



THE OPTIMAL SIZE OF GOVERNMENT EXPENDITURE AND ECONOMIC GROWTH IN KENYA 1963 – 2015

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Abstract

The effect of government size on economic growth has given rise to conflicting views among economists. Some view a large government size as harmful to economic growth due to inefficiencies inherent in government. The other group of economists argues that a larger size of government is likely to enhance economic growth. Kenya's public expenditure has been experiencing rapid growth since 1963, while GDP growth over the same period has not followed the same path. The main objective of this study was to examine the effects of government size on economic growth in Kenya for the period 1963-2015. The specific objectives for the study were to determine the effect of government size on economic growth in Kenya; determine the relationship between government size and economic growth in Kenya, and estimate the optimum size of government expenditure that maximizes economic growth in Kenya. This study adopted the basic growth accounting and used the production function of Solow to relate the rate of economic growth to capital and labour accumulation and total factor productivity. The estimation model examined Armey's idea of a quadratic curve that explains the level of government expenditure in an economy and the corresponding level of economic growth. Time series data was used for the period under investigation. The regression equation for this study was quadratic or a second-degree polynomial function and since it does not present any special problems Ordinary Least Square (OLS) estimation technique was used. The major findings of this study are that Government size has indeterminate relationship with economic growth. The growth maximizing government expenditure as a percentage of GDP was estimated to be 23 percent. Private investment and Trade openness had positive relationship with economic growth in Kenya. On the contrary labour force growth had negative relationship with

economic growth. Recommendations drawn from this study are: Government size downsizing to 23 percent of GDP, increasing trade with other countries, privatization to encourage investment and finally government check population growth through family planning programs.

Keywords: Optimal government size, Capital and Labour accumulation, Trade openness, Government downsizing

INTRODUCTION

Background

The subject of the relationship between size of government and economic growth has raised a lot of interest among economists and policy makers for centuries. According to Bergh and Henrekson (2011) Government plays an important role in economic growth. It imposes both positive and negative effects on economic development. Traditionally, the theory of market failures has justified government interventionism while the theory of State failures has rather insisted on the possible harmful effect of the government's activity and expansion. According to Ahmad and Ahmed (2005) there is increasing concern over the relative size of government in both developed and developing economies. Importance of public expenditure is evident on account of public good provision, accommodating externality, merit goods and for the pursuit of socially optimal level of investment both public and private.

There are two competing views relating to the impact of government size on economic growth. According to one group of economists, a larger government size is likely to be harmful to the economic growth due to the inefficiencies inherent in government. According to Barro (1990) a large government size may have negative impact on economic growth due to government inefficiencies such as excess burden of taxation, distortion of the incentives systems and interventions to markets. The other group of economists' is of the view that a larger size of government is likely to enhance economic growth. Government has authority to remove and regulate negative externalities. Government plays an important role in removing interest conflicts between private and public sector (Ram 1986).

Theories of government expenditure growth can be broadly classified into "institutional" and "a-institutional" approaches. Institutional approaches focus on political or public choice considerations, such as the roles of government bureaucrats, voter-taxpayers, and special interests as they engage in rent-seeking; Institutional approaches also rely upon structural changes and major shocks like war and economic crises to the political system. A-institutional

theories emphasize the impacts of changing market conditions that is, income and price effects on the demands for government services (Borcherding and Lee, 2004).

The institutional theory is related to the concepts of Wagner's Law and the displacement effect of Peacock and Wiseman (1961). The Wagner's Law predicts that government expenditure increases at the faster rate than the growth of the income level while the notion of displacement effect argues that government spending may shift permanently to a new level as a result of major disturbances such as wars and economic crises (Wagner and Weber, 1977). Openness is also proposed as an additional factor that has a positive effect on the scope of government, with the relationship being robust when the risk associated with terms of trade is highest (Rodrik, 1998). The other economic interpretation for government spending and growth is explained by the Keynesian view. This view suggests that government spending contributes positively to economic growth through the multiplier effect on aggregate output; a high level of government consumption is likely to increase the level of employment, profitability and private investment. Branson (1989) states that government expenditure raises aggregate demand that will lead to an increase in output. These two theories, Wagner's law and the Keynesian view also explain direction in terms of causality between government expenditure and economic growth which has been a topic of interest among researchers.

As governments expenditures continue to grow, understanding optimal government spending level is particularly important. According to Armev (1995) low government expenditure increases economic growth until it reaches a certain level, on the contrary excessive government expenditures reduce economic growth. Barro (1989), Armev (1995), and Scully (1998, 2003) did theoretical and empirical research on the existence of an optimal size of government as depicted by a concave curve. This theory argued that as government continues to grow as a share of GDP, expenditures are channeled into less productive (and later counterproductive) activities, causing the rate of economic growth to diminish and eventually decline.

According to Korpi (1996) economists have long been interested in the twin questions of whether economic prosperity is fostered by larger or smaller governments, and by more interventionist or more laissez faire government policies. As a consequence, policy advice to governments has often hinged on perceived answers to these questions. The concept of state intervention to correct inefficiencies stresses that government activities contribute vital public goods such as education, health, defense and security and infrastructure. According to Grossman (1988) and Dalamagas (2000) the government provides defense, social security, judiciary, property rights, regulations, infrastructure development, workforce productivity, community services, economic infrastructure, regulation of externalities, and marketplace. In

addition, when both public and private capital formations are complementing to each other, government activities may encourage the private sector to increase their investment which consequently boost economic growth. The theory of government failure argues that government activities will distort economic growth due to their inefficient operations and failure to meet public demands. There are several potential factors that could cause government inefficiencies such as bureaucracy in public sector, political patronage and rent-seeking activities. Poor government's fiscal and monetary policies of the country may also impede economic growth (Ram 1986).

Empirical findings also do not seem to indicate consensus on the impacts of the size of government on growth. A study by Ramayandi (2003) on the impact of government size on economic growth in Indonesia shows that government size tends to have negative effects on economic growth. According to this study such negative relationship will continue both in the short and long run respectively. Contrary to this study, Bergh and Henrekson (2011) carried out a study on the relationship between the size of government and economic growth using panel data. They noted that there is potential for increasing growth by restructuring taxes and expenditure so that the negative effects on growth for a given government size are minimized. In their study, Barro and Sala-i- Martin, (1992) established that direct expenditure that increases capital stock (physical or human) leads to higher flows of government funds. Akpan (2005) used a disaggregated approach to examine the relationship between different expenditures and economic growth. Components of public expenditure considered in his analysis were capital, recurrent, administrative, economic service, social and community service, and transfers. The study found no significant relationship between economic growth and most components of government expenditure in Nigeria. Handoussa and Reiffers (2003) studied the relationship between size of government and economic growth in the case of Tunisia to establish the validity of the Armey curve. This study not only observed the presence of the Armey curve but also empirically argued that 35% of government expenditure as a share of GDP is the ideal threshold required in the context of Tunisia.

