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# Assessing the Impact of Foreign Direct Investment on the Manufacturing Sector in Developing Countries: Empirical Evidence from Tanzania

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## Abstract

*The present study aimed to investigate the impact of foreign direct investment (FDI) inflows on the manufacturing sector's performance in developing countries, focusing on Tanzania. Using a non-experimental explanatory research design and a quantitative approach with time series data, the study aims to generalize the results to the entire population. A sample size of 32 annual observations from 1990 to 2021, sourced from international organizations, was employed. Data analysis involved multiple linear regression using the Ordinary Least Squares (OLS) method. Diagnostic tests addressed potential time series data issues, and STATA software facilitated econometric techniques. Findings indicate a significant positive correlation between FDI and manufacturing value added (MVA) in Tanzania. The ARDL bounds test established a long-term equilibrium relationship between FDI, MVA, GDP, and the inflation rate. Notably, a 1.961 unit increase in MVA corresponds to a unit rise in real GDP, with a 0.08 unit decrease linked to a unit increase in inflation. The error correction model shows a 0.66 percent adjustment from short-run to long-run equilibrium. Granger causality results suggest a bi-directional causal effect between MVA and FDI, with MVA causing FDI. Diagnostic tests confirm the model's stability, normality, and absence of serial correlation or heteroscedasticity. In conclusion, the study highlights FDI's positive role in propelling manufacturing sector growth in Tanzania, contributing to economic development and employment generation. Recommendations for Tanzanian policymakers include creating a conducive environment for FDI in the manufacturing sector, emphasizing policies to ease business operations, encourage technology transfer, and address inflationary pressures.*

*Keywords: Foreign Direct Investment, Manufacturing sector, Performance, Tanzania.*

## 1. Introduction

Foreign Direct Investment (FDI) denotes investments made by companies outside their home countries and is distinct from portfolio investments. Unlike portfolio investments, which lack control over management, FDI involves the flow of long-term capital for sustained profit in international production (TIC, 2020). FDI provides investors with the opportunity to actively participate in the direction and management of the business, primarily driven by multinational corporations (MNCs) that significantly contribute to economic growth (Ekienabor & Sunday, 2016). In 2014, global FDI inflows saw a 16%

decline to $1.23 trillion, attributed to an unstable global economy, unfavorable policies, and increased geopolitical risks (Wangwe, 2018). Despite the overall decrease, developing nations experienced a 2% increase in inward FDI flows, reaching $681 billion, with China emerging as the world's largest recipient of FDI (World Bank, 2020). Developing economies comprised five of the top ten FDI recipient countries, benefitting from substantial investments and job creation, while developed nations experienced a 28% decrease in FDI flows to $499 billion (UNCTAD, 2015). The decline in developed nations is linked to a significant divestment from the United States (ADB, 2019).

Initially, hesitant after gaining independence in the 1960s, African nations perceived free trade and investment platforms as tools for continued exploitation by former colonial powers (UNCTAD, 2017). However, in the 1970s and 1980s, some countries in Africa implemented capital controls and trade restrictions to promote import-substitution industrialization, aiming to safeguard domestic industries (ADB, 2019). This inward-looking strategy, focused on protecting local industries, is now acknowledged to hinder both foreign direct investment (FDI) and trade, potentially leading to slow economic growth and poor living conditions (Osakwe, 2017). Currently, Africa strives to shift from an agrarian to an industrial economy, facing challenges in attracting foreign direct investors due to a lack of industrial development (World Bank, 2019). In Sub-Saharan Africa, the average portion of manufacturing value added to GDP has remained around 11%, and the region's share of global FDI remains low compared to other African regions (Chen, Geiger, & Fu, 2015). Despite the 2014 global economic crisis, the East African Community (EAC) experienced significant growth in FDI, contributing to Africa's FDI stock from 3.1% in 2001 to 3.8% in 2013 (Slavica & Andreja, 2014). The EAC's progress towards a common market is crucial for enhancing its attractiveness to FDI (Slavica & Andreja, 2014).

Tanzania leads the East African Community in foreign direct investment (FDI) inflow, with a substantial net inflow of US$ 2.1 billion in 2014. Ranking among the top three African nations for FDI, Tanzania holds the largest stock of inward FDI in the EAC at US$ 17 billion, driven by significant contributions from the mining and gas industries. The government actively promotes FDI growth as part of Tanzania's post-independence vision for economic prosperity. Despite the manufacturing sector's modest share in the GDP compared to other sectors, time series analysis confirms its vital role in Tanzania's economic growth (World Bank, 2020; United Nations: Economic Commission for Africa, 2016; Wagwe et al., 2016).

Despite being one of the fastest-growing economies in Eastern Africa, Tanzania's manufacturing sector faces challenges such as implementation lags, unrealistic goals, and intense price competition from low-priced imports, hindering its significant contribution to the country's GDP (Mwang'onda & Mwaseba, 2018). The global economic crisis in 2009 led to caution and reduced confidence among foreign investors in the short term, affecting FDI prospects. However, developing nations, especially in Asia and Africa, continue efforts to attract FDI into their manufacturing sectors for economic development. To bolster FDI, countries like Nigeria, alongside other African nations and the global community, participate in initiatives like the New Partnership for Africa's Development (NEPAD) (World Bank, 2019; World Investment Report 2015; Ekienabor & Sunday, 2016).

Transnational Corporations (TNCs) are extending their Foreign Direct Investment (FDI) channels, with Africa being just one focus among regions like South, East, and South-East Asia, as well as Latin America (World Investment Report, 2015). Future FDI destinations are anticipated based on TNCs' aspirations and developing nations seeking economic transformation through trade and investment platforms. This trend is expected to contribute to a rising share of FDI inflows globally. In Kenya, the service sector receives a more substantial FDI contribution than manufacturing, while Uganda and Tanzania's FDI is dominated by the mining sector. Tanzania is actively fostering a favorable environment in the manufacturing sector through infrastructure improvement and policy reforms to attract more Multinational Corporations (MNCs). Rwanda, on the other hand, prioritizes the service sector, particularly in ICT, manufacturing, and finance, as part of its efforts to enhance FDI (Chen, Geiger, & Fu, 2015).

