OPTIMUM GOVERNMENT CONSUMPTION EXPENDITURE IN KENYA: EVIDENCE FROM 1960-2018

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Abstract: This paper examines the existence of optimum government consumption in Kenya from 1960 to 2018. The study used Armey's idea of a quadratic curve that describes the level of government expenditure in an economy and the corresponding level of economic growth. The research also employed the use of time series data the period 1960-2018. The data for the variables were subjected to unit root tests using ADF test techniques and the results showed that each variable was stationary at order I(1), that is, upon first differencing. Since a polynomial of second degree is linear in parameters; the model therefore permitted the use of Ordinary Least Square (OLS) estimation technique in this study. The result of the finding was that the growth maximizing government consumption expenditure in Kenya as a percent of the GDP was 47.52 percent. The coefficient of CEX was positive showing that increases in government consumption expenditure would increase the size of the gross domestic product up to a size of approximately 48 % of the Kenya's GDP. This study recommends strengthening austerity measures against government expense.

Keywords: Government Consumption Size, Economic Growth

1. Introduction

Public spending is inevitable for government of the day and a number of theorists have come to its support. The Keynesian economists in particular emphasized a major role of the state in creating economic stability. However, it has been noticed that many governments are pro-consumption spending beyond what is considered economically desirable. As noted by Majoge (2018), World government consumption expenditure grew from USD 2,583 trillion in 1960 to USD 55,360 trillion in 2017 and has consistently been on the increase reached its ever highest peak of USD 106,300 trillion in the year 2014. The high peak in the year 2014 was attributable to fiscal expansion that many countries had to undergo after 2008 to counter the economic downturn from the negative global and domestic shocks.
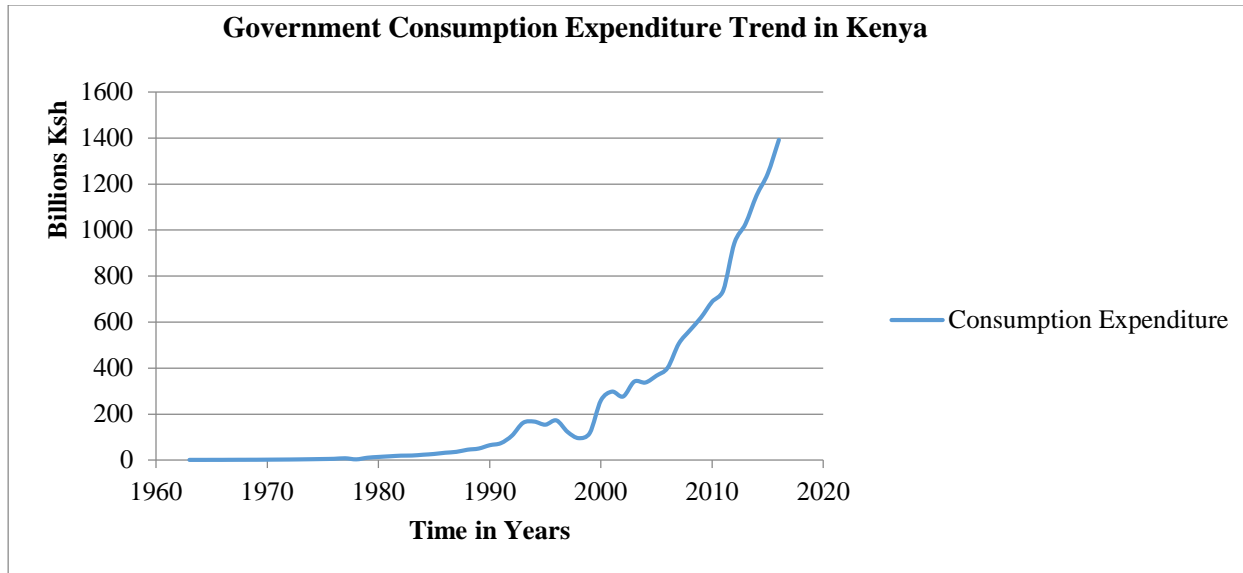
Government Consumption Expenditure Trend in Kenya

