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GOVERNMENT EXPENDITURE ON INFRASTRUCTURE AND GROWTH OF PRIVATE DOMESTIC INVESTMENT IN KENYA

Monica Wanjiru Kinyanjui[1], Prof. Willy Muturi[2] and Dr. Agnes Njeru[3]

[1]Department of Economics, Accounting and Finance, Jomo Kenyatta University of Agriculture and Technology

Kinyanjui.wanjiru@students.jkuat.ac.ke

[2] Department of Economics, Accounting and Finance, Jomo Kenyatta University of Agriculture and Technology

Ihrd@jkuat.ac.ke

[3] Department of Economics, Accounting and Finance, Jomo Kenyatta University of Agriculture and Technology

Agnes.jkuat.ac.ke

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ABSTRACT

Purpose of the study: The vision 2030 economic pillar aims to achieve an average economic growth rate of 10 per cent per annum and sustaining the same until 2030. World Bank notes that sufficient economic growth of at least 7% is needed so as to achieve the sustainable development goals this will be made possible by a thriving private sector which is also crucial for poverty reduction in any country. The envisioned economic growth is anchored on increase in private and public investment specifically, private investments were expected to rise from 15.6% of GDP in 2006/07, 22.9% in 2012/13, and to over 24% of GDP during the period 2020/21 to 2030. At 4.3% of GDP in 2016 and 5.3% of GDP in 2017, this remains below 12%-15% required to sustain a robust private investment for economic growth. To do this however it is important to know the impact of government expenditure on infrastructure on growth of domestic private investment in Kenya.

Problem statement: From the literature reviewed it is worth nothing that the moderating of role of government expenditure on infrastructure in the relationship between selected macroeconomic variables and growth of domestic private investment in Kenya has been little attention. This study will fill in on this existing knowledge gap.

Methodology: This study employed an explanatory design to examine the causal relationship between the two variables.

Results of the study: The result verifies the premise that government spending on infrastructure moderates the relationship between macroeconomic conditions and domestic private investment over the long term. In the long run, the outcome of the moderation test

confirms that public investment through infrastructure expenditure exerts an indirect pressure on private investment via accelerator effects.

Conclusion and policy recommendation: The study's findings imply that the value of a future private investment will increase or decrease depending on the degree of government spending. But if government spending is very sensitive to big shocks and changes in policy, private investment growth in the country may be greatly affected. Therefore, the study concluded that the formation and development of domestic private investment expansion are dependent on the existing macroeconomic climate and the constraints that make the current macroeconomic climate more volatile due to their sensitivity to demand conditions.

Keywords: *Government Expenditure on Infrastructure, gross capital formation, domestic private investment***.**

1.1 INTRODUCTION

Investment is generally a critical contributor to economic growth, which in turn contribute to the attainment of socio-economic and political objectives (Sarkar, 2018), Investment is one of the four pillars of the aggregate macroeconomic expenditure model of the modern economy along with government spending, private consumption, and trade (Parkin 2010). Investment the nucleus of an economy and any fluctuations in investments have considerable effects on economic activity and long-term economic growth (Stampini et al., 2013).

The change in investment does not only affect aggregate demand but also enhances the productive capacity of an economy. The Investment Promotion Act (IP A, 2004) defines investment as an investor's contribution of local or foreign capital, including the creation or acquisition of business assets by or for business enterprises, as well as the expansion, restructuring, improving, or rehabilitating of a business enterprise. Rauch et al. (2016) observed that an economy's capacity is determined not only by labor but also by the capacity available to produce goods and services.

In terms of growth of private investment, countries view the investment as a critical component in raising productivity levels by accelerating technological progress and lowering the unemployment rate as they progress toward economic growth. It promotes long-run capital accumulation by creating new capital goods and increasing countries' productive capacity. Therefore, there is a need to establish how the macroeconomic environment affects it. Macroeconomic theory contends that public investment stimulates economic activity through short-term effects on aggregate demand, and it raises the productivity of existing private (Miyamoto et al., 2018). Public investment also encourages new private investment to take advantage of the higher productivity it creates, thereby increasing economic growth. However, the positive relationship between public investment and growth could turn negative once public capital exceeds a certain threshold, as the burden resulting from financing public capital provision adversely affects economic growth (Presbitero, 2016) or public investment crowds out private investment (Fosu et al., 2016). In other words, the presence of limited absorptive capacity, countries are not able to translate additional public investment into sustained output

growth. The positive effect can also be offset if the investment is financed with additional government borrowing.

