapid increase in public debt has the potential of eroding the country's sovereign rating, particularly if it is not supported by proportionate growth in the size of the economy (Nord, Harris, & Giugale, 2013). However, there is a paucity of literature on the relationship between external debt and macroeconomic variables in Kenya (Putonoi & Mutuku, 2013). This paper will review studies on the relationship between external debt and economic growth around the world to establish under what contexts different interpretations of the relationship apply. The study investigated the relationship between external debt and GDP growth rate.

LITERATURE REVIEW

Debates over the effects of external debt on economic growth have intensified due to growing deficits around the world. The relationship between debt and economic growth is complex. There are varied and sometimes contradictory findings on how public debt affects the economy from country to country (Miller & Foster, 2012). Reinhart & Rogoff (2009) showed that external debt has a negative impact on economic growth and financial stability, while Nersisyan & Wray (2010) showed that excessive sovereign debt does not necessarily hurt growth. Checherita & Rother (2010), in an investigation of the average impact of government debt per-capita GDP growth among Euro-zone countries over the past 40 years, reported a non-linear impact of debt with a turning point beyond which public debt to GDP ratio exerts a damaging impact on long-term growth – approximately 90-100% of GDP. Confidence levels showed that the onset of negative impacts starts at around 70-80% of GDP, hence the need for prudent indebtedness policies (Checherita & Rother, 2010). Econometric analyses presented by Miller & Foster (2012) report that the negative impact starts when debt-to-GDP ratio is 35%, while debt levels can be high as 90% in developed countries.

External borrowing for productive investment creates macroeconomics stability (Amaoko-Adu, 2002), increases domestic savings, improves welfare and enhances growth (Karagol, 2002; Cecchetti & Zampolli, 2011). When external debt accumulates; repayment and debt-service costs depress domestic investment. Further, debt obligations lead to crowding-out effect that dries capital that should have been invested in the economy (Karagol, 2002). However, some studies have not found evidence of significant crowding effect in some countries (Clements, 2003). High debt levels have been associated with negative impacts including high interest rates, crowding-out private investment, and limited flexibility of the government to effectively respond to economic and national security crises. These negative impacts have the potential of undermining overall productivity growth and cause economic stagnation (Miller & Foster, 2012).

Checherita and Rother (2010) investigated the average impact of government debt per-capita GDP growth among Euro-zone countries over the past 40 years. The findings reported a non-linear impact of debt with a turning point beyond which public debt to GDP ratio exerts a damaging impact on long-term growth – approximately 90-100% of GDP. Confidence levels showed that the onset of negative impacts starts at around 70-80% of GDP, hence the need for prudent indebtedness policies (Checherita & Rother, 2010). Econometric analyses presented by Miller & Foster (2012) the negative impact starts when debt-to-GDP ratio is 35%, while debt levels can be high as 90% in developed countries.

Reinhart and Rogoff (2010) used a multi-country historical dataset on public (government debt) to examine for a systematic relationship between public debt levels, growth and inflation. The study reported that whereas the link between growth and debt seems relatively weak at “normal” debt levels, median growth rates for countries with public debt over roughly 90 percent of GDP are about one percent lower than otherwise; average (mean) growth rates are several percent lower. The researchers also reported that the relationship between public debt and growth is remarkably similar across emerging markets and advanced economies. However, this was not the case for inflation as the study found no systematic relationship between high debt levels and inflation for advanced economies as a group (albeit with individual country exceptions including the United States). By contrast, in emerging market countries, high public debt levels coincided with higher inflation.

Plane, Bonjean, and Cohade (2012) based their study on the famous “Growth-in-a-Time-of-Debt” study by Carmen Reinhart and Kenneth Rogoff that demonstrated that average post-WW2 economic growth is dramatically declining in advanced economies, once the debt-to-GDP ratio is above a 90% threshold. The study explored the relevance of the exogenous threshold using up-to-date econometric techniques, and revealed an endogenously-estimated threshold around a debt-to-GDP ratio of 115%, above which the negative debt-growth link changes sign.

Atique and Malik (2012) carried out a study to examine the determinants of economic growth in Pakistan and the impact of domestic and external debt on the economic growth separately over the period 1980-2010. Using the Ordinary Least Square (OLS) approach to Cointegration, Unit Root Testing, Serial Correlation Testing, test for checking Heteroskedasticity and CUSUM test of stability, the researchers demonstrated that there is an inverse relationship between the domestic debt and economic growth. The external debt and economic growth was also found to be inversely related. These relationships were found to be significant as well. The findings concluded that the amount of external debt slows down the rate of economic growth more than the amount of domestic debt.