Figure 1. 1

Source: Author 2020

Against this excessive growth in public consumption expenditure, World Bank (2018) warns Kenya on cutting expenditure meant for development saying it will only slow down the county's growth but rather Kenya should cut spending in the public sector wages and other recurring items to reduce the debt load. They reiterated that there is need to re-calibrate the balance between capital and consumption expenditures, with the latter bearing a higher share of the expenditure containment.
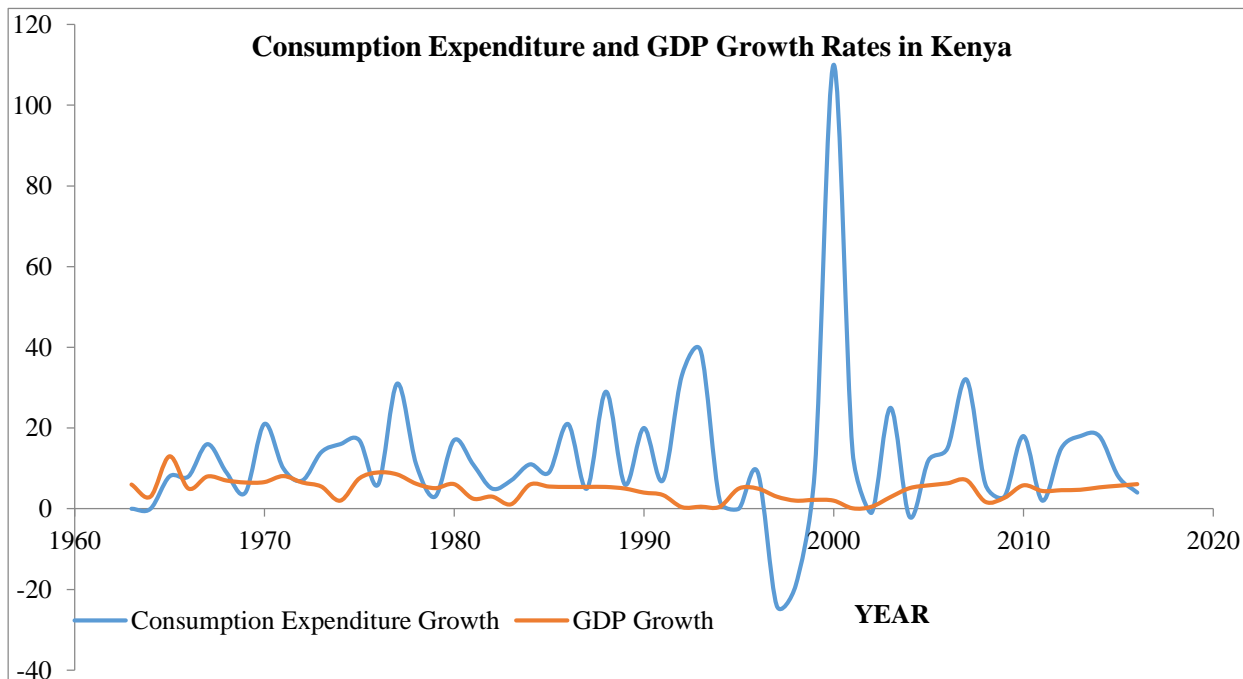

Consumption Expenditure and GDP Growth Rates in Kenya

Figure 1. 2

Source: Author 2020

The figure above shows that the total government consumption expenditure of Kenya has been influenced certain factors operating in the economy resulting in variations in the level of expenditure, and sometimes wide and drastic variations as in the late 1990s. The drastic increase in government consumption experienced in the year 1965 was suspected to have resulted in slacken economic growth in the same period.

