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Public Procurement–Intangible Investment Nexus: Insights into Endogenous Growth in Côte d'Ivoire

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Abstract

Public procurement is increasingly recognized as a catalyst for economic growth, yet empirical research has largely focused on physical infrastructure investments. Far less attention has been paid to service-oriented public procurement, despite its potential to enhance knowledge accumulation, organizational capacity, and productivity. This study examines the growth effects of public service procurement in Côte d'Ivoire using an autoregressive distributed lag-error correction model (ARDL-ECM) applied to annual data from 1993 to 2024. Drawing on data from the General Directorate of Public Procurement (DGMP), the World Development Indicators (WDI), and the Central Bank of West African States (BCEAO), the analysis controls for private investment, public debt, industrial value added, trade openness, and inflation. The results indicate that public service procurement is a significant driver of long-run economic growth: a 10% increase in service procurement expenditure raises real GDP per capita by approximately 0.41%, despite the relatively small share of procurement in GDP. Short-run dynamics also reveal a positive immediate effect (0.34%), followed by gradual adjustment toward the long-run equilibrium. In contrast, gross fixed capital formation exhibits a

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negative long-run impact, pointing to structural inefficiencies in private investment, while industrial value-added supports growth and excessive debt accumulation constrains sustainability. These findings are consistent with endogenous growth theories emphasizing the role of intangible investments and extend the public finance literature beyond infrastructure-centric perspectives. Policy implications suggest that reorienting public procurement toward knowledge-intensive services could strengthen institutional capacity, foster innovation, and support sustainable growth in Côte d'Ivoire.

Keywords: Public Procurement, Endogenous Growth, ARDL-ECM

1. Introduction

Economic growth in Sub-Saharan Africa remains uneven, despite decades of reforms, investments, and globalization (Ajakaiye & Ncube, 2010; IMF, 2022). Côte d'Ivoire presents a particularly striking case: after experiencing deep crises in the 1980s-1990s, the country has, since the early 2010s, re-emerged as one of Africa's fastest-growing economies (IMF, 2022). Yet, sustaining growth requires not only material infrastructure but also institutional and organizational investments that foster efficiency (North, 1990; Acemoglu & Robinson, 2012). A neglected but increasingly critical policy instrument is public procurement of services, which involves state expenditures on consultancy, training, research, and technical assistance (OECD, 2019; UNCTAD, 2020). The literature on public investment and growth is rich. Classical economists (Smith, 1776; Ricardo, 1817) emphasized capital accumulation, while Keynesian models highlighted public spending as a stabilizer of demand (Keynes, 1936). In the 1980s, Aschauer (1989) and Munnell (1992) linked infrastructure spending to productivity gains, inspiring extensive work on public capital. More recently, endogenous growth theorists (Romer, 1986, 1990; Lucas, 1988; Barro, 1990) argued that knowledge, innovation, and human capital - often facilitated by service expenditures - drive long-term growth.

However, most empirical studies - both global and African - focus overwhelmingly on physical works procurement (roads, bridges, energy), while services procurement remains underexplored (OECD, 2019; Ndikumana, 2012; Ajakaiye & Ncube, 2010). Yet, in countries like Côte d'Ivoire, where governance reforms, institutional modernization, and digitalization are underway (IMF, 2022), service procurement may play a decisive role in efficiency and competitiveness.

This paper addresses this lacuna by testing the hypothesis that public procurement of services has a significant positive effect on economic growth in Côte d'Ivoire, controlling for investment, debt, trade openness, industrial value added, and inflation. Specifically, we will:

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1. Test whether service procurement drives both short-run and long-run growth.
2. Identify the main macroeconomic determinants of economic growth and quantify their contribution within the ARDL short-run and long-run dynamics.

Thus, the study bridges theoretical perspectives on intangible investment with empirical evidence, aiming to reframe policy debates around procurement in West Africa.

2. Literature Review

2.1. Theoretical Foundations

The relationship between public expenditure and economic growth has long been the subject of debate in economic theory. Classical economists such as Smith (1776) and Ricardo (1817) emphasized the productive role of certain types of public spending. Smith highlighted the necessity of investments that enhance productivity, while Ricardo argued for the importance of capital accumulation and the efficient allocation of resources. Later, the neoclassical growth model developed by Solow (1956) formalized the idea of diminishing returns to capital and introduced technological progress as an exogenous driver of long-term growth. Within this framework, the state's role was relatively limited, with emphasis placed on capital accumulation and savings. In contrast, Keynes (1936) viewed public spending as a critical instrument for stabilizing demand during economic downturns. Building on this idea, Musgrave (1959) conceptualized public finance as fulfilling three core functions: allocation of resources, redistribution of income, and stabilization of the economy. These contributions emphasized that government expenditure, when well-targeted, could play a vital role in addressing both cyclical and structural challenges.

