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Determinants of foreign direct investment inflows in Tanzania: A Macroeconomic analysis (1990-2024)

Mgimwa, D.[1*], Warioba, R.[2], Safari, I.[2]

*[1]Masters student in Economics, [2]Staff at St. Augustine University of Tanzania, *Email of corresponding author:* deodarthmgimwa@gmail.com

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Abstract

Foreign Direct Investment (FDI) is an engine for economic growth, industrialization, and technological advancement in developing nations like Tanzania. However, the country has experienced lower and more volatile FDI inflows compared to its regional peers, despite significant policy reforms. This study examines the key macroeconomic determinants of FDI in Tanzania from 1990 to 2024. Using the Autoregressive Distributed Lag (ARDL) model, the analysis reveals that trade openness has a strong, positive long-run effect on attracting FDI. In contrast, GDP growth, interest rates, exchange rates, and inflation showed minimal or statistically insignificant impacts. The error correction term was significant and negative, indicating a rapid adjustment to long-run equilibrium following short-term shocks. The study concludes that structural and policy-focused factors, especially trade liberalization, were far more critical for attracting FDI to Tanzania than short-term economic conditions. Consequently, it is recommended that policymakers prioritize enhancing trade facilitation, ensuring policy stability, and implementing long-term structural reforms to strengthen Tanzania's competitiveness and attract sustainable investment.

Keywords*: Foreign Direct Investment, Tanzania, Trade Openness, GDP Growth, Exchange Rate, ARDL Model*

JELClassification: E2, E20, E22.

1. Introduction

1.1 The problem

Foreign Direct Investment (FDI) is universally recognized as a critical driver of economic growth, capital formation, technology transfer, and employment generation in developing economies (World Bank, 2022; UNCTAD, 2023). For Tanzania, with its vast natural resources and growing market potential, attracting stable and substantial FDI is indispensable for accelerating structural transformation and building a competitive, industrialized economy, which are the central pillars of the national development agenda as enshrined in the Tanzania Vision 2050 (The United Republic of Tanzania, 2025). Despite implementing policy reforms since the 1990s, including trade liberalization, privatization, and the establishment of the Tanzania Investment Centre (TIC), the country's FDI performance has been uneven and volatile, averaging

2.43percent on average, contributing to the country's GDP (World Bank, 2023; UNCTAD, 2023). This persistent underperformance raises critical questions about the specific macroeconomic factors that drive FDI inflows in the Tanzanian context. While classical economic theory and existing literature point to macroeconomic variables such as GDP growth, exchange rates, inflation, and trade openness as key determinants, their individual and combined impact in Tanzania remains ambiguous and often contradictory in empirical studies (Moshi & Kilindo, 2019; Rutasitara, 2018). For instance, while robust GDP growth signals market potential, its effect can be dampened by perceptions of regulatory risk or infrastructure deficits.

Similarly, the role of exchange rate volatility and inflation is debated, with some studies highlighting their deterrent effect, particularly in the manufacturing sector (Muganda, 2023). This ambiguity creates a critical knowledge gap, leaving policymakers without a clear, evidence-based roadmap for attracting foreign investment.

This study, therefore, aims to empirically investigate the determinants of FDI inflows in Tanzania, focusing specifically on GDP growth, interest rates, exchange rates, inflation, and trade openness from 1990 to 2024. By employing the Autoregressive Distributed Lag (ARDL) model, the research provides robust, country-specific evidence to inform targeted policy interventions. The findings are crucial for enhancing Tanzania's investment climate, fostering sustainable FDI inflows, and supporting the nation's broader economic development objectives. Following this introduction, Section 2 presents a review of the related literature. Section three outlines the methodology, and section four contains the analysis and interpretation of results. The final section concludes the study with policy recommendations.

2. Literature Review

The Eclectic (OLI) Paradigm, as proposed by Dunning (1980), provides a robust theoretical foundation for this study. The paradigm posits that a firm's decision to engage in FDI is influenced by three sets of advantages: Ownership (O), Location (L), and Internalization (I). For Tanzania, Location-specific advantages are particularly relevant. These include market size (proxied by GDP growth), macroeconomic stability (inflation, interest rate, and exchange rate), and trade policies (openness). A stable macroeconomic environment reduces risk and uncertainty for foreign investors, making the host country more attractive to them. Conversely, volatility in key indicators like inflation and exchange rates increases perceived risk, deterring investment.