## 2. Literature Review

### Theoretical Model

### Investment Development Path (IDP) Theory

This study was guided by the Investment Development Path (IDP) theory. This theory, developed by economist John Dunning (1980), explains the evolution of a country's involvement in foreign direct investment (FDI) based on its economic development stages. The IDP theory suggests that countries go through different stages in attracting FDI, starting from being a net capital importer to becoming a net capital exporter. It takes into account factors such as resource-seeking, market-seeking, efficiency-seeking, and strategic asset-seeking motives for FDI (Duran, & Ubeda, 2005).

In the context of the study on the effect of foreign direct investment inflows on manufacturing sector performance in developing countries, particularly Tanzania, the IDP theory can help you understand how FDI has evolved in the country, what motives are driving these investments, and how they impact the manufacturing sector at different stages of development. This theory provides a framework to analyze the dynamics between FDI and the manufacturing sector, offering insights into the reasons behind FDI inflows and their effects on the host country's industrial performance.

### Macro-Level Foreign Direct Investment Theories

FDI refers to the form of tangible investment made by the original country to the host country and the country`s balance of payments is where these forms of capital flows are found based on the idea of Lipsey (2001), macroeconomic theories try to portray the motivations of the foreign investor to allocate their fund in foreign countries to facilitate FDI. Market size, rate of economic growth, infrastructure and other superstructures, natural resources, political stability, and others are accounted to be the macro-level determinants that affect the host country's FDI flows (Das, 2007). Through the guidance of this theory, it was applicable to ring a vital direction about an intersection between FDI inflow and manufacturing sector growth.

These global studies on the impact of Foreign Direct Investment (FDI) offer diverse insights. Javorcik's (2004) exploration of Lithuanian industries underscores the advantages arising from relationships between foreign and local enterprises, particularly those of an upstream or vertical nature. Blomstrom and Wolf's (1994) research on Mexican manufacturing between 1965 and 1982 highlights the favorable impact of foreign investments on local productivity growth. Aitken and Harrison's (1999) investigation in Venezuela reveals positive correlations between foreign equity participation and productivity in smaller plants but a negative effect on firms with 100 percent domestic ownership.

Chakraborty and Nunnenkamp's (2008) study on India demonstrates a significant causal relationship between FDI stock and manufacturing sector output, emphasizing the growth-promoting role of services sector FDI. Conversely, Masron and Hassan's (2016) examination of US FDI in Malaysia from 1999 to 2008 finds no positive spillover to various manufacturing industries. Samantha and Liu's (2018) analysis of Sri Lanka's industrial sector and Jayawickrama and Thangavelu's (2007) study on Singapore's manufacturing sector both yield inconclusive evidence regarding the link between FDI and industrial sector growth on a global scale. Lastly, Haskel et al.'s (2007) investigation in the UK finds no evidence of spillovers from inward FDI on domestic firms' productivity in the global context.

**Empirical Literature Review**

Empirical studies focusing on the African perspective of FDI in Nigeria's manufacturing sector offer varied insights. Okoli and Agu's (2015) 40-year analysis supports pro-FDI policies for economic stability. Mounde (2017) finds a positive long-term link between FDI inflow and manufacturing growth, while Adejumo's (2013) study suggests a negative impact on manufacturing value added. Eze & Nkalu (2019) emphasize positive correlations with manufacturing output growth despite statistical insignificance. Ebekozien et al. (2015) stress the challenges in attracting FDI to Nigeria's construction sector, advocating for supportive policies. Ekienabor & Sunday (2016) affirm a positive FDI-manufacturing growth relationship, proposing measures like crude oil diversification. Ogbona's (2019) 34-year study shows FDI's facilitative role in Nigeria's manufacturing capacity and overall economic growth.

From Tanzania's perspective, limited research has explored the impact of FDI on Tanzania's manufacturing sector. Asajile's (2014) study focuses on FDI's positive correlation with overall economic growth, advocating for government policies to support international market openness and combat inflation. Wangwe (2015) highlights the resilience of Tanzania's manufacturing firms during the global economic crisis, emphasizing the sector's vital role in economic growth and the need for strategies to attract domestic and foreign investors. Senkuku & Gharleghi's (2015) analysis of FDI factors reveals infrastructure and technology shortages as key attractors, while Rutaihwa & Simwela (2012) assess the minimal impact of FDI in the mining sector on Tanzania's exports. Contrarily, Ngowi (2012) and Kabelwa (2006) suggest that FDI is still in its early stages in Tanzania, requiring active policies for effective development.

## 3. Methodology

The study, conducted on the mainland of Tanzania, aimed to explore the impact of Foreign Direct Investment (FDI) inflows on the manufacturing sector in the country spanning the years 1990 to 2021. Employing a non-experimental research design, specifically an explanatory research design, was crucial for this investigation. This design choice facilitated a thorough examination of the relationships between variables, allowing the researcher to delve into potential causal connections through various statistical techniques. The quantitative research approach adopted for time series data enabled the generalization of results to the entire population. To capture any long-run relationships between variables, a sample size of 32 annual observations was incorporated into the study.

