

Government Expenditure and Private Sector Growth in the East African Community: Evidence of Crowding-In or Crowding-Out?

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Abstract

Government expenditure can influence private-sector development through infrastructure provision, human-capital formation, aggregate demand, and the creation of an enabling environment for investment. However, public expenditure may also displace private investment when it competes for scarce financial resources, is inefficiently allocated, or is financed through mechanisms that raise the cost of private capital. This study examines the relationship between government expenditure and private-sector growth in six East African Community (EAC) countries; Burundi, the Democratic Republic of Congo, Kenya, Rwanda, Tanzania, and Uganda using annual panel data covering 1970–2022. Government expenditure was measured using an equally weighted composite index based on education, health, military, and recurrent expenditure, while private-sector growth was operationalized using private gross fixed capital formation as a share of GDP. A fixed-effects panel regression was estimated after selecting the estimator through the Hausman specification test. The analysis comprised 286 observations across six countries. The results show a positive and statistically significant association between government expenditure and private-sector growth ($\beta = 0.050$, $SE = 0.004$, $t = 11.27$, $p < .001$; 95% CI [0.041, 0.059]). The model explains 31.3% of the within-country variation in private-sector growth and is statistically significant, $F(1, 279) = 126.94$, $p < .001$. The findings are consistent with the crowding-in hypothesis, suggesting that, over the study period, higher government expenditure was associated with stronger private-sector capital formation in the EAC. The study contributes long-run regional evidence to the debate on whether public expenditure complements or substitutes for private investment and provides policy implications for expenditure allocation and fiscal management in the EAC.

Keywords: Government expenditure; private-sector growth; private investment; crowding-in; crowding-out; fiscal policy; East African Community.

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I. Introduction

Government expenditure is a central instrument of fiscal policy through which governments provide public goods, develop infrastructure, support human capital, and influence economic activity. Its importance is particularly pronounced in developing economies, where deficiencies in infrastructure, social services, productive capacity, and financial systems may constrain private investment. Public expenditure directed towards productive activities can therefore complement private capital by reducing production costs, improving productivity, and expanding market opportunities (Barro, 1990; Miyamoto et al., 2020).

The relationship between government expenditure and private-sector growth is nevertheless theoretically ambiguous. Keynesian theory provides a basis for a positive relationship by emphasizing the role of government expenditure in stimulating aggregate demand, particularly when private demand and investment are weak (Keynes, 1936). Government expenditure can increase demand for private-sector goods and services, generate employment and income, and support economic activity. Public investment in infrastructure can also provide complementary inputs that private firms depend upon but may not efficiently provide individually.

The endogenous growth perspective provides an additional explanation for a potential crowding-in effect. Productive public expenditure can enter the production process through infrastructure, education, health, and other public services that enhance the productivity of private capital. Barro (1990) argues that productive government services can increase the productivity of private inputs, implying that public expenditure can complement rather

than substitute for private investment. In this sense, the effect of government expenditure depends not simply on its magnitude but also on its productivity and allocation.

An alternative perspective is the crowding-out hypothesis. Government expenditure may compete with private investors for financial resources, especially when expenditure is financed through domestic borrowing. Increased public borrowing can place upward pressure on interest rates and increase the cost of capital, thereby discouraging private investment. Excessive or poorly targeted expenditure can also distort resource allocation and weaken incentives for private-sector investment. The theoretical possibility of both effects means that the direction of the government expenditure–private investment relationship remains an empirical question.

Empirical evidence reflects this theoretical ambiguity. Nguyen (2023), using data for developed and developing economies, found that government expenditure crowded out private investment in developed economies but crowded it in developing economies. The results suggest that fiscal policy may operate differently across stages of development. Carvelli (2023), examining 28 OECD countries, similarly showed that the composition and financing of government expenditure matter: productive expenditure can support private investment, whereas unproductive expenditure can discourage private capital formation. These findings indicate that the effect of government expenditure is not necessarily uniform across countries or expenditure categories.

