

EFFECTS OF GOVERNMENT SPENDING ON PRIVATE INVESTMENTS IN KENYA

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DECLARATION

This Research Paper is my original work and has not been presented to any institution for the award of diploma, bachelor Degree or Masters.

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DEDICATION

This study is dedicated to my mother, family friends and my significant other.

ACKNOWLEDGEMENT

I want to extend my heartfelt gratitude to the Almighty God who enabled me to complete this work. His favor and mercies have been enormous and immeasurable. I received unconditional and invaluable support from my family and friends and relatives. I am indebted to my supervisor and advisor Ms. Laura Barasa for her insight, guidance and exuberant professional support. God has favored and rewarded our efforts.

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ABBREVIATIONS AND ACRONYMS

ADF - Augmented Dickey-Fuller Test

ECM - Error Collection Model

GDP- Gross Domestic Product

GNP- Gross National Product

IMF- International Monetary Fund

GoK – Government of Kenya

MDG – Millennium Development Goals

MTP- Medium- Term Plan

PP – Phillip Perron Test

SAPs - Structural Adjustment Programs

UN - United Nations

VAR –Vector Autoregressive Model

VECM- Vector Error Correction Model

Key Words: Private investment, crowding-in, Crowding-out, Government expenditure

ABSTRACT

Government expenditure has been an imperative form of expansionary policy in Kenya since independence. Studies from diverse parts of the world indicate a mixed result of the effects of government spending on private investment. Some studies reveal that government expenditure crowds-in investments while others reveal that it crowds it out. Despite the increase in government spending in Kenya, the private investment has not been sustainable even though there have been numerous reforms seeking to enhance this component of GDP. This is a cause to worry considering that private investment is a crucial component as Kenya endeavor to enhance its economic growth. This study, therefore, sought to establish whether government spending crowds-in or out the private investments. To attain this objective, this study adopted VAR and VECM methodology using the data for the period 1994-2014. The study analyzed the long-run relationship between private investment and government expenditure through Johansen cointegration approach. Additionally, the study employed Philip Perrons' and Augmented Dickey-Fuller Test to check for unit roots. These statistical tests indicated that all the data in the model were non-stationary, but they became stationary on the first-difference. The findings revealed that government expenditure on development projects has both short-run and long-run effects on private investment. Recurrent spending only indicated a long-run relationship with the private investments. All the results indicated a positive relationship. This means that government expenditure significantly crowds-in private investment in Kenya. This study recommends that the government of Kenya should focus on spending on components that have a positive impact to private investment and numerous reforms need to be put in place to enhance public finance management.

CHAPTER ONE

INTRODUCTION

1.1 Background

Milbourne, Otto, and Voss, (2013) argue that in Kenya, private investment has not been sustainable since the nation achieved independence. The government is often concerned because investment is regarded as major element that accelerates economic growth and development. Kenyan Government has formulated numerous policies with an aim of encouraging private investment. Nonetheless, these strategies have borne little fruits (Milbourne, Otto, and Voss, 2013).

Every government aims to achieve macroeconomic goals such as stabilizing prices, stimulating aggregate demand, increased and sustainable economic growth, low and satisfactory unemployment levels among others. To attain these goals, governments often put in place either fiscal or monetary policy or both (Ghura and Goodwin, 2011). Monetary policy entails government efforts to control directly monetary aggregates such as credit facilities control. Conversely, fiscal policy entails taxation and government expenditure in the verge of achieving macroeconomic goals. Kenya uses both monetary and fiscal policies. In response to the dynamic needs in the Kenyan economy, successive governments have significantly opted to increase public spending noticeably so as to stimulate economic growth (Diamond, 2014).

After independence, the Government of Kenya (GoK) embarked on strategies that would enhance quick economic growth to overcome the challenges the economy was facing. One of the measures the country embraced was giving incentives to the private investors. Within the first decade after independence, the nation had attained tremendous growth in private investment of approximately 16% of GDP (Kiptui, 2005). In the succeeding decade there was mixed tendency; however, the average growth was relatively high at approximately 18% of GDP. In the third decade, there was a minor decline in the growth to around 16.5% of GDP (Were, Ngugi & Makau, (2006). This decline persisted in the fourth decade, with a major decline in private

investment to about 12% of the GDP. Noting such trends, it is important to assess whether an increase in government spending has the impact on private investment.

1.1.1 Public Expenditure Policy in Kenya

The Kenyan government spending size and distribution has continued to change significantly since the country attained its independence (Kiptui, 2005). There are various aspects that guide the government on its expenditure. This includes various sessional papers, Kenya Vision 2030 and medium-term plans. Since in the early 1960s, the nation has tried to uphold high levels of investment, from which the larger part is financed by domestic savings. Ghura and Goodwin (2011) contend that the savings-investment gap for several years has unremittingly increased from around 3% of GNP experienced between 1965 and 1969 to 6.2% in the 1980s. Therefore, Kenya significantly relied on external borrowing to enhance its capital formation. This meant that, if net foreign capital inflows were reduced, there would be rigorous negative effects on economic growth whereas high overdependence on external capital inflows would lead to vast outflows of investible resources regarding debt repayments. Previous studies indicate that this is the major cause of the heightening savings-investment gap, which is the huge budget deficits incurred by the public sector. From 1969 to 1973, the overall budget deficit amplified from 4.9% to about 9.4% of GDP. On average, it was about 5.0% between 1989 and 1990 (Bwonde, 2000). In 1986, Economic Management for Renewed Economic Growth sessional paper was published. This paper suggested that to improve the Kenyans' living standards, it was essential that economic policy focuses on enhancing economic growth and sustenance of the rapid growth rates that were experienced in the 1960s was necessary. This would be made possible by implementing of suitable policies, mainly those lessening fiscal, saving, and foreign exchange constraints (Government of Kenya, 2010).