2. Statement of the Problem

Achieving higher economic growth rates of double digits has been Kenya's main economic target for the last decade. However, the realized economic growth rates have always fallen short of this target. As a matter of fact, it was only in the 1960s that Kenya was able to achieve this noble dream where the country realized a 13 % growth in GDP, particularly in the year 1965. Since then, it has become a nut to crack to hit such growth levels. Kenya has been experiencing dwindling economic performance with many economic policy advisers hinting at the blossoming government consumption expenditure as the major deterrent factor to attaining higher economic growth rates as was noted by World Bank Group (2018). Thus, this paper establishes the link between government consumption expenditure and economic growth as well as examining the existence of an optimal level of government consumption expenditure that maximizes growth in Kenya.

3. Theoretical Literature

Formulations of the problem of public expenditure growth are best explained by the contributions of Musgrave and Rostows. Their ideas are stem from the investigation of a large number of different historical trends of developed economies. To them, in the early phases of economic growth and development, government expenditure as a proportion of the domestic product of the economy is found to be high since public capital formation is of particular importance at such stages. The public sector is therefore expected to avail social infrastructure overheads such as roads, transportation systems, sanitation systems, law and order, health and education amongst other development expenditures. This initial government capital expenditure is believed to increase productivity and to stir up the process of industrial take-off in emerging economies. In the middle stage of growth, the state continues to provide investment goods but this time around government capital expenditure is complementary to the levels of private investment. During all the stages of development, market imperfections and information asymmetry exist which can thwart the move towards viable economic development, hence the increased need for government participation in the economy in order to deal with such market imperfections. According to Rostow (1989), when economies reach the maturity stages the complementarity of public expenditures will shift from expenditures on infrastructure to increasing expenditures on education, health and welfare services. Finally, according to Brown and Jackson (1996), in the last stage of mass consumption, sustenance programs, and strategies meant to redistribute welfare, will grow significantly relative to other items of government expenditure and also relative to GDP.

Armey (1995) posits that low public expenditure associated with increases in economic growth until it reaches a certain point; on the other hand, excessive public spending impedes economic growth. Barro (1989), Armey (1995), and Scully (1998, 2003) found empirical evidences on the existence of an optimal size of government depicted by a concave curve. Their idea was based on the fact that as states expenditures as proportion of the economy continue to grow, more expenditure are more likely to diverted to less productive and later on to counterproductive activities, causing the rate of economic growth to diminish and eventually decline.

4. Empirical Literature

Many research works have been done examine the link between public spending and economic growth. Landau (1983), using a sample of 96 countries found that the share of government consumption to GDP was negatively related to economic growth, a finding which was in line with the view that growth in public expenditure impedes overall economic growth. Section of the results showed that general government consumption was significant and had a negative effect on growth. Education spending was positive but not significant.

Ram (1986), using a sample time series data for 115 countries found that public expenditure had significant positive influence on economic growth particularly in the emerging economies. His study was based on the effect of public expenditure on economic growth and the findings revealed both the positive and negative impacts of public expenditure in developing countries.

Using time series data for the period 1965-1996, Kweka and Morrissey, (1999) conducted study on the impact of public spending on economic growth in Tanzania and found that increased productive expenditure especially on physical investment have a negative impact on growth and consumption expenditure had a positive link with economic growth. Further, the results showed expenditure on human investment had no significant relationship with public investment in Tanzania.

Using a time series panel data, Dar and Khalkhali (2002) conducted a study on the impact of government size on economic among OECD countries during the period 1970 – 1999. Their study was embedded on the endogenous growth model. The findings of their study revealed that government size had a negative and statistically significant impact on economic growth. Other countries whose data did not show significant results included USA, Sweden and Norway.

Employing the Scully Model, Chabanov and Mladenova (2009) also carried out a study on the optimal size of government that maximizes economic growth among a panel of OECD countries. The findings of the study revealed that the optimal level of public expenditure 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.