Evidence from Africa also remains mixed. Shobande and Olunkwa (2018) found that fiscal measures, including government expenditure, had positive long-run relationships with private investment in selected African countries, although short-run effects differed. Ouédraogo et al. (2019), using a large panel of 44 Sub-Saharan African countries over 1960–2015, found that public investment crowded in private investment on average, although the magnitude differed across countries and was stronger where the private sector was relatively strong. These findings provide support for the possibility that public investment can complement private capital formation in African economies.

Within the East African context, Gitonga et al. (2022) examined government spending and private investment in Kenya and reported heterogeneous effects across expenditure components. The study found that some forms of infrastructure-related public expenditure supported private investment, while other expenditure categories produced weaker or adverse effects. Earlier evidence by Mose and Keino (2017) also links fiscal conditions and private investment in the EAC, reinforcing the importance of fiscal policy in shaping private-sector investment conditions. The evidence therefore suggests that both the level and composition of public expenditure matter for private-sector development.

The East African Community provides an important setting for examining this relationship because its member states have pursued public expenditure programmes aimed at infrastructure development, human-capital formation, social services, and structural transformation while simultaneously seeking to expand private-sector participation in economic development. However, much of the existing evidence is based on individual countries, shorter periods, or broader international samples. Long-run comparative evidence covering the EAC as a regional economic bloc remains limited.

This study therefore examines the relationship between government expenditure and private-sector growth in six EAC countries over the period 1970–2022. The analysis isolates the direct GE–PSG relationship from the broader thesis framework in which private-sector growth serves as an intervening variable in the GE–economic growth relationship. The study asks: What is the relationship between government expenditure and private-sector growth in the East African Community?

The study contributes to the literature in three respects. First, it provides long-run regional evidence using more than five decades of annual panel data. Second, it examines government expenditure using a composite index that captures several major expenditure dimensions rather than a single expenditure category. Third, it directly evaluates whether the observed relationship is consistent with the crowding-in or crowding-out proposition within the EAC context.

II. Literature Review

Theoretical Perspective

The study is primarily anchored on Keynesian Theory and Endogenous Growth Theory. Keynesian Theory explains how government expenditure can stimulate aggregate demand and private economic activity, particularly where private-sector demand is weak (Keynes, 1936). This perspective supports the possibility that public spending may stimulate private-sector growth through demand and income effects.

Endogenous Growth Theory complements this argument by emphasizing productive public investment as a determinant of long-run productivity. Barro (1990) demonstrates that government services can influence the productivity of private capital. Public expenditure on infrastructure, education, health, and related productive activities may therefore raise the returns to private investment and generate a crowding-in effect.

The competing crowding-out mechanism is incorporated as an alternative empirical expectation. Where public expenditure competes with private investors for financial resources or is poorly allocated, the net effect

may be negative. Thus, the theoretical framework permits both positive and negative outcomes, with the empirical analysis determining which effect dominates in the EAC over the study period.

Empirical Evidence

Government expenditure can influence private-sector growth through several interconnected channels. Public investment in roads, electricity, transport, communications, and other infrastructure can reduce transaction and production costs and improve the productivity of private capital. Similarly, public expenditure on education and health can improve the quality of human capital, while expenditure that supports financial and institutional systems can facilitate access to markets and investment opportunities (Miyamoto et al., 2020; Gitonga et al., 2022). These channels suggest a complementary relationship in which public expenditure raises the productivity and expected return of private investment.

The demand channel provides another mechanism. Government expenditure increases aggregate demand and can create markets for private-sector goods and services. Through employment and income generation, public spending can increase purchasing power and stimulate private-sector activity (Keynes, 1936). In developing economies where private demand may be constrained by low incomes and inadequate infrastructure, these effects may be particularly relevant.

However, the crowding-out mechanism operates in the opposite direction. Government borrowing can absorb financial resources that would otherwise be available to private investors. Where public expenditure is financed through borrowing or distortionary taxation, the resulting increase in the cost of finance or reduction in disposable resources may weaken private investment. Carvelli (2023) emphasizes that the financing and composition of government expenditure are important in determining whether public spending complements or substitutes for private capital.