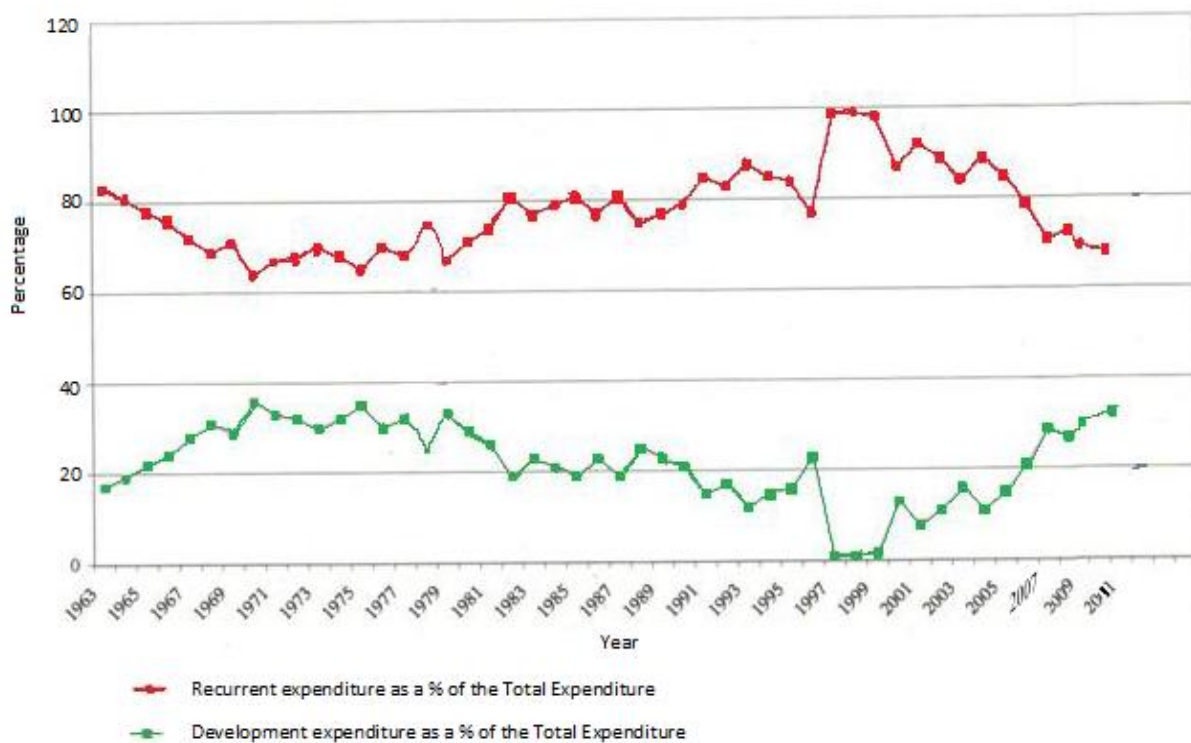
Based on the National Accord Implementation Committee on National Reconciliation and Emergency Social and Economic Recovery Strategy reports, the government came up with medium-term fiscal expenditure plan covering a period between 2008 and 2012. The chief goal of the Medium-Term policy was to increase the real GDP growth from an estimated 7 percent in 2007 to between 7.9 and 8.8 per cent by the year 2009-10; and to approximately 10 per cent by

2012 (Diamond, 2014). In the succeeding five years, the levels of savings and investment were estimated to increase to enhance economic growth and the creation of employment envisioned under the Plan (Milbourne, Otto, and Voss, 2013).

1.1.2 Composition of government expenditure in Kenya; development and recurrent expenditure

Kenya Public expenditure classified in terms of development and recurrent expenditure for the period between 1963 and 2011 as summarized in % form in figure 1.1 below;

Figure 1.1: Government Expenditure in Kenya; Development and Recurrent Expenditure



Source: Herandez-Cata, E., 2010.

It is apparent from above figure (figure 1.1) that since independence, the government has prioritized on the recurrent expenditure rather than development expenditure. This could be because immediately after Kenya attained independence; the sitting president adopted African

socialism, which stated that there was need to have a concerted effort to exterminated poverty, illnesses and ignorance. The government came up with strategies in order to provide those needs. In the successive years, corruption, wastefulness, bloated government ministries and unnecessary parliament members' salaries could partially account for the trend (Government of Kenya, 2014). Recurrent expenditure ratio higher than that of development could be partly attributed to the International Monetary Fund (IMF) and World Bank spearheaded structural adjustment programs which discouraged the Kenyan government from directly being involved in the economy.

The structural adjustment programs (SAPs) supported privatization strategy and cost sharing that brought about the reduction of expenditure in some ways. In 2002, the development expenditure ratio declined and this was attributed to vast budget expense to fund the election and settle people who were internally displace during post-election violence (Were, Ngugi & Makau, 2006). Since 2002, development expenditure underwent an upward trend as the NARC government started implementing immense infrastructure development as a strategy for eradicating poverty (Government of Kenya, 2002). Since then, infrastructural development has recorded immense growth. These include construction of Thika road, various bypasses, ICT infrastructure (especially optic cable installation), and education enrollment among others. Between 2008 and 2011, development expenditure was constantly high since most of the development projects were in progress coupled with the high raw materials' prices because of high fuel costs, devaluation and inflation which hit high record of 19% in 2011 (Milbourne et al., 2013).

1.1.3 Trends and Composition of Government Expenditure

To explain the growth in the overall government expenditure, it is essential to consider its breakdown by expenditure categories. Expenditure is classified in terms of purpose as either recurrent or development expenditure. Recurrent expenditure entails the expenditure of recurrent expenses that are less optional and are made on continuing programs or activities. This comprises administration, wages and salaries, transfers payment, debt repayment and welfare services (Milbourne, Otto, and Voss, 2013; Hernandez-Cata, 2010). Recurrent expenditure can have an impact on economic growth since it affects people's capacity and the will to work, save and invest. Development expenditure comprises of expenditure that is basically discretionary.

Mostly, it entails the programmes and activities that are new and which have not been completed as desired. An example of development expenditure includes spending on the construction of railways, road network and communication systems, irrigation schemes and energy (Government of Kenya, 2014).

1.2 Statement of the Problem

Private capital accumulation is crucial for enhancing economic growth. Bwonde (2000) asserts that private investment is the key driver of economic growth. Over the years, the GoK has been trying to restructure its government expenditure with an aim of revitalizing the economy. However, the slight increase in the GDP has not translated into higher private investment. Even though various reforms have been implemented, the levels of private investment have remained. On average since independence, private investment in Kenya as a percentage of GDP is approximately 12.6 percent. The highest percentage recorded was 16.2% in 2005. Diamond (2014) argues that this ratio is far below what the prosperous world's economies experiences and thus it is insufficient to stimulate economic growth in the verge of attaining at least 10% growth as stipulated in Kenya Vision 2030.

According to Government of Kenya (2010) the public investment share in gross investment in 2011 was 14.1%, whereas the share of private investment 87%. Nevertheless, by 2014, the comparative shares for public and private investment were 24.1% and 75.3% respectively (Diamond, 2014). This indicates that public investment has continued to grow comparatively faster than the private investment.

The effect of government expenditure on private investment performance has not received much attention as opposed to effects of government spending on economic growth. Consequently, it is not apparent what effects the government expenditure has had on private capital accumulation (Milbourne, Otto, and Voss, 2013). Despite the government increasing external borrowing to expand development expenditure, which would significantly elevate private capital formulation, the efforts have not borne fruits. Therefore, the study sought to determine the effects government expenditure on private investors in Kenya.

