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Government Sector Spending and Private Investment: Evidence from Kenya

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Abstract
The private sector investment plays an integral part in guaranteeing economic soundness of an economy. In Kenya, the recurrent government expenditure increased sharply in the last two decades although this has not been commensurate to the private capital growth rate. Further, past empirical studies on recurrent sectoral expenditure and private investments have yielded mixed results with some in favor of the crowding-in hypothesis and other crowding-out effects (Buiter, 1977). Due to this controversy, the link between private capital formation and sectoral public spending remains unresolved in Kenya. The study used secondary data for 1963 to 2018 from various Statistical abstracts and Economic surveys reports. Both the Autoregressive Distributed Lag (ARDL) model and the Error Correction Model (ECM) estimation method were used to realize the study objective. Generally, this result posed mixed results on how health, education, agriculture, infrastructure and defense recurrent outlays impact private investment. The study components result indicates promotion and demotion of private investment in the country. The recurrent outlays in most public spending were found to crowd-in private investment significantly. These findings will inform the formulation of relevant vibrant fiscal policies to switch government spending in sectors that will spur private investment and hence economic growth in Kenya.
Keywords: Recurrent spending, private investment, capital information, crowding-out, sector, Keynesian model.
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1 Introduction

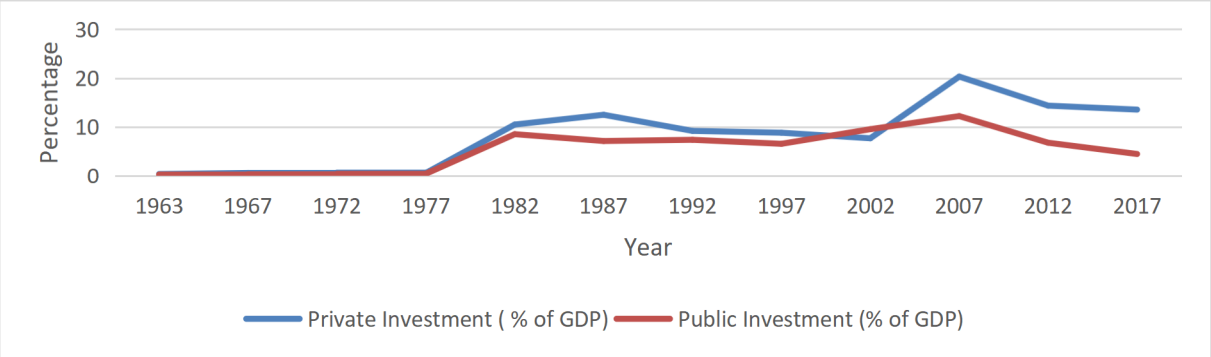
Over the years, developing countries Kenya included have prioritized private capital formation to boost the production capacity and stimulate production techniques. The World Bank (WB) ease of doing business report, ranked Kenya position four in Africa, behind Mauritius, Rwanda, and Morocco and 56 globally out of 190 countries reviewed in 2020. The ranking majored in costs associated with the acquisition of construction permits, starting a business, electricity, credit access, property registration, tax payment, minority investors protection, contract enforcement, labor market, cross-border trading as well as resolving insolvency issues. However, although 74.6 % of our total investment comes from the private sector, increased uncertainties such business recessions in every election cycle and the post-election violence witnessed in 2007/2008 decelerated the growth of private capital in Kenya (Oyieke, 2011).

According to Milbourne, Otto and Voss (2003), Kenya has experienced erratic fluctuations of private investment since the 1970s, resulting in the development and operationalization of various policies and economic plans to give impetus to private investors. Specifically, the growth of private investment as a percentage of GDP has been oscillating around 7.6 percent and 14 percent according to Kenya National Bureau of Statistics (KNBS) Various Economic Survey reports.