Nguyen (2023) examined 36 developed and 98 developing countries and found that public expenditure crowded out private investment in developed economies but crowded in private investment in developing economies. The study attributed the difference partly to differences in development conditions and the role of public spending in supporting private-sector activity. This finding is particularly relevant to the EAC because the region consists predominantly of developing economies.

Carvelli (2023) examined 28 OECD countries over 1990–2019 using a dynamic panel framework and distinguished between productive and unproductive government expenditure. The study found that productive public expenditure can support private investment in the long run, while unproductive expenditure can adversely affect private capital formation. The study further emphasizes that the financing of public expenditure is important because borrowing or distortionary taxation can weaken the positive effects of productive expenditure.

Gitonga et al. (2022) examined government spending and private investment in Kenya using disaggregated expenditure categories. Their findings showed that the relationship differs across expenditure components, with infrastructure-related spending contributing positively to private investment in several specifications. The study is relevant to the present analysis because it demonstrates that public expenditure can provide complementary inputs to private investment, while also showing why aggregate expenditure may conceal differences across spending categories.

Ouédraogo et al. (2019) examined public investment and private investment in 44 Sub-Saharan African countries over 1960–2015. Using heterogeneous-parameter approaches, they found that public investment crowds in private investment on average, although the magnitude of the effect differs across countries and is stronger in countries with a strong private sector. This evidence is particularly relevant to the present study because it supports a regional African crowding-in mechanism while recognizing cross-country heterogeneity.

Dreger and Reimers (2016) also found a long-run relationship between public and private capital in the euro area, supporting the view that public investment can complement private investment. Shobande and Olunkwa (2018), using selected African countries, found positive long-run relationships between government expenditure and private investment, although short-run effects differed. These findings reinforce the argument that the temporal dimension and economic context matter when assessing fiscal effects on private investment.

Overall, the literature indicates that government expenditure can either crowd in or crowd out private-sector activity. The direction of the effect appears to depend on expenditure composition, financing arrangements, development conditions, and institutional capacity. This study extends the literature by examining the long-run relationship within the EAC using a consistent panel framework and an aggregate government expenditure measure.

Research Gap

Although the government expenditure–private investment relationship has received considerable empirical attention, three gaps remain. First, many studies focus on individual countries or broad international samples, limiting their ability to explain the specific dynamics of the EAC. Second, several studies use shorter periods, whereas the present study covers 1970–2022 and therefore captures longer-term changes in fiscal policy

and private-sector development. Third, previous studies frequently focus on individual expenditure categories, while the present study uses an equally weighted composite measure representing the broader fiscal expenditure position. The study therefore provides complementary evidence on whether the aggregate fiscal stance is associated with private-sector capital formation in the EAC.

III. Data and Methodology

Study Area and Data Sources

The study employed a quantitative panel-data design. The analysis covered six EAC member states: Burundi, the Democratic Republic of Congo, Kenya, Rwanda, Tanzania, and Uganda. South Sudan was excluded because of substantial missing observations over the study period, which would have reduced the consistency and reliability of the panel dataset. The study used annual secondary data covering 1970–2022.

Data were obtained from internationally recognized macroeconomic sources, principally the World Development Indicators and the International Monetary Fund Government Finance Statistics, together with other official international databases used in the thesis. The extended period permits examination of long-run fiscal and private-sector dynamics across different stages of economic and institutional development.

Variable Measurement

Government expenditure was operationalized using an equally weighted composite index constructed from four expenditure categories: education, health, military, and recurrent expenditure. Each component was expressed as a percentage of GDP, and the composite measure was obtained as the arithmetic mean of the four expenditure components. The composite approach provides a broader representation of government fiscal activity than reliance on a single expenditure category and was selected partly because of the availability and comparability of expenditure data across the six EAC countries (Barro, 1990; Kimaro et al., 2017; Angelopoulos et al., 2008).