The study relied on secondary time series data spanning from 1990 to 2021, sourced from the International Organisation, the World Bank, and World Development Indicators. The choice of this source was rooted in its credibility and widespread trust among researchers, providing a historical dataset of various variables over an extended period. For data analysis, a multiple linear regression analysis was applied, utilizing secondary data gathered from the World Bank's World Development Indicators. The Ordinary Least Squares (OLS) method was chosen for estimating the relationships between variables, given its advantages in producing minimum variance unbiased estimators. The analysis involved employing various diagnostic tests to address potential issues associated with time series data. Additionally, STATA software was utilized for its capability in offering a range of econometric techniques for data analysis, supported by the researcher's expertise in its use. Throughout the study, ethical considerations were paramount. The researcher adhered to research ethics, properly acknowledging sources in literature reviews, and ensuring the reliability of information gathered from accessible and public sources. No manipulation of data or information occurred, maintaining the integrity of the study.

## 4. Findings and discusions

This study aim to investigate the effect of Foreign direct investment inflows on Manufacturing sector in Tanzania for the period being observed 1990 to 2021. The variable being studied include FDIs inflows expressed in percentage growth, Manufacturing value added percentage growth, GDP as well as inflation. The current chapter started by presenting the descriptive statistics, followed by preliminary analysis on unit root problem, then estimating the model.

### Descriptive Statistics

The researcher performed the descriptive analysis on the raw data to observe the behavior of the time series data as well as identifying whether the time series are normall distributed or not.

**Table 4. 1: Summary Statistics**

| | MVA | INFL | GDP | FDI |
|---|---|---|---|---|
| Mean | 8.528026 | 12.07424 | 5.176171 | 2.526638 |
| Median | 8.666252 | 7.250973 | 5.743208 | 2.296152 |
| Maximum | 10.98306 | 35.82677 | 7.672155 | 5.663728 |
| Minimum | 6.277763 | 3.290291 | 0.584322 | 0.000202 |
| Std. Dev. | 1.083504 | 9.556895 | 2.002267 | 1.508818 |
| Skewness | -0.196133 | 1.193622 | -0.806504 | 0.226685 |
| Kurtosis | 2.792507 | 3.186196 | 2.580084 | 2.326225 |
| | | | | |
| Jarque-Bera | 0.262567 | 7.405906 | 3.704165 | 0.879357 |
| Probability | 0.876969 | 0.064651 | 0.156910 | 0.644244 |
| | | | | |
| Sum | 272.8968 | 374.3013 | 165.6375 | 80.85243 |
| Sum Sq. Dev. | 36.39338 | 2740.027 | 124.2813 | 70.57251 |
| | | | | |
| Observations | 32 | 32 | 32 | 32 |

**Source: Researcher's Computations (2023)**

Table 4.1 above shows the manufacturing sector in Tanzania, measured by manufacturing value-added, has a mean of 8.52%, ranging from a minimum of 6.277% to a maximum of 10.98%. FDI inflows exhibit a mean of 2.52%, varying between 0.0002 and 5.66, indicating occasional years with minimal inflows up to an average of 5.7%. Tanzania's real GDP averages 5.17%, ranging from 0.58 to 7.67, while the inflation rate averages 12.07%, with a range of 3.3% to 35.8%. Notably, inflation has outliers, leading to data transformation. Jarque-Bera statistics confirm the normal distribution of all variables, as indicated by probability values exceeding 0.05.

**Correlation Analysis**

The preliminary analysis, detailed in Table 4.2, examined the linear relationships and collinearity among variables. As per Wong and Hiew (2005), a correlation coefficient (r) of 0.0 to 0.59 is weak, while 0.60 to 1.00 is strong. The results show a strong, positive correlation (80.6%) between Manufacturing Value Added (MVA) and FDI. Additionally, a strong positive relationship (62.9%) exists between MVA and real GDP, while a negative and significant correlation (68.9%) is observed between inflation and MVA. This suggests that price instability impacts individual consumption, influencing manufacturing sector performance. The independent variables exhibit lower average correlations, indicating minimal collinearity concerns.

**Table 4. 2: Correlation Matrix**

| | MVA | FDI | GDP | INF |
|---|---|---|---|---|
| MVA | 1.000000 | | | |
| FDI | 0.806544 | 1.000000 | | |
| GDP | 0.629181 | 0.33252 | 1.000000 | |
| INF | -0.689402 | -0.492085 | -0.520349 | 1.000000 |

**Source: Researcher's Computations (2023)**

**Unit Root Test**

Literature emphasizes the importance of testing for stationarity in time series data to avoid obtaining spurious results in regression models (Datta and Kumar, 2011). To ensure meaningful estimates, the study conducted Augmented Dickey-Fuller (ADF) unit root tests on the variables before estimating the ARDL modified model. The ADF test, allowing optional exclusion of the constant, inclusion of a trend term, and lagged values, helps eliminate the unit root problem and achieve stationarity through differencing. All variables, after ADF testing, were found not to be stationary at levels, as their absolute test statistics did not exceed the critical values at the 5% significance level, leading to a failure to reject the null hypothesis.

**Table 4. 2: ADF Unit Root Test Results**

| AT LEVELS | | | |
|---|---|---|---|
| Variable | ADF t-statistic | 5% critical value | Decision |
| MVA | -2.447 | -2.958 | Accept $H_0$ |
| FDI | -1.203 | -2.958 | Accept $H_0$ |
| GDP | -0.463 | -2.958 | Accept $H_0$ |
| INFL | -2.157 | -2.958 | Accept $H_0$ |

**Source: Researcher's Computations (2023)**

The null hypothesis for the test was,

$H_0$: Series is non-stationary/has unit root.

$H_1$: Series has no unit root.

As all individual ADF Statistic tests are below the critical values, we fail to reject the null hypothesis, indicating that the series is non-stationary and possesses a unit root. Subsequently, the researcher differenced all variables and subjected the data to another ADF test. The results for the differenced data are presented in Table 4.4 below.

