INTERNATIONAL JOURNAL OF SOCIAL Sciences and Information Technology
ISSN 2412-0294 www.ijssit.com
http://www.ijssit.com

DETERMINANTS OF GOVERNMENT CONSUMPTION EXPENDITURE IN KENYA

[1*] **Peter Odira Majoge**
majogie@gmail.com

[1*] *School of Arts and Social Sciences, Rongo University, Kenya*

Abstract

Government expenditure is a very instrumental demand tool in achieving economic stability and policy makers frequently use it to influence certain economic outcomes. Government expenditure majorly consists of two components: investment and consumption components. The aim of the study was to establish the economic, structural and political and institutional determinants of government consumption expenditure in Kenya. A quantitative approach was adopted in order to establish the reasons for the rise in consumption expenditure in Kenya and drawing from the public choice theorem, three models were used:(i) Economic model (ii) Structural model (iii) Politico-institutional model. The study used published data obtained from World Bank, Country Data Portal (2018) for the period 1963-2017. VECM, VAR and OLS estimations techniques were adopted in this study and the results were that in the long-run, while 1USD increase in GDP causes USD1.3 increase in government consumption expenditure, a unit increase in inflation rate would cause USD1.8 increase in consumption expenditure. However, 1USD increase in foreign direct investment and external debt stock causes, respectively, USD 0.07 and USD 2.6 drop in government consumption expenditure. Corruption, democracy and political instability have positive effects on government consumption expenditure in Kenya. Urbanization and population dynamics jointly affect the variable in the short-run. This study recommends that the government should strengthen its institutions that are mandated to deal with graft cases, create peaceful political setting at all times and ensure a friendly environment to foreign investors.

***Keywords**: Consumption, Expenditure, VCM, VAR*

1. Introduction

Public expenditure is an ecclesiastical function of any government. Economy is always demand driven and in cases where there is a fall in household and private sector aggregate demand, then it becomes the responsibility of the government, as a principle, to take up the mantle to invigorate the economy through public expenditure as this helps to raise the fallen aggregate demand. According to Musgrave (1989), it is because of the existence of market distortions that the state is required in the provision public goods and services.

However, it has been observed that development-recurrent ratio favors recurrent components and that creates development expenditure problem (Were, 2018). World government consumption expenditure grew from USD 2,583 trillion in 1960 to USD 55,360 trillion in 2017. Growth in world's consumption expenditure has been on the rise and reached its ever highest peak of USD 106,300 trillion in the year 2014 and this high peak was possibly attributed to fiscal expansion that many countries had to undergo after 2008 to counter the economic downturn from the negative global and domestic shocks.

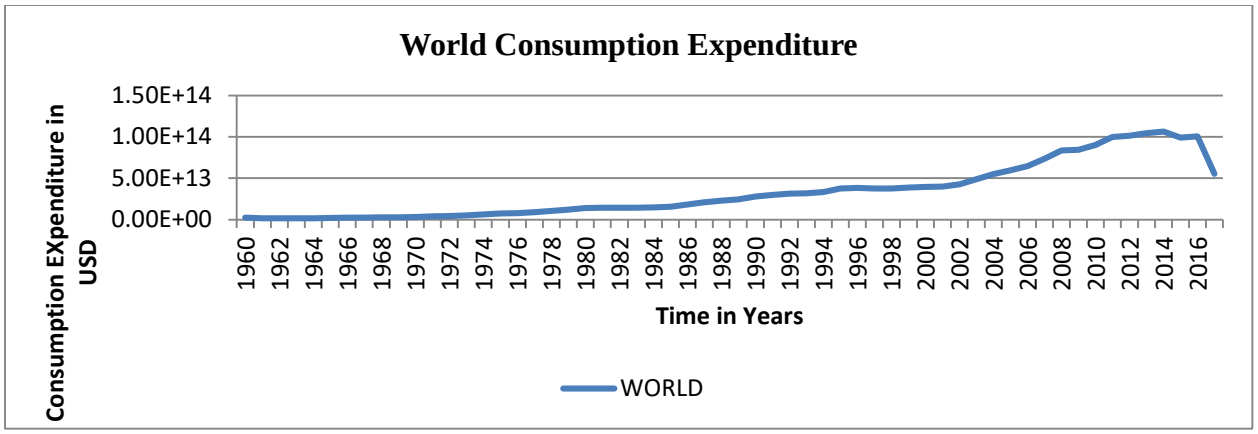


Figure 1: World Consumption Expenditure

Source: World Bank, 2018

It was expected that government expenditure would fall after recovery from the global shocks, however, consumption expenditure continued to trend upwards even long after economic recovery strategies adopted between 2008 and 2010.

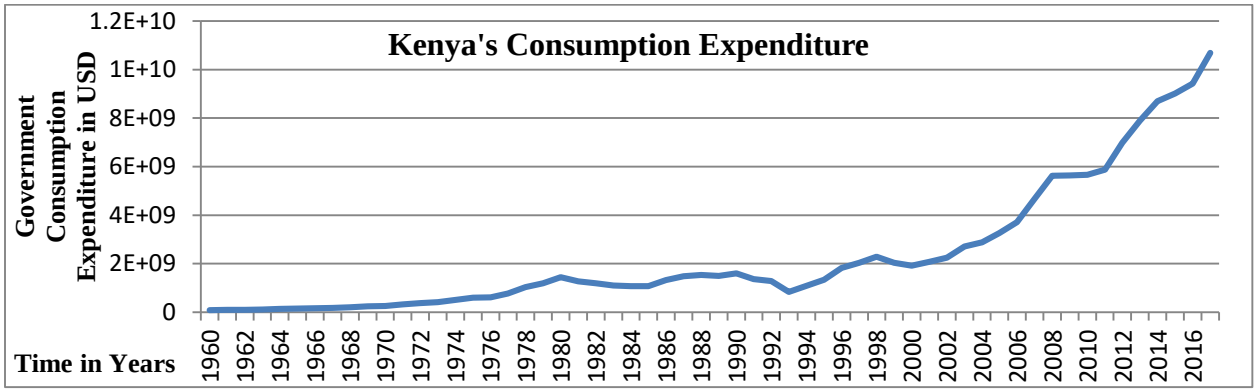


Figure 2: Kenya's Consumption Expenditure

Source: World Bank, 2018

Kenya has experienced increases in government expenditure in the last decade, where the public wage bill has increased tremendously and has accounted for a bigger share of the government budget outturns despite cautions that higher growth in recurrent expenditure relative development expenditure is a proscribed phenomenon by many governments since it is deemed growth retarding.