The nation's consistent GDP growth, averaging 5-7%, signals market size and potential, serving as a key attraction for market-seeking investors in sectors like fast-moving consumer goods and telecommunications, as evidenced by firms such as the Azam Group and Vodacom. However, this potential can be undermined by weaknesses in other L-advantages, namely macroeconomic stability. Volatility in key indicators such as inflation and the significant depreciation of the Tanzanian Shilling increases perceived risk and operational costs, thereby deterring investment, especially in import-dependent manufacturing. Conversely, the policy-driven L-advantage of trade openness, enhanced by memberships in the EAC and AfCFTA, has proven to be a powerful magnet for efficiency-seeking FDI. By integrating Tanzania into regional and global value chains, trade openness transforms it into an export platform, a fact underscored by the growth in textile and agro-processing investments. Thus, the OLI Paradigm effectively frames Tanzania's FDI challenge: its ability to attract diversified and sustainable investment is contingent on strengthening and stabilizing these Location-specific factors to outweigh the perceived risks for foreign investors.

Empirical studies on FDI determinants in Tanzania and similar economies offer mixed results, underscoring the context-specific nature of these relationships. Moshi and Kilindo (2019), in a study titled "Foreign Direct Investment and Economic Growth in Tanzania," found a positive long-run relationship between FDI

and GDP growth using an ARDL model. However, they noted the relationship was weak in the short term, attributed to Tanzania's heavy reliance on extractive industry FDI, which offers limited spillovers. Focusing on inflation, Mwamba and Nyoni (2021) applied a Nonlinear ARDL approach and identified an inflation threshold of 7.2% for Tanzania. Their findings suggested that inflation below this level does not significantly deter FDI, but beyond it, the impact becomes severely negative, especially for manufacturing investments. On exchange rates, Rutasitara and Mwambuli (2021) conducted a sectoral analysis and found that exchange rate volatility significantly curtails manufacturing FDI but has negligible effects on mining sector FDI. This was attributed to the dollar-denominated revenues in the extractive sector, which act as a natural hedge. Regarding trade openness, Mwakyusa and Mwambuli (2022) employed a threshold regression analysis and discovered that trade openness positively impacts FDI only when the trade-to-GDP ratio exceeds 40%. Their study concluded that this effect is more pronounced for manufacturing FDI than for resource-seeking investments. Kweka and Ndege (2020) investigated interest rate fluctuations and found a negative long-run relationship between high real interest rates and FDI, with short-run volatility having an even larger discouraging effect. This ambiguity and the sector-specific nature of prior findings underscore the necessity for a comprehensive macroeconomic analysis that captures the combined short- and long-run effects within a unified framework, which this study provides.

3. Methodology

This study used an explanatory and non-experimental design based on quantitative time-series secondary data from 1990 to 2024. The data on FDI inflows (% of GDP), GDP growth (annual %), inflation (CPI annual %), real interest rate (%), and trade openness ([Exports + Imports]/GDP%) were sourced from the World Bank's World Development Indicators and the Bank of Tanzania. To effectively address the research objectives, the Autoregressive Distributed Lag (ARDL) model was utilized, specifically employing the bounds testing approach along with a dynamic Error Correction Model (ECM). The ARDL model is advantageous as it can be applied regardless of whether the variables are integrated of order I(0) or I(1), and it efficiently estimates both short-run and long-run relationships.

3.1 Model Specification

The functional relationship between the FDI inflows in Tanzania and its macroeconomic determinants is specified as:

$FDI= \beta_0+\beta_1 GDP+\beta_2 INF\ \beta_3 EXR+ \beta_4 INR + \beta_5 TOP + \varepsilon$…… 1

Where:
FDI = Foreign Direct Investment Inflows (% of GDP)
GDP = GDP growth rate (%)
INF = Inflation rate (%)
EXR = Exchange rate (TZS/USD, log)
INR = Real interest rate (%)
TOP = Trade openness (% of GDP)
ε= Error term

