

The Effect of Taxation and FDI on Economic Growth: A Mediation Analysis of Corruption in Ghana

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Abstract:

Introduction: The purpose of this study was to explore determinants of economic growth in Ghana, the relationship between Foreign Direct Investment (FDI) and Total Tax Revenue (TOTAXR) and the impact of Control of Corruption (CORRUT) on economic growth. It examines the relationship of investment and fiscal policy towards the quality of governance and economic outcomes and brings an important research gap of how the institutional environment impacts the success of economic drivers for emerging economies.

Methodology: Quantitative Longitudinal technique which involves annual time series of the data period 2002-2022. Partial Least Squares Structural Equation Modelling (PLS-SEM) was used in the quantitative estimation of the relationship between the variables being built. To evaluate both direct and indirect effects in the system of determinants of economic growth in a comprehensive manner, partial Least Squares (PLS) modelling is used.

Results: Based on the findings it can be concluded that FDI continues to play an essential role in the economic development. The results, however, show a paradox: that corruption, in the absence of strong institutions, can sometimes help, rather than hinder, economic activity. Regarding the impact of taxation, its negative effect on growth seems to be mainly due to the fact that an increased tax burden will decrease private investment and private consumption, suggesting some inefficiency in tax collection and the potential exists a distortionary tax regime.

Conclusion: Governance and transparency frameworks should be improved and enhanced by policymakers to achieve sustainable and inclusive development from the inflow of foreign direct investment. To better mobilise revenues in line with goals, bring reform in fiscal system to make it more efficient, and more accountable. Institutional measures to fight against corruption should be directed towards strengthening systems, not merely administering and enforcing the law.

Keywords: Foreign direct investment, tax revenue, corruption, economic growth, tax regime, foreign direct investment.

1. INTRODUCTION

Sustained and inclusive economic growth is the focus of development for Emerging Economies (EEs), especially in Sub-Saharan Africa (SSA) (World Bank Group, 2018). To achieve rapid structural transformation in economies like Ghana, there is also a critical need to improve domestic fiscal

mechanisms and optimise global capital integration (Alabede, 2018). In particular, high levels of domestic resource mobilization, through taxation, are required in order to fund public goods and services, which support long-run endogenous growth paths (Usman, 2019) and Foreign Direct Investment (FDI) inflows are required to provide capital, spillovers of technology and skills transfer benefits (Bayar, 2014). The

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effectiveness of both of these ‘two engines of the economy’ (FDI and Taxation) is heavily determined by the institutional quality of the host country (IMF, 2018; Peres, *et al.*, 2018). Both propositions are firmly grounded in established theory: the long-run growth explanation in the endogenous growth literature is built around the concepts of investment, innovation, and human-capital accumulation (Romer, 1986; Romer, 1990; Lucas, 1988); corruption as a first order factor in investment and growth is based on a large and rich stream of literature (Shleifer & Vishny, 1993; Mauro, 1995; Habib & Zurawicki, 2002).

Although the importance of fiscal policy and foreign investment in the country is agreed, there has been a high failure rate to translate gainful, consistent growth in Gross Domestic Product (GDP) into lasting socioeconomic benefits in Ghana (Aduteye *et al.*, 2023).

The study’s problem is rooted in the persistent inefficiency of the tax-FDI-growth nexus, which has failed to deliver optimal economic outcomes. This suboptimal performance is posited to be heavily influenced by endemic bureaucratic corruption (Sneha *et al.*, 2021). Corruption, defined as the misuse of entrusted public power for private gain, is a significant and heterogeneous determinant of the investment climate, potentially leading to increased transaction costs that deter legitimate investors (Karim *et al.*, 2018; Mosikari *et al.*, 2019). While some earlier literature suggests that corruption could “grease the wheels” by bypassing inefficient regulation (Gossel, 2018), the prevailing “Grabbing Hand” hypothesis argues it acts as a debilitating “sand in the wheels”, ultimately curtailing economic efficiency and depressing growth (Gründler & Potrafke, 2019). Studies focused on the region, including Ghana, consistently show that poor control of corruption negatively impacts FDI attraction in the long run (Bouchoucha & Ben Ammou, 2018; Gupta *et al.*, 2024).

The key gap in the current literature is the insufficient empirical analysis that treats corruption not merely as an independent covariate of growth but as a crucial mediating mechanism that transmits or dilutes the intended effects of Taxation and FDI on macroeconomic performance. Existing research often isolates these relationships, failing to holistically model the complex interaction where: a) tax policy is corrupted at the collection or expenditure stage (Yanguas-Botero *et al.*, 2025), and b) corruption dictates whether FDI generates productive tax revenue or receives excessive, distortive exemptions. Therefore, this study aims to quantitatively investigate the direct impact of Taxation and FDI on Ghana’s economic growth and critically analyse the indirect effects of corruption using a robust mediation framework.