**Table 4. 3: ADF Unit Root Test Results**

| AT FIRST DIFFERENCE | | | |
|---|---|---|---|
| **Variable** | ADF statistic | 5% critical value | Decision |
| **MVA** | -7.595 | -2.961 | Reject H0 |
| **FDI** | -7.669 | -2.961 | Reject H0 |
| **GDP** | -4.211 | -2.961 | Reject H0 |
| **INFL** | -7.296 | -2.961 | Reject H0 |

**Source:** *Researcher's Computations (2023)*

The null hypothesis for this test was,

$H_0$: Series is non-stationary/has unit root.

$H_1$: Series has no unit root.

Since all individual ADF Statistic tests now are greater than critical values, we reject the null hypothesis that the series is non-stationary/has unit root and then conclude all data are stationary. Since all the data are stationary at first difference, the researcher concluded that, the variables are integrated of order one I(1).

**Long-Run Relationship**

**ARDL Bounds Test for Co-integration**

The researcher used the ARDL bound test by Pessaran and Shin to examine the long-run relationship between Manufacturing Value Added (MVA), FDI inflows, GDP, and inflation rate. Co-integration was assessed through F-bounds and t-bounds tests, revealing a long-term equilibrium relationship between the variables. Results in Table 4.5 reject the null hypothesis of no co-integration and suggest at most one co-integrating equation. This indicates a long-run relationship between MVA, FDI, GDP, and inflation rate in Tanzania, confirming co-integration, with absolute f-statistics and t-statistics greater than I(0) and I(1).

**Table 4. 4: F- Bounds Test and t-Bounds Test**

| F-Bounds Test | | Null Hypothesis: No levels relationship | | |
|---|---|---|---|---|
| | Value | Signif. | I(0) | I(1) |
| F-statistic | 9.813579 | 10% | 2.26 | 3.35 |
| K | 3 | 5% | 2.62 | 3.79 |
| | | 2.5% | 2.96 | 4.18 |
| | | 1% | 3.41 | 4.68 |
| | | | | |
| | | | | |

| t-Bounds Test | | Null Hypothesis: No levels relationship | | |
|---|---|---|---|---|
| Test Statistic | Value | Signif. | I(0) | I(1) |
| t-statistic | -4.405526 | 10% | -2.57 | -3.86 |
| | | 5% | -2.86 | -4.19 |
| | | 2.5% | -3.13 | -4.46 |
| | | 1% | -3.43 | -4.79 |

**Source: Researcher's Computations (2023)**

The findings suggest a co-integrating relationship between the variables, supported by F-statistics exceeding critical values for I(0) and I(1). Additionally, the validation through t-statistics indicates the presence of a long-run equilibrium relationship, with t-statistic values surpassing critical values.

**Long-Run Relationship**

**ARDL Bounds Test for Co-integration**

The researcher investigated the existence of long run relationship using the ARDL bound test approach by Pessaran and Shin. The researcher employed the F-bounds test and t-bounds test for co-integration to test the long run relationship between Manufacturing Value Added, FDI inflows, GDP and inflation rate. The two variables are said to be co-integrated if they have a long-term, or long run equilibrium, relationship between them.

Results in Table 4.5 below have led to the rejection of the null hypothesis of no co-integration and fail to reject the null hypothesis of at most one co-integrating equation. Thus, the researcher concluded that there is long-run relationship between variables in the model. This implies there is a long-run relationship between MVA, FDI, GDP, and Inflation rate in Tanzania. The results confirm variables are co-integrated. As the f-statistics and t-statistics in absolute terms are greater than I(0) and I(1).

**Table 4. 5: F- Bounds Test and t-Bounds Test**

| F-Bounds Test | | Null Hypothesis: No levels relationship | | |
|---|---|---|---|---|
| | Value | Signif. | I(0) | I(1) |
| F-statistic | 9.813579 | 10% | 2.26 | 3.35 |
| K | 3 | 5% | 2.62 | 3.79 |
| | | 2.5% | 2.96 | 4.18 |
| | | 1% | 3.41 | 4.68 |
| | | | | |
| | | | | |
| t-Bounds Test | | Null Hypothesis: No levels relationship | | |
| Test Statistic | Value | Signif. | I(0) | I(1) |

| | | | | |
|---|---|---|---|---|
| t-statistic | -4.405526 | 10% | -2.57 | -3.86 |
| | | 5% | -2.86 | -4.19 |
| | | 2.5% | -3.13 | -4.46 |
| | | 1% | -3.43 | -4.79 |

**Source: Researcher's Computations (2023**

The result indicated that, the there is a co-integrating relationship between the variables as the F-statistic from the F-bound are greater than critical values in I(o) and I (1). Moreover, the results were validated by the t-statistic which also shows the existence of long-run equilibrium relationship with the value of t-statistic being greater than critical values.

**ARDL Long Run Coefficients**

The Autoregressive Distributed Lag Model revealed a significant long-run relationship between all independent variables and the dependent variable, with a high overall model significance (F-statistic p-value < 0.0000) which is less than 5% level of significance and an adjusted R-squared of 0.7440 meaning that, the variation of dependent variable has been explained by independent variables (FDI inflows, real GDP and Inflation) by 74.4% while the remaining 25.6 percent is not explained in the model. Specifically, there's a positive association between manufacturing value added and real GDP, indicating a 1.961 unit increase in manufacturing value added for every unit rise in real GDP. Conversely, a negative relationship exists between inflation and manufacturing value added, resulting in a 0.08 unit decrease with a unit increase in inflation. All coefficients are significant predictors ($p < 0.05$) of manufacturing value added in Tanzania