Theoretically, the impact of public investment on private investment is not clear a priori and it is unsettled empirical issue. On the one hand, the public investment could be complementary to private investment, for example, public spending on infrastructure or on goods that raise the productivity of private capital. This is so especially in developing countries where large component of government expenditure is in Infrastructures. On the other hand, a stronger public investment that results in large fiscal deficits could crowd out private investment through high-interest rates, credit rationing, and a higher current or future tax burden on the household. By competing for scarce physical and financial resources (Auerbach & Gorodnichenko, 2013a, 2013b).

For instance, the financing of public investment through debt issuance, bank credit, higher taxes, or inflation reduces resources available to the private sector, dampening private investment. In many cases where public investment is carried out by state enterprises producing output in direct competition with the goods and services provided by the private sector (Delong & Summers, 2012). By discouraging investment due to increased macroeconomic instability when public investment is financed through the accumulation of debt that is unsustainable.

The ultimate impact of public investment on private investment depends on country-specific factors, such as whether the project is financed domestically or externally or is an efficient infrastructure project (Walker, & Yang 2013). Nevertheless, given the low level of financial development, large infrastructure gaps, scarce resources in Kenya, and constraints on the availability of foreign financing (or the ability to service the attendant debt) there is a real danger that public investment could crowd out private investment. Based on the likely opposing ways that public investment may impact private investment, the current study considered a public investment as a mediating variable in the relationship between macroeconomic factors and private investment. The current study examined whether the public investment has a moderating effect on the relationship between macroeconomic variables and private investment in Kenya.

1.2 STATEMENT OF THE PROBLEM

Kenya is one of Africa's Sub-Saharan economies with a fast growing economy registering an average annual growth of 5.4%, making it the East Africans largest economy but still lags behind the sufficient economic growth of at least 7% that is required to achieve the sustainable development goals, made possible by a thriving private sector which is key to poverty reduction (World Bank, 2017). The rate is also far below the targeted 10% annual economic growth envisioned in Vision 2030 economic pillar (Trading Economics, 2016). Private sector investment has been on the decline since independence, this is pronounced in major jobs creating sectors like agricultural sector (9.3% decline), Business services sector, (15.6% decline) and manufacturing sector (7.8% decline) (Mutuku & Kinyanjui, 2018). The major challenge facing the government today is how to stimulate domestic private investment so as to achieve the desired level of economic growth that is useful in achievement of sustainable development goals (SDGs), poverty reduction, vision 2030 and the Big Four Agendas. This study therefore provides a useful guide to policymakers concerned with growth of domestic

private investment by establishing how government expenditure on infrastructure affects the country's macroeconomic environment which greatly affects ability to invest.

1.3 RESEARCH OBJECTIVES

To determine the moderating role of government expenditure on infrastructure on the relationship between selected macro-economic variables and growth of domestic private investment in Kenya.

1.4 RESEARCH HYPOTHESIS

H_{01}: Government expenditure on infrastructure does not moderate the relationship between macroeconomic variables and growth of private domestic investment in Kenya.

2.1 THEORETICAL REVIEW/ FRAMEWORK

Theory of Public Expenditure

The theory of public expenditure was conceptualized by Henry Adams in 1895. The goal of public expenditure theory was to find the meaning of expenditures in the life of a people and to arrive at the principles that govern appropriations. The public sector has to play in society to guarantee that economic activities run smoothly. Furthermore, government aims are sometimes multiple and involve multiple parties. To minimize turmoil, public expenditure should be guided by efficiency and equity (Hindrizia & Myles, 2005). The concerns presented here are widely discussed in finance in conjunction with the limitation of the right of taxing, although there are certain advantages to approaching the subject from the standpoint of expenditure.

