An In-Depth Analysis of Tanzania's Export Growth Trajectory from 1992 to 2021

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ABSTRACT

This paper analyses Tanzania's export performance from 1992-2021. Exports remain an important aspect of earning foreign currency. To ensure the country's robust economic growth, it is also imperative to increase export value. To analyse Tanzania's export performance, time series data from the World Bank was used. The comparative advantage theory guided this study in analysing export performance. Also, the ARIMA model was used to figure out the relationship between export, FDI, and nominal exchange rate, and the study revealed that export, Foreign Direct Investment (FDI) inflows, and exchange rates have a relationship with export performance. The ARIMA model was used because of its effectiveness in forecasting and capturing patterns, trends, and seasonality. This study is important because it examines the importance of FDI and exchange rates on export performance. Furthermore, this study provides policymakers with actionable recommendations based on empirical evidence, helping them make informed decisions regarding export promotion initiatives, particularly in creating a conducive environment for FDI and the importance of managing nominal exchange rates. To stimulate the country's exports, governments should support and promote strategies that encourage FDI and strictly manage the appreciation and depreciation of currencies.

Keywords: ARIMA, Export, Appreciation, Depreciation, Economic Growth, FDI

I. INTRODUCTION

Agriculture, mining, manufacturing, and tourism sectors mainly enhance Tanzania's exports (Kingu, 2014; Gupta, 2020; Nurdin, 2020; Kitole & Utouh, 2023). According to the National, Trade, & Policy (NTP, 2003), it indicates that agriculture contributes about 70% of merchandise earnings from exports. Tanzania's main export products are coffee, cotton, sisal, cashew nuts, cloves, diamonds, and gold (ibid.). Though Tanzania lacks precise and sufficient data to demonstrate the extent to which exports have increased over the years, in some cases, as indicated in Figure 1, Tanzanian export volume has significantly decreased from 22.4 percent of GDP in 2012 to 14.3 percent of GDP in 2021. However, according to the national account data from the World Bank, during this period, Tanzania's total exports amounted to USD 9.8 billion (World Bank, 2021).

Foreign Direct Investment (FDI) has been regarded as a source of external finance to supplement domestic capital formation in the host country that can not only bring financial resources but also transmit technological know-how, create employment opportunities, upgrade managerial skills, and increase competitiveness in the host country (Epaphra et al, 2017; Babatunde & Zhao, 2007; Afolabi et al., 2022; Kitole & Utouh, 2023; Ahmed et al., 2023; Utouh & Tile 2023).