1.3 Objectives of the Study

1.3.1 General Objective

The main objective of the study was to examine the effects of government spending on private investment in Kenya

1.3.2 Specific Objectives

- i. Determine the relationship between development government spending and private investment
- ii. To examine the relationship between recurrent expenditure and private investment

1.4 Significance of the Study

This study aimed at revealing information that would be highly beneficial to various parties, not just on the academic angle. This study specifically is beneficial to policy makers. Based on the study's findings, the policy formulators obtain relevant information regarding the effect of public spending on private investments in the verge of encouraging private capital formulation to spur economic growth. This could lead to better policies' formulation and in turn private investment could be enhanced.

The study advances literature through bridging the gap on the effects of government spending on private investment. Now, there is sparse literature concerning the subject in Kenya. Most studies have only focused on the overall effect of government expenditure on economic growth. This study sheds light on the effects of various government spending variables on private investment.

2.0 LITERATURE REVIEW

2.1 Introduction

This section entails the review of the literature in relation to the effects of government spending on private investments. It reviews various hypotheses that elaborate the impact of government expenditure. The section also makes an empirical review of previous studies conducted on this topic and the findings from those studies. This section finally reviews the literature and points out the gaps that need to be filled.

2.2 Theoretical Framework

The impact of public expenditure on private investment behavior has always sparked controversy among scholars. Ascharer (1989) contends that thought that stipulates that an increase in government expenditure as a result of increased borrowing requirements, suppresses private investment which in turn retards economic growth. Scholars refer the phenomena as the crowding-out hypothesis. Ricardian Equivalence is another useful hypothesis in this study. It suggests that any increase in government expenditure followed by equal increases in private saving have no first-order effect on private spending. This divergent school of thought led to numerous empirical studies which have attempted to establish the impact of public expenditures on private investment, and most of those studies have shown mixed results that support one theory or the other (Ascharer, 1989).

2.2.1 Musgrave Rostow's Approach

The theory posits that in early stages of economic growth, a country's public spending need to be encouraged. This theory further argues that during the early economic growth phases there exist market failure; therefore, the government should be significantly involved to deal with such failures. Nevertheless, this theory has its limitation in that it ignores the contribution made by the private sector to development. It assumes that government expenditure is the solitary driver of economic growth.

2.2.2 Keynesian Theory of Investment

In the theory of Keynes, he argued that savings and investments need to be identical. Different investment decisions are undertaken to save or invest; therefore, Keynes indicated that savings and investments needed to be equal (Keynes, 1936). The model function as formulated by Keynes is;

$$I = I_0 + I(r),$$

Where, I denote investment

I_0 is the autonomous investment

$I(r)$ denote interest rates

This model posits that investment is inversely proportional to interest rates. This means that the higher the rates of interest, the less probable an entity would be willing to on an investment project. Therefore, Keynes argued that firms often rank diverse investment projects on the basis of investment's marginal efficiency or their internal rate of return (IRR). Given a certain interest rate, most firms select projects with IRR that surpasses the interest rate. This approach was criticized on grounds that investments ranking are mostly only dependent on the rates of interest (Ghura and Goodwin, 2011).

2.2.3 Simple Accelerator Model

This theory is associated with Keynesian theory as a result of the assumptions on fixed prices. Clark advanced the theory and it has been widely used in business cycles. This model emphasizes that spending on investment is relative to changes in the output, and thus the cost of capital does have an effect (Diamond, 2014).

The simple/naïve accelerator theory was based on the perspective that most firms use new capital whenever they intend to produce more output. This means that if the output is expected to change, firms goes ahead and make new investments. Other than that, firms would not make any investment decisions. This approach was commendable on explaining firms' investment, but it has been criticized because it did not consider the cost of investing. Empirical research has been undertaken to establish whether the cost of capital has a significant impact on investment. When

this model is extended to connect investment to previous and current changes in income, it explains better on investment compared to other neoclassical models.

2.2.4 Tobin's Q Theory of Investment

This model was advanced by James Tobin. The approach relates decisions by private investors to the volatility of the market for stocks. Whenever a private company issues its capital for investment through issuing shares in the stock market, it means that the stock price is a reflection of the firm's investment decisions. Therefore, this approach suggests that the decision to invest by the firm is determined by the following Tobin q ratio;

$$q = \text{Capital shares' Market Value} / \text{replacement Cost of Capital}$$

This theory construes that whenever this ratio is greater than one, most firms begin to invest more on capital and the investment grows rapidly. In case the ratio equals one, firms become unresponsive on whether to put more investment on capital or not. A ratio that is not greater than one indicates that the firm is better off its current assets rather than working on acquiring new ones.

A major setback of this theory is that it is not practical to quantify replacement cost of capital. It is also more difficult to measure such costs. In order to make an empirical reflection, the average of Q, is normally used as an alternative to marginal Q, a component that is difficult to measure. Application of Tobin Q especially in the least developed countries is difficult since it oversimplifies assumptions such as perfect information flow, perfect capital markets, and minimal public investments. Monadjemi (1995) argues that developing countries do not have effective capital markets, and thus they face financial suppression, huge debts, imports influx and persistent macroeconomic volatility. Kenya has not been an exception to this, for a long time, it has faced corruption and ineffective governance, and these factors have an enormous impact in domestic private investment.

2.3 Empirical Review

Studies on public investment and private investment are centered on the crowding-out hypothesis. The theories discussed above show that the results are controversial. Some theory such as the Musgrave Rowstows model indicates that public spending significantly enhances private investments whereas others such as the Keynesian theory show that increasing public expenditure would lead to crowding-out effect. Empirical studies also exhibit similar divergence as it will be noted below.

Kiptui (2005) made use of Error Correction Model and Co-integration tests in his study in analyzing the impact of fiscal alteration practice on private investment in the Kenya environment for a period between 1972 and 1999. The author examined the private investment determinants, but his concentration was on variables mainly while interpreting the results. Those variables were the burden of a tax, public debt, consumption expenditure by the government, and budget deficit. This study established that the problem of debt servicing usually crowds-out private investment. In the econometric analysis, the author observed that there are harmful effects of public spending on private investment. This study, however, noted that government consumption expenditure had significant effects on the private investment. The ECM results from this study indicated there was comparative effects or rather regressors' elasticity. Nevertheless, the study does not give information on the period in which the effects would be present. Another impediment entailed assuming that the private investment was subjective. This negatively affected the model estimation due to the fact there was a likelihood that some variables were influenced by private investment.