Njuru (2012) opined that since independence, Kenya has laid down several policies and strategies including giving incentives to local investors to accelerate private stock accumulation in the country. Nevertheless, the growth of this macroeconomic variable has posed mixed results over the decades hitting the all-time highest growth of 12.5% in 1987 (Kiptui, 2005). The impact of the oil crises experienced globally negatively affected investment growth in Kenya between 1971 and 1977. Also, the collapse of the East Africa Community (EAC) in 1977 barely 10 years after its establishment, was a major impediment to economic integration and immensely affected private investments in Kenya (Oyieke, 2011).

The Kenya Vision 2030 economic pillar envisages to achieve a middle-income status with a GDP growth average of 10% during the implementation period and beyond (KNBS, 2007). To secure this dream, the country was expected to grow its private investment annually by at least 22% of the GDP up to 2013 and 24 percent in the remaining implementation period and beyond. However, this has not been achieved and the ratio is standing at 17.4% in 2019 according to the KNBS Economic Survey report for 2020 (GoK, 2020). Figure 1 illustrates the trends in domestic capital stock over the years.

Figure 1: Private and Public Investment Trends in Kenya



Source: Oyieke (2011); GoK (2018).

Figure 1 illustrates the movement of both private and public capital between 1963 and 2017. The year 1973/74 recorded low investment by the private sector which Oyieke, (2011) associates to the detrimental effects of the oil crisis which occurred in the same period. He continues to note that the improvement in private investment between 1978 and 1980 was mainly due to increased government spending resulting from the agricultural sector spending. It is also important to note that the Economic Recovery Strategy (ERS) led to the rise in private investment between 2003 and 2007 due to economic stimulus programs launched in the review period related to increased recurrent government budget (GoK, 2018).

The two broad classifications of government expenditures are development and recurrent expenditures (Barro, 1990). The former is more discretionary and comprises spending on new projects and programs whose aim is to spur economic and social development. For instance, construction of hospitals, schools, infrastructures (railways and highways), water and irrigation projects, communication infrastructure, and many others that directly or indirectly affect the economic growth and stimulate private investment growth further (Gisore, 2017). Conversely, recurrent expenditure is less discretionary and includes the government expenditure on essential routine services like salaries and remunerations, depreciation etc. which don't necessarily result in the acquisition or creation of fixed assets (Agenor, 2007).

Theoretically and empirically, economists believe that a positive relation exists between government spending and private investment in developing nations. According to Keynes (1936), an increase in recurrent government expenditure is expected to stimulate further the aggregate demand and consumption, create employment, avert recessions, and complement private investment when the economy is not in full employment state (Babu et al., 2014). Since the emergence of Keynes theorem in the 1930s various schools of thought have tried to elucidate this relationship in different countries. This will inform the formulation of relevant vibrant fiscal policies to switch government spending in sectors that will spur private investment and hence economic growth in Kenya (Okisai, 2018).

1.1 Statement of the Problem

To achieve the targets in the Kenya Vision 2030, the 'Big Four' Agenda, post COVID-19 economic recovery strategy, and other local, regional, and international development blueprints, there is an urgent need to understand how sectoral recurrent spending impacts the private sector growth in Kenya. This will inform the formulation of relevant vibrant fiscal policies to switch government spending in sectors that will spur private investment and hence economic growth. This renders Private investment an integral driver to spur economic growth to a double-digit. In Kenya, many studies have concerted efforts to examine the connection between government expenditure and private capital outlay without decomposing the expenditures into sector components and examining their influence on private capital separately (Gisore, 2020). Additionally, very few studies have included the debt charge variable in their regression analysis. It is on this milieu that this study seeks to establish how these specific sector recurrent outlays and debt charges impact private investment in Kenya.