The emergence of endogenous growth theory in the 1980s and 1990s marked a decisive shift. Pioneered by Romer (1986, 1990), Lucas (1988), and Barro (1990), these models stressed that long-run growth is sustained not merely through capital accumulation, but through knowledge spillovers, innovation, and human capital formation. In this perspective, public spending on research, training, and institutional capacity-often delivered through service procurement-generates positive externalities that avoid the diminishing returns associated with physical capital. Service procurement thus finds a theoretical anchor in the endogenous growth literature, which recognizes the strategic role of intangible investments in shaping productivity trajectories.

Parallel to these developments, institutional economics highlighted the importance of governance. North (1990) argued that institutions are the "rules of the game" underpinning economic performance, while Acemoglu and

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Robinson (2012) demonstrated empirically that inclusive institutions are decisive in explaining cross-country growth divergences. Public procurement of services, by reinforcing institutional frameworks, improving transparency, and building technical capacity, can therefore be seen as a mechanism through which institutional quality is enhanced.

Other theoretical perspectives have also contributed to understanding public spending. Public choice theory, advanced by Buchanan (1967), underscored risks of inefficiencies due to rent-seeking and misallocation of resources. Similarly, structuralist perspectives such as Hirschman (1958) and Lewis (1954) emphasized the particular constraints of developing economies, where capital misallocation and dualistic structures hinder growth. These views underscore that the growth effects of procurement are context-dependent, shaped by institutional quality and governance.

2.2. Contrasting Empirical Evidence

Empirical studies on public spending and growth have historically concentrated on infrastructure. Aschauer (1989) provided seminal evidence that public capital investment was a major determinant of U.S. productivity, a finding that spurred widespread international investigation. Munnell (1992) reinforced this link, while Calderón and Servén (2004) demonstrated, across a large panel of countries, that infrastructure enhances both growth and equity by lowering transaction costs and expanding access to markets. In Africa, Ndikumana (2012) and Ajakaiye and Ncube (2010) documented similar infrastructure-driven effects, highlighting the contribution of physical capital formation to growth and poverty reduction.

However, the dominance of infrastructure in empirical analysis has left public service procurement largely underexplored. While multilateral institutions such as the OECD (2019) and UNCTAD (2020) increasingly emphasize the centrality of services in global value chains, innovation, and competitiveness, few econometric studies have directly measured the contribution of service-oriented procurement in African contexts. This creates a methodological imbalance: infrastructure, with its visible outputs, attracts more empirical scrutiny, whereas intangible services, despite their potential for capacity building, remain statistically neglected.

Some evidence also challenges conventional assumptions about investment. While gross fixed capital formation is typically associated with growth, Pritchett (2000) argued that in many developing countries, inefficiencies, rent-seeking, and poor governance mean that investment does not automatically translate into productivity gains.

The empirical literature thus presents significant gaps. First, there is a clear lack of systematic analysis of service procurement in Sub-Saharan Africa. Existing studies tend to aggregate all forms of public spending,

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masking the distinct effects of immaterial expenditures. Second, most models remain skewed toward infrastructure, thereby overlooking investments in institutional capacity, training, and consultancy that may have equally transformative, if less visible, effects. Third, the productivity of private investment in fragile economies remains insufficiently interrogated, with studies rarely distinguishing between efficient and inefficient capital accumulation.

Filling these gaps is not merely of academic interest; it has profound policy relevance. For countries like Côte d'Ivoire, where procurement represents a substantial share of public expenditure, understanding the distinct contribution of services is essential to designing efficient and sustainable growth strategies. Moreover, as the global economy increasingly relies on services, knowledge, and innovation, African economies cannot afford to ignore the role of immaterial investments in their development trajectories. Addressing these evidence gaps contributes to a more nuanced understanding of growth dynamics and provides policymakers with the tools to reorient procurement strategies toward long-term institutional strengthening and competitiveness.

3. Methodology

This study adopts an autoregressive distributed lag (ARDL) - error correction model (ECM) framework to examine the contribution of public service procurement to economic growth in Côte d'Ivoire. The ARDL-ECM is particularly suitable for small samples and for variables that exhibit a mixture of stationarity orders, I (0) and I (1), allowing the simultaneous estimation of short-run dynamics and long-run equilibrium relationships. The model is grounded in the error correction representation of Davidson, Hendry, Srba and Yates (1978) and the bounds testing framework of Pesaran, Shin and Smith (2001), later DHSY and PSS respectively.

3.1. Standard General Form

The general $ARDL(p, q_1, q_2, \ldots, q_k)$ model is written as:

$$y_t = c_0 + \sum_{i=1}^{p} \phi_i y_{t-i} + \sum_{j=1}^{k} \sum_{i=0}^{q_j} \beta_{ji} x_{j,t-i} + \varepsilon_t \quad (1)$$

Its unrestricted ECM reparametrisation (the bounds testing equation) is:

$$\Delta y_t = c_0 + \sum_{i=1}^{p-1} \phi^*_i \Delta y_{t-i} + \sum_{j=1}^{k} \sum_{i=0}^{q_j-1} \beta^*_{ji} \Delta x_{j,t-i} + \delta_0 y_{t-1} + \sum_{j=1}^{k} \delta_j x_{j,t-1} + \varepsilon_t \quad (2)$$