M'Amanja and Morrissey (2005) analyzed the impact of fiscal policy on the growth of Kenyan economic. The study presumed that fiscal policy was imperative in explaining the growth of Kenyan economy. This study found out that public investment and productive consumption were essential elements in elucidating real per capita income growth. Increasing productive consumption apparently led to a significant drop in the growth of Kenya economy. This indicated that it was essential to carry out a detailed analysis of consumption expenditure and in order to establish how it affects economic growth factors. The study also analyzed whether increasing in public expenditure plays a significant role in the private sector and as a result

stimulating growth. It revealed that government needed to enhance productive expenditure especially in areas that brings about positive effects on private sector.

Monadjemi (1995) examined the effect of government spending on private sector without using the conventional channel of tax and interest rate but using the labour channel based on the fact that federal funds allocated to the local government are significantly relies on the local population level. The author used granger causality methodology with a sample of five African nations. The study's results revealed strong evidence that an exogenous increase in the federal spending reduces firms' capital investment, that is, a crowding-out effect. The impact of government expenditure is especially pronounced among firms that are smaller, more geographically concentrated and located in areas that has high rate of employment.

Narayan (2004) analyzed the impact of government spending on private sector. The author assessed the reality of the crowding-out versus crowding-in effects. Using panel data from 1960 to 2007 the results indicated that government expenditure leads to important crowding-out effects. Both private consumption and private investment are negatively affected.

Bwonde (2000) in establishing the correlation between public and private investment utilized Granger causality approach for a sample of twenty-five developing countries in Africa, Asia and Latin America for the period between 1970 and 2000. The results revealed that public investment crowds-in private investment. Using the probit model, the author established that the higher the share of government involvement in an economy, the lower the trade openness and the more stable the macro and monetary environment are the higher the possibility that public investment may crowds-out private investment.

Monadjemi (1995) explored the impact of public investment on private investment in developing economies. The author applied numerous pooled specifications in a standard investment model to a panel of developing countries for 1980 to 1995. The observation made was that public investment complement private investment; however, private investment is constrained by the accessibility of credit from financial institutions. The same empirical models were run on a panel of developed countries. Conversely, in developing economies, public investment crowds-out private investment.

Mwakalobo (2009) uses quarterly data from 1960 to 2005 to analyse the nature and relationship between public expenditure and private investment in South Africa. The author finds that although public investment is not crowding in or crowding out private investment it exerts an indirect impact of private investment through the accelerator effect. As a result of this, they recommended that a more proactive fiscal policy is suggested to increase the investment- GDP ratio which can stimulate higher growth rates.

Ghura and Goodwin (2011) investigate the long-run equilibrium connection between real private investment and public spending in Saudi Arabia over the period 1968 to 2006 using a threshold co-integration test which allows for asymmetric adjustment. Their findings show that the stability of private investment effort: that the increase in public spending boosts private investment below threshold parameter.

2.3.1 Review of the Link between Government Expenditure and Private Investment

The aim of this segment is to explore the possible relationship between public spending and private investment. Theoretically, it is expected that there is a positive link between government spending and private investment behavior. This is because an increase in government spending has a likely positive effect on economic growth since it spurs economic activities.

Keynesian analysis endorses government involvement in the economy based on the idea of market failures. A common argument by Keynesian economics is that decisions by the private sector often lead to unproductive macroeconomic outcomes and hence, they advocate dynamic policy responses by the government, especially the monetary policy and fiscal policy in order to stabilize output in an economy (Kimani, 2005).

The central role of private investment on growth revival has necessitated governments' attempts to influence the level of investment in developing countries (Narayan, 2004). Where private investment is low, the government has to undertake serious monetary and fiscal policies to gear it up. Monadjemi (1995) argues that government expenditure has direct effects on various private sectors' production, for instance, education and infrastructural development. Moreover,

government expenditure at times indirectly influences the effectiveness of private sector allocation of inputs and productive activities. Thus, government expenditure corrects market failures, enhances property rights and contracts enforcement. More importantly, it ensures essential public goods are provided. Nonetheless, in the theoretical study of the effect of government spending on private investment, the central focus has mostly been on crowding-out and crowding-in effect of government expenditure on private investment, and the way they can be substituted or complemented (Mwakalobo, 2009). Thus, it can be observed that government spending may crowd out/crowd in private investment.

Ghura and Goodwin (2011) revealed that an assessment of the effect of government spending on private investment requires that the researchers to distinguish between the diverse government expenditure categories. Government spending such as infrastructural development spending (for instance roads and electricity), airports, education, and research can stimulate private sectors' productivity and thus complement private investment. Conversely, some of government expenditure such as spending on consumption and health can substitute for private investment.

Serven (1998) indicates that the government spending heterogeneity should be considered when analyzing the impact of government spending on private investment. The author distinguished between infrastructure investment by the government and non-infrastructure capital spending. The author revealed that an increase in public infrastructure raises the long-run private capital stock through reduction of the cost of capital to the private sector. Conversely, an increase in non-infrastructure capital spending can lower or increase private investment. This depends on how close substitutes are the final goods produced by the public and private sectors. In case the degree of substitutability is higher, growth in public non-infrastructure expenditure might result in crowding-out of private investment. Fundamentally, Serven, significantly focused on the contest between government investment and private investment, especially in factor and output markets.

The first integration of the government expenditure in standard macro investment model was done by Diamond (2014). The author based the analysis on the neoclassical model where private non-residential investment was assumed to be influenced by government spending, government

investment, consumption and the private non-financial corporate capital's rate of return. The author sought to estimate the split effects of different government expenditure categories on private investment.

Narayan (2004) noted that when a country's economy gets closer to full employment level, there is high possibility of crowding effect. The author observed that if the economy was at less than full employment level, an increase in income subsequent to government expenditure multiplier effects might increase household saving. Therefore, the new saving generated assist in financing the deficit such that less crowding-out of private sector borrowing could result.

In line with free enterprise system belief, the neoclassical school of thought contested government spending meant to influence private investment. This view was caged strongly in the crowding-out theory. Monadjemi (1995) observed that the most noticeable crowding-out case where the government that has massive resources at its disposal, it engages in activities that would otherwise be provided by the private sector. Therefore, public investment spending tends to crowd-out, that is, reduce or replace private investment spending.

Kimani (2005) also observed that David Ricardo and neoclassical economists such as Hayek and Hawtrey strongly opposed the government spending. Hawtrey argued that whether government expenditure was financed by taxes or loans from private savings, it was possible that the increased government expenditure would replace private spending. Hence, government spending financed by loans would tend to be inflationary, raising the rate of interest. This would negatively affect the private enterprise.