Shabbir (2013) explored the relationship between external debt and economic growth in 70 developing countries over the period of 1976-2011. The study reported that increase in external debt stock reduces the fiscal space to service external debt liabilities and thus dampens the economic growth. High levels of external debt also reduces the level of private fixed capital formation in the countries surveyed. With regard to exploring the role of investment towards economic growth, the study established that both the foreign direct investment and the fixed capital formation play a positive role in increasing economic growth while openness positively influences the development of welfare in developing economies.

Ogunmuyiwa (2010) examined whether external debt actually promotes economic growth in developing countries using Nigeria as a case study. Time series data covered the years 1970-2007. The findings analyzed using regression showed that there is no causality between external debt and economic growth, and that the relationship was weak and insignificant in the Nigerian case. However, in a study carried out by Ezeabasili, Isu, and Mojekwu (2011) to investigate the relationship between Nigeria's external debt and economic growth between 1975 and 2006, a period characterized by external debt escalation. Using the cointegration approach, the study confirmed the existence of a one cointegrating relationship at 1% level of significance. Error estimates showed that there is a negative relationship between external debt and economic growth in Nigeria; a 1% increase in external debt led to a 0.027 decrease in the Gross Domestic Product. As such the researcher recommended that the country should take into consideration low debt-to-GDP, low debt service/GDP capacity ratios when negotiating future debt agreements.

Boboye & Ojo (2012) investigated the effect of debt burden on economic growth and development. A regression analysis of OLS was used to analyze secondary data from Central Bank of Nigeria (CBN), Economical and Financial review, Business times, Financial Standard and relevant publication from Nigeria on variable like National Income, Debt Service Payment, External Reserves, Interest rate among others. The findings showed that the external debt burden had an adverse effect on the nation income and per capital income of the nation. High level of external debt led to devaluation of the nation currency, increase in retrenchment of workers, continuous industrial strike and poor educational system, leading to economic depression. Based on these findings, the researcher recommended that debt service obligation should not rise above foreign exchange earnings and that debts should be used for appropriate profitable investments where they can generate reasonable amount of money to fund debt repayment.

Were (2001) established that low income countries classified as HIPCs have continued to experience difficulties in managing and servicing their huge stocks of external debt. Most of

these countries including Kenya are in sub-Saharan Africa. The relatively high level of Kenya's external indebtedness and rising debt burden has serious implications on the country's development and debt sustainability initiatives. In a study examining the magnitude and structure of Kenya's external debt and its impact on growth and private investment, Were (2001) showed that Kenya's external debt is mainly official, of which a bigger proportion is from multilateral sources and that it has been rising over the years with debt burden indicators increasing steadily in the early 1990s. Using time series data covering the period between 1970 and 1995, the study confirmed external debt accumulation and its negative impact on economic growth and development. While the government of Kenya continued servicing external debt, the inflows crowded out private investment, hence the need for the government to create debt relief measures while ensuring that there is efficiency and increased productivity of public investments.

Kasidi & Said (2013) examined the relationship between external debt and economic growth in Tanzania over the period 1990-2010. Data was collected from the Bank of Tanzania (BoT), President's Office of Finance, Ministry of Finance, World Bank, and International Monetary Fund publications. The findings demonstrated that there is a significant relationship between external debt and debt service on GDP growth. The total external debt stock had a positive effect of 0.36939 on GDP growth, while debt service payment had a negative effect of 28.517 on the GDP growth. Cointegration tests showed that there is no long run relationship between external debt and GDP.

Putonoi & Mutuku (2012) concentrated on the effects of domestic debt owing to the shifting composition of public debt in favour of domestic debt in Kenya. The study used advanced econometric techniques and quarterly time series data from 2000 to 2010. The Jacque Bera (JB) and Augmented Dickey-Fuller (ADF) tests were used to investigate the properties of the macroeconomic time series in the aspect of normality and unit roots respectively, while the long run relationship between the variables was investigated using the Engel-Granger residual based and Johannes VAR based cointegration tests. There was evidence of cointegration hence an error correction model has been used to capture short run dynamics. The results demonstrated domestic debt expansion in Kenya, for the period of study. There was a positive and significant effect on economic growth. Due to this, the researchers recommended that the Kenyan government should encourage sustainable domestic borrowing provided the funds are utilized in productive economic avenues.

