

Public Expenditure Composition and Economic Growth in Somalia: The Moderating Role of Institutional Quality

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ARTICLE INFORMATION	ABSTRACT
Article history: Published: October 2026 Keywords: Public Expenditure Composition Economic Growth Institutional Quality Moderating Effect ARDL Cointegration Fiscal Governance State Fragility Somalia	This doctoral research paper investigates the structural and dynamic relationship between public expenditure composition and long-run economic growth in Somalia, with a primary analytical focus on the crucial moderating role played by institutional quality. Utilizing highly comprehensive and harmonized macro-level time-series data spanning from 1990 to 2025, this research systematically decomposes the government's spending matrix into two foundational clusters: recurrent expenditure (comprising public sector salaries, general administrative overheads, and internal/external security operations) and capital expenditure (consisting of hard core economic infrastructure, transportation networks, and social development frameworks). Operating within an Autoregressive Distributed Lag (ARDL) cointegration methodology, the empirical frameworks reveal that while government capital interventions demonstrate an inherently positive long-run impact on real Gross Domestic Product (RGDP) trajectories, recurrent spending profiles exert a significant negative pressure on long-term aggregate output expansion when governance matrices are deficient. Crucially, the interaction econometric models confirm that institutional quality operates as a robust, statistically significant, and highly positive moderating catalyst, completely altering the macroeconomic return on public resource distributions. Specifically, a 1% structural advancement in institutional framework performance shifts the marginal growth elasticity of capital infrastructure allocations from a fragile base level of 0.142 to an optimized coefficient of 0.285. Concurrently, heightened regulatory capability drastically curtails the crowd-out effects, market distortions, and procurement leakages that typically corrupt recurrent administrative expenditures. The bounds testing setup establishes a stable, long-run cointegrating relationship, where the calculated F-statistic of 6.42 comfortably exceeds the upper-bound critical parameters at the 1% significance level, and the underlying error correction mechanism validates a highly rapid structural speed of adjustment ($ECM = -0.584$). These empirical outputs formulate a rigorous and precise blueprint for strategic fiscal policy recalibration across fragile and post-conflict states, demonstrating that budgetary restructurings remain structurally incapable of generating sustainable development dividends unless actively combined with comprehensive and deep-seated structural institutional strengthening.

1. Introduction

The foundational relationship linking public expenditure composition to aggregate economic expansion represents one of the most critical structural debates in contemporary fiscal policy, macro-econometric modeling, and development economics. Following the structural blueprints laid down by Barro's Endogenous Growth Model (Barro, 1990), public expenditure can be cleanly partitioned based on its distinct structural capacity to alter long-term economic steady-state growth trajectories. Public outlays specifically directed toward building physical capital stock, multi-modal transportation corridors, integrated communication networks, clean energy grids, and human resource competencies are classified as productive expenditures because they directly boost marginal factor productivity and trigger positive technological spillovers across private industrial sectors. Conversely, excessive public outlays dedicated to expansive governmental ingestion, poorly targetted consumer subsidies, and non-meritocratic administrative payroll expansions fall into the analytical bin of unproductive expenditures, which frequently depress growth dynamics by crowding out private financial capital markets and altering the efficient distribution of rare domestic resources.

In post-conflict jurisdictions, fragile states, and recovering economic zones, this fiscal allocation trade-off is severely magnified by structural institutional deficits, massive constraints in domestic revenue generation capacity, and an overwhelming systemic dependence on volatile external official development assistance (ODA). The country of Somalia presents an exceptionally dynamic and highly complex case study for analyzing these macroeconomic and fiscal interactions. Following multiple decades characterized by absolute central government collapse, intense political fragmentation, structural civil conflict, and profound institutional erosion, the gradual re-establishment and stabilization of the Federal Government of Somalia (FGS) initiated an epochal process of fiscal normalization, structural state re-building, and public financial reform. This historic stabilization process reached its formal institutional apex in December 2023 with the successful attainment of the Full Completion Point under the Enhanced Heavily

Indebted Poor Countries (HIPC) Initiative, as verified by the International Monetary Fund (IMF) and the World Bank. This historic milestone successfully eliminated billions of dollars of external debt arrears and restored Somalia's access to non-concessional and highly favorable financing lines from international financial institutions. This structural transition effectively shifted the core national economic policy agenda away from baseline emergency crisis intervention toward long-term structural development and sustainable macroeconomic growth.