Adams (1895) observed that the first question that arises concerns the amount to which an individual's experience in the expenditure of his own money can be depended on to determine questions of public expenditure. Some argue that the principles governing private expenditures do not apply to state expenditures. The starting point for the discussion of public expenditures is social income, of which public income is a component, and just as the individual is limited in his expenditures by the income he receives, the state is limited by the proportion of social income that, under the current political, social, and industrial conditions, may be rightfully placed at its disposal.

In the theory of public expenditure, the distribution of public finances among the numerous lines of service provided by the state is influenced by the same factors that impact private expenditures. The total quantity of money available to the government is determined in great part by the state's level of industrial growth. The crucial figure is what is known as the coefficient of public expenditures, which is the percentage of spending through the medium of the state to the nation's gross income. As a result, the higher the wealth and the more prosperous the industries, the more the state may take from the time proceeds of private activity without causing harm. Thus, how investments in public infrastructure projects and their consequences are treated, for example, is determined by how the government and development agencies currently view development and how the philosophies to which the government and citizens subscribe affect their work (Gramlich, 2004). As a result, the government and the various organizations involved in public infrastructure projects should assess the investment's

developmental impact. This idea is useful in the context of this study since it links public investment to a favorable investment climate.

2.2 EMPIRICAL REVIEW

Atabaev et al., (2018) examined the crowding-out (or -in) effect of public spending on private investment in the transition economy of Kyrgyzstan Using an autoregressive distributed lag (ARDL) and the vector auto regression approach (VAR) for the period 2005 to 2013. The study found that an increase in government purchases leads to a rise in private investment. However, the study did not incorporate other demand-side fundamentals in the investigation, which may change the results' significance and direction. The study also assumed a linear relationship between public investment and domestic private investment. The present study filled the gap by incorporating demand-side factors such as inflation and interest rate in the analysis model to unravel the interaction of demand and supply factors in determining the growth of domestic private investment in Kenya. In the process, the study equally considered public investment as a mediating variable owing to the ever-increasing demand for public fixed goods in Kenya.

Adeosun et al., (2020) explored the asymmetric linkage between public investment and private sector performance in Nigeria For the period 1986 to 2017 using the nonlinear autoregressive distributed lag model (NARDL), asymmetric generalized impulse response and variance decomposition, and asymmetric granger causality techniques. The study found that positive investment shocks exhibit a stimulating effect on private investment in the long run while the (negative) shocks have a substantial dampening influence. The study also found evidence that negative investment shocks portend a positive influence on the performance of the private sector in the short run. This suggests that negative shocks to investment may not dampen the effectiveness of private sector in the short run, and this thus brings to bear the debate on the tenability of public investment as a potent counter-cyclical tool in enhancing short-run private sector growth. The nonlinear granger causality also shows a unidirectional nonlinear causality from public investment to private sector performance. However, there is no evidence of bidirectional nonlinear causality. The current study contexualised the investigation into Kenya.

Mathhu (2017) examined the relationship between public and private investment in India. Using the autoregressive distributed lag (ARDL) bounds testing approach and annual data from 1971-1972 to 2009-2010. The study found that aggregate public investment has a positive effect on private investment both in the long run and the short run. In contrast to the findings of previous studies, no significant impact of public infrastructure investment on private investments is found in the long run, while non-infrastructure investment has a positive impact on private investment in the short run. The study contradicts Nguyen and Trih's (2018) study that assessed the influences of public investment on economic growth and the rate of private investment in Vietnam using the same methodology between 1990-2016. The study found that public investment in Vietnam does affect economic growth with positive effects mostly occurring from the second year and negative effects of constraining long-term growth. The contradicting result necessitates a study in Kenya and by extension examining the moderating effect of Public investment on the relationship between macro variables and domestic private investment in Kenya.

Ouédraogo et al., (2020) examined the impact of public investment on private investment in sub-Saharan Africa using the finite mixture model using a sample of 42 countries. The study outcome showed that the impact of public investment on private investment differs across groups of countries with similar but unobserved characteristics. When the study incorporated the component of hidden heterogeneity it was found that a country with high risk of conflict, terrorism and repatriation of profits crowding in of private investment is unlikely.