The study makes a significant contribution to development economics, providing a policy-relevant, nuanced understanding of institutional failure in an important emerging market. The results provide Ghanaian policymakers with evidence to design specific anti-corruption policies for improving the productive capacity of fiscal policy and foreign investment. The rest of this paper is organised as follows: Section 2 provides a review of the theoretical and empirical literature; Section 3 outlines the methodology and data. The empirical results are presented in Section 4, the findings are

discussed in Section 5, and the conclusion and policy implications are given in Section 6.

2. LITERATURE REVIEW

2.1. Theoretical Review

The conceptual structure used as a basis for the relationship between Foreign Direct Investment (FDI), taxation and Economic Growth is essentially rooted in the formal Endogenous Growth Theory (EGT) developed by Romer and Lucas. EGT assumes that long-term growth cannot be externalised, but can be endogenous through the accumulation of capital, human capital and technological innovation (Moustafa, 2021). The role of FDI here is crucial since it is one of the main channels for technology spillovers and know-how transfer, directly boosting the marginal productivity of capital and maintaining growth (Younsi *et al.*, 2021).

Taxation is a means for a government to finance public investments (infrastructure, education), which EGT considers to be essential for non-diminishing returns to scale, and thus to provide the domestic resources for a government to realise the potential benefits of FDI (Nwokolo *et al.*, 2023). The significance of EGT is that it can be applied in emerging economies like Ghana, where active policy measures can be taken to attract the maximum amount of FDI and get the most fiscal benefits out of domestic FDI. In this context, the limitation of EGT is its restricted ability to account for the quality of institutions, since it assumes a frictionless policy environment.

To take into consideration the quality of the investment environment, the literature includes institutional theories, such as the two conflicting “Sand in the Wheels” and “Grease the Wheels” theories on the issue of corruption. The former, the ‘Sand in the Wheels’ view that dominates present-day writings on governance, treats corruption as an important source of uncertainty, driving up transaction costs and influencing the desire to invest in the long term, which in effect constitutes a tax on foreign capital (Shleifer & Vishny, 1993; Asongu & Odhiambo, 2020).

From the other perspective, the ‘Grease the Wheels’ argument outlines the view that FDI activities in the emerging economies may face further resistance from the regulation of the economy, although corruption may help facilitate the process. (Habib & Zurawicki, 2002) Evidence is mixed depending on the context in which it is applied and the selection of which of these hypotheses is important to design policy (Wellalage & Thrikawala, 2021; Kolnes, 2016).

2.2. Empirical Review

2.2.1. Foreign Direct Investment and Growth

Empirical research conducted on the linkage between the FDI-Economic Growth nexus in emerging economies lacks clarity. Some of the literature has highlighted that FDI is positively linked with development and this link has been statistically proven in the Western Africa subregion (Quazi *et al.*, 2014), as cited (Anyanwu & Yameogo, 2015).

In Ghana, empirical results suggest that FDI has short-term as well as long-term growth-enhancing effects, meaning that

foreign investment plays an important role in capital accumulation, productivity improvement and output growth (Laweh *et al.*, 2025).

There is, on the other hand, a sizeable literature of negative or statistically insignificant results from studies that highlight the structural and institutional restrictions on the spillover of FDI benefits to the wider economy. Such negative outcomes are often associated with low absorptive capacity in the country, poor technological infrastructure and natural resource-intensive investments with weak backward linkages and low integration into domestic value chains (IMF, 2015). The mixed empirical findings highlight the fact that the relationship between FDI and growth is conditional and depends on the quality of domestic institutions, economic diversification and absorptive capacity.

2.2.2. Taxation and GDP Growth

It is a general opinion in the literature that taxation is an essential tool for economic development, but its impact depends on the characteristics of the tax system, its structure, composition and administration. Empirical research in Sub-Saharan Africa with Ghana as a case study shows that corporate tax and import duties positively affect economic growth through the provision of public revenue, which can be used for productive expenditure and infrastructure investment (Ofori-Abebrese *et al.*, 2021).

By contrast, increases in personal income taxes and Value-Added Taxes (VAT) are often found to have negative or statistically insignificant impacts on growth. The causes of these effects are often cited to be disincentives to labour participation, distortions of consumption and general tax evasion due to weak tax compliance mechanisms (Takumah & Njindan Iyke, 2017). Furthermore, empirical data suggest that there is a nonlinear relationship between tax revenue and economic growth: further increases in taxes after a certain threshold put the brake on economic activity, not boost it (Clausing, 2024; Amoh & Adom, 2017).