1.2 Statement of the Structural Research Problem

Despite achieving these magnificent milestones under multiple IMF Staff-Monitored Programs (SMP) and Extended Credit Facilities (ECF), Somalia's real economic growth continues to exhibit profound volatility and structural weakness, averaging a modest 2.5% to 3.0% per annum over the past decade. This growth path remains highly insufficient because it fails to clear the national demographic expansion rate, thereby leading to stagnant or declining real GDP per capita indicators. The core structural vulnerability paralyzing the Somali economy is found within the extreme imbalances characterizing the composition of its public financial management matrix. Somalia's official public execution budgets remain profoundly distorted in favor of recurrent expenditures.

Spending lines dedicated to fundamental state security apparatuses, emergency policing, and basic executive administration regularly consume upwards of 75% to 83% of the entire domestic budgetary framework, leaving public capital accumulation and foundational infrastructure investments profoundly underfunded or entirely dependent on volatile external project grants.

Compounding this severe structural fiscal mismatch is the systemic weakness and fragility that characterizes Somalia's domestic institutional architecture. According to long-run datasets from the World Bank's Worldwide Governance Indicators (WGI), Somalia persistently registers percentile ranks below the 5th percentile globally across all core dimensions, including regulatory quality, rule of law, government effectiveness, and control of corruption. Standard economic theory proves that public spending never operates within an institutional vacuum; the real macroeconomic return on any fiscal expenditure is heavily dependent on the quality of the administrative pipeline through which it passes. When institutional quality is low, capital spending programs are severely undermined by extensive rent-seeking behaviors, contract inflation, and technical execution leakages, while recurrent expenditures degrade into extensive patronage networks. While standard literature has explored government spending or institutional quality independently, a deep empirical gap exists regarding how these variables interactively operate in Somalia. This study directly resolves this gap by analyzing the moderating role of institutions within a long-run time-series design.

1.3 Research Objectives and Hypotheses

This doctoral dissertation aims to empirically resolve this structural gap by satisfying the following specific research objectives:

- To rigorously quantify and evaluate the long-run and short-run structural impacts of public capital expenditure lines on real GDP growth trajectories in Somalia.
- To empirically evaluate the structural influence and macroeconomic consequences of recurrent public spending profiles on Somalia's long-term economic output.
- To determine whether institutional quality acts as a statistically significant, positive moderating force within the relationship connecting public expenditure composition to economic growth.

2. Comprehensive Literature Review

2.1 Theoretical Framework and Mathematical Derivations

This dissertation is theoretically anchored within the Endogenous Growth Model formulated by Barro (1990), modified to incorporate the structural tenets of New Institutional Economics as advanced by North (1990). We begin by specifying an aggregate macroeconomic production function where public expenditure components enter directly as inputs. Let aggregate output (Y) at time t be determined by:

$$Y_t = A_t * K_t^{\alpha} * L_t^{\beta} * G_{\{p,t\}}^{\gamma} * G_{\{u,t\}}^{\delta}$$

Where A represents the total factor productivity coefficient, K is private capital stock, L is labor input, G_p represents productive public expenditure (capital outlays), and G_u represents unproductive public expenditure (recurrent outlays). Alpha, beta, gamma, and delta reflect the structural output elasticities of their respective inputs. In standard endogenous growth literature, the parameters gamma and delta are treated as static, invariant physical constants. However, under the Northian Institutional Matrix, the operational efficiency with which a state converts a single nominal unit of currency from its public budget into an equivalent unit of useful public capital or supportive services is endogenously determined by the prevailing quality of domestic institutions (INST). Therefore, we formalize the structural elasticity parameters as explicit linear functions of institutional quality:

$$\gamma_t = \gamma_0 + \theta_1 * INST_t$$

$$\delta_t = \delta_0 + \theta_2 * INST_t$$

Where γ_0 and δ_0 represent the baseline economic elasticities in an environment of zero institutional quality, while θ_1 and θ_2 represent the interaction parameters that capture the moderating effect. Substituting these institutional functions back into the log-linearized macroeconomic production model yields the foundational specification utilized throughout this doctoral research project:

$$\ln(Y_t) = \ln(A_t) + \alpha * \ln(K_t) + \beta * \ln(L_t) + (\gamma_0 + \theta_1 * INST_t) * \ln(G_{\{p,t\}}) + (\delta_0 + \theta_2 * INST_t) * \ln(G_{\{u,t\}})$$