The lowest value of consumption expenditure that Kenya ever recorded was USD 86,715,965.24 in 1960 and the highest value of USD 10,687,876,290.12 in the year 2017 with an average of USD 2,330,652,945.90. It is notable that after the 2008/2010 fiscal consolidation period government expenditure was meant to come down and indeed growth in consumption expenditure dropped from 26. 2 % in 2007, further dropped to 20.3 % in 2008 and finally to 0.11 % in 2009. However, this drop did not stay as the country found itself in an expansion path of huge government consumption expenditure recording 19 % and 12 % growth in consumption expenditure in the year 2012 and 2013 respectively. This sudden expansion could be due to the roll out of devolution which had seen a speedy upsurge of administrative expenses, increased security spending, and the

rising wage bill which has been associated with both national and county government employees. On average, based on the past five years, Kenya tops the East African countries in consumption expenditure with USD 8,757,880,222.04 followed by Tanzania with USD 6,693,052,622.84. Somalia, Burundi and Rwanda are the least spenders in government consumption with USD 317,859,302.75, USD 635,739,775.28 and 1,182,610,788.62 respectively, on average.

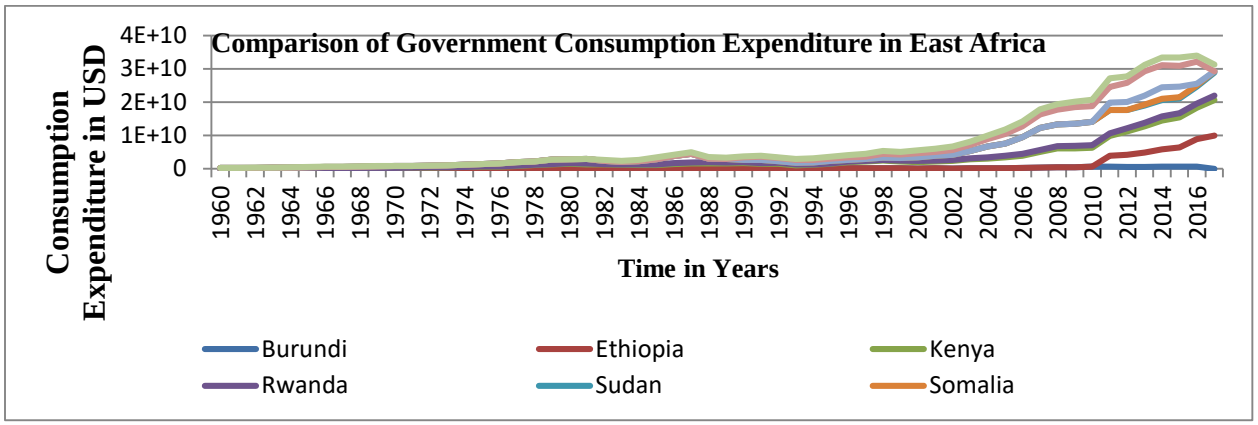
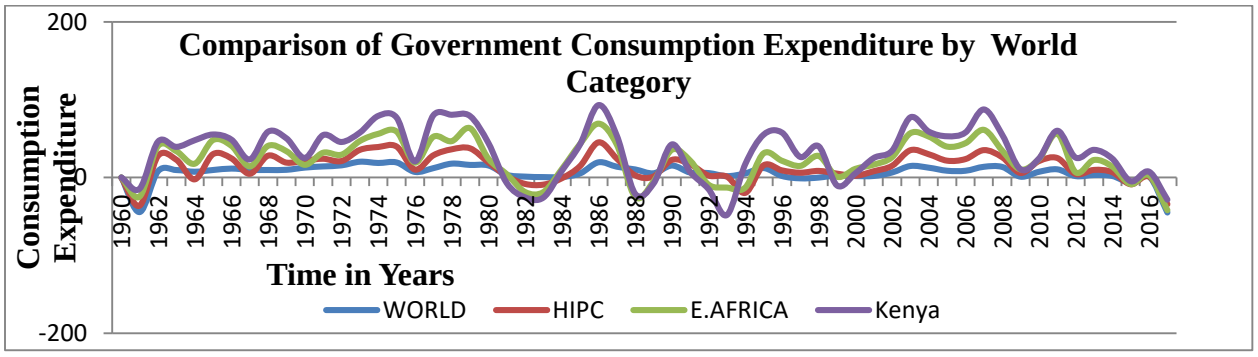


Figure 3: Eastern African Countries Consumption Expenditure

Source: World Bank, 2018

Kenya and Tanzania remain towering among all Eastern African countries probably because of their size in terms of population. Kenya's growth in consumption expenditure has been attributed to a number of fiscal pressures emanating from elections and their subsequent repeats, huge administrative expenses both at national and county governments and expenses towards drought mitigation measures which often occasion high tides in government expenditure. Kenya's plot of growth in government consumption expenditure exhibits high peaks and spikes and has even remained above world growth rate. The high spikes are indications of likelihood of disturbances on government spending that operate within the structure of the economy.



Key: HIPC, Heavily Indebted Pour Countries

Figure 4: Consumption Expenditure Growth by Category

Source: World Bank, 2018

Kenya government is facing difficulties in managing its consumption spending, in particular with the devolved units of governance. From time to time, workers represented by their unions have pushed for better pay and salaries, and this has always called for the restructuring of the government budget. This mounting pressure

sometimes force the government into borrowing but this would only further aggravates the situation as it increases local debt. While Maingi (2010) illustrated the effects of consumption expenditure on economic growth, Kanano (2006) demonstrated the determinants of total public expenditure. Oketch, T. O. and Linge, T. (2018) focused on wages and allowances and consumables to elaborate the determinants of recurrent expenditure in Kenya. In light of this, this study sought to establish the determinants of government consumption expenditure in Kenya with special focus on three streams of variables; economic, structural and politico-institutional variables using time series data for the period 1963-2017.

1.1 Statement of the Problem

In Kenya, government consumption has shown rapid growth from Ksh 31.2732 billion in 1963 to Ksh 2107.2 billion in the year 2018. Noting this relatively high level of consumption expenditure, the World Bank and IDA have issued caution to Kenya to downsize her consumption expenditure to create room for investment expenditure (Were, 2018; Kinuthia, 2018). The question that then lingers is how then should the government slash down consumption expenditure? The government has to identify the causes of growth to consumption spending and be able to effectively restrain the high tides exhibited in consumption expenditure in Kenya. While Kanano (2006) modelled the determinants of total public expenditure growth in Kenya. However, both of them did not model the causes of consumption expenditure. Thus, in light of this exposition, this study endeavored to establish the determinants of government consumption expenditure in Kenya using time series data for the period 1963-2017.

2. Literature Reviesw

This chapter is divided into three sections: theoretical literature review, empirical literature review and summary of the literature review..

2.1 Theoretical Literature Review

For many years, varied theoretical models have been formulated to provide explanations to increases in state spending.