**Table 4.6: ARDL Long Run Coefficient**

| Variable | Coefficient | Std. Error | t-Statistic | Prob.* |
|---|---|---|---|---|
| MVA(-1) | 0.424419 | 0.130650 | 3.248531 | 0.0027 |
| FDI | 0.701057 | 0.144516 | 4.851060 | 0.0000 |
| GDP | 1.969806 | .403123 | 4.886364 | 0.0003 |
| INF | -0.083775 | 0.039547 | -2.118379 | 0.0418 |
| C | 5.862603 | 3.521224 | 1.664933 | 0.1054 |
| R-squared | 0.783413 | Mean dependent var | | 4.927750 |
| Adjusted R-squared | 0.744034 | S.D. dependent var | | 1.899301 |
| S.E. of regression | 0.960915 | Akaike info criterion | | 2.915768 |
| Sum squared resid | 30.47083 | Schwarz criterion | | 3.211321 |
| Log likelihood | -51.31535 | Hannan-Quinn criter. | | 3.022631 |
| F-statistic | 19.89398 | Durbin-Watson stat | | 2.082582 |
| Prob(F-statistic) | 0.000000 | | | |

**Source: Researcher's Computations (2023)**

## Short-Run Relationship

### Error Correction Model

The researcher explored short-run dynamics from the co-integrated series, with results in Table 4.7 displaying short-run coefficient estimates from the ECM version of the ARDL model. The error correction term, indicating the speed of adjustment to restore equilibrium, is highly significant with a negative sign, aligning with the expectations outlined by Bannerjee et al. (1998). The ECM coefficient (-0.66) signifies that deviations from long-term growth in manufacturing value added are corrected by 0.66 percent over the following year, highlighting a relatively rapid adjustment from the short-run to long-run equilibrium.

**Table 4. 6: ECM Regression**

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 19.10313 | 3.454499 | 5.529928 | 0.0001 |
| @TREND | -0.114040 | 0.029302 | -3.891879 | 0.0019 |
| D(MVA(-1)) | 0.743458 | 0.232963 | 3.191320 | 0.0071 |
| D(MVA(-2)) | 0.469566 | 0.200479 | 2.342221 | 0.0357 |
| D(GDP) | -0.153434 | 0.132927 | -1.154276 | 0.2692 |
| D(FDI) | 0.034521 | 0.157048 | 0.219814 | 0.8294 |
| D(FDI(-1)) | -0.701828 | 0.209269 | -3.353711 | 0.0052 |
| D(FDI(-2)) | -0.260580 | 0.134003 | -1.944575 | 0.0738 |
| D(INFL) | 0.009375 | 0.047143 | 0.198868 | 0.8454 |
| D(INFL(-1)) | 0.074351 | 0.041870 | 1.775739 | 0.0992 |
| D(INFL(-2)) | 0.072764 | 0.048311 | 1.506149 | 0.1559 |
| CointEq(-1)* | -0.664289 | 0.304372 | -5.467935 | 0.0001 |

**Source: Researcher's Computations (2023)**

### Granger Causality Test

The researcher examined Granger Causality between Manufacturing Value Added and FDI inflows using the Vector Autoregressive Model (VAR). Appropriate lag length was determined through VAR model estimation, and the results are presented in Table 4.8.

**Table 4. 7: Vector Auto-regression Estimates**

| | MVA | GDP | FDI | INFL |
|---|---|---|---|---|
| MVA(-1) | 0.460243 | -0.015926 | 0.657984 | -0.895051 |
| | (0.20954) | (0.31136) | (0.25037) | (0.89854) |
| | [ 2.19644] | [-0.05115] | [ 2.62805] | [-0.99611] |
| | | | | |
| MVA(-2) | -0.262494 | -0.005328 | -0.184853 | 0.759360 |
| | (0.21995) | (0.32684) | (0.26281) | (0.94320) |
| | [-1.19340] | [-0.01630] | [-0.70336] | [ 0.80509] |
| GDP(-1) | -0.291422 | 0.322376 | 0.158104 | 0.046667 |
| | (0.21088) | (0.31335) | (0.25197) | (0.90428) |
| | [-1.38195] | [ 1.02880] | [ 0.62748] | [ 0.05161] |
| GDP(-2) | 0.088789 | -0.034652 | -0.073960 | -0.895166 |
| | (0.12872) | (0.19127) | (0.15380) | (0.55199) |
| | [ 0.68977] | [-0.18116] | [-0.48087] | [-1.62172] |
| FDI(-1) | 0.238451 | 0.352937 | 0.293450 | 0.016803 |
| | (0.17212) | (0.25576) | (0.20566) | (0.73808) |
| | [ 1.38537] | [ 1.37995] | [ 1.42688] | [ 0.02277] |
| FDI(-2) | 0.130831 | 0.251543 | 0.194074 | -0.482240 |
| | (0.16950) | (0.25187) | (0.20253) | (0.72685) |
| | [ 0.77186] | [ 0.99870] | [ 0.95825] | [-0.66346] |
| INFL(-1) | -0.083476 | -0.026131 | 0.107557 | 0.868317 |
| | (0.05237) | (0.07782) | (0.06258) | (0.22458) |
| | [-1.59388] | [-0.33577] | [ 1.71877] | [ 3.86633] |
| INFL(-2) | 0.015945 | -0.022823 | -0.058814 | -0.216838 |
| | (0.04389) | (0.06522) | (0.05244) | (0.18821) |
| | [ 0.36327] | [-0.34994] | [-1.12147] | [-1.15208] |
| C | 7.691858 | 2.890054 | -3.534826 | 10.27747 |
| | (2.53695) | (3.76977) | (3.03128) | (10.8789) |
| | [ 3.03193] | [ 0.76664] | [-1.16612] | [ 0.94472] |

**Source: Researcher's Computations (2023)**

The researcher employed the VAR model to determine the optimal lag length, considering criteria such as Akaike Information Criterion (AIC), Final Prediction Error (FPE), Hannan-Quinn information criteria, and Schwarz Criterion (SC). The selected lag length was then used for estimating Granger Causality between the variables.