Maingi (2010) carried out a study on the effects of public expenditure on economic growth in Kenya using the Ram (1986) model. His study was focused on the endogenous growth theory for the period 1963 to 2008. He used the vector auto-regressive model for estimation and the results indicated that additional public expenditure on areas such as physical infrastructure development and in education are growth enhancing. On the other hand, expenditure on foreign debts servicing, government consumption and expenditure on public order and security, salaries and allowances impeded growth in Kenya. However, Maingi did not find the percentage government size that would maximize economic growth in Kenya. Thus, the current study uses general government consumption expenditure data for the period 1960-2018, tries to unlock the validity of this statement using a different time span and estimation technique.

Similarly, Faccini and Melki (2011) examined the existence of Armey curve and optimal government size in France for the period 1871 – 2008. The findings of their study showed that Armey curve and the optimal government size existed for the case of France. They further revealed that a public size of 30 percent of the GDP was growth maximizing for the case of France.

Basing on the Keynesian theory and also using a time series data for the period 1964 to 2011, Muthui *et al.,* (2013) investigated the impact government expenditure components on economic growth in Kenya. The study also examined the causation relationship between public expenditure and economic growth. The results indicated a bi-directional causality between the two variables and further showed that government expenditure components like education, transport and communication and public order and security were the major drivers of economic growth. However, Maingi's linear approach to modeling is different from the one adopted in this study since a quadratic function is used in this study instead.

5. Theoretical Framework

This study uses the Armey curve to evaluate the relative size of government consumption expenditure for the Kenyan economy for the period 1960-2018. The Armey curve posits that a quadratic relationship exists between an area's government spending and its economic output. According to this idea of the Armey Curve, when there is no participation, a country's economy will less productive in output. But as the size of public expenditure increases, the economy's output also increases, ceteris paribus. Further, according to the Armey's Curve concept, there exists a certain level of public expenditure that will maximize a country's level of productivity, ceteris paribus. The concept continues to reveal that beyond that maximizing level of expenditure; the nation's economic productivity begin to slow down since the increased presence of the government begins to "crowd out" the private sector by assuming more and more of its resources and functions. Characteristically the connection indicates one of diminishing marginal returns to government in the economy. Graphic exposition reveals the Armey curve is identical to the Laffer curve, which states that a tax rate exists that maximize the amount of revenue the government obtains from taxation. Thus, with available data a researcher can adopt the Armey curve to a region or an individual state economy and can be expressed in a simple quadratic form as follows:

$$RGDP = \alpha + \beta G - \delta G^2 + \gamma T \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (3.0)$$

The equation of the Armey Curve has positive sign on the linear term, G (public expenditure), which is meant to indicate the beneficial effects of public spending on economic growth (Real GDP), on the other hand the negative sign for the squared term shows the variable traces any adverse effects associated with increased government size. Because the squared term increases in value faster than the linear term, the presence of adverse effects from public spending eventually will outweigh the positive effect, producing downward-sloping portion of the Armey Curve. To control for factors unrelated to government spending, the time variable T is introduced. Therefore, the faster and greater the expenditure increases, the greater the probability of diminishing returns and ineffective use (Leach, 2002).

6. Empirical Model

This research adopted a quadratic function used by Armey (1998) to investigate the research problem. The model of the study was modified and stated as follows:

$$GDP = f(CEX, CEX^2) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 3.1$$

Where

GDP is real economic growth at period;

CEX is share of real government consumption expenditure to real GDP; and

CEX^2 is the square of the share of real government consumption expenditure to GDP.

The inclusion of the variable CEX^2 assists in empirically proving or invalidating the phenomenon of the Armey curve in the stated model of the study. In order to achieve the second objective which is to examine the presence of the Armey Curve, the sign of the coefficients β_1 and β_2 are used. Thus, the optimum government consumption expenditure size percentage would be arrived at by equating the partial derivative of the above equation to zero as follows:

$$CEX^* = \frac{-\beta_1}{2(\beta_2)}$$

7. Estimation Techniques and Time Series properties of Data

The model for this study comprised two parts: the linear term CEX and the squared term of CEX, and therefore conforms to a quadratic function. A polynomial of second –degree is linear in parameters, βs, and as such it permits the use of Ordinary Least Squares (OLS) estimation techniques. This study there employed the OLS technique to estimate the research parameters.