Private-sector growth was operationalized using annual private gross fixed capital formation expressed as a percentage of GDP. The indicator captures private-sector investment in fixed domestic assets and is consistent with the measurement approaches used by Nguyen (2023), Carvelli (2023), and Gitonga et al. (2022). It therefore provides a direct measure of private capital accumulation and is appropriate for testing the crowding-in or crowding-out relationship.

The descriptive statistics in the thesis show an EAC-wide mean of 7.01% of GDP for the composite government expenditure measure and 8.97% of GDP for private-sector growth. The standard deviations were 1.33 and 4.69, respectively, indicating relatively limited dispersion in the composite government expenditure measure but greater variation in private-sector capital formation across countries and years.

Table 1: Operational Definition of Variables

Variable	Measurement	Scale	Supporting Literature / Source
Government Expenditure (GE)	Equally weighted arithmetic mean of education, health, military and recurrent expenditure (% GDP)	Ratio	Barro (1990); Kimaro et al. (2017); Angelopoulos et al. (2008); IMF-GFS/WDI
Private-Sector Growth (PSG)	Private gross fixed capital formation (% GDP)	Ratio	Nguyen (2023); Carvelli (2023); Gitonga et al. (2022)

Model Specification

To estimate the relationship between government expenditure and private-sector growth, the following fixed-effects panel regression model was specified:

$$PSG_{it} = \beta_0 + \beta_1 GE_{it} + \mu_i + \varepsilon_{it}$$

where PSG_{it} denotes private-sector growth in country i at time t ; GE_{it} denotes the composite government expenditure index; β_0 is the intercept; β_1 measures the association between government expenditure and private-sector growth; μ_i captures unobserved country-specific, time-invariant effects; and ε_{it} represents the idiosyncratic error term.

The inclusion of μ_i is central to the fixed-effects specification because countries may differ in institutional quality, geography, historical conditions, market structure, and other characteristics that are not directly observed but remain constant over time. The fixed-effects estimator controls for these time-invariant country-specific characteristics.

The null hypothesis was specified as:

H_0 : Government expenditure has no statistically significant relationship with private-sector growth in the East African Community.

Estimation Technique and Model Selection

Panel-data models can be estimated using pooled ordinary least squares, random effects, or fixed effects. The choice depends on the treatment of unobserved country-specific effects and their potential correlation with the explanatory variables (Baltagi, 2021; Wooldridge, 2010). The Hausman specification test was employed to determine whether the random-effects estimator or fixed-effects estimator was more appropriate. The test produced $\chi^2 = 24.761$, $p < .001$, leading to rejection of the null hypothesis of no systematic difference between the fixed-effects and random-effects estimates. The fixed-effects estimator was therefore selected.

The fixed-effects approach is appropriate for the present study because the objective is to estimate the within-country relationship between government expenditure and private-sector growth while controlling for unobserved, time-invariant country characteristics. The interpretation of β_1 is consequently based on changes within countries over time rather than differences in average expenditure and private-sector growth across countries.

Diagnostic Tests

The thesis analysis conducted diagnostic tests to assess the suitability of the regression model. The residual normality test indicated normally distributed residuals (adjusted $\chi^2(2) = 0.340$, $p = .843$). The Ramsey RESET test was not significant ($F(3, 279) = 0.68$, $p = .567$), indicating no evidence of model misspecification. The mean variance inflation factor was 1.003, indicating no multicollinearity concern. The White test was not significant ($\chi^2(9) = 7.21$, $p = .615$), supporting homoscedasticity, while the Breusch–Godfrey LM test was not significant ($\chi^2(1) = 0.007$, $p = .934$), indicating no evidence of serial correlation. These diagnostics support the suitability of the estimated fixed-effects model.

IV. Results and Discussion

Descriptive Statistics

The descriptive statistics indicate that the EAC-wide mean of the composite government expenditure measure was 7.01% of GDP, with a standard deviation of 1.33 and a coefficient of variation of 0.19. Private-sector growth recorded a higher mean of 8.97% of GDP and a standard deviation of 4.69, with a coefficient of variation of 0.52. The comparatively higher variation in private-sector growth suggests greater differences in private capital formation across the countries and over time than in the aggregate government expenditure measure.