ISSN: 1857-7881 (Print)
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where $H_0: \delta_0 = \delta_1 = \cdots = \delta k = 0$ is tested using the PSS bounds F-statistic. The long-run level relationship, conditional on cointegration, is:

$$y_t = \theta_0 + \sum_{j=1}^{k} \theta_j x_{jt} + u_t \quad (3)$$

where $\hat{\theta} j = -\hat{\delta} j / \hat{\delta}_0$ are the long-run coefficients recovered from the level terms of Equation (2). The error correction term is defined as:

$$ECT_t = y_t - \hat{\theta}_0 - \sum_{j=1}^{k} \hat{\theta}_j x_{jt} \quad (4)$$

The restricted DHSY–PSS short-run ECM is:

$$\Delta y_t = c_0 + \sum_{i=1}^{p-1} \phi^*{}_i \Delta y_{t-i} + \sum_{j=1}^{k} \sum_{i=0}^{q_j-1} \gamma_{ji} \Delta x_{j,t-i} + \lambda \cdot ECT_{t-1} + \varepsilon_t \quad (5)$$

where $\lambda < 0$ is the speed-of-adjustment coefficient.

3.2 Application to the Present Study

The empirical analysis relies on annual data covering the period 1993 to 2024. Data on public service procurement were obtained from the General Directorate of Public Procurement (DGMP), macroeconomic aggregates from the Central Bank of West African States (BCEAO), and complementary variables - GDP per capita, gross fixed capital formation, trade openness, and industrial value added - from the World Bank's World Development Indicators (WDI). The dependent variable y_t is real GDP per capita ($ln\ GDPCAP_t$) and the regressors are public service procurement ($ln\ MPA_t$), gross fixed capital formation ($ln\ GFCF_t$), public debt ($ln\ DEBT_t$), industrial value added ($ln\ INDUSVAL_t$), trade openness ($ln\ TRADE_t$), and inflation ($INFL_t$). Applying Equation (3), the long-run level equation estimated under Case 2 (restricted constant, no trend) is:

$$ln\ GDPCAP_t = \theta_0 + \theta_1 ln\ MPA_t + \theta_2 ln\ GFCF_t + \theta_3 ln\ DEBT_t + \theta_4 ln\ INDUSVAL_t + \theta_5 ln\ TRADE_t + \theta_6 INFL_t + u_t \quad (6)$$

where θ_1 through θ_6 are the long-run elasticities reported in Table 3. The error correction term ECT_{t-1} is the lagged residual from Equation (6), measuring the deviation of $ln\ GDPCAP$ from its long-run equilibrium. Applying Equation (5), the short-run ECM estimated in the present study is:

ISSN: 1857-7881 (Print)
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$$\Delta ln\, GDPCAP_t = c_0 + \sum_{i=1}^{p-1} \phi^*_i \Delta ln\, GDPCAP_{t-i} + \sum_{i=0}^{q_1-1} \delta_{1i} \Delta ln\, MPA_{t-i} + \sum_{i=0}^{q_2-1} \delta_{2i} \Delta ln\, GFCF_{t-i} + \sum_{i=0}^{q_3-1} \delta_{3i} \Delta ln\, DEBT_{t-i} + \sum_{i=0}^{q_4-1} \delta_{4i} \Delta ln\, INDUSVAL_{t-i} + \sum_{i=0}^{q_5-1} \delta_{5i} \Delta ln\, TRADE_{t-i} + \sum_{i=0}^{q_6-1} \delta_{6i} \Delta INFL_{t-i} + \lambda \cdot ECT_{t-1} + \varepsilon_t \quad (7)$$

where λ is the speed-of-adjustment coefficient.

The estimation procedure follows several methodological steps. Initially, the time-series properties of the variables were examined through standard unit root tests, including the Augmented Dickey-Fuller (ADF), Phillips-Perron (PP), and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) tests, to verify the order of integration. This was followed by bounds testing approach to cointegration to determine whether a long-run equilibrium relationship exists among the variables. Once cointegration was established, the appropriate lag length for the ARDL specification was selected based on the Akaike Information Criterion (AIC), ensuring that the model adequately captured dynamic interactions while avoiding over-parameterization.

The long-run coefficients were then estimated to assess the enduring impact of procurement and other covariates on economic growth. To capture short-run dynamics, the model was reparametrized into an ECM form, where the coefficient of the error correction term indicates the speed of adjustment from short-run disequilibria to long-run equilibrium. A negative and significant error correction coefficient provides evidence of convergence toward equilibrium, thereby validating the model's consistency.

To ensure the robustness of the results, a battery of diagnostic tests was conducted. Serial correlation was assessed using the Breusch-Godfrey LM test, while heteroskedasticity was examined through the White test. The Jarque-Bera statistic was employed to test for normality of residuals. Stability of the estimated parameters was evaluated using cumulative sum (CUSUM) and cumulative sum of squares (CUSUMSQ) tests, while the Ramsey RESET test was applied to detect possible specification errors. Collectively, these procedures (see in appendix) confirm whether the model is statistically valid and whether its estimates can be meaningfully interpreted.