The monetarists have accentuated the neoclassical economists' perspective outlined above. They argue that that taxation and government expenditure only channels resources to the government and consequently crowd-out private investment spending. The analysis of Narayan (2004) harmonizes the belief in say's law of markets. This law stated that, "supply creates its own demand" and it highlights a position in which the economy is at full employment and its resources are fully employed. In such circumstances, each amount of supplementary government expenditure would necessitate a transfer of resources from the private sector to finance government spending. Therefore, increased government spending may crowd-out the same

amount of private spending. Nevertheless, this might not be the case when an economy is at less than full employment. Having idle resources, and with the risk averting private sector in investment projects, the government prevails as a logical agent and it endeavors to raise aggregate investment levels, which the private sector can pick up from due to the positive externality effect of government expenditure (Seruvatu & Jayaraman, 2001; Arestis, 1979).

Monadjemi (1995) noted some of the limitations advanced towards the Keynesian approach especially by the neoclassical proponent. He argued that such an analysis did not consider the way government budgets are financed. Government spending financed by means other than money creation may reduce private spending. This is the situation is the one where fiscal actions lead to crowding-out of private expenditure. Thus, since the government has an option to borrow or tax people to finance its expenditure, public spending becomes a resource transfer from the private to the public sector.

Mwakalobo (2009) examined the cases of deficit-financed government spending that is not accompanied by new issues of money. The author realized that the need for government to issue debt instruments would compete with those of private debt especially in the financial markets leading to exerted interest rates pressure. This in turn lessens private investment spending which are interests elastic. Njuru et al. (2014) maintained that there is no theoretical controversy over this type of crowding-out since it forms the largest constituent of the Keynesian approach, and most monetarists are not opposed to it.

2.4 Overview of Literature

Literature has shown the subject surrounding the impact and effect of government expenditure has significantly attracted debate among the scholars. There are scholars who found out that increasing government spending leads to crowding out effect, whereas others have indicated a possibility of crowding in. Some studies have therefore focused on the labor aspect rather than focusing the on the variables such as the real interest rates. There is no available literature giving the Granger causality between government expenditure and private investment and the literature reviewed gave conflicting results on the relationship between these variables.

Numerous studies focus on the effect of private expenditure on private investment without desegregating public spending into various components (Njuru et al., 2014; Diamond, 2014; Monadjemi, 1995). This could be the reason behind diverse outcome in the previous studies. This study therefore filled this gap by disaggregating development expenditure and recurrent expenditure into various components including development projects, appropriation in aids, payment of guaranteed loans, wages and salaries, interest payments, operations and maintenance and pensions in order to effectively establish their effects on private investment.

3.0 METHODOLOGY

3.1 Introduction

From the literature, it has been noted that government expenditure has its effects especially in influencing private investment levels. It has been clearly highlighted that the two government expenditure classification includes development and recurrent expenditure. The model adopted in this study effectively captured the effects of government spending on private investment in Kenya. This entails studies disaggregating government expenditure into its various components and examining their separate effects on private sector investment.

3.2 Model Specification

This study adopted reduced VAR model in order to estimate the instantaneous shocks to various variables. The model involved regression of a system of equations to determine the interrelationship between economics variables using of minimal assumptions regarding the underlying economic structure. The advantage of VAR model is that it evades the burden of potentially spurious constraints. It is also easy to understand, and effortlessly extended to non-linear specifications models.

The reduced VAR was espoused by this study since it avoided making structural modelling, through modelling each endogenous system's variable as a function of the lagged values of itself and of all the endogenous variables in the system (Njuru et al, 2014). This reduced form VAR model is a statistical model, which does not use any economic structure past the choice of variables. The condensed VAR model form can be represented as:

$$X_t = \alpha_0 + \alpha_1 X_{t-1} + \alpha_2 X_{t-2} + \dots \alpha_p X_{t-p} + e_t$$

Where; α_0 is $n \times 1$ vector of invariable terms, $\alpha_0, \alpha_1, \alpha_2, \dots, \alpha_p$ represents $n \times n$ matrices of coefficients; X_t represents $n \times 1$ the endogenous variables vector and e_t is the serially uncorrelated error terms vector that have a zero mean and a covariance of matrix ϕ . Every variable in the

VAR model is regressed on a constant variable α_{ij} , q lags of itself, and q lags of every other variable in that model and the error term ε_t .

It is recognized that lag lengths that are longer are suitable since they entirely capture the dynamics of the equation that is being modelled as well as increasing the parameters. Nevertheless, due to constraints of the data, determination of the lag length might be a main challenge. This is due to the fact that lags that are long often lessen the degree of freedom. Moreover, this problem accelerated by data limitations. Consequently, the study will have a trade-off between using adequate lags number and an adequate number of parameters for estimation.

The condensed form of a VAR model estimated in this study was presented as:

$$I_t = f(\text{DEDP}, \text{DEAA}, \text{DEPGL}, Y, \text{INF})$$

$$I_t = \beta_0 + \beta_1 \text{DEDP}_t + \beta_2 \text{RSWS}_t + \beta_3 \text{RSOM}_t + \beta_4 Y_t + \varepsilon_t \dots\dots\dots (1)$$

Where:

I_t = Gross Domestic private investment which captures total capital accumulation by individuals and firms.

β_0 = vector of the parameter.

β_1 = vector of the parameter DEDP in equation

DEDP_t = Development Expenditure on Development projects

β_2 = the intercept term of the parameters of RSWS

RSWS_t = Recurrent Spending on wages and salaries.

β_3 = the intercept term of the parameters of RSOM

RSOM_t = Recurrent Spending on Operations and Maintenance

β_4 = vector of the parameters of Y in equation

Y_t = representing the national income which is measured by the GDP.

ε_t = Error term. t= time subscript.

3.3 Definition and Measurement of Variables

Table 3.1: Definition of Variables and their Hypothesized Relationships

Variable	Measurement	Expected sign and literature source
I: Gross Domestic Private Investment	It is the private sector investment especially in fixed assets such as equipment, machinery and buildings. It is measured real prices in Kshs (at current market prices)	+ve (Bwonde, 2000)
DEDP: Development Expenditure on Development projects (which includes infrastructural developments, transportation, electricity, waterways irrigation, communication, mining)	It is measured as development expenditure in Kshs	+ve (Njuru et al, 2014)
Y = is the national income which	It is measured by the GDP in terms of prices (Kshs)	+ve (Monadjemi, 1995)
RSWS: Recurrent Spending on wages and salaries	Recurrent expenditure is measured in Kshs	+ve (Kiptui, 2005)
RSOM: Recurrent Spending on Operations and Maintenance		+ve (Kiptui, 2005)

3.4 Data Types and Sources

This study adopted a time series approach to identify the parameters of concern and it covered a period of 21 years in the analysis of the effects of public expenditure on private investment. The STATA package was used in the analysis where private investment was regressed on different categories of government spending to identify the categories of government spending that crowd in private investment and those that have crowding-out effect. Data was generated in line with

the period covered by the study, which is 1994-2014. The study used time series data set. The data sources for this study are mainly secondary in nature. Data on components of government expenditures (Development expenditure (DEP), recurrent expenditure (REC) and National Income in terms of GDP, and were obtained from statistical abstract and economic surveys which had been obtained from Kenya Bureau of Statistics. The study also obtained data from Central Bank of Kenya (CBK) statistical bulletin.