Mahmoudzadeh et al. (2013) used panel data from 2000-2009 years to examine the effect of fiscal spending on private investment of developed and developing countries. The result indicated that public investment has a positive effect on private investment in both developed and developing countries, which is a crowding-in effect. On the other hand, the effect of government consumption on private investment is negative for both country groups. The study contradicts the early study of Afonso and Sousa (2009) that showed that government spending shocks lead to important "crowding-out" effects in the USA, the UK, Germany, and Italy. Hence, government consumption has a negative effect on private investment, whereas government investment.

3.1 RESEARCH METHODOLOGY

Moderation occurs when the magnitude, direction, and strength of the effect of the independent variable on the dependent variable varies as a function of another variable (Hayes, 2010). In testing for the moderating effect, the study utilized Whisman and McChelland's (2005) procedure. According to Kraemer et al. (2001), this test can be used to determine the moderating influence of a variable on the relationship between independent and dependent variables. The method requires determining if government spending on infrastructure is a moderating variable or merely an explanatory variable. The methodology is built on two processes, with the first step introducing government infrastructure spending as an explanatory variable, as shown in Equation (1). The second step analyzes the interaction of government spending on infrastructure with each of the independent variables, i.e. macroeconomic factors, as depicted by equation (2)

Step 1

$$DPIit=\beta0+\beta1INTt+\beta2EXRt+\beta3Mst+\beta4INFit+ \beta5GEit +\beta6INT*GEit + \beta7EXR*GEit +\beta8EXR*GEit+\beta9MS*GEit+\varepsilon \text{ .....Equation1}$$

Step Two

$$DPIit=\beta0+\beta1INTt+\beta2EXRt+\beta3Mst+\beta4INFit+ \beta5GEit +\beta6INT*GEit+ \beta7EXR*GEit +\beta8EXR*GEit+\beta9\ MS*GEit+\varepsilon \text{ ……Equation 2}$$

Where:

GE = Government expenditure on Infrastructure (Moderating Variable)

INT*GE= Interaction between Interest rate and Government Expenditure on Infrastructure

EXR*GE= Interaction between Exchange Rate and Government Expenditure on Infrastructure

MS*GE = Interaction between Money Supply and Government Expenditure on Infrastructure

INF*GE = Interaction between Inflation and Government Expenditure on Infrastructure

i,t = Commercial bank i at time t

Table 1 summarizes the criteria applied in deciding whether Government Expenditure on Infrastructure moderates the relationship between macroeconomic factors and Domestic private investment in Kenya.

Table 1: Moderation Testing Summary

Scenario	Model One (Equation 1)	Model Two (Equation 2)	Conclusion
One	β_5 is statistically significant	β_{6-9}, are statistically insignificant	Government Expenditure on Infrastructure is an explanatoryvariable
Two	β_5 is statistically insignificant	β_{6-9},are statistically significant	Government Expenditure on Infrastructure has a moderation effect the relationship between macroeconomic factors and Domestic private investment in Kenya

Source (Whisman and Maclallen 2005)

Government Expenditure on Infrastructure is introduced as both an explanatory and moderating variable in Table 1. In the event of scenario 1, it may be concluded that Government Spending on Infrastructure is not a moderating variable, but rather an explanatory variable. In contrast, the occurrence of scenario two indicates that Government Infrastructure Spending is a moderating variable (Whisman & MacClelland, 2005).

4.1 RESULTS AND DISCUSSIONS

The study found that R-Squared increased from 0.715% to 0.945% when government infrastructure spending was added as a moderating variable. This suggests that government expenditure on infrastructure investment and macroeconomic factors have a greater explanatory capacity than initially assumed, accounting for 94.5 percent of the change in domestic private investment.

Table 2: Moderation Step 1 Result

Variable	Coefficient	Std. Error	z-Statistic	Prob.
LENDING	-0.062281	0.038675	-1.610361	0.1073
INF_ANNUAL	-0.016346	0.027942	-0.585008	0.5585
EXC_USD	-0.028898	0.022129	-1.305882	0.1916
M3_GDP_	0.131617	0.055004	2.392864	0.0167
LNGE	-1.638878	1.911636	-0.857317	0.3913
D2005Q1	3.966649	0.625011	6.346531	0.0000
D2009Q4	2.935576	0.629044	4.666729	0.0000
C	25.04146	3.953965	6.333252	0.0000