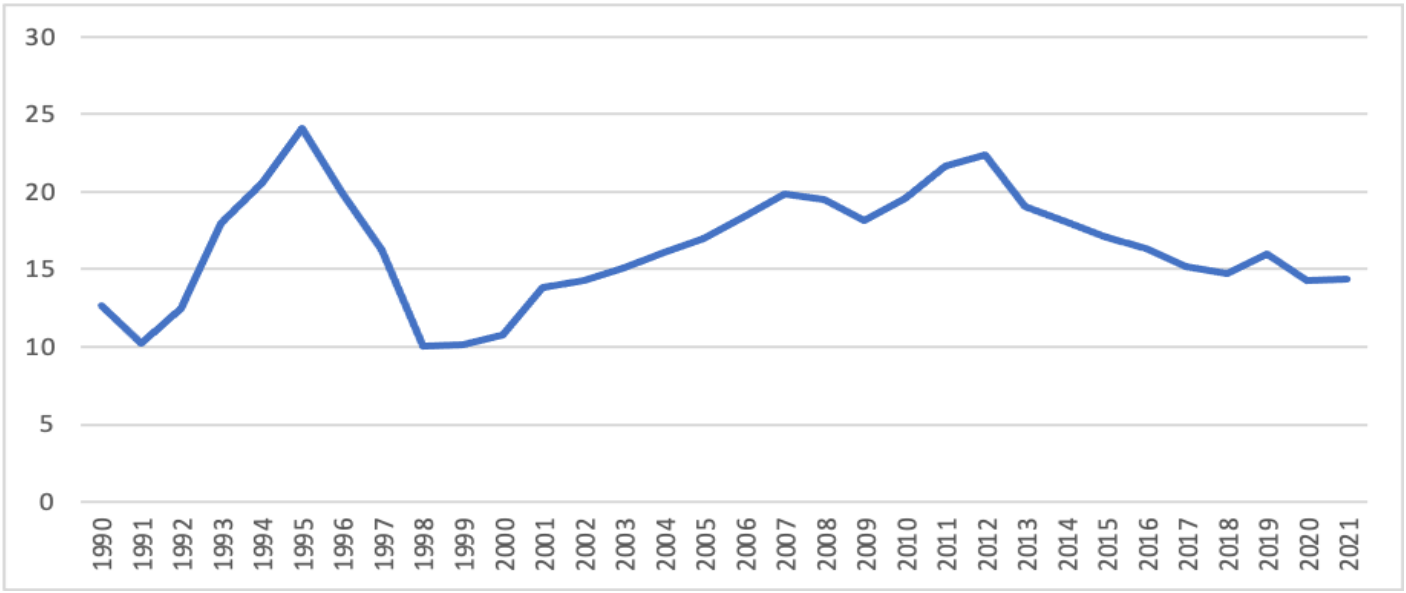


Figure 1
Trends of Export in Tanzanian as the percentage of GDP from 1990 to 2021

Source: World Bank, (2021)

Tanzania's exports face several challenges, including but not limited to failure to meet the international quality standard, failure to compete, lack of information on the availability of preferential markets, the existence of non-tariff barriers, especially along the border, a lack of commitment or will by some private sector to meet the demands of specified markets, a higher cost of doing business, a lack of cold chain and storage facilities at the port and airports for the storage of manufactured and horticultural goods, a lack of e-commerce skills and platforms, and the onset of the COVID-19 pandemic (National Five Year Development Plan [NFYDP], 2021; Tile et al., 2023)

This study is imperative due to the fact that it specifically focuses on the trend of Tanzania's export performance from 1992 to 2021. This study has outstanding benefits, including understanding the role of FDI and exchange rates on the country's export performance. The study emphasises the influence of exchange rates and foreign direct investment on export performance. It ascertains how FDI and exchange rates affect export performance, highlighting the necessity of encompassing macroeconomic strategy and policy. Since the study involves time series data, it is possible to analyse the patterns in export performance over a given period. Furthermore, this study provides policymakers with actionable recommendations based on empirical evidence, helping them to make informed decisions regarding export promotion initiatives, particularly in creating a conducive environment for FDI and managing exchange rates.

II. LITERATURE REVIEW

2.1 Empirical Review

The study, which was conducted by Osman (2023) on the Determinant of Export Performance in Uganda from 1989-2020, indicated a positive relationship between FDI net inflows, inflation, the real exchange rate, terms of trade, and GDP on export performance, which means that FDI contributes to the improvement of the export.

Likewise, the study conducted in Turkey by Karimov (2020) on the impact of foreign direct investment on trade (export and import) revealed that exports can be stimulated by inward FDI from domestic sectors through spillover effects. It builds strong demand incentives for domestic investors and stimulates exports. Additionally, export-oriented FDI can create products that further boost the exports of the host country and increase productivity growth. Thus, productivity will enhance the competitiveness of products at the international level in terms of price and quality and thus raise exports. However, the study conducted by Gebremariam and Ying (2022) on the foreign direct

investment export performance nexus in Ethiopia revealed that the relationship between FDI and export performance was insignificant.

Bhattacharyya and Rit (2018) conducted a study in India to investigate the relationship between the nominal exchange rate and exports, and their findings suggest that the nominal exchange rate indirectly influences exports through domestic prices. Also, Ikenna et al. (2023) conducted a study on inflation, exchange rate, and agricultural exports in Nigeria, which indicated the exchange rate has a positive and significant relationship with agricultural export value. Moreover, the study that was conducted by Gebremariam and Ying (2022) on the foreign direct investment export performance nexus in Ethiopia illustrated that the depreciation of the exchange rate improved the export performance.