3.5 Estimation

To determine the clear link between the study's dependent variable and its explanatory variables, it was crucial to regress gross domestic private investment on the equation for government expenditure using the ordinary least squares (OLS) estimation approach. However, it should be remembered that most time series data are non-stationary. Therefore, a regression of time series data may lead to spurious results. As a result, the f-statistic and t-test based on such estimation process become deceptive.

Cointegration approach assisted in solving the problem of spurious results. The approach is especially suitable for stationary data of similar order of integration. In this study, Error Correction Model (ECM) was also used since it is more suitable for data series that has the dissimilar order of integration and it established the long-run and short run relationship.

3.5.1 Unit Root Testing

It was imperative to check for variable stationarity using two frequently used approaches; Philips-Perron (PP) and Augmented Dickey-Fuller (ADF) test. In this study, both tests were utilized to test for stationarity of variables. These two tests were utilized to determine their inherent restrictions. Augmented Dickey-Fuller tests contain additional differentiated terms in an equation. Said and Dickey (1984) argues that while using ADF, one loses some degrees of freedom thus the test may become insufficient. Conversely, while using Philips-Perron test, error term autocorrelations are often negative, and the real size could be greater than the nominal size. Nevertheless, it was crucial to make non-stationary time series data stationary so that there could

be significant results before carrying out a regression. The results indicated the existence of unit roots and therefore differencing the variables to make them stationary was necessary.

3.5.2 Testing For Cointegration

The times series data in this study was non-stationarity, hence cointegration test was carried out to establish long-run relationships. Miller and Russek (1989) posit that cointegration occurs when two or more non-stationary or stationary time-series data move together in similar direction. The results indicated the presence of a cointegration vector, error correction model (ECM) was used to establish both short-run and long-run relationship between the variables. Literature reveals that cointegration vectors often have a cause-effect relationship; therefore there was need to test which variable caused the other.

3.6 Limitations of the study

The major challenge of this study was the period that the data covered. It is noted that before 1994, the data available on public expenditure have not been itemized in the current format. Therefore, some items were mixed up. It is only after 1994 where the items included in the classified expenditure are consistent. Therefore, considering them led to use of smaller observations (21). Besides, the regression analysis established that some components were not statistically significant to explain the relationship between private investments and public expenditure. Therefore, the following variables were dropped; development expenditure on appropriation in aids, development expenditure on guaranteed loans, recurrent expenditure on interest payment and inflation.

3.7 Definition of Terms

Public investment - public investment entails the entire accumulation to stocks of public fixed assets. It includes improvements in land, plants, purchases of equipment and machines, infrastructural development by the government units, neoclassical growth theory indicates that increases in public capital stock levels lead to increased capital shocks, consequently real output increases.

Government recurrent expenditure- This is the current spending on purchases of goods and services by the state/governments. It entails office supplies, salaries and wages, operations and maintenance.

Development expenditure – Development spending comprises of expenditure that is discretionary. Mostly, it entails the programmes and activities that are new and which have not been completed as desired. An example of development expenditure includes spending on the construction of railways, road network and communication systems, irrigation schemes and energy

CHAPTER FOUR

DATA ANALYSIS

4.1 Introduction

This chapter entails presentation of the study's empirical results. It begins with presenting descriptive statistics and later econometric results.

4.2 Descriptive Statistics

4.2.1 Measures of Dispersion

The study variables indicate that the medians and mean are more or less equal; therefore, the data has the quality of normal distribution. Therefore, it does not have an outlier problem. Additionally, the measures of dispersion, standard deviation, maximum and minimum, (determining the range of data) also indicate that the series' spread is normal as indicated in Table 4.1.

Table 4.1: Measures of Dispersion/Spread

Variable	Obs	Mean	Std. Dev	Min	Max	Skewness	Kurtosis
i	21	22.03825	0.5108184	21.3684	22.911	0.0968	0.4008
Dedp	21	10.4367	1.231318	8.867287	12.328	0.0453	0.6223
rs ws	21	11.55268	0.5473613	10.84591	12.547	0.0301	0.6073
rsom	21	11.40793	1.006131	9.515396	12.831	0.0922	0.6206

The measures of the spread included Skewness and Kurtosis. In skewness, normally distributed data ranges from -1 to +1.

4.3 Statistical Analysis

4.3.1 Unit Roots Test

Before the estimation of the long-run relationship of the variables through cointegration analyses, this study checked for stationarity of the data. This was done to establish the

Stationarity of the time series property for the data used. Therefore, the study utilized Augmented Dickey-Fuller (ADF) and Philips-Perron (PP). As presented in Table 4.2., the variables were non-stationary. However, at the first difference the variables became stationary as indicated in table 4.3. One lag was chosen as by lag selection criteria.

Table 4.2: Unit Root Test Results

Table 4.2: Unit Root Test Results						
variables	test at levels	unit root test				comment
		ADF Test		PP Test		
		t-statistics	critical value (5%)	t-statistics	critical value (5%)	
I	Intercept	1.730	-3.000	-2.954	-3.000	Non-stationary
	Trend & Intercept	-0.702	-3.600	-0.702	-3.600	Non-stationary
	No Trend & No Intercept	1.700	-1.950	1.700	-1.950	Non-stationary
DEDP	Intercept	0.267	-3.000	0.267	-3.000	Non-stationary
	Trend & Intercept	-0.715	-3.600	-0.715	-3.600	Non-stationary
	No Trend & No Intercept	2.764	-1.950	2.764	-1.950	Non-stationary
RSWS	Intercept	2.102	-3.000	2.102	-3.000	Non-stationary
	Trend & Intercept	-1.187	-3.600	-1.187	-3.600	Non-stationary
	No Trend & No Intercept	1.492	-1.950	1.492	-1.950	Non-stationary
RSOM	Intercept	0.673	-3.000	-1.372	-3.000	Non-stationary
	Trend & Intercept	-1.535	-3.600	-2.017	-3.600	Non-stationary
	No Trend & No Intercept	1.778	-1.950	1.554	-1.950	Non-stationary
Y	Intercept	2.338	-3.000			Non-stationary
	Trend & Intercept	0.485	-3.600	0.485	-3.600	Non-stationary
	No Trend & No Intercept	2.735	-1.950	2.735	-1.950	Non-stationary