According to Adolph Wagner (1893), simultaneous growth in government spending and gross domestic product can be attributed to three reasons: First, the responsibility of the state in providing basic security as well as its role in controlling economic activities are likely to become more enormous and expansive because of the growing complexity of economic life and urbanization, which occur especially during industrial transformation. Second, as a country undergoes industrial transformation, government sector activity tends to substitute for private sector activity because administrative functions and defensive roles of a state increase fundamentally during this process of industrial transformation. Finally, government spending on social protection and welfare programs also continues to grow as a country industrializes due to the raised elasticity of demand for these services; this is an assumption which is clearly implied in Wagner's work.

2.2 Empirical Literature Review

Kariuki (2003) studied the determinants of gross fixed capital formation in Kenya and found that increases in real interest rates do not deter private investment. Government expenditure was the most significant determinant of gross fixed capital formation. His study further reveals that monetary policy and output play a less significant role in explaining fixed capital formation, while FDI was very significant and strongly explain gross fixed capital formation in Kenya.

Kanano (2006) used OLS estimation techniques to study the determinants of public expenditure in Kenya using time series data for the period 1980 - 2004 and the results showed that private debt significantly explains public expenditure growth in Kenya.

Mosoti (2014) explains the causes of the growth of public expenditure in Kenya over the period 1980 to 2012. He used Ordinary Least Squares to find a possible links between the explanatory and the dependent variables, and concluded that, in Kenya, Population, GDP, and coalition government show a strong significant relationship with public expenditure in the long run.

Kilinga (2015) studied the determinants of county government capital expenditure using cross-se tion data for the 2013/2014 budget period in Kenya. The findings of this study indicated that wage bill had a negative statistically significant relationship with capital expenditure while local revenue performance had a positive and significant relationship with capital expenditure.

Oketch T. O. and Linge T. (2018) investigated the determinants of recurrent public expenditures in Kenya with interest on salaries, social contribution and non-wage related variables using error correction model and found that all the variables significantly affect recurrent spending in Kenya.

3. Methodology

This chapter presents both conceptual and theoretical frameworks within which the study was formulated. It also discusses the models used in the study, data types, sources of data, and data analysis techniques employed in this study.

3.1 Research Design

The study was a non-experimental research in which a range of variables were measured and adopted correlational studies design. The study used secondary data for the period 1963-2017 for the following set of variables: economic variables; gross domestic product, foreign aid, inflation, foreign direct investment, interest rate, trade openness and external debt stock; Structural variables; urbanization rate, young population and old population and finally Politico-institutional variables; market liberalization, political liberty, political instability, corruption and elections. Published data was collected from World Bank Country Data Portal (2018) and analysed using Stata and Gretl econometric softwares. The systems of equations were estimated using VECM, VAR and OLS after carrying out time series property tests on the data.

3.2 Conceptual Framework

The study was guided by three objectives and each objective was modelled separately giving rise to three systems of equations in the study that formed the basis of the conceptual framework.

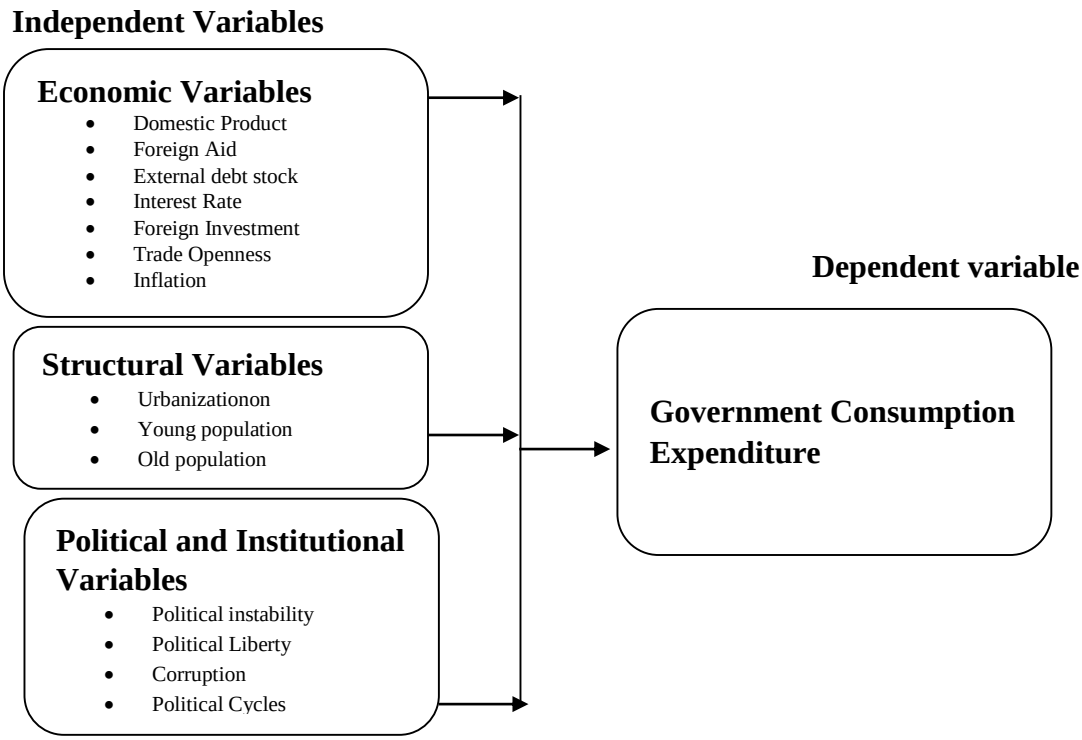


Figure 5: Conceptual Framework

Source: Author, 2018

3.3 Theoretical Framework

This study adopted public choice approach similar to that used by Hewitt (1991, 1992, 1993), Davoodi et.al (2001), Nyamongo (2007) and Akanbi and Schoeman (2010).