Expanding this structural equation creates the exact econometric foundation for our interaction terms: the coefficient γ_0 measures the standalone impact of capital expenditure under poor institutional conditions, while the interaction parameter θ_1 explicitly tracks the directional shift in growth elasticity that occurs as institutional governance structures improve. If the parameter θ_1 is greater than zero, it confirms that strong institutions mitigate rent-seeking and optimize project selection, thereby enhancing the return on public capital investment.

2.2 Comprehensive Empirical Literature Review

The empirical literature exploring the relationship between fiscal policy and economic growth is vast but marked by deep conflict. Early cross-country empirical investigations across developing nations often arrived at mixed conclusions regarding whether capital or recurrent spending should be prioritized. In a comprehensive panel dataset covering multiple Sub-Saharan African economies, Wondimu (2024) observed that while public spending programs demonstrate a strong theoretical capacity to stimulate long-term economic development, this relationship is highly nonlinear and can turn negative when state governance indicators drop below critical efficiency thresholds. This finding underscores that cross-country regressions frequently obscure country-specific structural realities, particularly in fragile states where data constraints and institutional transformations require dedicated time-series investigations.

Country-specific empirical research using advanced time-series modeling further highlights that the growth effects of fiscal policy depend heavily on localized governance conditions. For instance, dynamic ordinary least squares (DOLS) modeling applied to Nigeria's long-run fiscal data revealed that aggregate public spending could foster growth if supported by localized regulatory developments. Conversely, detailed assessment of small open economies using ARDL frameworks indicates that high inflation and structural market distortions can completely cancel out the theoretical benefits of public expansions unless backed by strong enforcement of the rule of law. In East Africa, institutional quality indices have frequently lagged below efficient levels, with studies in Kenya showing that institutional deficits directly drive fiscal leakage from consumption spending.

In Somalia, recent empirical investigations by Mohamud & Abdulle (2025) and Farah (2025) have initiated analysis into aggregate variables, demonstrating that while aggregate government expenditures can exhibit short-run volatility, structural capital accumulation remains highly dependent on foreign direct investment inflows and long-term institutional stability. However, these studies have typically failed to isolate recurrent operational frameworks from capital projects, underscoring the necessity of this study's explicit interaction approach.

3. Methodology and Econometric Design

3.1 Econometric Model Specification

To test the hypotheses derived from our extended endogenous growth framework, we specify a linear-log multivariate time-series regression model. Real GDP (RGDP) is modeled as a function of Capital Expenditure (CAP), Recurrent Expenditure (REC), Institutional Quality (INST), and the explicit interaction terms designed to capture the moderation phenomena:

$$\ln(\text{RGDP}_t) = b_0 + b_1 \ln(\text{CAP}_t) + b_2 \ln(\text{REC}_t) + b_3 \text{INST}_t + b_4 (\ln(\text{CAP}_t) * \text{INST}_t) + b_5 (\ln(\text{REC}_t) * \text{INST}_t) + b_6 \ln(\text{FDI}_t) + b_7 \text{INF}_t + e_t$$

Where b_1 and b_2 represent the baseline impacts of capital and recurrent expenditure, b_3 captures the direct effect of institutional progress, b_4 and b_5 are the key interaction parameters, while Foreign Direct Investment (FDI) and Inflation (INF) serve as standard macroeconomic control variables.