ISSN: 1857-7881 (Print)
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A further methodological consideration concerns the potential for reverse causality. In a single-country time-series context, procurement budgets may be partly endogenous to GDP performance: periods of strong growth generate higher fiscal revenues and, in turn, larger procurement allocations, which could introduce simultaneity bias into the estimates. The ARDL-ECM framework partially addresses this concern through its distributed lag structure, which allows the effect of procurement to unfold over multiple periods rather than imposing instantaneous causation, and through the inclusion of the lagged error-correction term, which captures adjustment dynamics rather than contemporaneous feedback. Nevertheless, the ARDL approach does not constitute a formal instrument-based identification strategy, and that the possibility of residual endogeneity cannot be entirely ruled out. This limitation should be interpreted as a boundary condition on causal inference: the estimated coefficients are best understood as conditional associations that are strongly consistent with the causal mechanisms proposed by endogenous growth theory, while a definitive causal claim would require an instrumental variable or natural experiment design that is beyond the scope of the present single-country time-series data.

The analytical plan thus combines descriptive and inferential techniques. First, descriptive statistics and correlation analysis provided an overview of the data and initial insights into relationships among variables. Second, the ARDL-ECM framework was implemented to quantify both long-run and short-run effects of service procurement on GDP per capita. Third, diagnostic and stability tests ensured that the results were not driven by model misspecification or statistical anomalies. Finally, the findings were interpreted in light of theoretical expectations from endogenous growth and institutional economics, thereby linking empirical evidence to broader debates on the role of immaterial public expenditures in economic development.

4. Results and Discussions

The empirical analysis begins with an examination of the descriptive statistics, which provide an overview of the behavior of the variables during the study period. The data reveal that real GDP per capita in Côte d'Ivoire has followed a positive trajectory since the early 2010s, reflecting the recovery from political instability and the implementation of macroeconomic reforms. Public service procurement, the core explanatory variable of this study, shows a steady upward trend, particularly after the introduction of procurement reforms in the mid-2000s. The distribution of this variable indicates both a gradual increase in the volume of service contracts and a diversification of their nature, reflecting the government's growing reliance on intangible investments such as consultancy, training, and information technology.

ISSN: 1857-7881 (Print)
e-ISSN 1857-7431 (Online)

Table 1: Descriptive Statistics

	GDPCAP	MPA	GFCF	DEBT	INDUSVAL	INFL	TRADE
Average	1742.506	8.11E+10	18.22733	8486294.	18.19992	3.646476	56.57547
Median	1678.223	5.04E+10	18.11672	6157080.	17.87438	2.505791	54.81546
Maximum	2390.747	2.44E+11	24.48247	30409800	23.04454	26.08157	76.20234
Minimum	1420.174	1.52E+09	9.345464	2605400.	13.71596	-1.106863	41.94263
Std-Dev	280.9263	7.53E+10	3.974664	6725050.	3.026854	4.889761	8.122497
Jarque-Bera	3.137938	3.782098	1.449068	51.46186	2.531602	273.1431	1.097595
Probability	0.208260	0.150913	0.484550	0.000000	0.282013	0.000000	0.577644
Observations	32	32	32	32	32	32	32

Source: Author's calculations based on the data

The correlation analysis confirms the existence of meaningful relationships among the variables. Public service procurement is positively correlated with real GDP per capita, consistent with theoretical expectations from endogenous growth models. By contrast, gross fixed capital formation exhibits a negative correlation with growth, which is counterintuitive but consistent with arguments in the literature that stress the inefficiency of capital accumulation in fragile institutional contexts (Pritchett, 2000). Industrial value added, trade openness, and public service procurement all display positive associations with growth, while debt and inflation reveal negative correlations. These initial results underscore the importance of disaggregating different types of investment in order to understand their heterogeneous contributions to economic performance.

Table 2: Correlation Matrix

Correlation Probability	GDPCAP	MPA	GFCF	DEBT	INDUSVAL	TRADE	INFL
GDPCAP	1.000000						
MPA	0.831255	1.000000					
	(0.0000)						
GFCF	0.725330	0.820101	1.000000				
	(0.0000)	(0.0000)					
DEBT	0.776956	0.621921	0.418447	1.000000			
	(0.0000)	(0.0001)	(0.0172)				
INDUSVAL	0.630847	0.683510	0.361666	0.489668	1.000000		
	(0.0001)	(0.0000)	(0.0420)	(0.0044)			
TRADE	-0.654395	-0.525206	-0.540570	-0.226961	-0.207283	1.000000	
	(0.0000)	(0.0020)	(0.0014)	(0.2116)	(0.2550)		
INFL	-0.109229	-0.196409	-0.419462	0.158783	0.177792	0.482373	1.000000
	(0.5518)	(0.2813)	(0.0169)	(0.3854)	(0.3303)	(0.0052)	