Assuming the welfare function of the government to be as follows: W = f (P, C, R, and Z)... (3.1) Where P = private consumption; C = government capital spending; R = government recurrent spending; and Z = state variables (i.e. GDP per capita, government revenue, governance index, population and urbanisation index, etc.) The government's decision of the level of recurrent and overall government spending is affected by the state variables. Overall government spending is represented by the following equation: G = C + R. ……. (3.2)

Abstracting from private investment and the external account, the budget constraint is determined by the available resources in the economy: G = Y – P……..…… (3.3)

Where, Y represents the value of gross domestic product. In order to obtain a simple analytical solution, a Cobb-Douglas specification for equation (3.1) is considered, while abstracting from the presence of state variables. Thus,

$\mathbf{W = P^{\propto} C^{\beta} R^{\gamma}}$……..……. (3.4) Choices of G, C and R that maximise equation (3.4) subject to equations (3.2) and (3.3) will result in:

$\mathbf{G = \frac{\beta}{\gamma} R + \frac{\gamma}{\beta} C}$……... (3.5)

$$\boldsymbol{C} = \frac{\beta}{\beta+\gamma}\boldsymbol{G} \quad \ldots\ldots\ldots\ldots \quad (3.6)$$

$$\boldsymbol{R} = \frac{\gamma}{\gamma+\beta}\boldsymbol{G} \quad \ldots\ldots\ldots\ldots \quad (3.7)$$

Equations (3.5), (3.6) and (3.7) show the simultaneous relationship between the two categories of spending and overall government spending. Higher capital and recurrent spending will lead to higher overall spending and vice versa. Allowing for the state variables to enter the equations, results in the following equations:

$G = f_1(C, R, Z)$………………………………………………………………………….. (3.8)

$C = f_2(G, Z)$……………………………………………………………………..…. (3.9)

$R = f_3(G, Z)$…………………………………………………………………………. (3.10)

In line with the specification of this study, equation (3.10) becomes the model of interest to this study showing that recurrent expenditure R is function of total government expenditure G plus other state variables Z.

3.4 The Empirical Models

This study used three models that take the lead from Hewitt (1991, 1992, and 1993). They were specified as follows:

3.4.1 Economic Model

This system of equation consists of variables with cyclical behaviour and comprised of the following: gross domestic product, foreign aid, inflation rate, foreign direct investment, interest rate, trade openness and external debt stock. Thus, equation of the economic determinants was set as follows:

$GC = \beta_0 + \beta_1 GDP + \beta_2 FA + \beta_3 INF + \beta_4 FDI + \beta_5 INT + \beta_6 TRO + \beta_6 DEBT + \mu$…………………………………………………………………………….… (3.11)

where:

GC is real government consumption expenditure; GDP is real Gross Domestic Product; FA is Foreign Aid; INF is Inflation rate; FDI is foreign direct investment; INT is interest rate; TRO is trade openness; DEBT is external debt stock; β_0, β_1, β_2, β_3, β_4, β_5, β_6 are the coefficients or parameters are estimators, and μ is a random error term, assumed to be normally distributed with a zero expected value (or mean).

3.4.2 Structural Model

In this system, demographic factors were considered and they included urbanization rate, young population and old population. The model was therefore specified as follows:

$GC = \beta_0 + \beta_1 URB + \beta_2 YOUNG + \beta_3 OLD + \mu$ ……………………….………………… (3.12)

Where:

GC is real government consumption expenditure; URB is urbanization rate; YOUNG is young population below 15 years; OLD is old population above 64 years; β_0, β_1, β_2, β_3 are the coefficients or parameters are estimators, and μ is a random error term, assumed to be normally distributed with a zero expected value (or mean).

3.4.3 Politico-institutional Model

In this model, issues related to politics and governance were taken into account. It consists of six sets of dummy variables: market liberation, political liberty, political instability, election periods and corruption. The equation for this system was then set as follows:

$$GC = \beta_0 + \beta_1 SAP + \beta_2 DEMOC + \beta_3 WAR + \beta_4 ELECT + \beta_5 COR + \mu \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.13)$$

Where: GC is real government consumption expenditure; SAP is structural adjustment programs which takes a value of 1 for presence and 0 otherwise; DEMOC is political liberty which takes a value of 1 for presence and 0 otherwise; WAR is political instability which takes a value of 1 for presence and 0 otherwise; ELECT is elections which takes a value of 1 for presence and 0 otherwise; COR is corruption which takes a value of 1 for presence and 0 otherwise; β_0, β_1, β_2, β_3, β_4, β_5, are the coefficients or parameters are estimators, and μ is a random error term, assumed to be normally distributed with a zero expected value (or mean).

4. Results and Discussions

This section reports the discussions on descriptive statistics of the study data, econometric analysis of the time series, interpretation and the discussion of the econometric results.

4.1 Descriptive Analysis of Data

In time series analysis, descriptive analysis of data enables us to examine the variability of data so as to determine if the time series data can be subjected to further statistical analysis. Table A1 all through to Table A3 below show the STATA output summary for descriptive analysis for the three Models.

Table A1: Summary Statistics for Economic Model

Variable	Obs	Mean	Std. Dev.	Min	Max
GC	55	3.08e+09	2.18e+09	3.51e+08	8.92e+09
GDP	55	2.28e+10	1.39e+10	4.79e+09	5.81e+10
FA	55	1118.779	825.5417	280.3	3572.62
INF	55	10.60218	8.323728	.099	45.979
FDI	55	9.64e+10	1.52e+11	1.28e+08	5.19e+11
INT	55	.1804364	.0533659	.12	.36
TRO	55	1.750309	.4833703	1.087	3.008
DEBT	55	4.94e+09	4.79e+09	2.27e+08	2.57e+10

Source: Author, 2018

Table A2: Summary Statistics for Structural Model

Variable	Obs	Mean	Std. Dev.	Min	Max
Year	55	1990	16.02082	1963	2017
GC	55	3.08e+09	2.18e+09	3.51e+08	8.92e+09
URB	55	.2124364	.0757835	.087	.362

YOUNG	55	1.15e+07	4854349	4269399	2.01e+07
OLD	55	693468.6	277024.7	324836	1335152

Source: Author, 2018

Table A3: Summary Statistics for Political-institutional Model

Variable	Obs	Mean	Std. Dev.	Min	Max
GC	55	3.08e+09	2.18e+09	3.51e+08	8.92e+09
SAP	55	.1272727	.33635	0	1
DEMOC	55	.4727273	.5038572	0	1
WAR	55	.1090909	.3146266	0	1
CHIGH	55	.1454545	.355808	0	1
CLOW	55	.2181818	.4168182	0	1
CMODERATE	55	.2181818	.4168182	0	1
CQUITEHIGH	55	.0727273	.2620818	0	1
CQUITELOW	55	.1818182	.3892495	0	1
ELECT	55	.2	.4036867	0	1

Source: Author, 2018

A closer look at the mean and standard deviation for Economic Model and Structural Model show that there was no case where the standard deviation was greater than the mean, thus, an implication that the mean was a good indicator of the parameters in the two models.

4.3 Econometric Analysis

As part of econometric tradition and practice, it is in order to ensure that the estimates are consistent and efficient and for such reasons, it was necessary to observe that pre-estimation assumptions underlying time series analysis were met.

4.3.1 Variance Inflation Factor Analysis

The time series in the Economic Model and Structural Model were subjected to collinearity test to examine the extent of multicollinearity among the variables in the system of equations.