Government Expenditures and Economic Growth

According to Gwartney (1998) certain functions of government such as the protection of individuals and their property and the operation of a legal system to resolve disputes should enhance economic growth. Governments can enhance growth through efficient provision of public infrastructure. However, as government continues to grow and more and more resources are allocated by political rather than market forces, two major factors suggest that the beneficial effects on economic growth will wane and eventually become negative. First, the higher taxes

and or additional borrowing required to finance government expenditures exert a negative effect on the economy. Thus, even if the productivity of government expenditures does not decline, the disincentive effects of taxation and borrowing, as resources are shifted from the private sector to the public sector, will exert a negative impact on economic growth.

Secondly Kirzner (1973) argues that, as government grows relative to the market sector, diminishing returns will be confronted. That is, as it expands into other areas, such as the provision of infrastructure and education, the government might still improve performance and promote growth, even though the private sector has demonstrated its ability to effectively provide these things. If the expansion in government continues, however, expenditures are increasingly channeled into less and less productive activities. Eventually, as the government becomes larger and undertakes more activities for which it is ill suited, negative returns set in and economic growth is retarded.

Overview of Economic Growth in Kenya

In Kenya the performance of the economy during the first decade of independence in 1963 was impressive. The growth of real GDP averaged 6.6 percent per year over the period 1964 –1973, and compared favorably with some of the Newly Industrialized Countries (NICs) of East Asia such as Malaysia and Singapore (World Bank, 2004). This growth was in large part driven by rapid expansion in the agricultural sector, activist fiscal policies, and the import substitution industrialization (ISI) strategy pursued by the Government of Kenya. During this period, the Government pursued a monetary policy that kept inflation low and attempted to reduce its reliance on foreign aid. Fiscal policy was cautious and serious efforts were made to keep budget deficits at sustainable levels (Republic of Kenya, 2004).

Toward the end of the 1970s, Kenya's economic performance began to deteriorate as a result of several factors. These included the collapse of the East African Community (EAC) in 1977; the second oil shock in 1977; and the anti-export bias of the import substitution strategy (Ikiara, Moses and Wilfred, 2004). In the early 1990s Kenya experienced negative economic growth through high inflation and interest rates, and reduced aid flows as donors suspended aid disbursements due to frustrations with widespread corruption. This negative impact on growth continued through to the year 2003 when GDP growth rose to 1.5 percent in 2003, but per capita income growth remained negative at -0.3 percent (World Bank, 2004). Economic growth continued on an upward trend from 2003 until it culminated to a growth rate of 7.1 percent in 2007. In 2008, when Kenya experienced the post election violence, the growth rate of the economy declined to 1.7 percent. However there has been an upward trend since then and 2011 GDP grew by 5.6 percent.

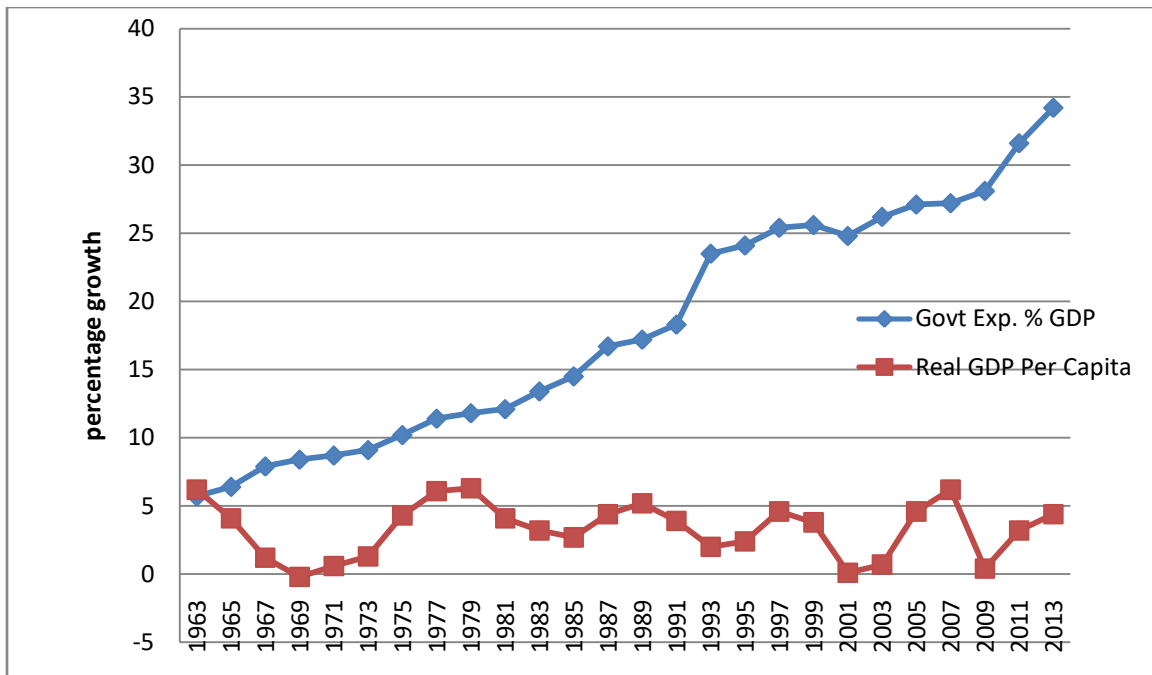


Figure 1 GDP and government size growth in Kenya (1963 – 2013)
 Source: Statistical abstracts and economic surveys of different years

Figure 1 shows the trend of economic growth and government size growth from 1963 to 2012. Government size has been increasing gradually from 6.2 percent as a share GDP in 1963 to 38.5 percent of GDP in 2011. During the same period, the rate of growth of GDP was cyclical, depicting no clear pattern and responsiveness to changes in government size. Despite the widespread government strategies to foster economic growth, increase in government expenditure has tended to grow faster than that of GDP as shown in figure 1.

The trends in this figure reveal a widening gap between government size and GDP growth and therefore a concern that this study is interested in. The government of Kenya has initiated several programs to boost economic growth which include the economic recovery strategy, the vision 2030 and the economic stimulus strategy.

Economic Recovery Strategy

This was an economic recovery action plan that was supposed to guide economic policies for five years from 2003, by the NARC government. The action plan was to harmonize strategies for accelerated economic. The plan focused on job creation through sound macroeconomic policies, improved governance, efficient public service delivery and an enabling environment for private investment. The implementation of this strategy was to translate into sustained economic growth, wealth creation and poverty reduction in Kenya. To improve public expenditure

management, the strategy identified three core fiscal objectives to be pursued over the period 2003-2007: Fiscal sustainability, expenditure restructuring for growth and poverty reduction and improving public service delivery. This was aimed at enhancing governance in the public sector through efficient and effective utilization of public resources (Republic of Kenya, 2003). The economy of Kenya responded to this strategy with GDP growth taking an upward trend up to 7.1 percent by 2007. However the economy took a downward trend after the 2008 post election violence.