1.2 Objectives of the Study

To investigate the effect of government sector recurrent expenditure on private investment in Kenya

2 Literature Review

2.1 Simple Accelerator Model

Simple accelerator model links private capital investment to the economic growth. It holds that private investment decisions are driven by the anticipated output increase occasioned by demand rise and government consumption increase (Blejer & Khan, 1981). This implies that when demand for a certain commodity/service

increases, government will respond by making investments to match the anticipated output change. Otherwise, investment decisions will be shelved if there is no change in demand and output in the economy (Laopodis, 2001). This model has been used in studying business cycles and it is related to the Keynesian demand theory since it assumes a fixed price regime. The simple accelerator model is influential in government and firms' capital accumulation analysis but it has been criticized for ignoring costs related to investment.

Several empirical studies to determine the link between investments and their costs have been conducted. When the model is used to compare the firm's changes in the present and previous income, it explains investments better compared to the neoclassical model implying a weak link between the cost of capital and investment rate (Laopodis, 2001).

2.2 Empirical Review

Private investment and publics expenditure topic has attracted researchers' attention world over evidenced by the analyzed literature. Interestingly, these studies have posed different results with some supporting and others contradicting the economic theory which recognizes the role of government spending in rejuvenating the private investment. To this end, there is no clear and unanimous nexus between public and private investment. For instance, Aschauer (1989), Blejer and Khan (1981), and Njuru (2012) argued that government expenditure crowd-in private investment while Oyieke (2011), Beni and Mwakalobo (2009), Babu et al. (2014) and Laopodis (2001) found out that the former crowds-out the latter. A good number of studies around this thematic area have aggregated the government expenditure into broad recurrent and capital expenditures rendering the availability of literature on government sectors spending limited. This could be the justification for the contradicting results from various researchers.

3 Research Methodologies

3.1 Data Types and Sources

The study used secondary data from official government reports including Statistical Abstracts and Economic Surveys of KNBS complimented by Central Bank of Kenya annual Publications. Annual time series data for the year 1963 up to 2018 was used for all the variables. The data was analyzed using STATA version 17.

3.2 Definition and Measurement of Variables

Private Investment (P) – Wealth accumulated by the private sector both firms and individuals in terms of fixed assets. It is measured in Kenya shillings in current market prices. It is proxied by the gross capital formation by the private sector. Demirer et al. (2020) conclude that it has a positive effect when included in growth model.

Recurrent Expenditure (EDr, HEr, AGr, DFr, IFr) - This is government spending in education, health, agriculture, defense and infrastructure which does not necessarily lead to the acquisition of fixed assets. Kiptui (2005) found out that it has a positive sign in relation to private investment growth.

Debt charges (DBr) – This is the total amount of money used to service both local and foreign mature debts incurred by the national government annually. It will be measured by the total amount paid as interest by the government. Maingi (2017) conclude that it has a negative sign in relation to investment.

3.3 Empirical Model

Using disaggregated recurrent expenditures on education, health, agriculture, infrastructure, defense, and debt repayment data, and the study model is specified as;

$$P = f(ED, HE, AG, DF, IF, DB),$$

$$P_t = \beta_0 + \beta_1 EDr_t + \beta_2 HEr_t + \beta_3 AGr_t + \beta_4 DFr_t + \beta_5 \beta_1 Ir_t + \beta_6 DBr_t + \varepsilon_t \quad 1$$

Where;

P_t - Private investment at time t
β_0-β_6 - Vector of parameters for different recurrent spending components
ED_r - Recurrent expenditure on education at time t
HE_r - Recurrent expenditure on health at time t
AG_r - Recurrent spending on agriculture at time t
DF_r - Recurrent spending on defense at time t
IF_r - Recurrent spending on infrastructure at time t
DB_r - Debt servicing at time t
ε_t - Error term