There seems to be an agreement that at moderate levels, debt improves welfare and enhances growth (Cecchetti & Zampolli, 2011) and that higher debt levels appear to have a disproportionately larger negative effect on growth (Reinhart & Rogoff, 2009). However, while

researchers rely on the size of debt relative to GDP as the most reliable assessment measure for the impact of debt on economic growth, the policy environment plays an overriding role in determining whether a specific debt level is sustainable (Miller & Foster, 2012). Again, some studies have reported a puzzling causality. For instance, Balassone, Francese & Pace (2011), in a study of debt and growth in Italy, established that peaks of debt to GDP ratio coincide with expansionary cycles in world GDP, possibly due to the effect of debt on capital formation and accumulation. Further, while Reinhart & Rogoff (2009), showed that debt has a negative impact on economic growth and financial stability, Nersisyan & Wray (2010) showed that excessive sovereign debt do not necessarily hurt growth and that Reinhart & Rogoff's findings are not relevant to the case of the United States. This implies that single country studies may be more beneficial in understanding the causality, rather than overgeneralization that occurs in multiple-country studies, since individual countries have their own microeconomic and macroeconomic policies.

Most Less Developing Countries (LDCs) are classified as severely indebted and low income countries (Boboye & Ojo, 2012). Due to the inability to collect enough revenue to finance national budgets, most developing countries rely on public external and domestic debt to realize the positive effects of debt such as higher growth and resultant capacity to service and repay both foreign and internal debt. Over the years, fiscal policy has focused on reducing external borrowing and relying heavily on domestic borrowing to finance budget deficits. This so even though it is widely understood that external borrowing, specifically for productive investment, creates macroeconomics stability. Capital inflows have a positive effect on domestic savings which in turn cater for investment demand. When external debt accumulates, repayment and debt-service costs depress domestic investment. Further, debt obligations lead to crowding-out effect that dries capital that should have been invested in the economy (Karagol, 2002). However, some studies have not found evidence of significant crowding effect in some countries (Clements, 2003).

External indebtedness have remained prominent in policy debates while less attention is being paid to domestic debt. Domestic debt stimulates the development of deep and liquid internal financial markets, protects from unfavourable external shocks, and mitigates foreign exchange risk (Del, 2003). However, domestic debt has a crowding-out effect on risky private sector investments. Its benefits notwithstanding, domestic debt are understood to be more expensive than external financing. This is because the interest load of domestic debt has the potential of absorbing important government revenue hence crowding-out pro-poor and growth enhancing expenditures. High-yielding government debt held by commercial banks may also

make these financial institutions to be self-satisfied about costs hence decreasing their mobilization of deposits and financing of private sector projects (Hauner, 2006).

METHODOLOGY

Time series data was obtained from IMF International Financial Statistics for GDP growth rate and external debt. The data was to cover the three political regimes in post-independence Kenya (1964-2012), however external debt statistics were only available from 1972 onwards hence the 1972-2012 study period. A simple open macroeconomic debt growth model was used. A regression method based on Ordinary Least Square (OLS) technique was used to estimate the relationship between GDP growth rate and external debt in Kenya covering the 1972-2012 period. The model specification was presented in the form of:

$$ED = f(\text{GDP}) \dots\dots\dots i$$

Where

ED = External debt

GDP = Gross Domestic Product growth rate

In stochastic form, the question becomes:

$$ED = \beta_0 + \beta_1 \text{GDP} + \varepsilon \dots\dots\dots ii$$

Where:

ε = Error term

β_1 = slope of the regression equation

Since the data is in time series the Augmented Dickey-Fuller (ADF) was used to test for stationarity. To ensure that the data does not violate the assumptions of classical linear regression model (CLRM), the study tested for heteroskedasticity, autoregressive conditional heteroskedasticity (ARCH), autocorrelation and normality.