The Kenya Vision 2030

Kenya vision 2030 is the country's development programme covering the period 2008 to 2030. The objective of Vision 2030 was to help transform Kenya into a middle income country providing a high quality of life to all its citizens. A medium term fiscal expenditure plan to run for the period 2008-2012 was launched with the aim of increasing real GDP growth from an estimated 7 per cent in 2007 to 8.5 per cent by the years 2009-2010; and to 10 per cent by 2012. Over the next five years, savings and investment levels were targeted to increase in order to support economic growth and employment creation envisaged under the Plan (Republic of Kenya, 2007). The targets of vision 2030 for the first medium term were not achieved with economic growth remaining below 5 percent.

The Economic Stimulus Program (ESP)

ESP was initiated by the government of Kenya to boost economic growth and lead the Kenyan economy out of a recession situation brought about by economic slowdown. This program was introduced in the 2009/2010 budget speech. The aim of ESP was to jumpstart the Kenyan economy towards long-term growth and development, after the 2007/2008 post election violence, an increase in oil and food prices and the effects of the 2008/2009 global economic crisis. The total amount allocated to ESP was 22 billion Kenya shillings which was to go towards construction of schools, horticultural markets, *jua kali* sheds and public health centres in all the 210 constituencies then. The intervention measures of the ESP were framed within the broader policy objectives of the Vision 2030. These measures were expansion of irrigation-based agriculture, construction of wholesale and fresh produce markets, construction and stocking of fishponds with fingerlings, construction of *jua kali* sheds, tree planting and construction of social infrastructure such as schools, health centres and roads (Republic of Kenya, 2010)

The ESP was effective in the construction of schools, health centres, *jua kali* sheds and fishponds as well as providing fingerlings to the beneficiaries. The programme was effective at the grass root level because it was being implemented at the constituency level.

However this programme did not jumpstart economic recovery to the envisioned medium term growth path as outlined in the Vision 2030. The objective of stimulating consumption which would in turn affect demand and hence economic growth was not fully achieved. The programme also failed to solve the challenge of food security in the country, despite the agricultural programmes initiated (UNICEF, 2011)

Public Expenditure in Kenya

The structure of Kenya’s public expenditure can broadly be categorized into capital and recurrent expenditure (Republic of Kenya, 2010). Public expenditure as a share of GDP in Kenya has been on a general upward trend since the country gained independence.



Figure 2 Public Expenditure Trend in Kenya (Growth rate), 1963- 2011

Source: Statistical abstracts different years.

Figure 2 shows that public expenditure growth was increasing up to 1967 when there was a sharp decline until 1970. From 1971 the growth of public expenditure has been on a gradual

increase until 2011. Despite the rapid growth rate in public expenditure in Kenya, economic growth has not followed the same pace as shown earlier in figure 1.

In Kenya, public opinion in economic debate has over the years been of the view that government is spending too much, particularly in recurrent expenditure. According to the Republic of Kenya (2008), public expenditure levels in 2006/2007, at 29.9 percent of the GDP, were way above that for most low income countries such as Ghana and Uganda which was 19 percent and 21 percent respectively. This realization perhaps, has informed the fiscal strategy in the country, which focuses on expenditure reduction, expenditure restructuring and expenditure reform.

Table 1 GDP Growth and Government Size

Year	2004	2005	2006	2007	2008	2009	2010	2011
GDP Growth%	4.9	5.9	6.3	7.1	1.7	2.7	5.8	4.4
Share of exp to GDP %	28.2	28.5	29.9	34.3	27.9	30.3	33.2	34.5

Source: statistical abstracts of different years

Table 1 shows growth of the size of government in Kenya from the year 2004 to 2011. From the table there is evidence that the size of government has been rising. The growth of government size is that of double digit while GDP is growing at a single digit. The public expenditure report (2010) asserts that the public wage bill has been increasing in real terms in proportion to GDP. The increasing wage bill in turn accounts for the rapid growth in government size as shown in the table above. Therefore a review of the overall size and functions of the public sector should be undertaken to ensure that the resource allocation is efficient, and if not, that the resources can be reallocated to the most productive priorities (Republic of Kenya, 2010).

Statement of the Problem

The government of Kenya aims to increase its annual GDP growth rate to 10 percent and maintain that double digit average in line with the Vision 2030. To achieve its growth targets, the government proposed to change not only the share of public expenditure in GDP, but also the composition of the same, with an increasing share of development expenditure (Republic of Kenya, 2009). Despite the measures by the government, through the economic recovery strategy, the vision 2030 and the economic stimulus program, public spending has continued to grow rapidly and economic growth has not reflected in the same pace in Kenya. There seems to

be a wide gap between government size growth and achievement of economic growth despite the huge budget expenditures allocated to various sectors year-in-year out through the national budget (Foster, 2008). Studies by Njuguna (2009), Maingi (2010) and Muthui, Kosimbei, Maingi and Thuku (2013) have shed light on components of government expenditures that contribute to economic growth as well as those that do not. In contrast this study focused the size of total public expenditure as a share of GDP and the relationship between government size and economic growth in Kenya.

Research Questions

1. What is the relationship between government size and economic growth in Kenya?
2. How does growth of government size and economic growth relate to the Arme y curve concept in Kenya?
3. What share of government spending as a percentage of GDP maximizes economic growth in Kenya?

Research Objectives

General Objective

The general objective of this study was to analyze the existence of an optimal size of government in Kenya as depicted by the Arme y Curve.

Specific Objectives

1. To determine the relationship between government size and economic growth in Kenya.
2. To determine the relationship between government size growth and economic growth in relation to the Arme y curve concept in Kenya.
3. To estimate the optimal size of government expenditure that maximizes economic growth in Kenya.

Significance of the Study

Analyzing the impact of government size will enable policy makers to restrict government spending to levels that contribute positively to economic growth. The Arme y curve provides the possibility of calculating optimal government expenditure percentages, and therefore may well be used as a policy tool in determining the efficient level of government expenditure.

There is need for both the national and county governments to understand the effects of various expenditures to economic growth and therefore this study is significant to them.

Scope of the Study

The study utilized data available from the KNBS, Economic Surveys and other relevant data. Time series data from 1963 to 2015 was used, covering a period of fifty three years

LITERATURE REVIEW

Theoretical Literature

There is sufficient evidence in economic literature on the relationship between public expenditure and economic growth which dates back to the 19th century.

With the advent of welfare and public sector economics the role of the state has expanded especially in the area of infrastructural provision and theory of public expenditure is attracting increasing attention. This tendency has been reinforced by the widening interest of economists in the problems of economic growth, planning, regional disparities and distributive justice (Bhatia, 2002).

Wagner's Law

This theory was developed by a German economist Adolph Wagner (1886) and is popularly known as the Wagner's law. Wagner revealed that there are inherent tendencies for the activities of different layers of a government such as central, state and local governments to increase both intensively and extensively. This theory maintained that there was a functional relationship between the growth of an economy and government activities with the result that the governmental sector grows faster than the economy.