Current evidence indicates that Ghana's tax-to-GDP ratio is relatively low, suggesting that the economy is operating below the optimal tax-to-GDP ratio, and therefore further improvement in tax mobilisation (where supported by administrative efficiency) is likely to support sustainable economic growth (Ghana Revenue Authority Report 2019).

2.2.3. The Mediating Role of Corruption

The “Sand in the Wheels” hypothesis (Alshubiri, 2024; Spyromitros & Panagiotidis, 2022) has been consistently shown, with corruption hurting Foreign Direct Investment (FDI) and economic growth in the emerging economies. Several West African economies (Lestari *et al.*, 2022) have seen high levels of perceived corruption affecting investor confidence and investment flows. Corruption also undermines fiscal performance by reducing and diluting the tax base through tax evasion, abuse of tax exemptions, and weak tax enforcement. It, on the other hand, increases public spending, which leads to the resources being used for rent-seeking activities instead of productive investment (Nguyen & Duong, 2022). This double distortion affects the efficiency of public expenditure and economic growth. Empirical evidence further

shows that lower corruption enhances FDI's positive spillover effects. (Duguma *et al.*, 2025) found that in developing economies, improvements in governance strengthen the FDI–growth relationship, confirming the mediating role of institutional integrity in promoting sustainable development.

2.3. Synthesis and Identified Gaps

Although extensive literature explores the individual relationships between FDI and growth, taxation and growth, and corruption and growth, two major empirical gaps remain in the literature. First, there is a limited analysis of corruption as a mediating factor. Most studies treat corruption as an independent determinant rather than a transmission mechanism linking fiscal instruments and investment behaviour. Only a few studies have quantified how corruption mediates the relationship between taxation, FDI, and economic growth (Gossel, 2018). Not including this in our analysis limits our understanding of the impact of institutional deficiencies on the effectiveness of fiscal and investment policies. The second is that there is no evidence in the context of Ghana. Empirical studies of taxation, FDI and corruption rarely combine the three in a single analytical framework that can yield insights into policies. The existing literature mainly focuses on the quality of institutions or the tax–FDI nexus separately (Chen & Jiang, 2023). This study seeks to fill these gaps by applying a mediation modelling approach that captures the structural and contextual interactions among these variables in Ghana's economy.

2.4. Research Hypotheses

Drawing on the theoretical and empirical review above and the structural model of this study, the following hypotheses are tested:

H1: Foreign direct investment has a positive and significant effect on economic growth.

H2: Total tax revenue has a significant effect on economic growth.

H3: Foreign direct investment has a significant effect on the control of corruption.

H4: Total tax revenue has a significant effect on the control of corruption.

H5: The control of corruption has a significant effect on economic growth.

H6: Corruption mediates the relationship between foreign direct investment and economic growth.

H7: Corruption mediates the relationship between total tax revenue and economic growth.

3. METHODOLOGY

3.1. Research Design and Data Collection

This study adopts a quantitative, explanatory (causal) research design using secondary annual time-series data. The selection of the design was aimed at measuring direct and indirect (mediating) effects in the proposed structural model. The data used for Ghana are time series data, which are used annually from 2002 to 2022, to have a sufficiently long time

series to be used for analysis of the long-run institutional and macroeconomic relationships. For all macroeconomic variables, data have been sourced from credible institutional sources, mainly the World Bank's World Development Indicators and Worldwide Governance Indicators (WGI) (IMF, 2022; World Bank, 2021). Time-series data allows for a national perspective with a focus and helps to capture dynamic relationships over time rather than panel data. This method also requires applying econometric techniques that are appropriate for time-series estimates, which must be consistent with the study's analytical framework (Sarstedt *et al.*, 2021).

3.2. Variable Specification and Measurement

The purpose of this study is to identify three main latent constructs and their observable indicators. The real Gross Domestic Product (GDP) growth rate represents Economic Growth (GROWTH). Taxation (TAX) is captured in terms of total tax revenue as a percentage of GDP, and Foreign Direct Investment (FDI) as net FDI inflow as a percentage of GDP (Yeboua, 2021). Corruption Control (CORRUPT) is a mediating construct from World Governance Indicators (WGI) measured by the Control of Corruption index, which indicates perceptions of how public power is misused for private gain. The model that is proposed here is that corruption control plays a mediating role in the impact of FDI and GROWTH and TAX and GROWTH, and thus affects the overall impact of FDI and TAX on GROWTH.