Table A4: Variance Inflation Factor Analysis for Economic Model

Variable	VIF	1/VIF
GDP	5.51	0.639200
DEBT	5.29	0.444863
FDI	5.15	0.187617
FA	5.14	0.194553
TRO	5.03	0.1988o7
INF	2.09	0.478469

```
       INT |      1.52    0.656623
-------------+----------------------
    Mean VIF |      4.25
```

Source: Author, 2018

Table A5: Variance Inflation Factor Analysis Structural Model

```
----------------+----------------------------
    Variable |       VIF       1/VIF
-------------+----------------------
       YOUNG |     87.75    0.011396
         URB |     43.41    0.023035
         OLD |     42.16    0.023721
-------------+----------------------
    Mean VIF |     57.77
-------------+----------------------------
```

Source: Author, 2018

Overall correlation was very high in the Structural model as indicated by the mean VIF values of 4.25 and 57.77 for Economic Model and Structural Model respectively. The test results for multiple correlation coefficients for the Economic Model show that there was no severe multicollinearity exhibited by the variables.

4.3.2 Stationarity Analysis

The series plots in figure below give a pictorial description of the nature of variables in the Economic Model and Structural Model.

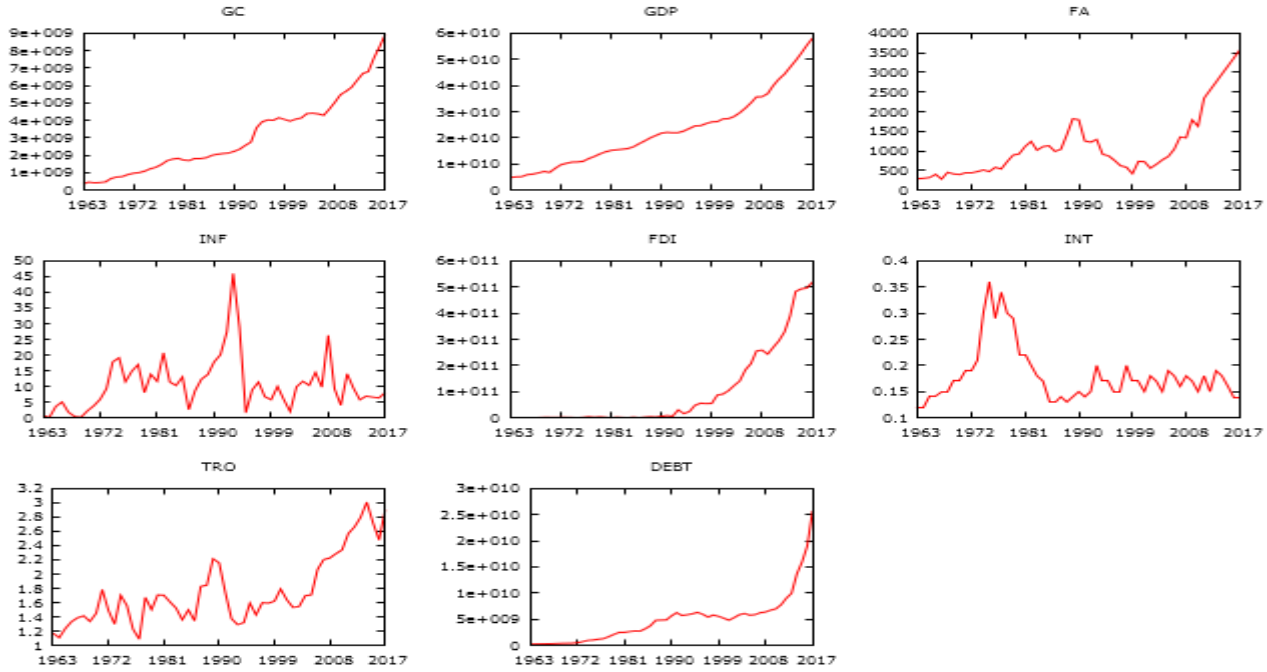


Figure 6: Time series plot for Economic Model

Source: Author, 2018

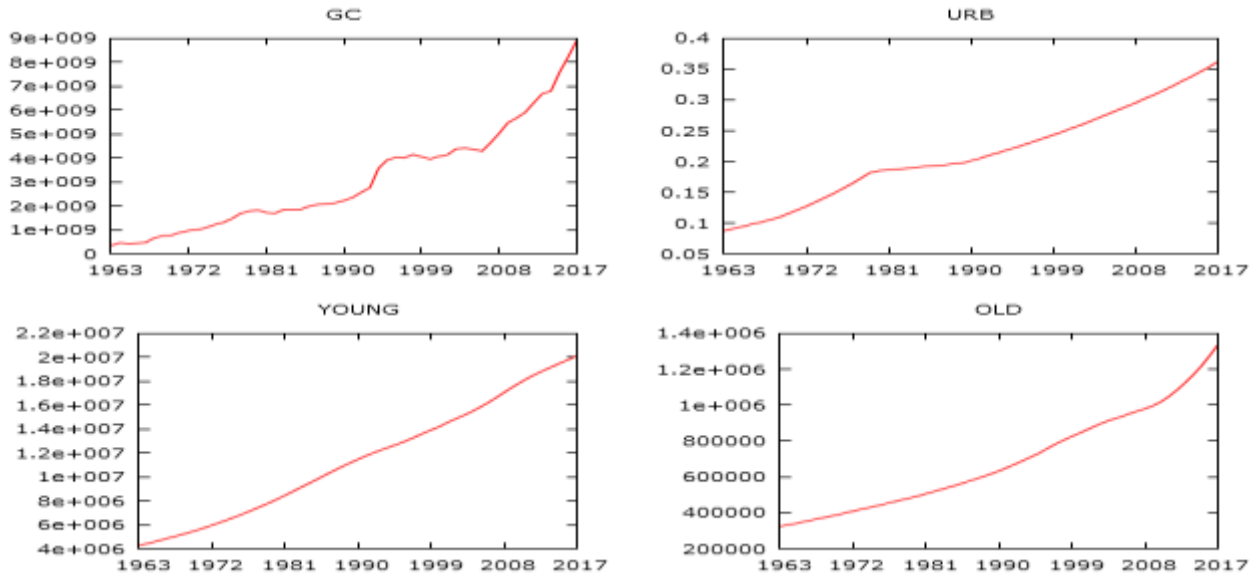


Figure 7: Time series plot for Structural Model

Source: Author, 2018

The variable were non-stationary at I(0) but upon first differencing, all the variables became stationary and it was therefore be concluded that the said series were integrated of at least order I(1).