Table 4.3: Unit Root Test Results: 1st Difference

variables	test at levels	unit root test				
		ADF Test		PP Test		
		t-statistics	Critical value (5%)	t-statistics	Critical value (5%)	
I	test at levels	-7.37	-3.000	-3.012	-3.000	stationary
		-4.173	-3.600	-4.173	-3.600	Stationary
		-7.532	-1.950	-7.532	-1.950	stationary
DEDP	Intercept	-3.810	-3.000	-3.81	-3.000	Stationary
	Trend & Intercept	-3.849	-3.6000	-4.404	-3.6000	Stationary
	No Trend & No Intercept	-2.954	-1.950	-2.954	-1.950	Stationary
RSWS	Intercept	-3.399	-3.000	-3.399	-3.000	Stationary
	Trend & Intercept	-5.299	-3.600	-5.299	-3.600	Stationary
	No Trend & No Intercept	-3.112	-1.950	-3.112	-1.950	stationary
RSOM	Intercept	-3.403	-3.000	-5.669	-3.000	Stationary
	Trend & Intercept	-2.202	-3.600	-4.362	-3.600	stationary
	No Trend & No Intercept	-3.587	-1.950	-3.241	-1.950	Stationary
Y	Intercept	-5.556	-3.000	-5.556	-3.000	Stationary
	Trend & Intercept	-5.976	-3.600	-5.195	-3.600	Stationary
	No Trend & No Intercept	-5.506	-1.950	-5.096	-1.950	Stationary

Number of Observations = 21

Source: STATA computation

The table (Table 4.2) above indicates that all variables were stationary level. As a result, stationarity at first difference was done, and the variables became stationary as indicated in results displayed in Table 4.3. Both the ADF and PP tests accepted Stationarity of the variables in first difference at 5%. The unit roots test results provided a ground for conducting cointegration analysis. The following were the variables tested in cointegration analysis; ΔI , $\Delta RSWS$, $\Delta DEDP$, $\Delta RSOM$, and ΔY .

4.3.2 Test for Cointegration

After checking for the unit root, it was necessary to carry out cointegration test between these variables. Non-stationarity of time series data is a major concern since it could lead to spurious problems. To ensure that this problem is avoided, it is essential to carry out cointegration tests. The following table shows results from Johansen cointegration tests;

Ho: no cointegration

H1: there is cointegration among variable

Table 4.4: Johansen's Cointegration Rank Test

H0: $r \leq$	Max-eigen statistics	95% critical value
r=0	59.5	33.46
r=1	37.4	27.07
r=2	15.8	20.97
r=3	4.46	14.07
r=4	3.25	3.76

Source: Stata computation

Table 4.5: Johansen Cointegrating Factors

H0: $r \leq$	trace statistics	95% critical value		
r=0	120.41	69.52		
r=1	60.91	47.21		
r=2	23.51*	29.69		
r=3	7.71	15.41		
r=4	3.25	3.76		
	Coef.	Std. Error	t-statistics	P> z
CE1	-0.4727	0.3196	-1.48	0.0139

Source: STATA computation

NB: * indicates rejection of the H0 at 5% significant level.

At 0 the trace statistics rejected the null hypothesis (H0) condition that at 0 means that there is no cointegration among our variables in the private investment equation. The guideline here is that: when trace statistic is smaller than the critical value, we cannot reject the null hypothesis. Meaning there are two cointegrating vectors in this model. The five variables are cointegration. This means that the five variables have a long run relationship. In the long run, they move together.

IF CE1 is negative in sign and significant, then we can say there is long-run causality running from DEDP RSWS RSOM Y to i. In this model, the coefficient value has a negative sign (-1.494766) and the probability value is significant (0.013, which is less than 5%). Therefore, there is a long-run relationship between variables.

4.3.2.1 ADF Test for Cointegration on the Residual

The study tested the lagged residual's Stationarity through ADF test. The lagged residual were tested for stationarity using ADF test. H0: there is a presence of unit root.

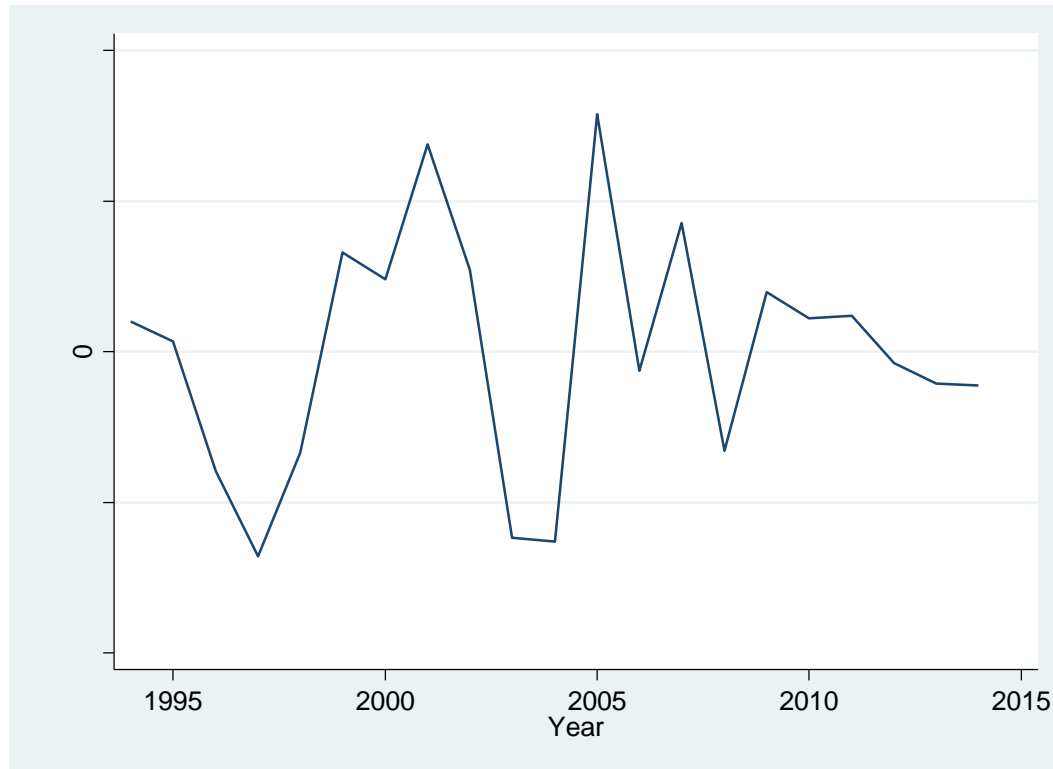
Table 4.6: ADF Unit root test results for the residual using Lag 0

	ADF	1%	5%	10%	Z(t)	Comment
Z(t)	-3.810	-4.380	-3.600	-3.240	-3.240	Stationary

Source: STATA computation

The table above (table 4.2) indicates that the absolute value from the test statistics is greater than the critical values at 5% and 10% intervals. This test shows that lagged residual do not have a unit root. Therefore, the null hypothesis was not accepted. The implication here was that there was short-run relationship of variables. In addition, the results indicated existence of long run cointegration relationship between the variables. Therefore, they move in the same direction in the long-run (or equilibrium).