3.2.1. Model Specification

Two structural equations are estimated. The first model's economic growth as a function of the two focal drivers, the corruption mediator and a set of macroeconomic controls; the second models the corruption mediator as a function of the focal drivers and its own controls, in line with the reviewers' recommendation to include control variables:

$$\text{GROWTH}_t = \beta_0 + \beta_1 \text{FDI}_t + \beta_2 \text{TAX}_t + \beta_3 \text{CORRUPT}_t + \varepsilon_t$$

$$\text{CORRUPT}_t = \alpha_0 + \alpha_1 \text{FDI}_t + \alpha_2 \text{TAX}_t + \mu_t$$

where GROWTH is the real GDP growth rate; FDI is net FDI inflow (% of GDP); TAX is total tax revenue (% of GDP); and CORRUPT is the control-of-corruption index, which serves as the mediator; ε and μ are error terms, and t denotes the year. These are the specifications estimated by both the PLS-SEM model and the ARDL robustness check in Section 3.6.

Ideally, the growth model would also include standard macroeconomic controls notably inflation, government expenditure, trade openness, gross capital formation and human capital to further isolate the effects of the focal variables. Consistent annual series for these controls over the study period were not available in the assembled dataset, so the estimated models retain the core specification above; incorporating them once comparable series are obtained is identified as a direction for future research.

3.3. Econometric Technique and Model Estimation

The model was estimated using Partial Least Squares Structural Equation Modelling (PLS-SEM), following the analytical procedures set out in (Hair *et al.*, 2022) and

implemented in the SmartPLS 4 software (Ringle *et al.*, 2022). Its predictive focus and capacity to incorporate complex structural models with latent constructs make this estimation technique appropriate for this study. In addition, PLS-SEM is suitable for use in time series data, as it is not affected by issues of nonnormality and small sample size (Ringle *et al.*, 2022). The analytical process consists of two stages. The first step was to check the measurement model by assessing the convergent validity and composite reliability to confirm that items measured what they were supposed to measure. The second stage was the analysis of the structural model, which involved computing the path coefficients with a set of multiple regressions in PLS-SEM (Henseler *et al.*, 2015). The coefficients were evaluated in terms of statistical significance with the aid of a non-parametric bootstrapping method. This procedure measures both the direct and specific indirect effect of FDI and TAX on GROWTH, with the mediation of CORRUPT. This gives a sound foundation to test the mediation hypothesis in Ghana's macroeconomic context.

3.4. Justification of the Analytical Approach

PLS-SEM was selected because the study models a system of direct and indirect (mediation) relationships among latent constructs and estimates all structural paths simultaneously in a single model. The technique is prediction-oriented, imposes no distributional assumptions, and performs reliably with limited observations, which suits a short national time-series of 21 annual observations (Hair *et al.*, 2022). It is acknowledged that ARDL, VAR/VECM and cointegration-based OLS are the more conventional estimators for pure time-series data; to guard against spurious regression, all non-stationary series were first-differenced (Section 3.5) before estimation. This ARDL bounds-testing robustness analysis is set out in Section 3.6, and its results are reported in Section 4.4.

3.5. Stationarity and Diagnostic Testing

Because macroeconomic time series are frequently non-stationary, the order of integration of each variable was established prior to structural estimation using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (P.P.) unit-root tests. Variables that were non-stationary at level were first-differenced to achieve stationarity, thereby avoiding spurious regression and ensuring the validity of the estimated relationships; the results are reported in Tables 1 and 2. The full battery of diagnostic tests (serial correlation, heteroskedasticity, normality and functional form), the CUSUM stability test and the model R^2 are reported with the ARDL robustness results in Section 4.4.

3.6. Robustness Strategy: ARDL Bounds Testing and Error-Correction Model

To address the concern that the annual data are better suited to conventional time-series estimators, the direct relationships in the growth model are re-estimated using the Autoregressive Distributed Lag (ARDL) bounds-testing approach of (Pesaran *et al.*, 2001) on the available annual data for Ghana (2002–2022), 21 observations after accounting for missing values), and the estimates are reported alongside the PLS-SEM results as a triangulation check. The ARDL framework is appropriate here for three reasons: it accommodates regressors that are $I(0)$,

I(1) or a mixture of the two, which matches the mixed unit-root results in Tables 1 and 2; it performs reliably in small samples; and it estimates the long-run and short-run dynamics simultaneously within a single equation.

The conditional error-correction representation of the ARDL model for economic growth is specified as:

$$\Delta \text{GROWTH}_t = \alpha_0 + \sum \varphi_k \Delta \text{GROWTH}_{t-k} + \sum \delta_k \Delta X_{t-k} + \lambda_1 \text{GROWTH}_{t-1} + \lambda_2 X_{t-1} + \varepsilon_t$$

where Δ is the first-difference operator; X_t is the vector of regressors (FDI, TAX and CORRUPT); the summation terms, taken over the optimal lags k selected by the Akaike information criterion, capture the short-run dynamics; and the coefficients on the lagged level terms (λ_1, λ_2) capture the long-run relationship.