**Table 4. 8: VAR Lag Selection**

| Lag | LogL | LR | FPE | AIC | SC | HQ |
|---|---|---|---|---|---|---|
| 0 | -214.3231 | NA | 124.0529 | 16.17208 | 16.36406 | 16.22917 |
| 1 | -178.2840 | 58.73034* | 28.60236* | 14.68771 | 15.64758* | 14.97313* |
| 2 | -169.3172 | 11.95572 | 52.62007 | 15.20868 | 16.93647 | 15.72244 |
| 3 | -151.1392 | 18.85129 | 57.01284 | 15.04735 | 17.54303 | 15.78945 |
| 4 | -127.8338 | 17.26323 | 57.05883 | 14.50621* | 17.76980 | 15.47665 |

**Source: Researcher's Computations (2023)**

The result indicated that, most of the criteria has selected lag 1, therefore the researcher used lag 1 to estimate the causality. The result for Granger Causality was presented in Table 4.10 below.

**Table 4. 9: Granger Causality**

| | | | |
|---|---|---|---|
| FDI does not Granger Cause MVA | 31 | 2.55579 | 0.1211 |
| MVA does not Granger Cause FDI | | 5.35752 | 0.0282 |

**Source: Researcher's Computations (2023)**

The result of the Granger Causality on the statement "FDI does not granger causes manufacturing sector Performance" the findings fail to reject the null hypothesis and conclude that, the FDI does not Granger causes the manufacturing value added. On the other hand, the results on the statement that, "MVA does not Granger causes FDI" the researcher rejected the null hypothesis and concluded that, the MVA Granger causes the FDI. For this case, the researcher concluded that, there is a bi-directional causal effect from MVA to FDI.

**ARDL Diagnostic Checking**

The researcher also performed diagnostic tests for serial correlation, normality, hetroscedasticity and structural stability of the models to make sure the regression model does not violate any assumptions of the classical linear regression model and that, the estimated parameters would be stable over time.

**Serial Correlation Test**

The model used the Breusch-Godfrey Serial Correlation LM test and the Durbin Watson test to test for existence of serial correlation in the model. An insignificant value of Breusch-Godfrey LM test would mean than the researcher cannot reject null hypothesis that model is free from serial correlation and by using Durbin Watson test, DW value higher than 1.8 means than the model has no autocorrelation problem i.e. it doesn't have serial correlation. The serial correlation test for the hypothesis that;

$H_0$-There is no serial correlation in the mode

$H_1$-There is serial correlation in the model

The result in Table 4.11 indicated that, the probability of Chi-square is above 5% significant level, then we fail to reject the null hypothesis that there is no serial correlation in the model. This findings is consistent with the result of Durbin Watson test in Table 4.6 which shows the DW statistic of 2.08 indicating the absence of serial correlation problem.

**Table 4. 10: Breusch-Godfrey Serial Correlation LM Test**

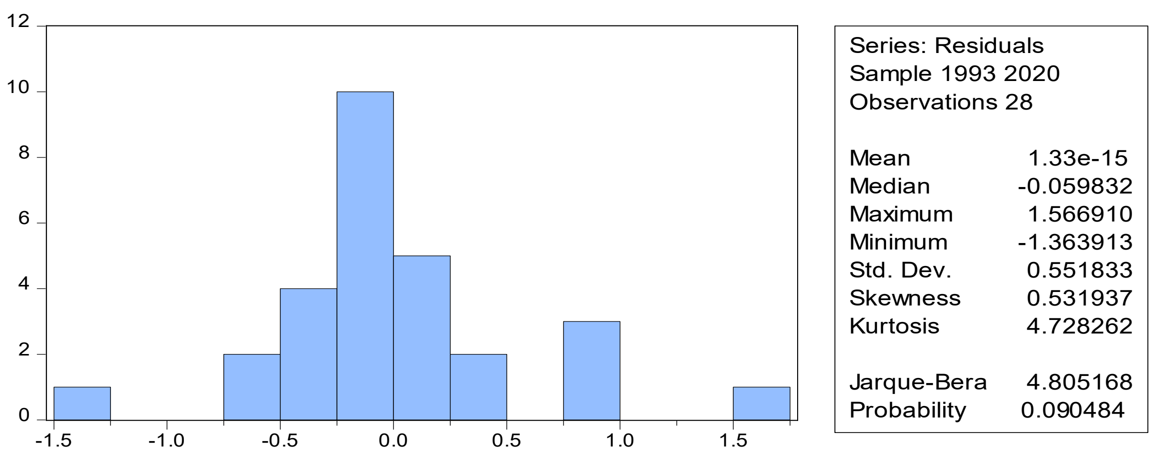
| | | | |
|---|---|---|---|
| F-statistic | 1.330649 | Prob. F(2,11) | 0.3037 |
| Obs*R-squared | 5.454560 | Prob. Chi-Square(2) | 0.0654 |

**Source: Researcher's Computations (2023)**

**Test for Normality Assumption**

The researcher assessed data normality using Jarque-Bera and histograms, with a non-significant probability indicating normal distribution. Figure 4.1's histogram of residuals supports normal distribution, corroborated by Jarque-Bera's probability value (0.090 > 0.05). The standardized residuals' plots affirm the model's adequacy for the data.

**Figure 4. 1: Test for Normality Assumption**




**Source: Researcher's Computations (2023)**

**Harvey Test for Heteroscedasticity**

Among the assumption underlying the classical regression model is that it assume the existence of the constant variance in a model (homoscedasticity). In order to ensure the assumption is met, the researcher performed a Breusch-Pagan heteroscedasticity to check for the following hypothesis;

Ho: residue has constant variance

H1: residue has no constant variance

Results of the test, the p-values were greater than a 5% level of significance, therefore we cannot reject the null hypothesis and declare that residues have constant variance (residues are homoscedastic).