Since the study used time series data, it was necessary to subject it to through a series of time series tests to ascertain their statistical soundness. ADF test for stationarity and strong trends was employed and the results showed that each variable was stationary after first differencing.

8. Empirical Findings

The EViews 10 statistical software package was used to conduct ordinary least squares (OLS) analysis on the study data. Table 1 below shows the results of the OLS analysis.

Table 1 OLS Regression Results

Dependent Variable: GDP
Method: Least Squares
Date: 02/18/20 Time: 10:53
Sample: 1960 2018
Included observations: 59

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4987591.	1310192.	3.806762	0.0004
CEX	2000.168	286.2166	6.988303	0.0000
CEX^2	-2104.200	381.2874	-5.518671	0.0000

R-squared	0.575693	Mean dependent var	1745323.
Adjusted R-squared	0.560539	S.D. dependent var	1160452.
S.E. of regression	769284.7	Akaike info criterion	29.99382
Sum squared resid	3.31E+13	Schwarz criterion	30.09946
Log likelihood	-881.8177	Hannan-Quinn criter.	30.03506
F-statistic	37.98999	Durbin-Watson stat	0.287514
Prob(F-statistic)	0.000000		

Source: Author 2020

The *F*-statistic value indicates the overall significance of the regression. The value of the coefficient of determination exceeds 0.5, which indicates a relatively good fit of the model. Each of the explanatory variables in the system equation was statistically significant at least at the 0.01 level. Important to note was the coefficient of the CEX^2 variable which has a negative sign, indicating the existence of the Armey curve for the data for Kenyan.

Optimum government Consumption size $CEX* = \frac{\beta 1}{2 \times \beta 2} = \frac{2000}{2 \times 2104.2}$ Real GDP $= 0.48 \times$ Real GDP

9. Discussion of Results

The results indicate that small government consumption expenditure size is positively related to economic growth in Kenya. This is shown by the positive coefficient of linear term of the variable CEX. But this positive influence would only continue up to government consumption size of 48 % of the gross domestic product in Kenya. Further, the results indicate that there exists the presence of the Armey curve for the Kenyan data for the period 1960-2018. The negative sign of the squared term CEX^2 validates this fact. Thus, there exists optimum government consumption expenditure in Kenya, which is 48 % of the real GDP. by formulation, allows for determination of the level of government consumption expenditures as a percentage that maximizes economic growth. Obtaining the partial derivative of equation 3.1 with respect to CEX yields the following relation for finding the "optimal" level of government consumption expenditures: real GDP, Kenya's real GDP is maximized at a value of $\frac{2000}{2 \times 2104.2} \times 100$ of the GDP = 48 % of the GDP. For the year 2018, Kenya's growth maximizing consumption expenditure would be 0.48 x 4,794,832.60 = 2, 301,519.6 Million Kenya Shillings which is far much below the government consumption expenditure outturn in the year 2018 (4,539,623.73 Million Kenya Shillings). It means beyond this expenditure level of government expenditure, Kenya does not produce enough output or commands too many resources for the state's economy to generate positive real GDP.

10. Conclusions and Recommendations

This study concludes that there exists the presence of the Armey's Curve in Kenya's government consumption spending, that is small size of government consumption expenditure in Kenya improves economic growth while large sizes beyond 48 % of the GDP is growth retarding.

For maximum generation of output, the study recommends to the government of Kenya to ensure leanness in consumption expenditure and strengthening of its austerity measures towards bloated government consumption spending so that it is kept below 48 % of the real GDP at all times.

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