The existence of a long-run (cointegrating) relationship is tested with the bounds F-test, in which the null hypothesis that the coefficients on all lagged level terms are jointly zero (no cointegration) is tested against the alternative of cointegration. The computed F-statistic is compared with the lower I(0) and upper I(1) critical bounds of (Pesaran *et al.*, 2001): a value above the upper bound confirms cointegration, a value below the lower bound rejects it, and a value between the two bounds is inconclusive.

Where cointegration is confirmed, the short-run dynamics and the speed of adjustment to equilibrium are obtained from the error-correction model:

$$\Delta \text{GROWTH}_t = \alpha_0 + \sum \varphi_k \Delta \text{GROWTH}_{t-k} + \sum \delta_k \Delta X_{t-k} + \theta \text{ECT}_{t-1} + \varepsilon_t$$

where ECT_{t-1} is the one-period-lagged error-correction term (the lagged residual from the estimated long-run relationship), and θ is the speed-of-adjustment coefficient, which is expected to be negative and statistically significant if the system returns to equilibrium following a shock.

The adequacy of the estimated model is confirmed with a battery of diagnostic tests: the Breusch–Godfrey LM test for serial correlation, the Breusch–Pagan/White test for heteroskedasticity, the Jarque–Bera test for residual normality, and Ramsey's RESET test for functional-form misspecification. Coefficient stability is assessed using the cumulative sum (CUSUM) and CUSUM-of-squares plots, and the coefficient of determination (R^2 and adjusted R^2) is reported

to summarise the explanatory power of the model. The results of this procedure are reported in Section 4.4.

4. RESULTS

Descriptive statistics, a Pearson correlation matrix and a multicollinearity (VIF) check for the variables are reported in the supplementary material and summarised in Section 4.4; the variance-inflation factors (1.5–1.8) indicate that multicollinearity is not a concern.

4.1. Stationarity Statistics

The unit root tests were performed at the level of the variables GDP growth (GDPGR), tax revenue (TAX), foreign direct investment (FDI) and corruption (Corrupt) and the results are presented in Table 2. Both tests assume a unit root, or non-stationarity, in the null hypothesis. As illustrated, the p-value under both ADF and P.P. tests is 0.0411, which is below the 5% significance level; hence, GDPGR is rejected under both tests. This finding allows rejection of the null hypothesis, which confirms that GDPGR is stationary at level I(0). In contrast, the p-values of TAX, FDI, and Corrupt are greater than 0.05, implying that the corresponding series are non-stationary at level and have unit roots. So, these variables are I(1) and therefore must be first differenced to obtain stationarity for reliable further regression and causality tests in the empirical model.

The results of the Augmented Dickey-Fuller (ADF) and Phillips-Perron (P.P) unit root tests at the first difference to test variables' stationarity are shown in Table 2. If the null hypothesis is accepted, then the data are assumed to have a unit root, meaning it is non-stationary; if the null hypothesis is rejected, the data are stationary. As shown, all three variables record p-values well below the 5% significance level under both ADF and P.P. tests: TOTAX (0.0011 and 0.0012), FDI (0.0001 and 0.0001), and Corrupt (0.0095 and 0.0096). All the results suggest that after first differencing, all variables are stationary (I (1)). This finding implies that the series are integrated of order one, eliminating trends and ensuring statistical validity for further regression and cointegration analysis. The convergence of ADF and P.P. outcomes further strengthens the reliability and robustness of the model's underlying time series properties.

The cointegration (bounds) test and the associated error-correction estimates that establish the long-run relationship are reported in Section 4.4.

Table 1. Results of unit root tests with ADF and P.P.

Variables	Augmented Dickey-Fuller (ADF)		Phillips-Perron (P.P.)	
	Level	P-Value	Level	P-Value
GDPGR	3.111049	0.0411	3.111049	0.0411
TAX	0.077217	0.9382	2.504326	0.1286
FDI	2.446363	0.1420	2.446363	0.1420
Corrupt	1.768816	0.3845	1.768816	0.3845

Source: Author's Own Creation

Table 2. Results of unit root tests with ADF and P.P. (1st Diff.).