Table A61: ADF Test for Model 1 at First Difference

lags(0) Number of obs = 54

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
DGC	-9.775	-4.146	-3.498	-3.179
DGDP	-8.864	-4.146	-3.498	-3.179
DFA	-13.046	-4.146	-3.498	-3.179
DFDI	-9.420	-4.146	-3.498	-3.179
DINT	-8.497	-4.143	-3.497	-3.178
DTRO	-11.186	-4.146	-3.498	-3.179
DDEBT	-7.583	-4.146	-3.498	-3.179

Source: Author, 2018

Table A 7: ADF Test for Model 2 at First Difference

lags(0) Number of obs = 54

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
GC	-2.417	-4.141	-3.496	-3.178
DURB	-7.828	-4.146	-3.498	-3.179
DYOUNG	-5.948	-4.141	-3.496	-3.178
DOLD	-2.631	-4.146	-3.498	-3.179

Source: Author, 2018

4.3.2 Cointegration Analysis

Since all the study variables were found to be I(1), it was very useful to establish whether the variables possessed inherent long run equilibrium relationships between them.

Table A8: Johansen Cointegration Test for Economic Model

Trend: constant Number of obs = 51
Sample: 1967 - 2017 Lags = 4

maximum rank	parms	LL	eigenvalue	trace statistic	5% critical value
0	200	-4712.6327	.	276.9902	156.00
1	215	-4657.8794	0.88319	167.4835	124.24
2	228	-4623.3277	0.74204	98.3802	94.15
3	239	-4597.9604	0.63020	47.6456*	68.52
4	248	-4582.8666	0.44673	17.4580	47.21
5	255	-4576.6858	0.21525	5.0963	29.68
6	260	-4574.1376	0.09510	0.0000	15.41
7	263	-4574.1376	0.00000	0.0000	3.76
8	264	-4574.1376	-0.00000		

Source: Author, 2018

Table A9: Johansen Cointegration Test for Structural Model

Trend: constant Number of obs = 53
Sample: 1965 - 2017 Lags = 2

maximum rank	parms	LL	eigenvalue	trace statistic	5% critical value
0	20	-1863.8318	.	47.5760*	47.21
1	27	-1851.1009	0.38147	18.4143	29.68
2	32	-1844.6205	0.21694	5.4534	15.41
3	35	-1841.9775	0.09492	0.1673	3.76
4	36	-1841.8938	0.00315		

Source: Author, 2018

The trace statistics revealed 3 cointegrating equations with a probability value of 0.63020, which is greater than 5 percent significance level showing that there existed a long run relationship among the variables in the Economic Model. Similarly, the trace statistic for Structural Model revealed zero (0) cointegrating equations

since the entire trace statistic throughout all the cointegration ranks were less than the respective critical values at 5 percent significance level.

4.4 Diagnostic Tests

Diagnostic tests for serial correlation, autoregressive conditional heteroscedasticity and functional form were conducted on the two models.

4.4.1 Tests for Serial Correlation

Residuals which are highly correlated to the past values are likely to give unreliable results. To guard against invalid and unreliable regression results, residual test was conducted to ensure that the coefficients were consistent.

Table A10: Autocorrelation Test for Economic Model

Lagrange-multiplier test

lag	chi2	df	Prob > chi2
1	85.4305	64	***0.06***804
2	59.5454	64	0.63455

H0: no autocorrelation at lag order

Source: Author, 2018

Table A 11: Autocorrelation Test for Structural Model

Lagrange-multiplier test

lag	chi2	df	Prob > chi2
1	19.0960	16	0.26371
2	8.7606	16	0.92295

H0: no autocorrelation at lag order

Source: Author, 2018

From the conducted Lagrange-Multiplier test, it is clear that the probability values of the respective test statistics were all greater than 5 percent significance level throughout all the lags in both system of equations. This means there was no serial correlation in the variables specified in the model and that was desirable.

4.4.2 Normality Tests

Jarque-Bera normality tests were conducted on the two models: Economic and the Structural Models..

Table A12: Normality Test for Economic Model

Jarque-Bera test

Equation	chi2	df	Prob > chi2
GC	0.789	2	0.67397
GDP	1.639	2	0.44072
FA	3.281	2	0.19385
INF	0.502	2	0.77792
FDI	0.455	2	0.79639
INT	0.702	2	0.70415
TRO	1.227	2	0.54152
DEBT	1.322	2	0.51627
ALL	9.917	16	0.87091

Source: Author, 2018

Table A 132: Normality Test for Structural Model

Jarque-Bera test

Equation	chi2	df	Prob > chi2
GC	7.991	2	0.06643
ZURB	6.928	2	0.09753
ZYOUNG	1.189	2	0.55189
ZOLD	1.139	2	0.56569
ALL	7.247	8	0.05681

Source: Author, 2018

For both Economic and Structural Models, the Jarque-Bera test statistics turned out to be greater than 5 percent for all the individual variables. Thus, we could conclude that the residuals of each of the series were normally distributed.

4.4.3 Specification Tests

To detect possibility of misspecification in the VECM model in Economic Model and Structural Model, the companion matrix of the corresponding VAR was generated and its eigenvalues and their corresponding moduli were then analyzed in comparison to unit band limits of a circle.

Table A14: Eigenvalue stability test condition for Economic Model

Eigenvalue stability condition

Eigenvalue	Modulus
1.154609 + .1982024i	1.1715
1.154609 - .1982024i	1.1715
1.020972	1.02097
.8233285 + .08126293i	.827329

.8233285 - .08126293i	.827329
.5588477 + .2051742i	.595321
.5588477 - .2051742i	.595321
.3241411 + .4934674i	.590405
.3241411 - .4934674i	.590405
-.5724551	.572455
-.2455686 + .3917534i	.462358
-.2455686 - .3917534i	.462358
.3165786	.316579
.04646984 + .3063663i	.309871
.04646984 - .3063663i	.309871
-.1582071	.158207

At least one eigenvalue is at least 1.0.
Source: Author, 2018

Table A15: Eigenvalue stability test condition for Structural Model

Eigenvalue stability condition

Eigenvalue	Modulus
.9035935 + .1236521i	.907646
.9035935 - .1236521i	.905394
.8224152 + .1486242i	.836059
.8224152 - .1486242i	.826059
.7364075 + .1879924i	.760024
.7364075 - .1879924i	.760024
.497213 + .4234055i	.653064
.497213 - .4234055i	.653064

At least one eigenvalue is at least 1.0.
Source: Author, 2018

Eigenvalue stability test contains a table showing the eigenvalues of the companion matrix and their associated moduli. The table shows that one of the roots is 1. The table footer reminds us that the specified VECM imposes one unit modulus on the companion matrix.

The output indicates that there is a real root at about 0.95.

4.5 Regression Results

OLS, ECM, and VAR estimation techniques were used to establish long-run and short-run relationships among the variables.

4.5.1 Long-Run Coefficients of Economic model

This study estimated the system equation in Economic Model was estimated using VECM model as was earlier envisaged.