Source: Author's calculations based on the data

The long-run ARDL estimates provide more precise evidence of the impact of public service procurement on growth. The results indicate that a ten percent (10%) increase in service procurement expenditure is associated with a 0.41 percent increase in real GDP per capita, a statistically significant

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effect that validates the hypothesis of the study. This finding strongly supports the predictions of endogenous growth theory, which emphasizes the productivity-enhancing role of intangible investments. In contrast, gross fixed capital formation has a significant negative coefficient in the long run, confirming the suspicion that inefficiencies, misallocation, and rent-seeking behavior undermine the effectiveness of private investment in Côte d'Ivoire. Industrial value added emerges as a positive and robust determinant of growth, reinforcing the view that structural transformation through manufacturing and industry remains central to long-term development. Trade openness also contributes positively, suggesting that integration into international markets fosters competitiveness and growth, whereas the stock of public debt exerts a negative effect, underlining concerns about fiscal sustainability. Inflation, while having only a mild negative coefficient, nonetheless highlights the importance of macroeconomic stability in sustaining long-run growth.

Table 3: Long-Run Coefficients

Levels Equation Case 2: Restricted Constant and No Trend				
Variables	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
LMPA	0.0410	0.0096	4.2377	0.0012
LGFCF	-0.0572	0.0456	-1.2559	0.2331
LDEBT	-0.0803	0.0225	-3.5603	0.0039
LINDUSVAL	0.6274	0.0554	11.3082	0.0000
INFL	-0.0065	0.0011	-5.7250	0.0001
LTRADE	0.1161	0.0166	6.9992	0.0000
C	0.0300	0.0033	9.0242	0.0000
$EC = LGDP - (0.0411 * LMPA - 0.0573 * LGFCF - 0.0803 * LDEBT + 0.6275 * LINDUSVAL - 0.0066 * INFL + 0.1162 * LTRADE + 0.0301)$				

Source: Author's calculations based on the data

Turning to short-run dynamics, the error correction model provides valuable insights into the adjustment process. Public service procurement exerts an immediate and statistically significant effect, with a ten percent increase in procurement leading to a 0.34 percent rise in real GDP per capita in the short term. This short-run elasticity demonstrates that service procurement has both immediate stimulative effects on economic activity and longer-term benefits through capacity building and institutional strengthening. The error correction term is negative and significant, with a magnitude of approximately –0.52, indicating that more than half of short-run disequilibria are corrected within a single year. This coefficient provides strong evidence of convergence toward long-run equilibrium, suggesting that the growth process in Côte d'Ivoire is responsive to procurement-driven shocks but ultimately reverts to a stable path.

ISSN: 1857-7881 (Print)
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Table 4: Short-Run ECM Dynamics

ECM Regression Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LGDPCAP(-1))	0.1699	0.0432	3.9310	0.0020
D(LMPA)	0.0340	0.0020	16.993	0.0000
D(LMPA(-1))	-0.0335	0.0024	-13.895	0.0000
D(LGFCF)	0.1023	0.0152	6.7262	0.0000
D(LGFCF(-1))	-0.1201	0.0137	-8.7256	0.0000
D(LDEBT)	-0.0434	0.0053	-8.1569	0.0000
D(LDEBT(-1))	0.0234	0.0055	4.2495	0.0011
D(LINDUSVAL)	0.4771	0.0213	22.3999	0.0000
D(LINDUSVAL(-1))	-0.1908	0.0167	-11.3790	0.0000
CointEq(-1)*	**-1.0680**	**0.0464**	**-23.0136**	**0.0000**
R-squared	0.9889	Mean dependent var		0.0001
Adjusted R-squared	0.9836	S.D. dependent var		0.0445
S.E. of regression	0.0056	Akaike info criterion		-7.2336
Sum squared resid	0.0006	Schwarz criterion		-6.7621
Log likelihood	114.8877	Hannan-Quinn criter.		-7.0859
Durbin-Watson stat	1.8388			

Source: Author's calculations based on the data

Robustness and stability tests (see appendix) further reinforce the validity of the results. The Breusch-Godfrey test reveals no evidence of serial correlation, while the White test confirms the absence of heteroskedasticity. The residuals follow a normal distribution, as shown by the Jarque–Bera statistic. Importantly, the CUSUM and CUSUMSQ tests demonstrate that the estimated parameters remain stable throughout the sample period, validating the reliability of the model. Finally, the Ramsey RESET test indicates that the model is correctly specified, with no significant omitted variables or functional form misspecification.

Taken together, these results demonstrate the central role of public service procurement in fostering both short-run and long-run economic growth in Côte d'Ivoire. The findings align with theoretical expectations from endogenous growth theory, which emphasize the role of knowledge, innovation, and institutional capacity in sustaining development. They also resonate with institutional economics, insofar as service procurement strengthens governance structures and administrative efficiency. At the same time, the negative impact of private investment highlights persistent structural challenges, suggesting that the efficiency of gross fixed capital formation remains limited by weak governance, inadequate project selection, and rent-seeking behaviors. The positive role of industrial value added and trade openness underscores the importance of structural transformation and global integration, while the negative contribution of debt accumulation signals the risks associated with unsustainable fiscal practices.