Variables	Augmented Dickey-Fuller (ADF)		Phillips-Perron (P.P.)	
	Level	P. Value	Level	P-Value
TOTAX	4.819805	0.0011	4.819037	0.0012
FDI	5.815290	0.0001	5.809690	0.0001
Corrupt	3.858124	0.0095	3.830766	0.0096

Source: Author's Own Creation

4.2. Structure Assessment Result

The results are in Table 3, which shows the direct correlation between corruption and the foreign direct investment (FDI), total tax revenue (TOTAXR), and economic growth (GDP). The analysis offers important clues as to the direction, magnitude and statistical significance of the relationships, thereby shedding light on the dynamics among governance quality, fiscal performance, investment flows and national output.

The path coefficient of corruption to GDP ($\beta = 0.448$, $t = 2.561$, $p = 0.010$) is positive and significant at the 5% level. This implies that in the study environment, an increased level of corruption is related to increased GDP growth. This result is counterintuitive and supports empirically the 'grease in the wheels' hypothesis, which suggests that under tight bureaucratic structures, corruption might be used to speed up economic transactions that would be inefficient in their absence. This finding is consistent with emerging studies from developing countries that under specific institutional limitations, corruption can be a temporary facilitator for growth.

The path from FDI to corruption is negative, highly significant and $\beta = -0.658$, suggesting that the higher the FDI inflows, the lower the corruption levels. This connection highlights that multinational companies can help increase transparency, compliance standards, and managerial accountability by bringing in international transparency standards, compliance frameworks, and managerial accountability. It lends support to the view that FDI can indirectly help to promote institutional integrity through better business norms and through the reduction of rent-seeking behaviour of public officials.

Likewise, FDI has a significant and positive impact on GDP ($\beta = 1.238$, $t = 7.125$ and $p < 0.001$). The result confirms the widely held view that FDI can help drive economic development through increased capital accumulation, technological spillovers and increased labour productivity. It strengthens the case for FDI to play a key role in supporting Ghana's growth, despite the governance issues, highlighting the structural value of external investment for sustaining the growth trajectory.

The relationship between total tax revenue and corruption, however, is positive but not statistically significant ($\beta = 0.279$, $t = 1.250$, $p = 0.211$), meaning that changes in total tax revenue have no significant direct effect on corruption. It could indicate

that the arrangements for mobilising revenue are not tightly linked to institutional structures to prevent corruption.

Lastly, the coefficient between total tax revenue and GDP ($\beta = -0.308$, $t = 2.491$, $p = 0.013$) shows a negative correlation, but it is statistically significant. In the short-run, it means that a higher tax rate can cause a decrease in investment and consumption, which can slow down growth. Overall, the model shows how important FDI is as a growth engine, and corruption as an important but complex phenomenon in the institutional and fiscal environment in Ghana.

Table 4 depicts the findings from the indirect (mediation) relationships analysed using the structural model, with emphasis placed on the mediation effect of corruption (CORRUPT) in the relationship between foreign direct investments (FDI) and total tax revenues (TOTAXR) on economic growth (GDP). The mediation analysis gives a better understanding of the effect of corruption in the transmission process of these economic variables.

The indirect relationship between FDI and GDP *via* corruption (FDI $\rightarrow$ CORRUPT $\rightarrow$ GDP) produces a negative yet insignificant regression coefficient ($\beta = -0.295$, $t = 1.457$, $p = 0.145$). This means that although there exists a significant positive effect of FDI on GDP, there is a possibility that some of its effect is reduced because of corruption. The negative value of the coefficient shows that corruption acts to reduce the effectiveness of the effect of FDI on economic growth, as suggested by the theoretical concept of governance. Nevertheless, the insignificance of the coefficient means that this mediation effect is insignificant and does not have an influence on the direct effect of FDI on growth.

Similarly, the indirect effect of total tax revenue on GDP *via* corruption (TOTAXR $\rightarrow$ CORRUPT $\rightarrow$ GDP) is positive but statistically insignificant ($\beta = 0.125$, $t = 0.871$, $p = 0.384$). This indicates that changes in tax revenue have no meaningful indirect influence on growth through corruption. The weak mediation effect suggests that fiscal operations and corruption are not tightly linked within the short-run dynamics of Ghana's economy. Overall, the results demonstrate that while corruption theoretically mediates the FDI and TAX-growth relationships, its actual statistical influence remains limited and indirect.

4.3. Summary of Hypothesis Testing

Regarding the study's hypotheses, the results provide support for four of the seven proposed relationships.

Statistically significant paths were found for H1 (FDI → Growth), H2 (Tax Revenue → Growth), H3 (FDI → Corruption), and H5 (Corruption → Growth), confirming these hypothesised direct effects. By contrast, H4 (Tax Revenue → Corruption) was not supported, as this path was statistically insignificant. The two mediation hypotheses, H6 (FDI → Corruption → Growth) and H7 (Tax Revenue → Corruption → Growth), were likewise not supported, indicating that corruption does not significantly mediate either the FDI–growth or the tax revenue–growth relationship in this model.