According to Wagner's law the development of an industrial economy will be accompanied by an increased share of public expenditure in gross national product. Musgrave and Musgrave (1989) opined that as progressive nations industrialize, the share of the public sector in the national economy grows continually. Wagner's theory identified three main factors for increased government spending. First, administrative and protective role of government will increase as a country's economy develops. Second, with the expansion of an economy, government expenditures would increase, particularly on education and health. Wagner's theory implicitly assumed that the income elasticity of demand for public goods is more than unity.

According to Abizadeh and Yousefi (1988), the size of government grows as an effect of industrialization. The richer a society becomes, the more the government spends in order to alleviate social and industrial stress. Therefore in Wagner's approach, economic growth causes government expenditure through an increase in demand for public goods and services and redistribution.

Keynesian Theory

According to the Keynesian perspective, growth rates of an economy vary with aggregate demand and as such firms react by producing more or less goods for consumer markets.

The Keynesians see demand as prerequisite for growth and their analysis concludes that aggregate demand policies can be used to improve economic performance. Keynes (1936) believed that during depression government intervention was needed as a short term cure. The solution to economic depression was to induce the firms to invest through some combination of reduction in interest rates and government capital investment including infrastructure. Government will then increase public spending giving individuals, purchasing power and producers will produce more, creating more employment. This is the multiplier effect that shows causality from public expenditure to national income growth.

Keynes categorized government expenditure as an exogenous variable that can generate economic growth instead of an endogenous phenomenon. He believed the role of the government to be crucial as it can avoid depression by increasing aggregate demand and thus, switching on the economy again by the multiplier effect. According to Ram (1986) government expenditure can help improve the level of productive investment, hence economic growth and development can be secured. Thus government expenditure has a positive impact on economic growth.

The Median Voter Model

The median voter hypothesis assumes that the median voter plays a significant role in determining the level of spending by the government (Alm and Embaye 2010). Consequently, the demand for public services is considered to be driven by factors such as the median voter's preferences, income, tax-price and relative price of private goods and services (Bowen 1943). One of the earliest studies offering a formal representation and empirical estimation of the median voter model is that of Borchering and Deacon (2004), which analyses the demand for public services provided by the non-federal governments in the USA. Niskanen (1978) developed the median voter model to estimate government spending and demand for public goods and services by the voters. According to this model a voter's demand function is assumed to have the following form:

$$Q=As^k Y^l Z^m \dots\dots\dots 2.1$$

Where:

Q = quantity of the public good demanded by the median voter

s = the perceived per unit price of government services paid by the median voter

Y = the median voter's income

Z = other exogenous conditions affecting the demand for government services,
 A is a scale parameter and (κ λ and μ) are parameters of the demand function with
 $\kappa < 0$, $\lambda > 0$, and $\mu > 0$

Then, given the median voter’s share of the unit cost of government services (α), the perceived per unit price of public services paid by the median voter (S), the median voter’s demand function is as follows:

$$CQ = A\alpha^{\kappa} C^{1+\kappa} Y^{\lambda} Z^{\mu} \dots\dots\dots 2.2$$

Where:

C= Marginal cost

CQ= Government spending per capita

The variable (α), which represents the median voter’s tax share, is assumed to be a function of the fraction of government expenditure financed by tax revenues and the total number of taxpayers, as follows:

$$\alpha = (R/E)(1/N) \dots\dots\dots 2.3$$

Where R is the total tax revenues, E is the total government spending and N is the total number of voter-taxpayers. It is also assumed that the marginal cost (C) is a function of the private sector wage rate (W) and the total number of voter-taxpayers (N), as follows:

$$C = BW^{\sigma} N^{\phi} \dots\dots\dots 2.4$$

Where; (B) is the scale parameter, and (σ) measures the rate of increase in the price of government services relative to that of services in other sectors while (ϕ) captures the degree of publicness of services offered by the government.

Substituting equations 2.3 and 2.4 into equation 2.2 leads to the following:

$$CQ = A \left(\frac{R}{E} \frac{1}{N}\right)^{\kappa} (BW^{\sigma} N^{\phi})^{1+\kappa} Y^{\lambda} Z^{\mu} = AB^{1+\kappa} (R/E)^{\kappa} W^{\sigma(1+\kappa)} N^{\phi(1+\kappa)-\kappa} Y^{\lambda} Z^{\mu} \dots\dots\dots 2.5$$

This equation may be used to explain real aggregate government spending per capita G and its relationship to the variables in the median voter model. However, as the median voter model might not capture all the variations in government spending per capita, several other exogenous variables may be included during estimation.

Concept of the Armey Curve

The Armey curve originates from the theories of market and government failure. The theory of market failures justifies government intervention to correct externalities and provide public goods. The theory of government failures on the other hand focuses on the possible harmful effect of the State’s activity and expansion (Grossman, 1988). According to Armey (1995) low

government intervention increases economic growth until it reaches a certain level; nevertheless, excessive government expenditure reduces economic growth.

The presence of a government and the provision of public goods create a growth-enhancing environment in the economy. Government contributions for regulation and up-keep of law and order further contribute to the growth of the economy by creating a safe economic atmosphere. Any expansion of government spending in the economy initially is associated with an expansion in output. Nevertheless, as spending rises, additional projects financed by the government become increasingly less productive. In addition, the taxes and borrowings levied to finance disproportionate ventures impose increasing burdens, thus creating disincentives to workers. At some point, the marginal benefits from increased government spending reach zero. Armev (1995) puts this phenomenon into a graphical perspective when he makes use of a graphical technique to explain the relationship between government spending and economic growth. Armev consequently indicates that the size of the government and the growth of the economy can be modeled as a quadratic function, that is, a concave curve, which assumes a role for both the linear term and the squared term of government expenditure in the economic growth process.

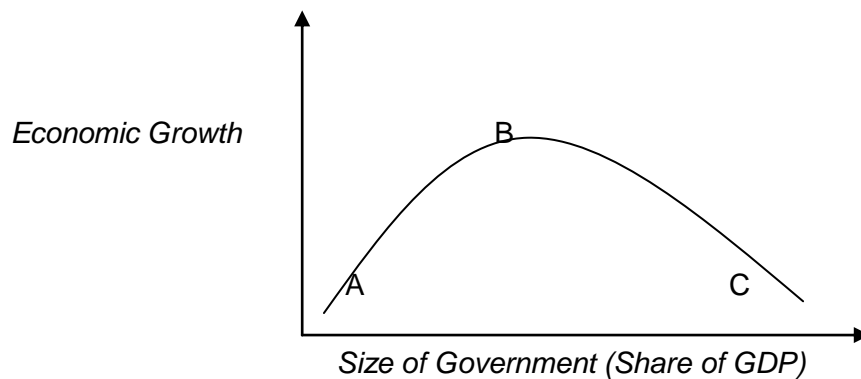


Figure 3 Armev Curve

At point A government intervention is low and as government size increases GDP continues to grow up to point B which is the optimum government size. Further increase in government size beyond this point yields a decline in GDP growth. The Armev curve therefore demonstrates the relation between government expenditure and economic growth and hypothesizes that an optimal size of government expenditure exists (Pevcin, 2004).