ISSN: 1857-7881 (Print)
e-ISSN 1857-7431 (Online)

When compared to existing literature, the results highlight both points of convergence and departure. On the one hand, the positive effects of industrial value added and trade openness confirm the conclusions of Calderón and Servén (2004) and Ndikumana (2012) on the significance of structural transformation and market integration. On the other hand, the negative effect of gross fixed capital formation contrasts sharply with earlier findings (Aschauer, 1989; Munnell, 1992), but aligns with Pritchett (2000), who warned against assuming automatic growth dividends from investment in contexts of weak governance. Most importantly, the positive role of service procurement represents a novel contribution to the literature, extending endogenous growth models (Romer, 1986; Barro, 1990) and empirical work on public spending by providing evidence from an African economy that immaterial expenditures can be as crucial as infrastructure in sustaining growth.

Overall, the results demonstrate that while traditional infrastructure-oriented investment remains important, the underexplored domain of service procurement holds significant promise for long-run development in Côte d'Ivoire. The findings therefore contribute to rebalancing the research agenda, highlighting the necessity of incorporating immaterial public expenditures into both theoretical frameworks and empirical analyses of growth.

Conclusion

This article has examined the role of public service procurement in Côte d'Ivoire's economic growth over the period 1993–2024, applying an ARDL-ECM framework to capture both short-run dynamics and long-run relationships. The findings show that service procurement exerts a consistent positive impact on growth, with effects manifesting immediately and persisting over time. In contrast, gross fixed capital formation is negatively associated with growth, highlighting inefficiencies in private investment, while industrial value added and trade openness emerge as supportive drivers of economic performance. Debt accumulation, however, continues to undermine sustainability. These results extend the literature beyond the traditional emphasis on infrastructure investment (Aschauer, 1989; Calderón & Servén, 2004) by providing evidence that immaterial expenditures such as training, consultancy, and institutional support contribute meaningfully to growth. They also confirm theoretical insights from endogenous growth models (Romer, 1986; Lucas, 1988; Barro, 1990) and institutional economics (North, 1990; Acemoglu & Robinson, 2012), which highlight the productivity-enhancing role of intangible capital and strong governance.

The policy implications are clear. Côte d'Ivoire must reorient procurement policy to give greater weight to service-oriented expenditures, which not only stimulate demand in the short run but also build institutional

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capacity and innovation over the long run. At the same time, improving the efficiency of private investment and ensuring prudent debt management are critical for sustaining growth. These reforms would allow procurement policy to serve as a lever not just for immediate economic activity, but for structural transformation and long-term competitiveness.

The findings of this study are bounded by its single-country design: the estimated relationships reflect the specific institutional, fiscal, and structural conditions of Côte d'Ivoire and cannot be assumed to generalize without further empirical validation. Future research should therefore disaggregate service procurement into specific categories and extend the analysis to other WAEMU economies to test the robustness of these findings. By focusing on the often-overlooked role of services, this article underscores the need to rethink procurement strategies as central to the development agenda in Africa.

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ISSN: 1857-7881 (Print)
e-ISSN 1857-7431 (Online)

Appendix

Appendix 1. List of the variables and the expected signs in the model

Variables	Mesure	Description	Sign	Data Sources
INFL	Inflation (%)	General level of the price according to the CPI	(-)	WDI (2024)
MPA	Public Procurement on Services	Contracts concluded between the public administration (the State) and private companies or service providers, aimed at delivering an intangible service for the benefit of the administration. (In billions of CFA francs).	(+)	DGMP (2024)
DEBT	Debt	Measures the country's outstanding debt stock (in billions of CFA francs).	(-)	BCEAO (2024)
GDPCAP	GDP per Capita	Economic growth (in constant dollars).		WDI (2024)
TRADE	Trade Openess	Sum of imports and exports of goods and services divided by twice the GDP (% of GDP).	(+)	WDI (2024)
GFCF	Graoss Fixed Capital Formation	Level of private investment (% of GDP).	(+)	WDI (2024)
INDUSVAL	Industry Value Added (%)	Corresponds to the net contribution of the industrial sector to national wealth.	(+)	WDI (2024)

Appendix 2. VIF test on the variables

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
LMPA	0.000255	2468.367	6.068538
LGFCF	0.007313	978.0169	6.318273
LDEBT	0.000303	1210.756	1.568294
LINDUSVAL	0.003610	484.7590	1.581012
INFL	5.47E-06	3.201272	2.033764
LTRADE	0.005587	1454.672	1.755129
C	0.261522	4196.789	NA