3.4 Data Analysis Approach

Most often, in time series data, variables are non-stationary causing spurious and misleading results. To ensure stationarity of all the variables, the determination of unit root was undertaken by applying the Augmented Dickey-Fuller (ADF) unit root test (Dickey, 2014). To address the unit root issues, non-stationary variables were

differenced once. This study applied the ARDL estimation model. The model is deemed appropriate in time series when the independent variables are integrated of different orders i.e I(0) and I(1) (Pesaran & Shin, 2001). This study decomposed recurrent government expenditure into sector spending and examined their influence on private investment distinctly in Kenya. After conducting the Bound test analysis, the short run ARDL (p, q_1-q_6) model for the ARDL recurrent expenditure equation was specified as below;

$$\Delta \ln P_t = \alpha_0 + \sum_{i=1}^{p} \alpha 1\, \Delta \ln P_{t-1} + \sum_{i=1}^{q1} \alpha 2\, \Delta \ln ED\, r_{t-1} + \sum_{i=1}^{q2} \alpha 3\, \Delta \ln HEr_{t-1} + \sum_{i=1}^{q3} \alpha 4\, \Delta \ln AG\, r_{t-1} + \sum_{t=1}^{q4} \alpha 5\, \Delta \ln DFr_{t-1} + \sum_{t=1}^{q5} \alpha 6\, \Delta \ln IFr_{t-1} + \sum_{t=1}^{q6} \alpha 7\, \Delta \ln DBr_{t-1} + ¥_t \quad (2)$$

Where;

Δ is the difference operator,α_0 is an intercept, α_1 - $\alpha_7$is the associated coefficients, P is the lags of the dependent variable, q1 –q_6 represents lags for the independent variables, $\ln P_{t-1}$ is the lagged values of P while $\ln ED_{t-1}$, $\ln HE_{t-1}$,$\ln AG_{t-1}$, $\ln DF_{t-1}$,$\ln IF_{t-1}$, $\ln DT_{t-1}$ are lagged values of repressors and ¥$_t$ is the error term. Following empirical works by Mose *et al*. (2021) logs (ln) of the study variables were used during estimation of the model so as to allow for estimation coefficients to be interpreted as elasticities.

Variables are said to be cointegrated if they exhibit both short-run and long-run relationships. Oyieke (2011) notes that cointegration has a cause-effect relationship and variables may move away from each other in the short-term and the same direction over some time. After performing the Bound cointegration test, short-run ARDL and long-run ECM models were constructed for sectoral spending. For reliability of result a number of time series diagnostic tests were applied and reported in next chapter result. The tests included heteroscedasticity limitation using Breusch-Pagan test, autocorrelation using Breusch Godfrey and finally stability test was applied to ensure the applicability and extension of the study findings.

4 Empirical Findings

4.1 Descriptive Statistics

Table 1 shows the descriptive result of the study variables.

Table 1: Descriptive result matrix

Variable	P	ED	HE	AG	DF	IF	DB
Mean	128491	60336	9721	5296	21022	8018	87064
Median	40560	12399	3842	2453	4874	242	29753
Std.Dev.	170371	93350	11890	6484	35908	13044	124011
Min	637.00	104.60	57.80	62.58	22.40	74.00	93.20
Max	734522	385265	49459	23968	140589	60446	470920
Variance	2.90e+10	8.71e+09	1.41e+08	4.20e+07	1.29e+09	1.70e+08	1.54e+10
Skewness	1.614	1.835	1.343	1.242	2.152	2.018	1.842
Kurtosis	5.188	5.546	4.098	3.512	6.689	7.013	5.659
Observation	55	55	55	55	55	55	55

Table 1 show that education has the lion share while health and agriculture sectors are the bottom two sectors respectively in terms recurrent expenditures in Kenya. Increased spending in education can be attributed to the emphasis put to eradicate ignorance and grow human capital after independence and free primary and secondary education program which is currently in place. Also, the result demonstrated a highly skewed distribution of all the variables and a leptokurtic kurtosis with long right-hand tails. The skewness and kurtosis values range was between 1.242 to 2.152 and 3.512 to 7.013 respectively, which according to Bryne (2010) mirrors a normal distribution.

4.2 Unit Root Test

Stationarity test was paramount to avoid spurious regression results and guarantee meaningful inferences. The unit root tests addressing the two study objectives were conducted using the augmented Dickey Fuller (ADF) test as outlined below on Table 2.