Figure 4.1: Graph of Residual vs. Year



Source: STATA computation

4.3.3 VECM Model

4.3.3.1 Long-run and Short Run Private Investment Dynamic Model

Since the variables are cointegrated, the study had to run the VEC model. In case they were not cointegrated, the alternative would have been to run only VAR model. The following are the result of VECM short-term causality test;

Table 4.7: Short-Term Causality Test

Short-Term Causality Test	
ΔI	0.0493(6.02)
$\Delta RSWS$	0.2623(2.68)
$\Delta DEDP$	0.0126(8.75)
$\Delta RSOM$	0.2611(2.69)
ΔY	0.4486(1.60)

Source: STATA computation

The null hypothesis here was no Short-run causality running from DEDP (LD, L2D). In this case, the probability is 0.0126(1.5%) which is less than 5%. Therefore, there is a short-run relationship. The study therefore made a conclusion based on the above results. First, there is long-run relationship running from DDEP, RSWS, RSOM, Y to I. second, there is short-run relationship running from DEDP to I but there is no short-run relationship running from RSWS, RSOM, Y to I

ECM helped to estimate direction of causality among variable since cointegration equations exist. Cointegration test of the residual in the previous section revealed stationarity of the variables. Short run and long run relationship of variables was also established.

Therefore, the OLS regression results are indicated below

Table 4.8 OLS Regression Results

OLS Regression Results				
95% Confidence Interval				
Variables	Coefficient	Standard errors	T-values	p> t
DEDP	0.0579008	0.0714718	0.81	0.010
RSWS	0.3056029	0.2208542	1.38	0.014
RSOM	0.0198744	0.0543955	0.37	0.001
Y	0.369223	0.1387556	2.66	0.000

β_0 -	8.953777
No of Obs	- 21
R2	- 0.9792
Adj.R2	- 0.9739
Root MSE	- 0.08245
Durbin Watson Test	- 1.808469

Source: STATA computation

The model for the effect of government spending on private investment would be;

$$I = 8.9538 + 0.05790 \text{ DEDP} - 0.3056029 \text{ RSWs} + 0.01987 \text{ RSOM} + 0.369223Y + \epsilon t$$

The above regression result gives the R-squared of 0.9792 implying that the explanatory variables in the model explain 97.92% of the rate of change of private investment. The remaining percentage could be explained by variables that are not captured in the model. In addition, The Adjusted R-squared value of 97.39% is a correction of R2 as measure of goodness of fit in this model. The Durbin Watson test value is 1.808469 indicates that the auto correlation in the residuals is not a serious problem.

The probability (prob>F) indicates the P-value associated with calculated F-statistics. It is, helpful in testing the hypothesis. In the model, the F-statistics are within the range under which null hypothesis is rejected. All variables in the model are statistically significant to explain the rate of change of private investment.

CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATION

5.1 Introduction

The study aimed at establishing the effect of government spending on private investments in Kenya. This chapter, therefore, entails a summary of the findings from the previous chapter. It also presents the conclusion of the results from the regression analysis, offers policy implication and recommendations for further research.

5.2 Summary of Findings and Conclusion

In general, all the government expenditure indicators used in the model as explanatory variables explained 97.39% the effects of change in private investment as a result of changes in government spending. These variables were normally distributed and they did not indicate the presence of outlier problem. Moreover, all the variables used in this study were significant since the F-statistic was below 0.05 (5% level of significance).

There are several studies that have been conducted on this topic in Kenya. One such study established that recurrent expenditure significantly boosted private investment (Kiptui, 2005) whereas the other study established that development expenditure promoted private investment (M^cAmanja and Morrissey, 2005). This study complements these study by indicating a positive change in private investment due to changes in both recurrent and development expenditure components as indicated by positive elasticity.

Development expenditure on development projects exhibited a positive influence on the private investment. *Ceteris paribus*, a change in development expenditure on development projects by one unit leads to positive change in private investment by 0.05790. Therefore, expenditure on development projects is a significant component in enhancing private investment in Kenya. Descriptive statistics indicates that this component is positively skewed. As opposed to recurrent

expenditure components, expenditure on development project does not only have a long-run effect but it has a short-run effect on the changes in private investment.

Recurrent spending on wages and salaries and recurrent spending on operations and maintenance measured the effects of recurrent expenditure on the private investment. The two components indicate a change in private by 0.3056029 and 0.01987 respectively due to their unit change when other variables are held constant. This relationship is however in the long-run as established in the cointegration tests. The overall effect is that both development and recurrent expenditure crowds in private investment in Kenya.

Finally, the national income has indicated a significant effect on private investment. A percent change in the national income, other factors held constant, causes a change in the private investment by 0.369223. National income was used in this study as a control variable.

5.3 Policy Implication

This study reveals several aspects that need to be reconsidered during policy formulation. The study established that development expenditure has both short-run and long-run effects on private investment. Therefore, if the government would want to boost private investment in the country in the short-run, they should reconsider increasing spending on development projects especially on the projects that benefits the private sectors and churn away from those that would crowd it out. This could include spending on expanding infrastructural development, communication, machinery and equipments, irrigation, waterways among others. Additionally, the government should reconsider increasing expenditure on operations that would boost private production so that the private sectors especially on operations that expands activities of the private investors. Spending on wages and salaries is another way of stimulating private investment. Generally, workers salaries and wages have positive multiplier effect especially through enhancing savings and investment in the country. This would significantly enhance capital formation. Finally, the government should consistently undertake major reforms to boost private investment. These reforms should be focused on enhancing practical financial management.

5.5 Further Areas of Study

This study could be among the few studies that have tried to disaggregate expenditure components on and analyze their effects on private investment. In this respect, different components have indicated different elasticities. Therefore, it is an indication that changes in each component causes a certain proportionate change in private investment. Due to data limitation, few components were selected in this study. Therefore, this study recommends that more studies should be carried out on the effects of other components of public expenditure on private investment.

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