**Table 4. 11: Heteroskedasticity Test: Breusch-Pagan-Godfrey**

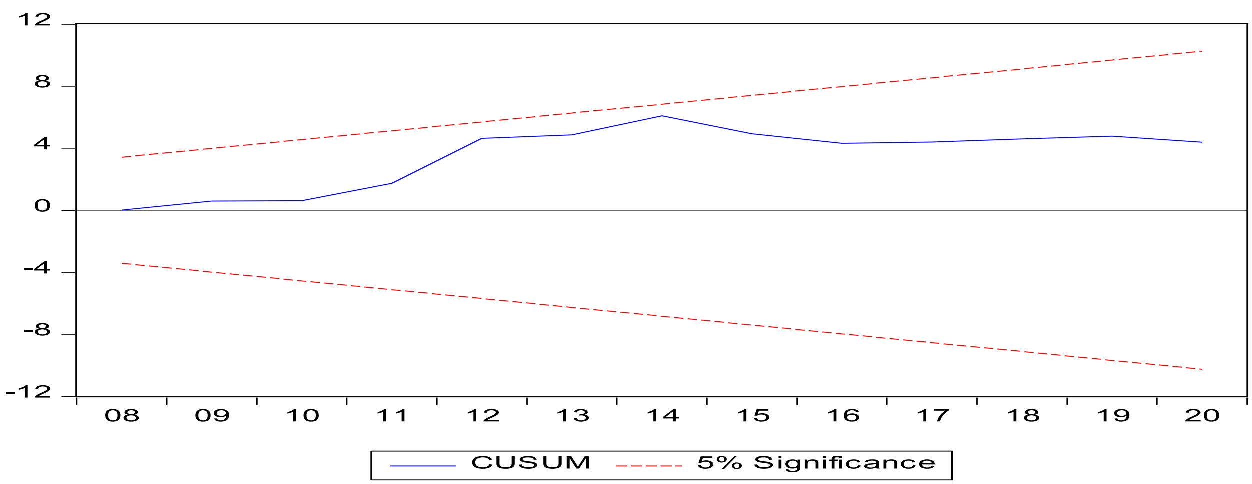
| | | | |
|---|---|---|---|
| F-statistic | 3.261376 | Prob. F(14,13) | 0.0720 |
| Obs*R-squared | 21.79467 | Prob. Chi-Square(14) | 0.0829 |
| Scaled explained SS | 8.757848 | Prob. Chi-Square(14) | 0.8462 |

**Source: Researcher's Computations (2023)**

**Parameters Stability Test**

Long-run parameter stability was tested using CUSUM and CUSUMQ, displayed in Figures 4.2. Following Pesaran and Pesaran (1997), the coefficients' stability in the error correction model was empirically examined. The CUSUM plot, depicted in Figure 4.2, reveals stability, adhering to Bahmani-Oskooee (2004) guidelines. The statistics within the critical bounds at the 5% significance level confirm the correct specification of the regression equation.

**Figure 4. 2: Parameter Stability Test**




**Source: Researcher's Computations (2023)**

The findings fail to reject the null hypothesis at 5% level of significance because the plots of the tests fall within the critical limits. Therefore, it can be concluded that our selected ARDL model is stable and there is no structure break in the model.

**Discussion**

The study aimed to explore the impact of FDI inflows on Tanzania's manufacturing sector from 1990 to 2021, guided by specific objectives: examining short-run dynamics, investigating the long-run relationship, and assessing Granger causation. Utilizing 32 observations of time series data, the study found that all variables are integrated of order one, following I(1) process and the ARDL bound test indicated a positive and significant long-run relationship between FDI inflows and manufacturing value added. This implies that a 1 unit increase in FDI inflows in Tanzania is associated with a 0.701 unit increase in manufacturing value added in the long run, considering other factors constant. The positive relationship aligns with the role of manufacturing sectors in economic development, creating jobs, and transforming economies.

Moreover, the study revealed a positive and significant long-run relationship between manufacturing value added and real GDP, indicating that a unit increase in real GDP leads to a 1.961 unit increase in manufacturing value added. However, a long-run negative relationship was observed between inflation and manufacturing value added, suggesting that a unit increase in inflation corresponds to a 0.08 unit decrease in manufacturing value added. Short-run dynamics, as indicated by the error correction model, demonstrated a rapid adjustment from short-run to long-run equilibrium, with a 0.66 percent correction of deviations from long-term growth over the following year. Pairwise Granger causality analysis confirmed a bi-directional causal effect between manufacturing value added and FDI, consistent with prior studies by Mounde (2017) and Ebekozien, Ugochukwu, and Okoye (2015).

## 5. Conclusions

The study concludes that Foreign Direct Investment (FDI) has a significant positive long-run relationship with manufacturing value added (MVA) in Tanzania. The ARDL bounds test confirms co-integration, establishing a lasting equilibrium relationship between FDI, MVA, GDP, and inflation rate. Specifically, a 1.961 unit increase in MVA is associated with every unit rise in real GDP, while a 0.08 unit decrease occurs with a unit increase in inflation. The error correction model suggests a rapid adjustment of 0.66 percent from short-run to long-run equilibrium. Granger causality results indicate a bi-directional causal effect between MVA and FDI, with MVA causing FDI. Diagnostic tests affirm the model's stability, normality, and absence of serial correlation or heteroscedasticity. Overall, the study underscores the positive role of FDI in fostering manufacturing sector growth in Tanzania, contributing to economic development and employment generation.

## 6. Recommendations

The study recommends that policymakers in Tanzania focus on fostering an environment conducive to attracting and retaining Foreign Direct Investment (FDI) in the manufacturing sector. Creating policies that enhance the ease of doing business, providing incentives for technology transfer, and facilitating the integration of FDI into the local economy can contribute to sustained growth in manufacturing value added. Additionally, policies aimed at reducing inflationary pressures can further support the positive relationship between FDI and manufacturing sector development. Policymakers should consider targeted interventions to address inflationary concerns, ensuring a stable economic environment that fosters FDI's positive impact on the manufacturing sector.