Table 2: Augmented Dickey Fuller (ADF) Unit Root Test

Variable	Tests at levels	t- Statistic	Comment
Lnpi	Constant & Trend	-1.701	Non stationary
Lnedrec	Constant & Trend	-2.641	Non stationary
Lnherec	Constant & Trend	-2.284	Non stationary
Lnagrec	Constant & Trend	-4.548	Stationary
lnderec	Constant & Trend	-3.039	Non stationary
lninfrec	Constant & Trend	-3.367	Non stationary
Lndebt	Constant & Trend	-1.000	Non stationary

Critical value at 5% significance level

The t-statistic absolute values for all variables except agriculture were less than their respective critical values at 5% significance level. Thus, the null hypothesis (H_0) of non-stationary series was rejected for agriculture (lnagrec) only and accepted for all other variables. However, running the ADF test using the first difference of the non-stationary variables, the series became stationary.

4.3 Cointegration Analysis

Cointegration analysis was imperative to establish the relationship among variables and to determine whether to estimate the long run or the short-run model. Most often, after conducting the unit root analysis, there are three major outcomes; integration at levels I (0), on first difference I (1) or the series has a combination of both. In our case, the stationarity results indicated a combination of both I (0) and I (1). Thus, a Bound test recommended by Pesaran and Shin (2001) for such series was conducted.

Table 3: Cointegration Analysis

Significance level	**10%**		**5%**		**2.5%**		**1%**	
Bound	$I_{(0)}$	$I_{(1)}$	$I_{(0)}$	$I_{(1)}$	$I_{(0)}$	$I_{(1)}$	$I_{(0)}$	$I_{(1)}$
F stat = 2.325	2.12	3.23	2.45	3.61	2.75	3.99	3.15	4.43
t-Stat =-3.033	-2.57	-4.04	-2.86	-4.38	-3.13	-4.66	-3.43	-4.99

The (H_0) hypothesis is no cointegrating equation while the alternative (H_1) is there are cointegrating equations in the series. The $H_0$was accepted since the value for F-statistic was 2.325 which were lower than the lower bound values at 5%, and 1% significant levels as shown in table 3. This means that only short-run Autoregressive Distributed Lag (ARDL) regression model should be estimated.

4.4 ARDL Regression Results

The cointegration results indicated absence of cointegrating equations in this series. To achieve objective of this research which was to determine the link between private investment and government sectoral recurrent spending, the short-run model (ARDL) was estimated and results presented below on Table 4. Table 4 presents the short-run recurrent expenditure model regression outcomes.

Table 4: ARDL Regression Model Results

Variable	**Coefficient**	**t-value**	**P-value**
Lnpi			
L1 lnp	0.712	7.49	0.000
Lnedrec	0.092	1.51	0.137
Lnherec	-0.015	-0.32	0.748
Lnagrec	0.028	0.76	0.451
Lnderec	-0.012	-0.33	0.745
L1 lninfrec	0.036	1.95	0.058
Lndebt	0.100	2.08	0.043
Constant	1.135	3.86	0.000
R-Squared =	0.997	F =	1968
Adj. R-squared =	0.997	Prob>F =	0.000
Log likelihood =	45.497	Sample size =	54
Breusch-Pagan test	Chi square (1) = 3.53	P-value(F) =	0.060
Breusch-Godfrey test	Chi square (52) = 53	P-value(F) =	0.435