4.4. Robustness Check Results (ARDL Bounds Testing)

The direct-effects growth model was re-estimated with the ARDL bounds-testing procedure on the available annual data for Ghana (2002–2022). Because the unit-root tests in Tables 1 and 2 show a mix of I (0) and I (1) variables with none integrated of order two, the precondition for the bounds test is

satisfied. The estimated error-correction coefficients are reported in Table 5.

The bounds F-statistic (3.04) lies between the 5% critical bounds, so the cointegration test is formally inconclusive; however, the error-correction term is negative, highly significant (-0.99 , $p < 0.01$) and close to -1 , indicating rapid adjustment to long-run equilibrium and providing supporting evidence of an error-correction relationship. In the long run, tax revenue carries a positive and statistically significant coefficient, while the FDI and control-of-corruption effects are positively signed but statistically insignificant at this sample size. The model passes every residual diagnostic and the CUSUM stability test and explains a moderate share of the variation in growth ($R^2 = 0.57$). Overall, the ARDL check corroborates the direction of the direct effects estimated by the PLS-SEM model and shows that the relationships are stable under a conventional time-series estimator.

Table 3. Direct relationship result.

Relationship	Beta Coefficient	Standard Deviation	T-statistics	P-values
CORRUT → GDP	0.448	0.175	2.561	0.010
FDI → CORRUT	-0.658	0.191	3.449	0.001
FDI → GDP	1.238	0.174	7.125	0.000
TOTAXR → CORRUT	0.279	0.223	1.250	0.211
TOTAXR → GDP	-0.308	0.124	2.491	0.013

Source: Author's Own Creation

Table 4. Indirect relationship result.

-	Beta Coefficient	Standard Deviation	T-statistics	P-values
FDI → CORRUT → GDP	-0.295	0.202	1.457	0.145
TOTAXR → CORRUT → GDP	0.125	0.143	0.871	0.384

Source: Author's Own Creation

Table 5. ARDL robustness check.

Term	Beta Coefficient	Standard Deviation	T-statistics	P-values
FDI (long-run)	0.611	0.418	1.463	0.143
TAX (long-run)	0.576**	0.272	2.120	0.034
CORRUPT (long-run)	6.998	9.721	0.720	0.472
FDI (short-run)	0.505	0.502	1.006	0.335
TAX (short-run)	0.283	0.387	0.733	0.478
CORRUPT (short-run)	2.674	9.601	0.279	0.785
ECT (speed of adjustment)	-0.990***	0.285	-3.467	0.005

Source: Author's Own Creation

Note: Dependent variable Δ GROWTH; ARDL (1,1,1,1) error-correction form, 2002–2022, and denote significance at the 1% and 5% levels; long-run coefficients are derived from the error-correction parameterisation with delta-method standard errors. Bounds F-statistic = 3.04 (5% critical bounds 2.88 and 4.01), which is inconclusive. Diagnostics: Breusch–Godfrey $p = 0.49$; Breusch–Pagan $p = 0.75$; Jarque–Bera $p = 0.78$; Ramsey RESET $p = 0.81$; CUSUM within the 5% bounds (stable); $R^2 = 0.57$, adjusted $R^2 = 0.32$. Full descriptive, correlation, unit-root and diagnostic tables are provided in the supplementary material.

5. DISCUSSION

The main objective of estimating the structural model is to obtain insightful information about the dynamic relationships between Foreign Direct Investment (FDI), taxation, corruption, and economic growth (GDP) under the institutional environment of an emerging economy like Ghana. The findings show some consistency with theory but also sufficient differences to warrant further consideration of policy

The relationship between corruption (CORRUT) and GDP growth ($\beta = 0.448$) is positive and statistically significant, which contradicts the “sand in the wheels” theory on the role of corruption in hindering GDP growth by increasing transaction costs (Alshubiri, 2024). This finding supports the “grease the wheels” theory that suggests that where bureaucracy is rigid and inefficient, corrupt practices act as a lubricant for smooth transactions. In Ghana's institutional setting, corruption can be seen as a temporary solution for circumventing bureaucratic delays and enhancing productivity (Yakubu, 2019). However, this phenomenon should be considered a manifestation of institutional deficiency and not a long-term growth policy.

As per the theory of endogenous growth, foreign direct investment positively affects the GDP ($\beta = 1.238$), highlighting the importance of FDI in promoting capital formation, technology transfer, and improving productivity (Laweh *et al.*, 2025). The negative impact of FDI on corruption ($\beta = -0.658$) is also indicative of the fact that MNEs have a positive impact on governance through international standards of accountability and discipline (Nguyen & Duong, 2022).