In terms of future research, the study suggests exploring the nuanced mechanisms through which FDI contributes to manufacturing sector growth, such as the specific channels of technology transfer and skills development. Further investigation into the impact of specific policy interventions on attracting and maximizing the benefits of FDI in the manufacturing sector would provide valuable insights for policymakers. Additionally, extending the study period or examining the impact of external factors, such as global economic trends or geopolitical events, on the relationship between FDI and manufacturing value added could enhance the understanding of the dynamics at play. Future research should explore detailed mechanisms of FDI impact, including technology transfer and skills development channels, and investigate the effects of specific policy interventions, extended study periods, and external factors.

## References


ADB (2019). African Economic Outlook 2019. Oxford. Oxford University Press.

Adejumo, A. V. (2013). "Foreign Direct Investment and Manufacturing Sector in Nigeria," African Journal of Business Management, 7(16), 1478-1487.

Aitken, B. J., & Harrison, E. (1999). "Do domestic firms benefit from direct foreign investment? Evidence from Venezuela," The American Economic Review, 89(3), 605-618.

Aitken, B.J. and Harrison, E. (1999). "Do domestic firms benefit from direct foreign investment? Evidence from Venezuela", The American Economic Review, Vol. 89, pp. 605-618.

Blomström, M. and Wolff, E. (1994). "Multinational corporations and productivity convergence in Mexico", in Baumol, W. and Nelsonet Wolff, R.E. (Eds), Convergence of Productivity: Cross-National Studies and Historical Evidence, Oxford University Press, Walton Street.

Blomström, M., & Wolff, E. (1994). "Multinational corporations and productivity convergence in Mexico," in Baumol, W., & Nelsonet Wolff, R.E. (Eds), Convergence of Productivity: Cross-National Studies and Historical Evidence, Oxford University Press, Walton Street, pp. 223-241.

Chakraborty, C. and Nunnenkamp, P. (2008). "Economic reforms, FDI, and economic growth in India: a sector level analysis", World Development, Vol. 36 No. 7, pp. 1192-1212.

Chakraborty, C., & Nunnenkamp, P. (2008). "Economic reforms, FDI, and economic growth in India: a sector level analysis," World Development, 36(7), 1192-1212.

Chen, Z., Geiger, M., & Fu, X. (2015). "Sub-national institutional safeguards, investment climates, and FDI: Evidence from a non-linear world," Journal of World Business, 50(2), 294-307.

Das, B. K. (2007). Theories of foreign direct investment. Gauhati University.

Dunning, J. H. (1988). The eclectic paradigm of international production: A restatement and some possible extensions. Journal of International Business Studies, 19(1), 1-31.

Duran, J. J., & Ubeda, F. (2005). The investment development path of newly developed countries. International Journal of the Economics of Business, 12(1), 123-137.

Ekienabor, B., & Sunday, O. O. (2016). "Foreign direct investment, economic growth, and political stability in African countries," Journal of Economic Studies, 43(1), 59-76.

Ekienabor, B., & Sunday, O. O. (2016). [Title of the Source, if available], [Publisher or URL, if available].

Eze, O. R., & Nkalu, N. C. (2019). "An Empirical Investigation of the Impact of Foreign Direct Investment on the Nigerian Manufacturing Sector (1981-2015)," International Journal of Innovative Research and Advanced Studies, 6(11), 16-25.

Javorcik, B. S. (2004). "Does foreign direct investment increase the productivity of domestic firms? In search of spillovers through backward linkages," The American Economic Review, 94(3), 605-627.

Javorcik, B.S. (2004). "Does foreign direct investment increase the productivity of domestic firms? In search of spillovers through backward linkages", The American Economic Review, Vol. 94 No. 3, pp. 605-627.

Lipsey, R. E. (2001). Interpreting developed countries' foreign direct investment. In Investing Today for the World of Tomorrow: Studies on the investment process in Europe (pp. 285-325). Berlin, Heidelberg: Springer Berlin Heidelberg.

Masron, T. A., & Hassan, M. K. (2016). "US foreign direct investment (FDI) and manufacturing sector in Malaysia," Asian Academy of Management Journal, 21(1), 89-110.

Masron, T.A. and Hassan, M.K. (2016). "US foreign direct investment (FDI) and manufacturing sector in Malaysia", Asian Academy of Management Journal, Vol. 21 No. 1, pp. 89-110.

Mwang'onda, D. L., & Mwaseba, D. L. (2018). "The impact of foreign direct investment on economic growth in Tanzania: A case study of the manufacturing sector," Journal of Development and Agricultural Economics, 10(8), 243-253.

Ogbona, G. (2019). Effect Of Terrorism on Foreign Direct Investment, [Publisher or URL, if available].

Okoli, U., & Agu, C. (2015). "Foreign Direct Investment in Nigeria: Analysis of the Determinants and Impact on Economic Growth," International Journal of Economics, Commerce and Management, 3(8), 1-12.

Samantha, N. P. G., & Liu, H. (2018). "The effect of foreign direct investment on industrial sector growth: evidence from Sri Lanka," Journal of Asian Development, 4(2), 88-106.

Samantha, N.P.G. and Liu, H. (2018). "The effect of foreign direct investment on industrial sector growth: evidence from Sri Lanka", Journal of Asian Development, Vol. 4 No. 2, pp. 88-106.

UNCTAD (2015). World Investment Report 2015: Reforming International Investment Governance, United Nations.

UNCTAD (2017). World Investment Report 2017: Investment and the Digital Economy, United Nations.

World Investment Report (2015). World Investment Report 2015: Reforming International Investment Governance, United Nations.

World Investment Report (2015). World Investment Report 2015: Reforming International Investment Governance, United Nations.