Table A16: Vector-Error-Correction Model for Economic Model

beta	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
_ce1						
GC	1	.	.	.	.	.
GDP	-1.295213	.128144	-10.11	0.000	-1.546371	-1.044056
FA	58746.85	776991.6	0.08	0.940	-1464129	1581622
INF	-1.822308	.2125307	-8.57	0.000	1.882358	6.326808
FDI	.0702632	.0083541	8.41	0.000	.0538895	.0866368
INT	7274.939	.	.	.	.	.
TRO	164.7232	.	.	.	.	.
DEBT	2.602987	.3713241	7.01	0.000	1.875205	3.330769
_cons	8.95e+09	.	.	.	.	.

Source: Author, 2018

Table A17: short-Run Dynamics of the Economic Model

Variable	chi2(3)	p-value
GDP	2.76	0.4294
FA	3.00	0.3919
INF	2.94	0.4005
FDI	0.20	0.9776
INT	3.77	0.2877
TRO	2.32	0.5084
DEBT	12.50	**0.0059*** **

Source: Author, 2018

The coefficient of gross domestic product was found to be 1.295213 with a p-value of 0.000, an indication that the coefficient was significant since the probability is less than 5 percent critical value, thus, a percentage increase in the level of gross domestic product would lead to about 1.3 percent increase in Government Consumption Expenditure in Kenya.

Also, the coefficient of foreign direct investment is -0.07263, and the p-value is 0.000 which is significant at the 5 percent confidence level. The magnitude and the sign of the coefficient mean that in the long-run, percentage increase in foreign direct investment would cause government consumption spending to drop by 0.07263 percent, on average, ceteris paribus.

The coefficient of inflation rate is 1.822308 with a p-value of less than 5 percent critical value which shows that it is significant at the 5 percent confidence level. The sign and the magnitude indicate that in the long run, a per cent increase in inflation rate would cause 1.822 percent increase in government consumption expenditure, on average, ceteris paribus.

Finally, the coefficient of external debt stock is -2.60299 with a p-value of less than 5 percent critical value meaning that the coefficient was statistically significant. The statistical information we can derive from this

result is that, in the long-run, a percentage increase in external debt level would result in a 2.6 percent decrease in government consumption expenditure in Kenya, on average, ceteris paribus.

4.5.2 Short-Run coefficients of the structural Model

This study estimated the system equation in the structural model which comprised of structural variables: centred values of urbanization rate (ZURB), young population (ZYOUNG), old population (ZOLD) and government consumption expenditure. Since the variables were integrated of the order I(1) and failed the Johansen test of cointegration, this study settled on VAR model to estimate the system of equation in the structural model.

Table A18: Vector autoregression for Structural Model

Equation	Parms	RMSE	R-sq	chi2	P>chi2
GC	9	1.5e+08	0.9961	13377.06	0.0000
ZURB	9	.015748	0.9998	10270.21	0.0000
ZYOUNG	9	.003376	1.0000	262117.8	0.0000
ZOLD	9	.00779	0.9999	13539.17	0.0000

	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]
GC					
L1.	.9995086	.1189346	8.40	0.000	.8396481 1.350524
L2.	-.4879464	.1344519	-3.63	0.000	-.7514673 -.2244256
ZURB					
L1.	1.28e+09	8.76e+08	1.47	0.143	-4.33e+08 3.00e+09
L2.	-1.23e+09	9.34e+08	-1.32	0.188	-3.06e+09 6.02e+08
ZYOUNG					
L1.	2.09e+09	4.05e+09	0.52	0.606	-5.85e+09 1.00e+10
L2.	-2.24e+09	4.01e+09	-0.56	0.576	-1.01e+10 5.61e+09
ZOLD					
L1.	6.501309	1.601307	4.06	0.000	3.361309 9.634709
L2.	-5.713209	1.544111	-3.70	0.000	-8.74e+09 -2.691809
_cons	7.00e+08	4.48e+08	1.56	0.118	-1.78e+08 1.58e+09

Source: Author, 2018

Table A19: Granger Causality Wald tests

Granger causality Wald tests

Equation	Excluded	chi2	df	Prob > chi2
GC	ZURB	2.3108	2	0.315
GC	ZYOUNG	.7963	2	0.672
GC	ZOLD	18.872	2	0.000
GC	ALL	24.289	6	0.000

|------------------------------+-------------------------|

Source: Author, 2018

Government consumption expenditure is strongly endogenous since the relation between its past values is very strong as indicated by the test statistics and the corresponding p-values which are less than 1 percent significance level. The first lag of government shows a strong positive endogeneity with a coefficient of 1.095086 and p-value of less than 1 percent significance level.

As can be seen from the table, Coefficient of the first lag is 6.50130, which shows that a percentage increase in the first lag of the old population aged 65 years and above is associated with 65 percent increase in government consumption expenditure in Kenya, on average, ceteris paribus. However, the second lag has a negative coefficient of -5.713209 which indicates that a percentage increase in the second lag of the old population aged 65 years and above is associated with 57.1 percent decline in government consumption expenditure in Kenya. The overall exogeneity effect for the old population aged 65 and above was also significant as indicated in Granger Causality Wald test.

4.5.3 Institutional effects of government consumption expenditure

In estimating the institutional model, OLS was used. Government consumption expenditure was regressed against five sets of dummy variables: market liberation (SAP), political liberty (DEMOC), political cohesion (WAR), election periods (ELECT) and corruption (COR). Each of these dummy variables consisted of two levels except corruption which had six levels.

Table A20: OLS Regression Results

```
      Source |       SS       df       MS              Number of obs =      55
-------------+------------------------------           F( 9,  45) =  161.38
       Model |  2.4930e+20     9  2.7700e+19           Prob > F      =  0.0000
    Residual |  7.7241e+18    45  1.7165e+17           R-squared     =  0.9699
-------------+------------------------------           Adj R-squared =  0.9639
       Total |  2.5702e+20    54  4.7597e+18           Root MSE      =  4.1e+08
------------------------------------------------------------------------------
          GC |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         SAP |   2.28e+08   2.44e+08     0.94   0.354    -2.62e+08    7.19e+08
       DEMOC |   6.40e+08   3.25e+08     1.97   0.045    -1.40e+07    1.29e+09
         WAR |   7.54e+08   2.57e+08     2.93   0.005     2.36e+08    1.27e+09
       CHIGH |   3.81e+09   4.13e+08     9.23   0.000     2.98e+09    4.64e+09
        CLOW |   1.30e+09   2.40e+08     5.39   0.000     8.12e+08    1.78e+09
   CMODERATE |   2.88e+09   3.74e+08     7.70   0.000     2.12e+09    3.63e+09
  CQUITEHIGH |   6.47e+09   4.13e+08    15.67   0.000     5.64e+09    7.31e+09
   CQUITELOW |   8.41e+08   1.91e+08     4.40   0.000     4.56e+08    1.23e+09
       ELECT |   1.22e+08   1.43e+08     0.85   0.398    -1.67e+08    4.11e+08
       _cons |   5.49e+08   1.42e+08     3.88   0.000     2.64e+08    8.35e+08
------------------------------------------------------------------------------
```

Source: Author, 2018

The results of the OLS regression show that the explanatory variables jointly explain the variations in the dependent variable government consumption expenditure. 96.3 per cent of the variations that occur in government consumption expenditure are jointly explained by changes in the explanatory variables.