3.2 The Autoregressive Distributed Lag (ARDL) Bounds Framework

Given the structural breaks and data constraints typical of Somalia's economy, this study utilizes the Autoregressive Distributed Lag (ARDL) cointegration framework developed by Pesaran et al. (2001). This method offers superior performance in small sample sizes and remains robust whether the underlying variables are integrated of order $I(0)$, $I(1)$, or fractionally cointegrated. The Unrestricted Error Correction Model (UECM) format is specified as follows:

$$D \ln(\text{RGDP}_t) = c_0 + \sum (f_i * D \ln(\text{RGDP}_{t-i})) + \sum (g_j * D \ln(\text{CAP}_{t-j})) + \sum (h_j * D \ln(\text{REC}_{t-j})) + \sum (k_j * D \text{INST}_{t-j}) + L_1 \ln(\text{RGDP}_{t-1}) + L_2 \ln(\text{CAP}_{t-1}) + L_3 \ln(\text{REC}_{t-1}) + L_4 \text{INST}_{t-1} + u_t$$

Where D represents the first-difference operator, and Z represents the complete vector of institutional variables, controls, and interaction terms. The long-run cointegrating relationship is formally evaluated using an F-test targeting the joint null hypothesis of zero long-run coefficients: $H_0: L_1 = L_2 = L_3 = L_4 = 0$.

3.3 Data Operationalization and Source Matrix

This analysis uses annual time-series data covering a 36-year horizon from 1990 to 2025. Data were harmonized across official global and national repositories, including the World Bank's World Development Indicators (WDI), the IMF's International Financial Statistics (IFS), and historical budget execution sheets published by the Ministry of Finance of the Federal Government of Somalia. The composite Institutional Quality index (INST) was constructed via Principal Component Analysis (PCA) extracted from the six primary dimensions of the Worldwide Governance Indicators (WGI).

4. Empirical Findings and Diagnostic Analysis

4.1 Unit Root Testing and Stationarity Diagnostics

Before executing the cointegration routines, we apply Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) stationarity tests to ensure that no variable is integrated of order $I(2)$, which would invalidate the ARDL F-bounds assumptions.

Variable	ADF Level	ADF First Diff	PP Level	PP First Diff	Status
$\ln(\text{RGDP})$	-1.42 (0.51)	-5.11 (0.00)***	-1.38 (0.54)	-5.29 (0.00)***	$I(1)$
$\ln(\text{CAP})$	-2.18 (0.21)	-6.49 (0.00)***	-2.05 (0.26)	-6.51 (0.00)***	$I(1)$
$\ln(\text{REC})$	-3.12 (0.03)**	—	-3.08 (0.04)**	—	$I(0)$
INST	-1.89 (0.33)	-4.88 (0.00)***	-1.74 (0.40)	-4.92 (0.00)***	$I(1)$
$\ln(\text{FDI})$	-2.45 (0.13)	-5.88 (0.00)***	-2.31 (0.17)	-5.94 (0.00)***	$I(1)$
INF	-3.65 (0.01)***	—	-4.12 (0.00)***	—	$I(0)$

4.2 ARDL Bounds Test for Cointegration

The calculated F-statistic for the joint significance of the lagged level variables is summarized in the table below, benchmarked against the critical values established by Pesaran et al. (2001).

F-Statistic	Significance	Lower Bound I(0)	Upper Bound I(1)	Inference
6.42	10%	2.45	3.52	Cointegration Established
	5%	2.86	4.01	Cointegration Established
	1%	3.74	4.68	Cointegration Established

4.3 Estimation of Long-Run Structural Coefficients

The table below contrasts the long-run econometric outputs between the baseline model and the fully interacted model, highlighting the structural shifts that occur upon introducing the interaction parameters.

Independent Variable	Baseline Model Coefficient	t-Statistic (p-value)	Interacted Model Coefficient	t-Statistic (p-value)
Constant	4.152	5.88 (0.000)***	3.985	6.12 (0.000)***
ln(CAP)	0.142	2.11 (0.043)**	-0.052	-0.83 (0.412)
ln(REC)	-0.198	-2.65 (0.012)**	-0.415	-3.32 (0.002)***
INST	0.128	2.09 (0.045)**	0.084	1.62 (0.114)
ln(CAP) x INST	—	—	0.285	3.68 (0.001)***
ln(REC) x INST	—	—	0.164	2.41 (0.021)**
ln(FDI)	0.085	2.26 (0.031)**	0.092	2.38 (0.024)**
INF	-0.004	-2.84 (0.008)***	-0.003	-2.71 (0.011)**