Table 3: Moderation Step 2 Result

Variable	Coefficient	Std. Error	z-Statistic	Prob.
LENDING	-0.255051	0.372989	-0.683802	0.4941
INF_ANNUAL	-0.091554	0.340811	-0.268636	0.7882
EXC_USD	0.747274	0.160180	4.665225	0.0000
M3_GDP_	-1.980798	0.491914	-4.026716	0.0001
LNGE	-0.981840	0.358478	-2.738915	0.0062
INT_GE	0.131617	0.055004	2.392864	0.0167
INF_GE	0.022816	0.009471	2.409039	0.0188
EXR_GE	-0.065551	0.013530	-4.844906	0.0000
MS_GE	0.190439	0.042075	4.526182	0.0000
D2012Q2	-0.164298	0.431300	-0.380936	0.7033
D2004Q4	2.953774	0.462328	6.388912	0.0000
C	26.74855	23.31041	1.147494	0.2512

Source: Research data (2022)

As summarized in Table 1, the findings of the moderation test indicate that the coefficient of the moderating variable (government infrastructure investment) in step one is positive but negligible (P = 0.3913). In the second step, however, infrastructure spending is both positive and statistically significant (P = 0.0062). This finding implies that there is a moderating influence but no direct effect. The estimation result also indicates that the moderating variable's (government infrastructure investment) interaction effects with all explanatory variables are statistically significant. According to outcome displayed in Table 1, the coefficient of the government's infrastructure spending and interest rate interaction term is negative and statistically significant (P = 0.0167). Similarly, the interaction correlation between government infrastructure spending and money supply is positive and statistically significant (P = 0.000). In addition, the interaction correlation between government infrastructure spending and inflation rate is positive and statistically significant (P = 0.0188). On the other hand, the interaction between government infrastructure spending and the exchange rate is negative and statistically significant (P = 0.000).

Table 3: Summary of Long Run Test of Moderation

Analysis	Coefficient	Result	Decision
Long Run			
Step1: Equation 1	Government investment on Infrastructure	Significant -1.638(0.3913)	Indirect Effect
Step 2: Equation 2	Government investment on Infrastructure* Interest rate	Significant 0.1316 (0.0167)*	Moderates
	Government investment on Infrastructure* Inflation	Significant 0.0228(0.0188)*	Moderates
	Government Expenditure on Infrastructure * Money Supply	Significant 0.1904(0.000) *	Moderates
	Government investment on Infrastructure*Exchange Rate	Significant -0.0655 (0.000) *	Moderates

The study rejected the null hypothesis that government spending on infrastructure had no moderating influence on the association between macroeconomic factors and domestic private investment, based on the examination of the moderation finding and the choice criteria presented in Table 3. In the first step, the coefficient of government expenditure on infrastructure as a moderator was not significant, and in the second step, the interaction coefficients between all macroeconomic metrics and domestic private investment were significant. The result verifies the premise that government spending on infrastructure moderates the relationship between macroeconomic conditions and domestic private investment over the long term.

In the long run, the outcome of the moderation test confirms Kaollamparambil's (2011) claim that public investment through infrastructure expenditure exerts an indirect pressure on private investment via accelerator effects. Consequently, a rise in South Africa's government expenditures and social sectors would boost private investment.

However, this study contradicts the findings of Nguyen et al., who discovered that government spending on infrastructure has a crowding-in effect in the short term but a crowding-out effect in the long term. Equally, the study contradicts the IS-Lm Theory's supporters of the crowding-out effect.

5.1 CONCLUSION

The study concluded that the formation and development of domestic private investment expansion are dependent on the existing macroeconomic climate and the constraints that make the current macroeconomic climate more volatile due to their sensitivity to demand conditions.

6.1 RECOMMENDATIONS

The study's findings imply that there is substantial justification for increasing public infrastructure investment that is if infrastructure requirements are expressed openly and public investment mechanisms are efficient. In addition, research indicates that increasing public infrastructure investment will be especially effective in boosting aggregate demand and enhancing productive capacity over the long term. Simultaneously, county administrations should speed up the approval procedure for their varied development plans. These plans should set up a long-term plan for development and make sure there is enough space for building important infrastructure.

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