The ARDL model is specified as:
The ARDL method was chosen because it can be used when variables are stationary at a mix of I (0) and I (1), and it performs well in small Observations

$$\Delta \ln FDI= \beta_0 + \beta_1 \sum \Delta \ln GDP_t + \beta_2 \sum \Delta \ln INF_t + \beta_3 \sum \Delta \ln EXR_t + \beta 4 \sum \Delta \ln TOP_t + \beta_5 \sum \Delta \ln INR + \beta_6 \sum \Delta \ln GDP_{t-1} + \beta_7 \ln INF_{t-1} + \beta_8 Ln\ EXR_{t-1} + \beta_9 Ln\ TOP_{t-1} + \beta_{10} \ln INRt\text{-}1 + \mu ECT_{t-1} + et \ldots\ldots\ldots\ldots 2$$

Where Δ is the difference operator, the sums (Σ) represent the short-run dynamics with their respective lag lengths, and ECT~t-1~ is the error correction term, which measures the speed of adjustment back to the long-run equilibrium.

The ARDL method was chosen because it is used when variables are stationary at a mix of I (0) and I (1), and it performs well in small, samples with observation from 30 to 80

4. Results

4.1 Descriptive Analysis

The descriptive statistics for the variables based on 35 observations are presented in Table 1. The results show that Tanzania experienced an average GDP growth of 5.40% with moderate fluctuations. FDI inflows averaged 2.43% of GDP but showed significant volatility (Std. Dev. 1.47). Inflation averaged 11.16% with high variability, while the exchange rate exhibited a clear depreciating trend over the period.

Table 1: Descriptive Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Gdp	35	5.402901	1.88936	.399007	8.464381
Top	35	37.57479	8.598877	23.98912	56.16612
Fdi	35	2.433714	1.471924	0	5.66
Inf	35	11.16072	9.40187	3.06	35.9
Exr	35	1339.984	726.4617	196.6	2544.25
Inr	35	6.96425	4.165044	-1.201762	14.747

Source: Researcher work (2025)

The null hypothesis of normal distribution was rejected at the 1% level.

4.2 Unit Root Test

The ADF unit root test results (Table 2) indicate that all variables are stationary either at level I(0) or first difference I(1), confirming the suitability of the ARDL approach. FDI and the interest rate (INR) are I(0), while GDP, inflation (INF), exchange rate (EXR), and trade openness (TOP) are I(1).**Table 2: Unit Root Test Results**

Dickey-Fuller test for unit root **Number of obs = 34**

-------- Interpolated Dickey-Fuller -------						
Variable	**Probability Z(t)**	**Order of Integration**	**Test Statistics**	**1% Critical Value**	**5% Critical Value**	**10% Critical Value**
GDP growth rate (dgdp)	0.0000	I(1)	-8.263	-3.696	-2.978	-2.620
Trade Openness(dtop)	0.0038	I(1)	-3.721	-3.696	-2.978	-2.620
Foreign Direct Investment (FDI)	0.0378	I(0)	-2.970	-3.689	-2.975	-2.619
Inflation rate(dinf)	0.0000	I(1)	-5.335	-3.696	-2.978	-2.620
Exchange rate (dexr)	0.0000	I(1)	-5.921	-3.696	-2.978	-2.620
Real interest rate(inr)	0.0316	I(0)	-3.037	-3.689	-2.975	-2.619

Source: STATA Estimation (2025), Author's computation (indicates stationarity at 5% significance level)

4.3 Cointegration Test

The results of the ARDL bounds test for cointegration are presented in Table 3. The calculated F-statistic (4.127) exceeds the upper critical value at the 10% significance level, leading to the rejection of the null hypothesis of no long-run relationship. This confirms the existence of a stable long-run relationship among the variables.

Table 3: ARDL Bounds Test Results

$$F = 4.127$$

	Critical-values						**P-value**	
	10%		**5%**		**1%**			
	I(0)	**I(1)**	**I(0)**	**I(1)**	**I(0)**	**I(1)**	**I(0)**	**(1)**
F	2.591	3.855	3.151	4.594	4.518	6.388	0.016	0.077
t	-2.559	-3.860	-2.925	-4.304	-3.685	-5.223	0.001	0.023
H_0: no level relationship								

Source: STATA Estimation (2025)

ARDL Long-Run and Short-Run Results
The estimated long-run coefficients and the error correction model are presented in Table 4.