The coefficient of political liberty was significant with a value of 6.40e+08 which represents a difference in government consumption expenditure between years when there was political liberty and years when there was no political freedom. Thus, showing that periods of political liberty are associated with more government consumption expenditure compared to periods of where there was no political liberty, on average, ceteris paribus.

Thus, it can be stated here that, as degree of corruption increases, government consumption expenditure is also bound to increase along with it. This is demonstrated in the results when all other attributes representing higher levels report positive difference in the coefficient relative to the lowest level of corruption very low (CVERYLOW).

For political instability, the regression results show a positive coefficient of 7.54e+08 with p-value of 0.005. Similarly, the coefficient of 7.54e+08 represents a positive departure in government consumption expenditure from the level of government consumption expenditure when the event was not observed, that is, when there was no war. Starting from a point of reference where there are no politically instigated violence and wars and moving to a period of political instability, government consumption expenditure would increase by USD 7.54e+08, on average, ceteris paribus.

5. Conclusions

While gross domestic product and inflation rate are positive determinants, foreign direct investment and external debt stock turned out to be negative determinants of government consumption spending in Kenya in the long-run. Structural determinants of government consumption expenditure in Kenya include the joint effect of urbanization, young population and old population. These three variables jointly cause government consumption expenditure in the short-run. Individually, the first lag of old population cause increase in government consumption expenditure while the second lag of old has significant negative effect on government consumption expenditure in Kenya in the short-run. Finally, political liberty, political instability and corruption are the political and institutional determinants of government consumption expenditure in Kenya, ceteris paribus. All the three variables have a significant positive impact on government consumption expenditure.

5.1 Policy Implications

The results obtained from this study are quite informative and is very useful to policy formulation and implementation. Prudent fiscal policy measures should be put in place to cushion inflationary measure. Inflationary fiscal policies have the tendency of bloating the government budget. The government should create conducive environment for foreign investment as this will complement a good portion of activities and reduce its financial burden. Foreign investors will absorb labor and reduce the government burden on remuneration of employs. The government should be very much cautious of the debt level and avoid over-borrowing since debt obligation has a severe impact on the government budget, creating huge deficits which when are tax financed lead to increases in prices which again inflate the government budget. The government should be up to date with urban dynamics and have accurate forecast about urbanization in readiness to meet consumption expenditure associated with development in towns and cities. Upsurge in population in urban dwellings can be

restrained by checking on rural-urban migration. Appropriate methods to absorb people in jobs at local levels should be devised. The government should take keen interest in empowering its citizens at younger ages to avoid vulnerability at later years which is associated huge government expenditure. This will reduce instances of, for example, free transfers to the old as way of social protection. Adequate resources, in terms of capitation and personnel, should be given to institutions such Ethics and Anti-Corruption Commission that are mandated to deal with graft and rent seeking behaviors in order to effectively control and ensure efficiency and leanness in government spending. Peace building should remain as one of the mega projects of the government. The government should ensure that the political class do not propagate divisive politics that usually end up in serious political tensions. Legislations on incitements and instigation of political violence should be strengthened and strictly adhered to.

5.2 Areas for Further Research

This study has extensively examined the determinants of government consumption spending in Kenya. Government consumption spending is the dependent variable which comprises of two categories of expenditure: productive government consumption expenditure and non-productive government consumption expenditure. Thus, a study of these two tiers of government expenditure can be conducted in relation to their determinants or with reference to GDP in Kenya

REFERENCES

Akanbi, O. A. (2014). Government Expenditure in Nigeria: Determinants and Trends. Mediterranean Journal of Social Sciences, Vol 5, No 27.

Davoodi H., Clements B., Schiff J., & Debaere P. (2001). Military spending, peace dividend, and fiscal adjustment. IMF Staff Papers, Vol.48, No.2,pp. 290-316.

Hewitt, D.P. (1991). Military expenditure: econometric testing of economic and political influences. IMF Working Paper WP/91/53 (Washington: International Monetary Fund).

Hewitt, D.P. (1992). Military expenditure worldwide: determinants and trends. Journal of Public Policy. Vol.12, No.2, pp.105-52.

Hewitt, D.P. (1993). Military expenditure 1972-1990: the reasons behind the post-1985 fall in world military spending. IMF Working Paper WP/93/18 (Washington: International Monetary Fund).

Kanano, A. G. (2006). Determinants of Public Expenditure Growth in Kenya. (Unpublished M.A Thesis). University of Nairobi, Nairobi, Kenya.

Kariuki, D. K. (2003). Determinants of Fixed Capital Formation in Kenya. (Unpublished M. A. Thesis). Makerere University, Kampala, Uganda.

Kilinga, E.N. (2015). Determinants of Capital Expenditure by County Governments in Kenya: FY2013/14. Journal of Management, Vol 2, No 17, 1621-1642.

Kinuthia, K. (2018, September, Monday). World Bank ranking highlights Kenya's debt, spending woes. Business Daily. Retrieved from https://www.businessdailyafrica.com/datahub/World-Bank-ranking-Kenya-debt-spending-woes/3815418-4764196-1521r35/index.html

Maingi, J. (2010). The Impact of Public Expenditure on Economic Growth in Kenya (Unpublished D. Phil Thesis). Kenyatta University, Nairobi, Kenya.

Mosoti, M. (2014). The growth of Public expenditure in Kenya. Exploring the Causes (1980-2012).

Musgrave, R. (1989). The Theory of Public Finance. New York: McGraw-Hill.

Nyamongo, E.M. (2007). The determinants of the structure of government expenditure in Africa. University of Pretoria, Pretoria. Available at: http://upetd.up.ac.za/thesis/available/etd-11212007-132033/unrestricted/00front.pdf.

Oketch, T. O. and Linge, T. (2018). Empirical Analysi s of Determinants of Recurrent Public Spending in Kenya. International Journal of Economics, Commerce and Management, Vol. VI, Issue 11.

Wagner, A. (1893). Grundlegung der Politschen Okonomie [Groundwork of political economy]. Liepzig, Germany: C.F. Winter.

Were, A. (2018, July, Sunday). Why recurrent expenditure has become a big budget problem. Business Daily. Retrieved from https://www.businessdailyafrica.com/analysis/ideas/Why-recurrent-expenditure-has-become-a-big-Budget-problem/4259414-4652510-10lgrr1z/index.html