The Scully Model

Scully (1998) developed a model that estimates the share of government spending (or general tax rate) that maximizes real economic growth. Following the exposition of the model, the production function is specified in Cobb-Douglas form:

$$Y = a(G_{t-1})^b [(1 - \tau) Y_{t-1}]^c \dots\dots\dots 2.6$$

Where Y is real GDP, G is total government spending (in constant prices), τ is total tax rate in the economy measured as the share of government spending as a percentage of GDP.

A balanced-budget assumption is made that G = τ Y each year. By substituting this assumption in equation 2.6, we obtain:

$$Y = a(\tau Y_{t-1})^b [(1 - \tau) Y_{t-1}]^c \dots\dots\dots 2.7$$

By finding the first and second derivative of Y with respect to τ, Scully model shows that the maximum real output is derived when government spending as a share of GDP equals the following:

$$\tau^* = \frac{b}{b+c} \dots\dots\dots 2.8$$

Thus, the following equation is used to estimate the optimum level of government spending:

$$\ln(y_t) = \ln(a) + b \ln(\tau Y_{t-1}) + c \ln[(1 - \tau) Y_{t-1}] \dots\dots\dots 2.9$$

Where the index t indicates the period t, y is real GDP per capita in year t.

The weakness of Scully model is that in its relationship it produces spurious estimates of an 'optimal tax rate.

Empirical Literature

Numerous studies have been conducted to investigate the relationship between government spending and economic growth. Landau (1983), using a sample of 96 countries found that the share of government consumption to GDP reduced economic growth which was consistent with the pro-market view that the growth in government constrains overall economic growth.

Landau (1986) extended the analysis to include human and physical capital, political, international conditions as well as a three year lag on government spending in GDP. Government spending was disaggregated to include investment, transfers, education, defense and other government consumption. The results in part mirrored the earlier study (of 1983) in that general government consumption was significant and had a negative influence on growth. Education spending was positive but not significant.

Ram (1986) incorporated a theoretical basis for tracing the impacts of government expenditure to growth through the use of production functions specified for both public and

private sectors. The data sampled 115 countries to derive broad generalizations for the market economics investigated. The results were that government expenditure has significant positive externality effects on economic growth particularly in the developing countries. This study focused on the effect of government expenditure on economic growth. The results of this study shed light on both the positive and negative effects of government expenditure in developing countries.

Kweka and Morrissey, (1999) investigated the impact of government spending on economic growth in Tanzania (1965-1996) using time series data for 32 years. They formulated a simple growth accounting model, adapting Ram (1986) model in which total government expenditure is disaggregated into expenditure on physical investment, consumption spending and human capital investment. It was found that increased productive expenditure especially on physical investment have a negative impact on growth and consumption expenditure relates positively to growth, and which in particular appears to be associated with increased private consumption. The results revealed that expenditure on human capital investment was insignificant in their regression and confirm the view that public investment in Tanzania has not been productive, as at when the research was conducted. This study was on disaggregated components of government expenditure and the results revealed both positive and negative effects on different components. This current study focused at government expenditure in total to find out the effect of government activities on growth and the extent of these effects.

Dar and Khalkhali (2002) set out to investigate how government size affected the economic growth by looking at OECD countries during the period 1970 – 1999. This study was based on the endogenous growth model. The study used panel data and alluded to the fact that government size had a negative and statistically significant impact on economic growth. The only countries which did not fall under the above conclusion were USA, Sweden and Norway whose coefficients turned out to be statistically insignificant. The current study used longitudinal data for one country, Kenya and covered a longer duration than that of Dar and Khalkhali (2002).

M'Amanja and Morrissey (2005) investigated the effects of fiscal policy on economic growth in Kenya. The study used endogenous growth theory based on the production function $y=Ak^{\alpha}-g^{\alpha}$

Where; y was the per capita output, k was the per capita private capital, A was the production technology and g was the government provided goods and services. This study used the autoregressive distributed lag (ADL) to estimate the equation. The results were that fiscal policy was significant for economic growth in Kenya. This study suggested that government should increase investment in the areas that are beneficial to the private sector and reduce those that

crowd it out. This study suffers from misspecification because taxes were used and yet they represent the financing of government expenditure. This study also grouped all government expenditures into productive and unproductive, yet it is not possible to know which is productive or unproductive before estimation.

Chabanov and Mladenova (2009) examined the optimal size of government (measured as overall government spending as a percentage of GDP) that maximizes economic growth for a set of OECD countries using the Scully model. The overall results of this study suggested that the optimal level of government spending was 25 percent according to the Scully model. However, due to model and data limitations, the evidence was that the results were biased upwards, and the “true” optimum government level was even smaller and depended also on the quality of a government, and not only its size.

This current study used the basic accounting growth model and the Armeij curve equation which is superior to the Scully model. Cross sectional data has more limitations as compared to longitudinal data, and therefore the results of this study are more accurate because data is available.

Maingi (2010) conducted a study on the impact of government expenditure on economic growth in Kenya using the Ram (1986) model. This study was based on the endogenous growth theory and used data for the period 1963 to 2008. The VAR model was used for estimation in this study and results indicated that improved government expenditure on areas such as physical infrastructure development and in education enhance economic growth while areas such as foreign debts servicing, government consumption and expenditure on public order and security, salaries and allowances were growth retarding. This study also tested for causality between government expenditure and GDP growth and found that causality was both ways.

The strength for this study was that it was able to compare the properties of the different components of government expenditure using VAR. However this study failed to give the effects of total government spending on economic growth. This current study sought to determine the effect of total government expenditure on economic growth and therefore OLS estimation technique was used. The study by Maingi (2010) did not find the percentage government size that would maximize economic growth in Kenya. The study under investigation estimated the percentage of government expenditure to GDP that will maximize economic growth in Kenya. This current study also included more variables that influence economic growth apart from the components of government expenditure.

Faccini and Melki (2011) analyzed the presence of Armeij curve and optimal government size in France (1871 – 2008). This study used the nonlinear quadratic equation to estimate the presence of the Armeij curve in France for the period. The results for this study were that there

was presence of the Armeiy curve and the optimal government size for France was 30 percent (of total government spending as a share of total GDP). This study is related to the study under investigation in that both studies are based on the Armeiy curve concept.

However the study by Faccini and Melki was faced with data limitations especially for the years of the first and second world wars. This study also, is on France which is a developed country while the current study is on Kenya which is a developing country. The study under investigation used data for all the years in the period of study.

Muthui *et al* (2013) conducted a study on the impact public expenditure components on economic growth in Kenya using the Keynesian theory. The study period was 1964 to 2011 and data on the components of government expenditure analyzed. The study also conducted Granger causality test to determine causality between government expenditure and economic growth which was found to be both ways. The results for this were that on average public expenditure and economic growth is linked in the long-run. From this study it was evident that the composition of government expenditure affects economic growth. Further key public expenditure components like education, transport and communication and public order and security are the major drivers of economic growth. This study used the linear approach and was based on the Keynesian model. This study is related to the study under investigation in that both studies focus on government expenditure and economic growth in Kenya. However the current study used the non linear approach and is based on the concept of Armeiy curve to analyze government size and economic growth in Kenya.