Table 4: ARDL Model Estimation Results: Co-integrating and Long-Run Relationship

Number of obs = 32 R-squared = 0.4976 Adj R-squared = 0.3771 Root MSE = 1.0112				
Equation	**Variables**	**Coefficient**	**t-statistics**	**Probability p greatergreaterp> $\|.t\|$**
ADJ (Coint-eq)	D.fdi (L1.)	-.8607136	-4.76	0.000
Long-run Coefficients				
	Gdp	.0893219	0.42	0.679
	Top	.0876218	2.27	0.032
	Inf	-.1475703	-2.30	0.030
	Exr	-.001297	-2.75	0.011
	Inr	-.0222157	-0.32	0.752
Short-run Coefficients				
	Constant	1.962871	1.36	0.186

Source: STATA Estimation (2025)

Note: denote significance at 1% and 5% levels, respectively.
The long-run results show that trade openness (TOP) has a positive and statistically significant effect on FDI inflows, with a coefficient of 0.0876. This implies that a 1% increase in trade openness leads to a 0.088% increase in FDI Inflows as a share of GDP in the long run. Inflation (INF) and the exchange rate (EXR) have negative and significant long-run effects, showing that macroeconomic instability deters foreign investment. Conversely, GDP growth and the interest rate (INR) are statistically insignificant, suggesting that6ty7 they are not primary determinants of FDI in Tanzania in the long run. The error correction term (ECT(-1)) is -0.8607 and highly significant (p=0.000). This indicates a very high speed of adjustment, with approximately 86% of any deviation from the long-run equilibrium being corrected within one year.

4.4 The diagnostic tests

The diagnostic tests confirm the robustness of the model. The Breusch-Godfrey test and the ARCH test indicate no evidence of serial correlation or multicollinearity. The Jarque-Bera test fails to reject the null hypothesis, suggesting that the residuals are normally distributed.

Table 5: Multicollinearity test Results

Variable	VIF	1/VIF
Inf	3.61	0.276668
Exr	2.41	0.415419
Gdp	1.88	0.531877
Inr	1.55	0.644428
Top	1.51	0.661312
Mean	VIF	2.19

Source: STATA Estimation (2025)

Based on the findings in table 5 above, the VIFs are between 1.51 and 3.61, with a mean of the VIFs being 2.19. As per the standard VIF value greater than 10 is considered extreme multicollinearity, whereas 5 to 10 is a concern (Kennedy, 2008). All the VIF values in this study are below 5, hence there is no sign of strong multicollinearity between the independent variables. This result implies that the explanatory variables do not affect the approximation of the coefficients in the ARDL model and that the personal contributions that GDP growth, trade openness, inflation, exchange rate, and interest rate have to FDI inflows can be interpreted.

4.5 Serial Correlation Test

A serial correlation test is conducted to determine whether the residuals (error) term of the estimated ARDL model is correlated with time. Serial correlation may give biased and inefficient estimates in case it exists, hence it should be tested. The null hypothesis of the test is that the residuals of the model do not show any serial correlation was tested using the Breusch-Godfrey test (Godfrey, 1978) to confirm serial correlation of the different lags of the residuals.

Table 6: Serial Correlation Test Results

Breusch-Godfrey LM test for autocorrelation			
lags(p)	**chi2**	**df**	**Prob > chi2**
1	**2.068**	**1**	**0.1505**
	H0: no serial correlation		

Source: STATA Estimation (2025)

Table 6 shows the outcome of the Breusch-Godfrey LM test on serial correlation that was conducted to determine whether the residuals (error) term of the estimated ARDL model is correlated with time. Serial correlation may give biased and inefficient estimates in case it exists, hence it should be tested. The null hypothesis of the test is that the residuals of the model do not show any serial correlation. Test value indicates that the chi-square value is 2.068, and the degree of freedom is 1, and a probability value (p-value) of 0.1505. We do not reject the null hypothesis because the p-value exceeds the typical levels of significance (0.01, 0.05, or 0.10)

4.6 Normality test

The main assumption in the regression analysis is that the residuals are normally distributed, making the standard errors valid and the hypothesis test reliable (Gujarati and Porter, 2009).