The findings indicate that the first lag of private investment and recurrent spending in infrastructure and the debt are statistically significant 5% significant levels respectively. This implies that in the short-run, a percentage point change in the first lag of private investment and recurrent spending in infrastructure are associated with 0.712 and 0.036 increase in private investment on average ceteris paribus at 1% and 10% statistical significance levels respectively. The supply of pure public goods through infrastructure spending which may constitute a sizeable component of aggregate demand; Government often acts as facilitator in the markets with asymmetric and imperfect information (Husnain *et al.,* 2011). This instrument of fiscal policy promotes economic growth in the sense that public investment contributes to capital accumulation and complement private sector. Indeed, if appropriately managed and utilised, government expenditure has significant positive effect on real GDP growth, especially in less developing countries where there exist inadequate and underdeveloped infrastructural facilities and where private sector is not mature enough to play the expected role in the economy. Also, a percentage point change in debt will increase the private investment by 0.1 on average ceteris paribus at 5% statistically significant level in the short run. *This implies debt accumulation can support investment for growth-enhancing purposes. As a country improves its credit worthiness and obligations private investors will be attracted and business confidence will grow in that nation.* Other variables in the model were statistically insignificant although defense and health coefficients indicated that they crowd out private investment. The constant for the

model is 1.135 which is statically significant at 1% level. This is possible as a result of competition between the less efficient public sector and the private sector in the credit market which may increase interest rate thereby misallocating private investment and eventually reducing economic growth.

Generally, this objective posed mixed results on how health, education, agriculture, infrastructure and defense recurrent outlays impact private investment (Gitonga, 2020). This agrees with the findings of Kiptui (2005) who using OLS approach in Kenya established that recurrent expenditure is a critical component complimenting private investment as well as the findings of Njuru (2012). More so, the empirical results of Aschauer (1989) recognized infrastructure spending as an activator of private investment which is largely supported by this paper. Also, this study underscores Laopodis (2001) position of defence expenditures demoting private investment and contradicts Njuru (2012) and Oyieke (2011) position on the role of debt charges on private capital formation.

From the result, heteroscedasticity was not a problem in this research. However, autocorrelation was a problem but the study used robust standard error to correct it. Based on analysis results, the CUSUM graphs were within the 5% boundary indicating that the models were stable. The F statistic is 1968.05 and its corresponding probability value is 0.000 which is highly significant at 1% level meaning the model is statistically significant. The R^2 is 0.997 implying that health, education, agriculture, infrastructure, defence and debt charges variables account for 99.71% variations in private investment in the country. This indicated that the overall goodness of fit was satisfactory.

5 Conclusions and Recommendations

Government recurrent spending in infrastructure and debt were found to promote private sector and also spending in education and agriculture influence private investment in the short run though insignificantly. More so, though defense and health were insignificant, the econometric findings indicated that they negatively affect private investment. These findings compares with Keynes (1936) and the fiscal economists who opined that increasing government expenditure is expected to stimulating private investment when the economy is not in full employment state. This paper concludes that public sector recurrent outlays are key in determining private investment and that different public spending component affect investment differently in short run. Debts are important to spur private investment and economic growth and if well managed, repayments cannot hamper the economy. However, caution should be exercised in management of public debts. Government can influence investment growth targets in the country through fiscal policy in both short run and long run.

The government recurrent spending in infrastructure, Education, and agriculture should be enhanced since they have a crowding-in effect. As the government intensifies the austerity measures, caution should be exercised when making sectors funding decisions. Investment in transport infrastructure expansion and modernizations will reduce costs of production hence attracting investors. Recurrent spending in education especially at a time when the government is implementing the free primary and secondary education should be amplified. This will go a long way in enhancing the quality of human resource capital which is a vital ingredient of investment. Also it will be prudent for government to enhance recurrent spending in this sector due to its significant contribution to GDP in Kenya. At the same time, government should scale down its recurrent outlays in health and defense since they deter private investment.

This study finally raises pertinent issues on the rising debt levels and debt management in the country. The study recommend that the government should exercise great care and caution when borrowing to ensure favorable terms as well as ensuring debts is invested in appropriate productive sectors with multiplier effects. The government should also emphasize good management of loans by sealing all the corruption and other wastages loopholes.

5.1 Areas of Further Study

This recognizes that there are qualitative variables that influence private investments but were not investigated. This in some ways renders the models unable to include all critical variables that influence private investment comprehensively. Thus, the study recommends that these variables should be factored in future studies.

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