At the country level, Burundi recorded the highest average government expenditure composite at 8.06% of GDP, while the Democratic Republic of Congo recorded the lowest at 6.13%. Private-sector growth was highest on average in Tanzania at 12.36% of GDP and lowest in Burundi at 7.98%. These differences demonstrate that similar regional fiscal environments can coexist with substantial differences in private-sector capital formation.

Correlation Analysis

The Pearson correlation results provide preliminary evidence of a positive association between government expenditure and private-sector growth. The correlation coefficient was $r = 0.762$ and was statistically significant at the 10% level. This indicates a strong positive association and provides initial support for the possibility that higher government expenditure is accompanied by stronger private-sector capital formation. However, correlation does not control for unobserved country-specific effects; consequently, the fixed-effects regression provides the principal basis for inference.

Table 2: Pearson Pairwise Correlation between Government Expenditure and Private-Sector Growth

Variables	Correlation (r)	Significance
GE-PSG	0.762	$p < .10$

Note. * $p < .10$. Source: Author's analysis.

Fixed-Effects Regression Results

The fixed-effects regression model was statistically significant, $F(1, 279) = 126.94$, $p < .001$. The model was estimated using 286 observations from six EAC countries. The within R^2 was 0.313, indicating that government expenditure accounts for 31.3% of the variation in private-sector growth within countries over time. The between R^2 was 0.088, while the overall R^2 was 0.299.

Government expenditure was positively and statistically significantly associated with private-sector growth ($\beta = 0.050$, $SE = 0.004$, $t = 11.27$, $p < .001$; 95% CI [0.041, 0.059]). The positive coefficient indicates that a one-unit increase in the composite government expenditure index is associated with a 0.050-unit increase in private-sector growth, conditional on the fixed-effects specification. The result is therefore consistent with the crowding-in hypothesis.

Table 3: Fixed-Effects Regression of Government Expenditure on Private-Sector Growth

Variable	β	SE	t	p	95% CI
GE	0.050	0.004	11.27	< .001	[0.041, 0.059]
Constant	1.567	0.023	68.15	< .001	[1.522, 1.612]

Model: Fixed effects; $N = 286$; countries = 6; R^2 within = 0.313; R^2 between = 0.088; R^2 overall = 0.299; $F(1, 279) = 126.94$; Prob. > $F < .001$. Source: Author's analysis.

The estimated relationship is expressed as:

$$PSG_{it} = 1.567 + 0.050GE_{it} + \mu_i + \varepsilon_{it}$$

The positive and statistically significant coefficient provides empirical evidence that government expenditure is associated with increased private-sector capital formation in the EAC. Importantly, the coefficient should be interpreted as an association rather than a definitive causal effect. Although the fixed-effects estimator controls for time-invariant country-specific heterogeneity, the model does not by itself establish the precise mechanisms through which government expenditure affects private-sector investment.

Discussion of Findings

The positive association between government expenditure and private-sector growth is consistent with the crowding-in perspective. Public expenditure can complement private investment when it supplies infrastructure and services that raise the productivity of private capital. Roads, energy systems, transport networks, communications infrastructure, education, and healthcare can lower production costs, improve labour productivity, and reduce constraints that private firms face when investing. Evidence from the thesis similarly identifies infrastructure and productive public expenditure as important channels through which public spending can stimulate private investment (Miyamoto et al., 2020; Gitonga et al., 2022).

The finding is also consistent with Nguyen (2023), who found that government expenditure crowded in private investment in developing economies. The EAC result may therefore reflect the role of public expenditure in addressing infrastructure and market constraints that are relatively more binding in developing economies. In such settings, public expenditure may provide complementary capital rather than merely competing with private investors for existing resources.