Table 7: Skewness/Kurtosis tests for Normality

Variable	Obs	Pr(Skewness)	Pr (Kurtosis)	adj chi2(2)	Prob>Chi2

Residuals	35	0.7202	0.8580	0.16	0.9230
Ho: Residuals are normally distributed					

Source: STATA estimation

Table 7 indicates that the p-values of skewness and kurtosis are 0.7202 and 0.8580, respectively, and the adjusted chi-square is 0.16, the p-value of which is 0.9230. The p-value of the overall value greater than 0.05 does not allow rejecting the null hypothesis of normality. This finding shows that the ARDL model residuals are normally distributed, which supports the validity of the estimated coefficients and makes the inferences made on the impact of GDP growth, trade openness, inflation, exchange rate, and interest rate on FDI inflows reliable.

4.7 Discussion

The empirical results offer nuanced insights into the macroeconomic drivers of FDI in Tanzania. The finding displayed a strong positive long-run relationship between trade openness and FDI inflows. This aligns with the Eclectic (OLI) Paradigm, where trade openness enhances Location-specific advantages by integrating Tanzania into global value chains, such as bilateral and multilateral economic integrations, such as EAC, SADC, making it a more attractive base for efficiency-seeking FDI that aims to serve regional and international markets.

The statistical insignificance of GDP growth is a critical finding that warrants discussion. While classical theory suggests market size is a key attractor, this result implies that for Tanzania, the signal of market potential sent by GDP growth may be overshadowed by structural impediments such as infrastructure deficits, regulatory risks, or the specific composition of FDI, which is heavily weighted towards the extractive sector. Resource-seeking FDI in mining and natural gas may be less responsive to short-term GDP fluctuations and more influenced by geological potential and contractual terms.

The negative long-run effects of inflation and exchange rate depreciation confirm the importance of macroeconomic stability in preventing the deterrence of investment, particularly for market-seeking and efficiency-seeking investments in sectors like manufacturing that are sensitive to cost and price stability. However, their role appears to be more about mitigating risk than actively stimulating inflows. This aggregate finding may mask sectoral nuances, as suggested by Rutasitara & Mwambuli (2021), who found the extractive sector to be less affected by exchange rate volatility due to dollar-denominated revenues.

5. Conclusion

This study examined the macroeconomic determinants of FDI inflows in Tanzania from 1990 to 2024. The ARDL estimation results reveal that trade openness is the most significant and positive determinant of FDI in the long run. Inflation and exchange rate depreciation have significant negative effects, while GDP growth and interest rates are not statistically significant drivers. The highly significant error correction term confirms a stable long-run relationship and a rapid adjustment process. These findings lead to two central conclusions. First, structural and policy-focused factors, particularly the degree of integration into the global economy, are far more critical for attracting sustainable FDI to Tanzania than short-term macroeconomic conditions. Second, while macroeconomic stability (low inflation, stable currency) is important, its role is more about preventing deterrence than actively stimulating inflows.

6. Policy Recommendation

Based on these conclusions, the following policy recommendations are proposed: Firstly, to enhance trade facilitation through the Ministry of Trade and Industry which should prioritize further trade liberalization and reduce bureaucratic hurdles at borders. Streamlining import and export processes and actively engaging in regional trade agreements like the AfCFTA will strengthen Tanzania's appeal to efficiency-seeking FDI.

Secondly, to ensure macroeconomic stability. The Bank of Tanzania should maintain its focus on controlling inflation and minimizing excessive exchange rate volatility. A predictable macroeconomic environment reduces investor risk, even if these factors are not the primary attractors.

Thirdly, to implement long-term structural reforms. Policymakers at the Tanzania Investment Centre (TIC) and the President's Office Planning Commission should focus on long-term structural reforms that improve the overall investment climate. This includes enhancing institutional quality, investing in infrastructure, and ensuring policy consistency and predictability to build investor confidence beyond short-term economic fluctuations.

By prioritizing trade openness and a stable, predictable policy environment, Tanzania can more effectively attract the foreign investment necessary to drive its industrial transformation and sustainable economic growth.

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