ANALYSIS AND FINDINGS

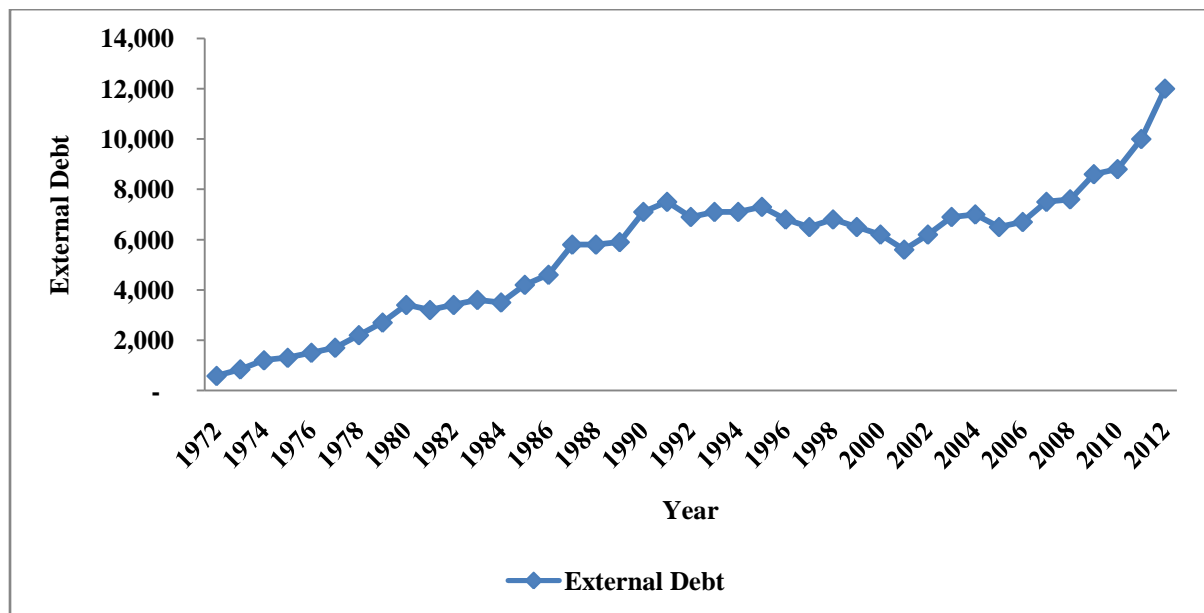
Descriptive Statistics

External Debt

The external debt increased steadily from 1972 to 2012, with a decline from the early 1990s to 2002, and an increase from 2002 to 2012, as presented in figure 1. External debt increased despite the substantial increase in the price of coffee in the 1970s, which quadrupled between 1975 and 1977 (Gertz, 2010). The increase from the 1970s to early 1990s can be attributed to the oil crisis which began in 1973 due to substantial petroleum shortages and elevated prices. The crisis peaked in 1979 when the Yom Kippur War and the Iranian revolution triggered interruptions in oil exports from the Middle East. Kenya signed a Structural Adjustment Loan

with the World Bank in 1980 and began implementing reforms to liberalize its economy. Further, countries began making adjustments in domestic economies to ensure efficient petroleum usage and controlled demand to offset elevated prices in the global market. In 1990 the government began a reduction in government expenditure as a result of a major policy shift to the economy towards an outward-orientation. In 1991 and 1992, bilateral and multilateral donors stopped lending to Kenya due to concerns over economic mismanagement leading to a reduction in external debt (Bruton and Banerji, 1996). The increase in external debt from 2002 onwards is attributed to the change of political regime, and the implementation of the Kenya Economic Recovery Strategy for Wealth and Employment Creation, marked by increased external borrowing to fund development expenditure.

Figure 2: Trends in External Debt (in millions)