Overview of Literature

Like many economic questions, the empirical research looking at the growth effects of public expenditure does not conclusively support the conventional belief that huge government expenditures are detrimental to growth. The evidence is mixed across countries, data and methodologies, with some finding a positive impact, while others find little or no significant growth effect of public spending.

It is evident from empirical literature that most studies on government size and economic growth were cross sectional and therefore general conclusions could not be useful for individual countries. This study has attempted to deal with this shortcoming of generalization by studying government size and economic growth in Kenya.

There are studies focusing on Kenya have examined the relationship between government expenditure and economic growth. However most of the studies reviewed are based on the framework of a linear model. Furthermore the results of these studies have found opposite clear-cut effects; either positive or negative. However, Grossman (1988) investigated

the possibility of a nonlinear relationship, assuming that government size has a positive effect on growth but only to a certain extent. Therefore this study analyzed the non-linear relationship between government size and economic growth. The choice of Armey curve for this study is from the fact that it can be used to determine the percentage of government spending in GDP that maximizes economic growth in Kenya. This study therefore sought to fill the knowledge gap in the area of government size and economic growth in Kenya.

METHODOLOGY

Research Design

This study employed empirical methods to analyze the relationship between government size and economic growth in Kenya. This study therefore adopted a longitudinal design that entailed analyzing data collected from 1963 to 2015 on government size and economic growth in Kenya. Kenya gained independence in 1963 and most economic and demographic data is available from this date. This study was therefore carried out using secondary data that was available between the periods 1963 to 2015.

Theoretical Framework

This study adopted the basic growth accounting and use production function model of Solow (1956) in which the rate of economic growth is a function of capital, labor accumulation and factor productivity. According to Agell, Lindh and Ohlsson (1997), this model assumed that total factor productivity depends on the rate of export, level of investment, capital accumulation and the size of government consumption.

Using the standard production function of the economy which is given by

$$Y_t = A_t f(K_t, L_t) \dots\dots\dots 3.1$$

Where; A_t is the coefficient measuring the total factor productivity with the two factors of production, capital (K) and labor (L).

Then, equation 3.1 can be expressed in growth rates as follows:

$$y_t = a_t + S_K k_t + S_L l_t \dots\dots\dots 3.2$$

By assuming $S_K + S_L = 1$, meaning constant returns to scale, S_K and S_L are the shares of capital and labour inputs respectively.

y_t, a_t, k_t and l_t are the percentage changes of Y_t, A_t, K_t and L_t respectively.

Following Amir and Dar (2002), this study assumed that trade openness (ex) and government size (g) were modeled impacts on economic growth through on total factor productivity (TFP).

Empirical Model

The TFP, a_t captures other variables that impact on economic growth other than capital (K_t) and labour (L_t), a_t was therefore expressed as follows to yield equation 3.3:

$$a_t = \beta_0 + \beta_1 g_t + \beta_2 g_t^2 + \beta_3 l_t + \beta_4 k_t + \beta_5 ex_t + \varepsilon_t \dots\dots\dots 3.3$$

Where; a_t is the total factor productivity, g is the share of government expenditure to GDP and ex is the share of exports plus imports as a share of GDP.

We substitute equation 3.3 to 3.2 to yield the following;

$$y_t = \beta_0 + \beta_1 g_t + \beta_2 g_t^2 + \beta_3 l_t + \beta_4 k_t + \beta_5 ex_t + \varepsilon_t \dots\dots\dots 3.4$$

This study used a quadratic equation adopted from Indriawan and Muhyiddin (2007) to address the objectives stated in chapter one. Equation 3.4 was therefore adopted and modified such that k_t represents private investment: GDP growth y_t was therefore expressed as function of g , g^2 , k , l and ex as follows:

Where

- y_t is GDP growth at period t ,
- g_t is the share of government expenditure to GDP
- g_t^2 is the squared share of government expenditure to GDP
- k_t is private investment as share of GDP
- ex_t is the openness of the economy as a share of GDP
- l_t is the labour force growth rate.

For estimation purposes equation 3.4 was specified as follows, which captures the Armeiy Curve equation as specified by Faccin and Melki (2011). This equation addressed the first objective:

$$y_t = \beta_0 + \beta_1 g_t + \beta_2 g_t^2 + \beta_3 k_t + \beta_4 ex_t + \beta_5 l_t + \varepsilon_t \dots\dots\dots 3.4$$

The inclusion of the variable g^2 assists in empirically verifying or invalidating the phenomenon of the Armeiy curve within this framework.

To address the second objective this study analyzed the properties of equation 3.6 with regard to g_t and g_t^2 . The signs coefficients β_1 and β_2 determined the presence of the Armeiy curve.

The third objective was addressed by getting the first partial derivative of equation 3.4 with respect to g while holding the other variables constant. This first partial derivative was then equated to zero.

$$\frac{d(y)}{d(G)} = \beta_1 + 2(\beta_2)g_t \dots\dots\dots 3.5$$

Equating equation 3.7 to zero gives the optimum government size percentage.

$$-2(\beta_2)g_t = \beta_1 \dots\dots\dots 3.6$$

$$g_t = \frac{\beta_1}{-2\beta_2} \dots\dots\dots 3.7$$

Definition and Measurement of Variables

Economic Growth Rate (GDP Rate) - This is the percentage rate of increase in gross domestic product. It captures the change in value of goods and services produced in a given economy for a specified period of time usually one year. It was calculated as a percentage rate of change of the GDP.

Government Size (g) - Government size was measured as the percentage share of total government expenditures to GDP. Therefore government size for this study was calculated as total government expenditure divided by GDP and then multiplying by hundred.

Investment (k) - Investment was measured as the private investment share of GDP. That is, total private investment divided by GDP and then multiplied by hundred. Public investment is captured in government expenditure; to avoid double counting private investment was used.

Openness of the Economy (ex) - Openness is the total exports plus total imports as a share of GDP.

Labour force Growth (l) - Labour force growth rate which was defined as the growth rate of the population of ages 16 years to 60 years in the country.

Data Type and Source

This study aims at establishing the effects of government size on economic growth in Kenya. Quantitative data was used to address the research objectives specified in chapter one. The study used secondary data for the period 1963 – 2015. Data for the study was collected through analysis of Economic surveys and economic reports for different years for the study period, Reports from Kenya Bureau of Statistics on economic issues were also used as a source of data for this study.

Estimation Techniques and Time Series properties of Data

The regression equation for this study includes both the linear term and the squared term of g in the estimation equation, and therefore is a quadratic function or a second-degree polynomial function. Since the second-degree polynomial function is linear in parameters, that is, β_s , it was estimated using the Ordinary Least Squares (OLS) estimation technique. To determine the hypothesis, the estimates were evaluated for statistical significance based on the relevant statistics of regression.