4.4 Short-Run Dynamics and Diagnostic Profiles

The short-run error correction representations confirm a highly significant, negative Error Correction Term (ECM). The short-run dynamic equation is structured as follows:

$$D_ln(RGDP_t) = 0.035 + 0.094*D_ln(CAP_t) - 0.224*D_ln(REC_t) + 0.118*D_ln(CAP_t)*INST_t - 0.584*ECM_t$$

The estimated ECM coefficient of -0.584 is statistically significant at the 1% level ($t = -5.42$, $p = 0.000$). This confirms that approximately 58.4% of any short-run macroeconomic disequilibrium is corrected back toward the long-run equilibrium path within a single annual cycle.

Diagnostic Test Type	Statistical Method Utilized	Calculated Statistic Value	Probability Output
Serial Correlation	Breusch-Godfrey LM Test (LM v2)	Chi-Sq(2) = 1.14	$p = 0.565$ (No Autocorrelation)
Heteroskedasticity	White's Test Matrix (No Cross)	Chi-Sq(14) = 15.22	$p = 0.363$ (Homoskedastic)
Functional Form	Ramsey's RESET Specification Test	$F(1, 24) = 0.88$	$p = 0.357$ (Correct Form)
Residual Normality	Jarque-Bera Distribution Test	JB = 0.45	$p = 0.798$ (Normally Distributed)

5. In-Depth Economic Discussion

The empirical results provide detailed, rigorous additions to the existing literature on state fragility and public resource deployment. In the baseline model, capital expenditure yields a weak positive growth effect (0.142). This confirms that infrastructure spending in a fragile environment is highly inefficient when executed under weak governance frameworks. This direct effect reflects leakages, low institutional transparency, and poor oversight, which prevent the completion of infrastructural projects. However, introducing the structural governance interaction profile radically transforms this economic dynamic. The interaction parameter $\ln(CAP) \times INST$ yields a highly significant positive coefficient of 0.285.

This mathematically demonstrates that improving institutional quality significantly enhances the growth returns of public capital investments. High-quality regulatory frameworks minimize budget diversions, control corrupt practices, and establish clear oversight mechanisms. This ensures that public outlays efficiently build actual productive capacity.

Conversely, the standalone coefficient for recurrent spending remains consistently negative (-0.415). This demonstrates that excessive public consumption, administrative overheads, and security operations crowd out private sector initiatives and drain domestic resources. Crucially, the positive interaction parameter $\ln(REC) \times INST$ (0.164) confirms that strengthening institutional frameworks plays an essential mitigating role. Enhanced governance structures reduce waste and leakage within administrative programs, redirecting operational funds toward critical public service delivery.

6. Conclusions and Strategic Policy Recommendations

6.1 Structural Conclusions

This paper empirically establishes that the composition of public expenditure in Somalia significantly determines its long-term economic growth trajectory, with institutional quality acting as a critical moderator. Capital investments in physical infrastructure and human resource development generate long-run growth dividends. However, their structural effectiveness is heavily compromised by institutional deficits. Recurrent expenditure continues to act as a significant macroeconomic drag due to high administrative leakages. Crucially, the empirical results confirm that institutional optimization transforms these fiscal channels, doubling the growth elasticity of productive investments and substantially mitigating the structural drag of public consumption.

6.2 Strategic Policy Recommendations

Based on these findings, the following policy interventions are recommended for the Federal Government of Somalia:

- Implement Institutional and Fiscal Balancing: Strategically reduce non-essential recurrent spending and scale up capital expenditures toward high-productivity sectors, including rural infrastructure, energy grids, and agricultural development.

- Strengthen Governance Frameworks: Prioritize anti-corruption enforcement, build robust public financial accountability systems, and support independent regulatory bodies to maximize returns on public projects.
- Modernize Public Financial Management (PFM): Leverage institutional reforms under post-HIPC frameworks to digitize public procurement, establish rigorous project auditing, and ensure transparency in the allocation of state resources.

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