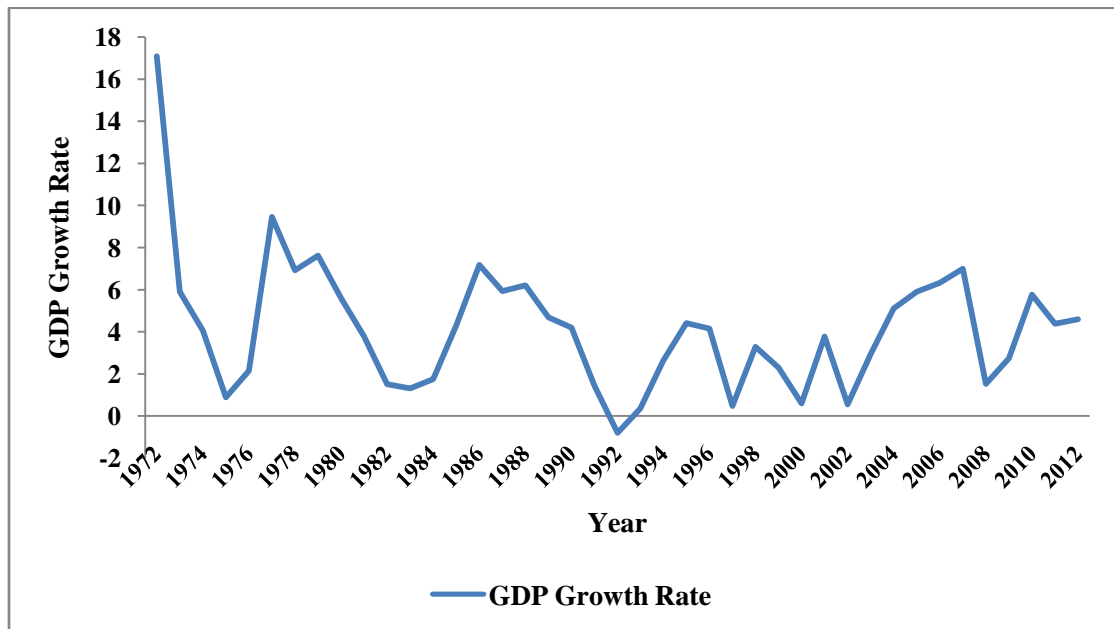
GDP Growth Rate

Based on secondary data, Kenya's GDP growth rate has fluctuating over time (figure 2). The country experienced a steep decline in economic growth from 1972 to 1975. Gertz (2010) stated that Kenya suffered a balance of payments crisis in 1970–1971, which was exacerbated by the first oil shock two years later. The effect of the oil crisis could not even be absorbed by the boom in the manufacturing sector, over 25% between 1971 and 1973. However, from 1975 there were increased earnings from the quadrupling of coffee prices in the global market, between 1975 and 1977, leading to an improvement in economic growth. A decline in coffee

prices from 1978, coupled by the oil crisis into the early 80s eroded gains earned in the second half of the 1970s (Gertz, 2010).

A sharp increase in economic growth in 1985, followed by a 10-year decline until 1992 can be attributed to the negative effect of the SAPs which began in 1980. Unsteady growth from 1992 to 2002, has been attributed to economic mismanagement characterized by the collapse of parastatals, corruption, and adverse weather conditions. Increased growth from 2002 to 2007 is attributed to the Kenya Economic Recovery Strategy for Wealth and Employment Creation (2003-2007), while the sharp decline between 2007-2008 was caused by the 2007/08 Post Election Violence. From 2009, economic growth increased despite the 2009/2010 global financial crisis, and declined in 2011 due to the oil shock caused by the Libyan shut-downs (Davis, 2011).

Figure 3: Trends in GDP Growth Rate



Correlation and Regression Analysis

The correlation analysis results for external debt and GDP growth rate indicate a Spearman's correlation coefficient of -0.1573 with a P value of 0.3260. This suggests that external debt and GDP growth rate are negatively related but the relationship is insignificant since the P value is greater than 0.05. The study plotted GDP growth rate against external debt and the relationship shows that at GDP Growth rate and external debt are negatively related though with moderate fluctuations as external debt rises. The regression results for GDP growth rate on external debt indicate an insignificant F statistic of 1.35 and an R square of 0.0351 percent (table 4.9). The

value of R square indicates that 3.5 percent of variations in external debt are explained by variations in GDP growth rate. This suggests that GDP growth rate poorly fits the model. Further, the coefficient for GDP growth rate is -0.0322 and has a p value of 0.253 implying that GDP growth rate does not statistically influence external debt.

Table 3: GDP Growth Rate on External Debt

Source	SS	Df	MS	Number of obs = 39		
				F(1, 37) = 1.35		
Model	0.0277	1	0.0277	Prob > F = 0.2532		
Residual	0.7612	37	0.0206	R-squared = 0.0351		
				Adj R-squared = 0.0090		
Total	0.7889	38	0.0208	Root MSE = 0.1434		

	Coefficient	Standard Error	T	P>t	[95% Confidence Interval]	
					Lower	Upper
GDP Growth Rate	-0.0322	0.0277	-1.16	0.253	-0.0884	0.0240
Constant	0.1739	0.0385	4.51	0.000	0.0958	0.2519