Moreover this study used time series data and inherently it might exhibit some strong trends, the non random disposition of the series might undermine the use of some of econometrics tests such as t and F tests. Therefore each series was tested for the presence of

unit root using Kwiatkowski-Philips-Schmidt-Shin (KPSS) test. The test results confirmed that the labour force variable had a unit root and the series was made stationary by first differencing.

EMPIRICAL FINDINGS

Summary of Descriptive Statistics and Correlation Matrix

Table 2 presents a summary for the sample variables which includes the mean, minimum and maximum values, standard deviation, skewness and kurtosis.

Table 2 Summary Statistics for Sample Variables

Variable	Obs	Mean	Std Dev	Min Value	Max Value	Kurtosis	Skewness
y_t	53	5.26599	0.78261	3.7688	7.2873	2.31483	0.14536
g_t	53	0.16653	0.09054	0.0628	0.3687	2.14204	0.60893
g_t^2	53	0.03576	0.03581	0.0039	0.1359	5.34046	1.16263
ex_t	53	1.15141	7.41512	0.3817	5.2351	4.70377	1.75416
k_t	53	4.16381	0.56982	2.9091	4.7869	2.77197	-1.0463
l_t	53	0.56097	0.10171	0.4245	0.7533	1.96875	0.59078

Skewness is the tilt in the distribution and the measure of skewness should be within -2 and +2 range for normally distributed series. As indicated in Table 2, all the variables fall within this range indicating they are normally distributed. The series also exhibited a positive skewness for all the variables except private investment (k_t). This means that more observations are concentrated on the right hand side of the mean.

Kurtosis on the other hand measures the relative peakedness or flatness of the distribution relative to normal distribution. The series has a kurtosis of less than three for the variables of GDP growth rate (y_t), government size (g_t), private investment (k_t) and labour force growth rate (l_t) and this means that their distribution has values that are widely spread around the mean and the probability for extreme values is less than that of a normal distribution. However the squared term of government expenditure (g_t^2) and openness (ex_t) variables have a kurtosis of greater than three which indicates that the distribution has values concentrated around the mean and thicker tails hence a high probability for extreme values.

Correlation

Table 3 presents the correlation matrix of all the variables of the study.

Table 3 Correlation Matrix

y_t		g_t	g_t^2	ex_t	l_t	k_t
y_t	1.0000					
g_t	0.4751	1.0000				
g_t^2	0.3971	0.9800	1.0000			
ex_t	0.3701	0.2589	0.2927	1.0000		
l_t	0.4343	0.16847	0.16042	0.1586	1.0000	
k_t	0.1005	0.09695	0.09483	0.02674	0.4000	1.0000

All the variables except g_t and g_t^2 , exhibit less than 0.5 correlation index which implies a low likelihood of the problem of multicollinearity. The variables g_t and g_t^2 exhibit a 0.98 correlation index because one is a square term of the other which is meant to bring out the optimal level of the curve.

Diagnostic Tests

Unit Root Test

The series were tested for presence of unit root using Kwiatkowski-Philips-Schmidt-Shin (KPSS) test. The results in table 4 indicate that all the variables stationary at levels except labour force growth rate which had a p -value of 0.720715 that is greater than the critical values at 5 and 10 percent levels. However this variable became stationary at first difference as shown below

Table 4 Kwiatkowski-Philips-Schmidt-Shin (KPSS) test

Variable		Statistic	p-value
GDP growth rate (y_t)	Level	0.851*	0.329
		0.6208**	
		0.3956***	
Government Size (g_t)	Level	0.513*	0.261
		0.419**	
		0.372***	
Squared term of government size (g_t^2)	Level	0.9489*	0.6749
		0.9202**	
		0.7498***	

Variable	Level	0.8159*	
Openness of the economy (ex_t)	Level	0.4178**	
		0.3867***	0.290696
		0.6022*	
Private investment (k_t)	Level	0.334**	
		0.2695	0.1037
		0.739*	
Labour force growth rate (l_t)	Level	0.463**	
		0.347***	0.720715
		0.739*	0.13996
	First difference	0.463**	
		0.347***	

Table 4...

***, **, * Indicates significance at 1%, 5% and 10% levels respectively

Null hypothesis: The variable ($y_t, g_t, g_t^2, ex_t, k_t, l_t$) are stationary

Decision Rule: Accept null hypothesis if the t-KPSS calculated is less than the value of the three critical values at 1%, 5% and 10% levels.

Regression Result

Table 5 Regression Results

Dependent Variable: y_t		Method: Least Squares		
Sample: 1963 2015		Included observations: 53		
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Gt	20.87719	4.212128	4.956446	0.0000
g_t^2	-0.447317	2.538091	-3.112933	0.0046
Ext	2.607614	7.590315	3.421565	0.0014
Kt	4.215856	2.178723	1.935013	0.0594
Lt	-0.419191	0.147179	-2.848161	0.0067
C	2.738845	0.865001	3.166290	0.0028
R-squared	0.798562	Mean dependent var	5.265099	
Adjusted R-squared	0.775671	S.D. dependent var	0.782607	
S.E. of regression	0.370669	Akaike info criterion	0.965152	
Sum squared resid	6.045403	Schwarz criterion	1.194595	
Log likelihood	-18.12881	Hannan-Quinn criter.	1.052525	
F-statistic	34.88581	Durbin-Watson stat	2.414656	
Prob(F-statistic)	0.000000			

From the empirical results shown in table 5, 77.5 percent of the variations in economic growth rate in Kenya are explained by variations in government expenditure both g_t and g_t^2 , openness of the economy ex_t , private investment k_t and labour force growth l_t .

Relationship between Government Size and Economic Growth

The first objective of this study was to determine the relationship between government size and economic growth in Kenya and the findings are outlined in the discussion below for each variable. The estimated coefficient for the country's government size (g_t) variable was significant at 5 percent level with the expected sign and thus gives credit to the hypothesis of Armey curve. The absolute value of the coefficient is 20.87719 implying that holding all the other variables constant, increase in the index of government size (g_t) will increase GDP (y_t). Therefore government size (g_t) variable has a positive relationship with economic growth in Kenya. This is consistent with Armey curve view that government size has positive effects on economic growth but only to a certain point and hence the need for the squared term (g_t^2)

The findings of this study are in line with the results of a study by Facchini and Melki (2011) for France for the period 1871 - 2008. However the difference in the magnitude of the coefficient of these two studies may be attributed to level of development between the two countries. France is a developed country while Kenya is a developing country. Most developed countries have sufficient infrastructure and therefore government spending is mostly on consumption and social welfare while most developing countries spend heavily on infrastructure development which may have direct influence on economic growth. A study by Indriawan and Muhyiddin (2007) on government size and growth in Indonesia also confirm the findings of this study.

Trade openness variable (ex_t) has a positive coefficient of 2.6076 and is significant at 5 percent level indicating a positive relationship with economic growth in Kenya. According to these results an increase in trade would expand the economy of Kenya. This is consistent with International trade theories and comparative advantage theories that view trade between countries as beneficial and positively related with economic growth. The results further conform to the findings by Forte and Magazzino (2010) on optimal size of government in EU where there was a positive and significant relationship for all the EU countries.