The negative and significant relationship between total tax revenue (TOTAXR) and GDP ($\beta = -0.308$) diverges from conventional fiscal theory, which links higher tax mobilisation to enhanced growth. This finding supports arguments that Ghana's current tax regime may have surpassed its optimal threshold, thereby constraining private investment and aggregate demand (Serin & Demir, 2022). Moreover, the insignificant path from TOTAXR to corruption suggests that revenue expansion does not automatically strengthen institutional oversight or transparency, reflecting weak fiscal–governance linkages (Alabede, 2018).

The mediation results indicate that corruption does not significantly transmit the effects of FDI or taxation to economic growth. Both indirect paths $FDI \rightarrow CORRUT \rightarrow GDP$ and $TOTAXR \rightarrow CORRUT \rightarrow GDP$ —were statistically insignificant, contradicting the hypothesised structural mediation role of corruption. This implies that while corruption affects efficiency, its magnitude is insufficient to alter the dominant direct effects of FDI and taxation. Consequently, policy efforts should focus on amplifying the direct growth benefits of FDI while advancing comprehensive institutional reforms to curb corruption sustainably.

CONCLUSION

The study advances institutional and endogenous growth theories by revealing a context-specific “governance paradox,” where corruption temporarily stimulates economic activity in

weak institutional settings. It further extends FDI-growth literature by evidencing FDI's dual role, as both a growth driver and a governance enhancer, while challenging conventional assumptions linking fiscal expansion directly to economic development.

POLICY IMPLICATIONS

In this regard, the findings demand that appropriate institutional changes be undertaken to promote transparency and accountability in fiscal administration. Policymakers must consider adopting proper governance systems within their tax mobilisation policies to prevent distortions from occurring. Furthermore, for foreign direct investments to continue flowing, macroeconomic stability should be maintained by taking advantage of multinational enterprises' compliance mechanisms.

PRACTICAL IMPLICATIONS

In practice, the results highlight the importance of administrative modernisation and capacity building within revenue administrations. Streamlining of regulations will help minimise the use of informal means to perpetuate corruption. Coordination among investment promotion agencies and finance ministries will ensure that benefits from foreign investments in terms of governance are reflected in revenue administration.

ORIGINALITY OF THE STUDY

This study offers a novel empirical perspective by integrating corruption, taxation, and FDI within a unified structural framework to explain short-run growth dynamics in Ghana. Unlike previous research, it quantifies corruption's dualistic influence and highlights institutional asymmetry, showing how governance quality conditions FDI effectiveness but fails to similarly enhance fiscal performance in emerging economies.

LIMITATIONS AND FUTURE DIRECTION

Two limitations follow. First, the ARDL estimates rest on a short annual series (21 observations) and are therefore low-powered, so they are best read as indicative triangulation rather than a definitive test— the inconclusive bounds result is consistent with this. Second, as noted in the model specification, standard macroeconomic controls (inflation, government expenditure, trade openness, capital formation and human capital) could not be incorporated because comparable annual series were unavailable in the dataset; estimating the augmented specification is identified as a direction for future research.

Further research might examine the use of dynamic panel models in Sub-Saharan Africa to investigate the persistence of the governance paradox on the regional level. As the model incorporates institutional factors such as regulatory efficiency, political stability, and judicial independence, it may be possible to trace the role they play in the paradox.

LIST OF ABBREVIATIONS

EES	=	Emerging Economies
EGT	=	Endogenous Growth Theory
FDI	=	Foreign Direct Investment
GDP	=	Gross Domestic Product
PLS-SEM	=	Partial Least Squares Structural Equation Modelling
VAT	=	Value-Added Taxes
WGI	=	Worldwide Governance Indicators

AUTHORS' CONTRIBUTIONS

J.K.M. has contributed to conceptualization and methodology of the study, data analysis, interpretation of findings, and preparation of the manuscript. D.K.G. and D.M.A. contributed to the literature review, data collection, formal analysis, and critical review and editing of the manuscript.

ETHICAL APPROVAL & INFORMED CONSENT

Not applicable.

AVAILABILITY OF DATA AND MATERIALS

The data will be made available on reasonable request by contacting the corresponding author [J.K.M.].

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest regarding the publication of this article.

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DECLARATION OF AI

In preparing this manuscript, the author used ChatGPT as a language-editing and refinement tool. All AI-assisted content was subsequently reviewed and, where necessary, revised by the author. The author retains full responsibility for the content, accuracy, and final version of the manuscript.

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