DISCUSSION OF RESULTS

Most Less Developing Countries (LDCs), such as Kenya, are classified as severely indebted (Boboye & Ojo, 2012) and are generally unable to collect enough revenue to finance national budgets, hence they rely on external debt to finance budget deficits. The growth in Kenya's debt composition shows that the country's external borrowing is increasing at a higher rate than domestic borrowing. In essence, Kenya's economic policy pursues external debt to fund productive investments, such as infrastructural developments, to create macroeconomic stability (Amaoko-Adu, 2002), increase domestic savings, improve welfare and enhance growth (Karagol, 2002; Cecchetti & Zampolli, 2011), yet the findings in this study shows that there is a negative relationship between GDP growth and external debt, even though this effect is not significant.

The results of the study show that while external benefits has benefits, Karagol (2002) argues that as the level of a country's external debt stock increases, repayment and debt-service costs depress domestic economic activity. Debt repayment obligations can lead to crowding-out and dry up capital that should have been invested in the economy (Karagol, 2002). Panizza and Presbitero (2012) also reported that high external debt levels have been associated with negative impacts including high interest rates, crowding-out private investment, and limited flexibility of the government to effectively respond to economic and national security

crises. These negative impacts have the potential of undermining overall productivity and decrease economic growth.

There are studies that have been done in Kenya, but majorities have concentrated on domestic debt. For instance, Nyambura (2012) investigated the relationship between domestic debt and economic growth in Kenya. The findings in the study revealed a weak positive relationship between domestic debt and economic growth. Another study by Maana, Owino, & Mutai (2008) also concentrated on domestic debt in Kenya and how it affected economic growth over the 1996-2007 period. The study concluded that the significant rise in domestic debt resulted in higher domestic interest payments which present a significant burden to the budget. Using a modified Barro growth regression, the results indicated that domestic debt expansion had a positive but not significant effect on economic growth during the period. Putonoi and Mutuku (2012) reported a positive effect of domestic debt on economic growth.

Other studies in developing countries have reported similar results. Adam (2004) found out that large debt accumulations in LDCs resulted to debt overhang. The debt overhang discourages investments and affects future output negatively. In Sub-Saharan Africa, the study established one of the causes of low economic growth rates in SSA countries, compared to Asian countries, is the large debt service payments. Further, SSA countries are more likely to borrow externally because of low domestic savings. Other studies have also reported similar results of an inverse relationship between GDP growth and external debt (Atique and Malik, 2012; Were, 2001). Shabbir, (2013) and Ezeabasili, Isu, and Mojekwu (2011) reported that external debt dampens growth, while Ogunmuyiwa (2011) reported that the relationship between external debt and GDP growth is not statistically significant. However, Kasidi and Said (2013) demonstrated that there is a significant relationship between external debt and debt service on GDP growth in Tanzania. However, further tests conducted on the data they collected showed that although there was a significant relationship, it was short term.

Checherita and Rother (2010) reported that there is a non-linear impact of debt with a turning point beyond which public debt to GDP ratio exerts a damaging impact on long-term growth – approximately 90-100% of GDP. Plane, Bonjean, and Cohade (2012) demonstrated that in developed countries, once the debt-to-GDP ratio is above a 90% threshold in developed countries, GDP growth declines dramatically.

At moderate levels, debt improves welfare and enhances growth (Cecchetti & Zampolli, 2011) and at higher debt levels appear to have a disproportionately larger negative effect on growth (Reinhart & Rogoff, 2009). This means that for developing countries, the effect of excessive debt can potentiate a crisis (Boboye & Ojo, 2012). Miller and Foster (2012) cautions that while researchers rely on the size of debt relative to GDP as the most reliable assessment

measure for the impact of debt on economic growth, the policy environment plays an overriding role in determining whether a specific debt level is sustainable.

CONCLUSIONS

The correlation findings show a negative association between GDP growth and external debt, implying that an increase in GDP growth leads to a reduction in the level of external debt stocks. Regression results indicate that there is no statistically significant relationship between GDP growth and external debt. Owing to the existence of divergent findings in literature, this study is an important addition to time-series analyses on the relationship between GDP growth and external debt in the Sub-Saharan region. The study recommends that the government should focus on policies that encourage economic growth as a way of becoming more self sufficient and utilize external borrowing in productive investments to enhance the capacity to meet debt repayment obligations.

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