Private investment variable (k_t) coefficient was significant at 10 percent level with a value of 4.2158 implying a positive relationship with economic growth. These results conform to findings of Mehdi and Jalal (2010) on the impact of government size on economic growth in Italy which revealed that private investment has a significant positive effect on economic growth with a value of 0.241. Forte and Magazzino (2010) found that private investment was not significant

for most of the EU countries. This was attributed to crowding out effect by the high government spending especially in the years before 1980 in EU countries.

Labour force growth rate (l_t) coefficient was statistically significant at 5 percent level with a value of -0.419191 implying a negative relationship between labour force growth rate and economic growth rate in Kenya. This may be attributed to the high unemployment rate in Kenya. The study agrees with the findings of Indriawan and Muhyiddin (2007) on government size and growth in Indonesia which gave a negative relationship between labour force growth rate and economic growth. Labour force growth rate variable according to Mehdi and Jalal (2010) has positive effect on economic growth in developed countries while it has a negative impact to economies of developing countries. The inverse relationship between labour force growth rate and economic growth in developing countries may be attributed to high population in these countries. High population in developing countries deters economic growth due to unemployment, provision of social amenities and high dependence rate by young ones.

The second objective of this study was to determine the relationship between government size and economic growth as depicted by the Armeij curve. This was achieved by looking at the signs of the coefficients of government size g_t and the squared term of government size g_t^2 . The sign of government size g_t is positive (20.87719) while g_t^2 has a negative sign (-0.447317). This means that increase in government size will have a positive effect on economic growth but up to a certain point from which further increase in government size will slow economic growth. This is consistent with public expenditure theories and according to Armeij curve, excessive increase in government spending triggers adverse effects on economic growth thereby slowing or decreasing economic growth. Therefore from the results the relationship between government size and economic growth in Kenya conforms to the Armeij curve hypothesis.

Estimating Government Size in Kenya

The third objective of this study is to estimate the optimal level of government size in line with the Armeij curve hypothesis.

$$y_t = 2.739 + 20.877g_t - 0.447g_t^2 + 2.608ex_t + 4.216k_t - 0.419l_t \dots\dots\dots 4.1$$

This was achieved by taking the first partial derivatives of equation 4.1 with respect to g_t and equating it to zero.

$$\frac{d(y)}{d(G)} = 20.877 - 2(0.447)g_t = 0 \dots\dots\dots 4.2$$

$$g_t = 20.87719 / 0.894634 = 23.3 \dots\dots\dots 4.3$$

The results give an optimal level of about 23.3 percent of government size as a share of GDP that will maximize economic growth in Kenya. Olasode and Femi (2013) estimated an optimal government size of 11 percent in Nigeria, Faccini and Melki (2011) estimated 34 percent in France while Chabanov and Mladenova (2009) estimated 25 percent for OECD countries. The variations in the optimal sizes of governments are as a result of the differences in the sizes of the economies, levels of development and government policies in the respective countries. In conclusion all these findings indicate that excessively large government sizes over and beyond the optimal sizes would retard economic growth.

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary

The purpose of this study was to empirically investigate how government size affects economic growth in Kenya and whether the concept of Armey curve applies in Kenya. According to Armey (1995), as government expenditure continues to increase economic growth increase but to a certain point beyond which further increase in government expenditure declines economic growth. The study's objectives were to determine the relationship between government size and economic growth and to estimate the optimal government spending that would maximize economic growth.

To achieve the objectives of this study the basic growth accounting and the production function model of Solow (1956) was used. GDP growth rate was the dependent variable while government size and the squared term of government size were used as the independent variables. Trade openness, private investment and labour force growth rate were also included in the model as independent variables as they also impact economic growth. Time Series data for the period 1963 – 2012 was used and OLS estimation technique was employed to generate the results of the study after testing for stationarity of the variables.

In conclusion, according to the estimation results explanatory variables jointly account for approximately 77.56 percent in explaining economic growth. The estimation results reveal that government size (gt) is statistically significant in explaining changes in economic growth. Trade openness and private investment contribute positively to economic growth while labour force growth rate has negative effect on economic growth.

Conclusion

One of the main conclusions of the study is that Kenya's economic growth and government size conform to the Armey curve assumption of an inverse relationship between government expenditure and economic growth. This therefore implies that there is a level of government

expenditure that maximizes economic growth in Kenya. According to the estimation results, the computed level of government expenditure that maximizes economic growth is 23.3 percent. This means that if government spending as a percentage of GDP is beyond 23.3 percent there will be negative effects that will slow economic growth in Kenya. The government of Kenya through the Vision 2030, aimed to increase GDP growth to 10 percent by the year 2012 and maintain that level for the plan period and beyond. This was to be achieved through infrastructure development and therefore the need to limit public expenditure to the optimal level.

Policy Recommendations

Based on the results of the study a number of policy recommendations can be drawn. Government spending has a positive influence on economic growth but up to some level and therefore policy makers should endeavor to ensure that optimal government spending is not surpassed so as not to retard the economic growth. To achieve high economic growth the government of Kenya should reduce government size from 38 percent in 2015 to the level that will optimize economic growth. Policy makers and government therefore must promote efficiency in the allocation of public resources for development. On the other hand private investment has positive effect on economic growth. Therefore the government should work with the private sector in a complimentary manner rather than compete with private investment. In sectors where private investment would be more productive than public investment government should engage the private sector. Private sector participation and privatization should be encouraged to downsize government size while at the same time increasing private investment. Labour force growth has negative effects on economic growth in Kenya. This may be because Kenya has high unemployment rate and rate of new job creation is lower than labour force growth rate. Therefore the government of Kenya should tackle unemployment by checking high population growth through promotion of family planning methods and pursuing policies to accelerate creation of employment opportunities. Trade openness contributes to economic growth in Kenya. The government can promote trade through bilateral trade establishments and trade incentives.

Areas for Further Research

This study examined the effect of Government size on economic growth specifically concentrating on the relationship between government size and economic growth in Kenya. Besides government size there are other factors in government expenditure that affect economic productivity. Therefore there is need to examine the factors that influence government

expenditure and eventually economic growth. Further there is need to compare the optimal government sizes in East Africa and would suggest a comparative study on the optimal government size in the East African region.

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ANNEXURE

ABBREVIATIONS

AICD	Africa Infrastructure Country Diagnostic
CPI	Consumer Price Index
EAC	East African Community
ECM	Error Correction Model
ERS	Economic Recovery Strategy
ESP	Economic Stimulus Program
GDP	Gross Domestic Product
ISI	Import Substitution Industrialization
LDC	Least Developed Countries
NIC	Newly Industrialized Countries
OLS	Ordinary Least Square
KNBS	Kenya National Bureau of Statistics
KPSS	Kwiatkowski-Philips-Schmidt-Shin
VAR	Variance Auto Regression
OECD	Organization for Economic Co-operation and Development