Source: Author's calculations based on the data

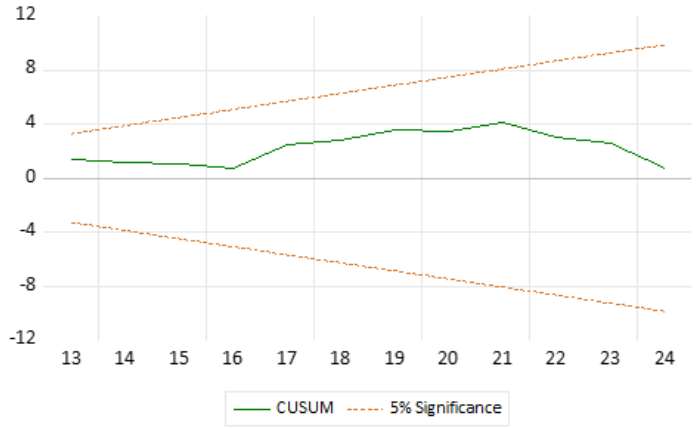
ISSN: 1857-7881 (Print)
e-ISSN 1857-7431 (Online)

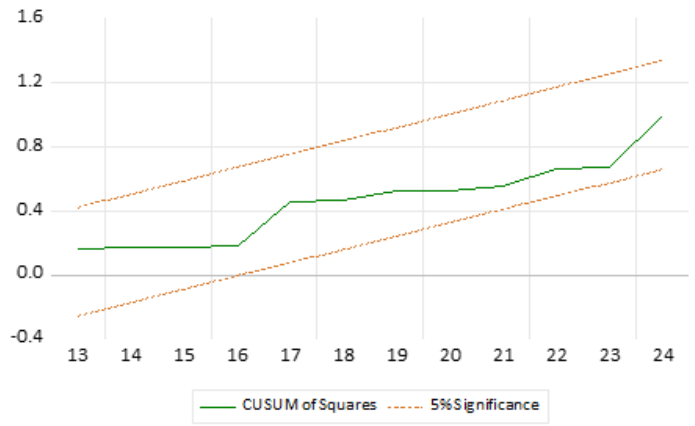
Appendix 3. Pesaran Cointegration Bounds test

Test Statistic	Valeur	Signif.	I(0)	I(1)
			Asymptotic : n=1000	
$F-Statistic$	41.81278	10%	1.99	2.94
k	6	5%	2.27	3.28
		2.5%	2.55	3.61
		1%	2.88	3.99
Actual Sample Size	29		Finite Sample : n=35	
		10%	2.254	3.388
		5%	2.685	3.96
		1%	3.713	5.326
			Finite Sample : n=30	
		10%	2.334	3.515
		5%	2.794	4.148
		1%	3.976	5.691

Source: Author's calculations based on the data Test Conduit sous Eviews

Appendix 4: CUSUM and CUSUMQ test on the Model





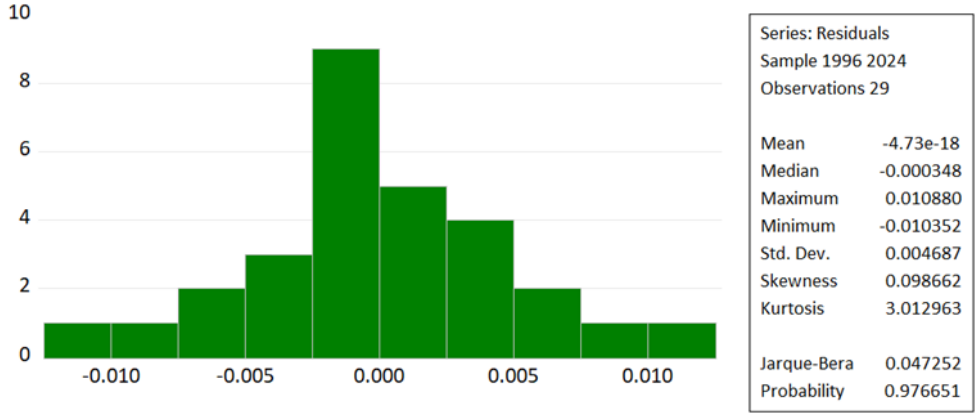
ISSN: 1857-7881 (Print)
e-ISSN 1857-7431 (Online)

Appendix 5: Error Autocorrelation Test on the Model

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob*
		1	-0.007	-0.007	0.0015	0.969
		2	0.156	0.156	0.8097	0.667
		3	-0.273	-0.278	3.3864	0.336
		4	0.213	0.219	5.0155	0.286
		5	-0.334	-0.322	9.1947	0.102
		6	-0.052	-0.144	9.3019	0.157
		7	-0.130	0.097	9.9904	0.189
		8	0.238	0.053	12.408	0.134
		9	0.098	0.212	12.841	0.170
		10	0.036	-0.125	12.904	0.229
		11	0.085	0.139	13.266	0.276
		12	-0.199	-0.363	15.360	0.222