The result is further supported by the regional evidence of Ouédraogo et al. (2019), who found an average crowding-in effect of public investment on private investment across 44 Sub-Saharan African countries. Their finding that the effect was stronger in countries with stronger private sectors also highlights the possibility that public and private investment reinforce each other. The positive EAC coefficient is therefore compatible with a broader African pattern in which productive public investment can support private capital formation.

The finding should nevertheless be interpreted alongside evidence of crowding-out. Carvelli (2023) demonstrates that unproductive expenditure and the financing of government spending can weaken private capital formation. Similarly, evidence from African economies indicates that the effects of fiscal expenditure vary by expenditure category and over time. Thus, the positive aggregate coefficient observed in the EAC should not be interpreted to mean that every form of government expenditure necessarily crowds in private investment.

The use of an equally weighted composite expenditure measure is relevant to this interpretation. By averaging education, health, military, and recurrent expenditure, the study captures the broader fiscal expenditure position rather than the isolated effect of one expenditure category. The positive coefficient therefore represents the net association of the combined expenditure measure with private-sector growth. Differences across expenditure components may offset one another, meaning that future disaggregated analysis could reveal heterogeneous effects that are not visible in the aggregate measure.

The finding also contributes to the broader thesis argument concerning the role of private-sector growth in the government expenditure–economic growth relationship. In the thesis, the GE–PSG pathway constitutes path a of the mediation framework. The significant positive coefficient reported here establishes that government expenditure is significantly associated with private-sector growth, providing empirical evidence for the first link in the proposed transmission mechanism. The subsequent mediation analysis in the thesis examines whether this association translates into economic growth through private-sector development.

V. Conclusion

This study examined the relationship between government expenditure and private-sector growth in six EAC countries over the period 1970–2022. Using 286 observations and a fixed-effects panel estimator, the study found a positive and statistically significant association between the composite government expenditure measure and private-sector growth. The estimated coefficient was 0.050, with a standard error of 0.004, a t-statistic of 11.27, and $p < .001$. The 95% confidence interval ranged from 0.041 to 0.059.

The model was statistically significant, $F(1, 279) = 126.94$, $p < .001$, and explained 31.3% of the within-country variation in private-sector growth. The findings provide evidence consistent with the crowding-in

hypothesis, indicating that, within the EAC over the study period, government expenditure was positively associated with private-sector capital formation.

The results reinforce the argument that public and private investment can be complementary in developing economies. However, the findings should not be interpreted as justification for indiscriminate increases in public expenditure. The literature indicates that the composition, productivity, financing, and efficiency of expenditure determine whether public spending complements or displaces private investment.

Policy Implications

The findings suggest that EAC governments should prioritize expenditure that provides complementary inputs to private investment. Public resources should particularly support infrastructure, education, health, and other productive services that reduce constraints on private-sector activity. Fiscal planning should therefore focus not only on the volume of expenditure but also on the extent to which public resources create conditions that enhance private capital formation.

Second, fiscal authorities should strengthen expenditure allocation and public financial management. Since evidence from the wider literature shows that unproductive expenditure can crowd out private investment, governments should improve budget prioritization, implementation, monitoring, and evaluation. The positive aggregate relationship identified in this study should therefore be interpreted as support for productive public expenditure rather than for unrestricted expenditure expansion.

Third, regional coordination within the EAC may strengthen the complementary relationship between public and private investment. Public investment in transport corridors, energy infrastructure, digital connectivity, and other regional projects can reduce transaction costs and expand markets available to private firms. Such investment can strengthen private-sector participation while supporting regional integration.

Limitations and Areas for Further Research

The study uses private gross fixed capital formation as the indicator of private-sector growth. Although the measure captures private investment in fixed assets, private-sector development also encompasses employment creation, entrepreneurship, innovation, productivity, and access to finance. Future studies could therefore employ broader measures of private-sector development.

The use of a composite government expenditure index also limits the ability to distinguish the effects of individual expenditure categories. Future research could disaggregate education, health, military, and recurrent expenditure to determine which components generate crowding-in and which may generate crowding-out effects. Further research could also examine whether the relationship varies across individual EAC countries or different periods of development.

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