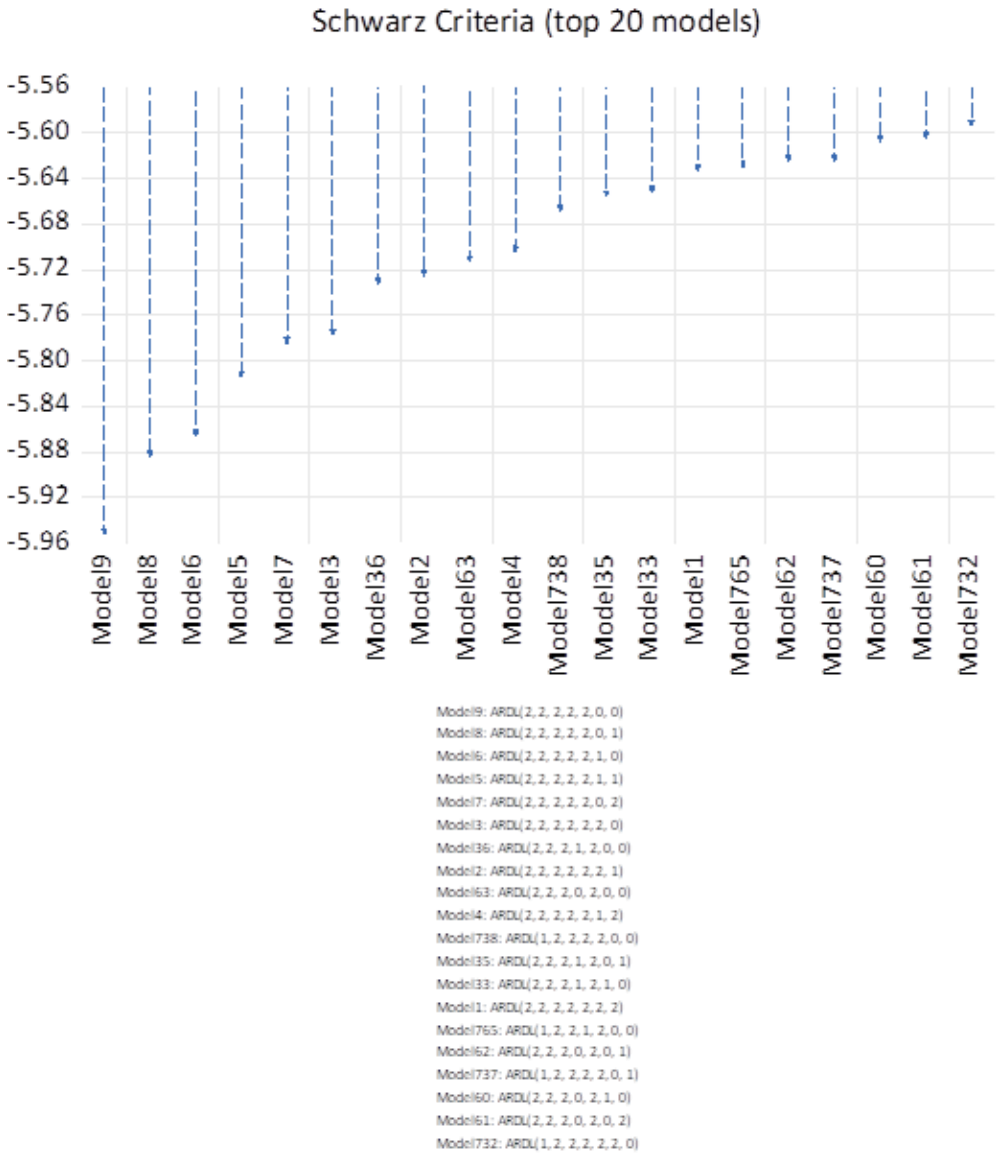
Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob*
		1	-0.089	-0.089	0.2534	0.615
		2	-0.122	-0.131	0.7478	0.688
		3	0.055	0.032	0.8532	0.837
		4	0.142	0.138	1.5746	0.813
		5	-0.082	-0.046	1.8295	0.872
		6	-0.080	-0.066	2.0793	0.912
		7	0.271	0.242	5.0774	0.651
		8	0.099	0.130	5.4961	0.703
		9	-0.079	0.013	5.7778	0.762
		10	-0.121	-0.129	6.4748	0.774
		11	0.085	-0.028	6.8324	0.812
		12	0.099	0.103	7.3550	0.833

Appendix 6: Normality test on the Model



ISSN: 1857-7881 (Print)
e-ISSN 1857-7431 (Online)

Appendix 7: Best Model Choice



ISSN: 1857-7881 (Print)
e-ISSN 1857-7431 (Online)

Appendix 8: Validity Test of the model

a. Ramsey Test

	Value	df	Probability
T-statistic	0.9988559879	11	0.33933039721
F-statistic	0.9977132845	(1, 11)	0.33933039721
Likelihood ratio	2.5178031771	1	0.11256730559

b. Breusch-Godfrey Serial Correlation LM Test

F-statistic	0.2804002053	Prob. F(2,10)	0.761229877
Obs*R-squared	1.5399601618	Prob. Chi-Square(2)	0.463022291

c. Heteroskedasticity Test

F-statistic	0.55737908	Prob. F(16,12)	0.8635306
Obs*R-squared	12.3636623	Prob. Chi-Square(16)	0.7185896
Scaled explained SS	2.13068571	Prob. Chi-Square(16)	0.9999839