The majority of studies conducted, such as (Bhattacharyya & Rit, 2018; Gebremariam & Ying, 2022; Ikenna et al., 2023), have shed light on the significant role of exports in fostering economic growth. However, this study sets itself apart from earlier studies by elucidating the impact of FDI and exchange rates on Tanzania's export performance.

2.2 Theoretical Review

The theory of comparative advantage posits that trade between two nations can be viable and beneficial, even if one of them excels in producing both goods at a lower cost. The theory was coined in the 19th century by a British economist called David Ricardo (Dornbusch et al., 1977; Costinot & Donaldson, 2012; Toraubally, 2022). According to the theory, the country with a cost advantage in the production of both goods should specialise in the one where its relative cost advantage is greater. Conversely, a country with a cost disadvantage in both goods should specialise in the production of the good where its comparative cost disadvantage is smaller (indicating a comparative advantage) and import the good where its comparative disadvantage is greater (indicating a comparative disadvantage) (Porter, 2011; Laursen, 2015; Ahmad et al., 2021).

In their study, Sukmaya et al. (2022) employed the comparative advantage theory to analyse the export performance and comparative advantage of Indonesian tropical fruits. In essence, the study underscored the necessity for Indonesia to enhance the competitiveness of its tropical fruit exports and its dominant position in the international market. The theory of international trade, while providing a foundation for international trade, overlooks significant factors as suggested by Dunn and Mutti (2004), which include zero transports, non-trade barriers, fixed quantities of the factors of production, perfect competition in both commodity and factor markets, and balanced trade, among other assumptions. In reality, these factors significantly impact international trade and trade patterns.

However, the theory remains relevant in the study of export performance since it provides a framework for comprehending the potential gains from trade by specialising in producing goods and services in which Tanzania has a comparative advantage and can maximise its gains from international trade. Focusing on sectors where Tanzania holds a comparative advantage, such as agriculture, mining, and tourism, allows the country to compete effectively in global markets, improve its export performance, and improve its overall economic welfare. Additionally, it offers direction for the efficient distribution of scarce resources, guaranteeing maximum output in profitable industries.

Furthermore, it provides insight for policymakers in formulating trade policies that promote international trade. These measures could involve building infrastructure, modifying tariffs, and offering export incentives. These measures have the potential to impact FDI choices, which in turn can result in enhanced productivity, technology transfer, and innovation, all of which are essential for Tanzania's growth in exports. Economic growth can be stimulated by specialisation, efficient allocation of resources, and favourable trade policy. In this setting, Tanzania's export potential will grow in tandem with its economic growth.

III. METHODOLOGY

3.1 Research Design

This study used a statistical study design to forecast or predict Tanzania's export performance from 1992 to 2021. The time-series secondary data from the World Bank was used to analyse the export performance of Tanzania throughout the specified time period. In order to ascertain whether the data under consideration is non-stationary, the Augmented Dickey Fuller (ADF) unit root test was employed to assess the data for stationarity, and the ARIMA model was employed to elucidate the relationship between the variables.

The ARIMA model was employed to examine the influence of FDI and exchange rates on exports. Based on the analysis of past time series data, the ARIMA approach forecasts or predicts future outcomes based on the respective trends and patterns of the data. The fundamental principle underlying the expressed idea is the concept of serial correlation in statistics, which posits that past data have an impact on future data.

The ARIMA model was employed to empirically estimate Tanzania's export performance from 1992 to 2021. The model was selected due to its efficacy in forecasting and capturing patterns, trends, and seasonality. In many cases, the projections derived from this method proved to be more reliable than those derived from traditional economic modelling (Gujarati, 2009). Weerasinghe and Jayasundara (2021) employed the approach in their study in modelling pepper export income in Sri Lanka applying Deterministic Decomposition and Seasonal ARIMA models.

3.2 Econometric Model Specification

This study examines Tanzania's export performance from 1992 to 2021. The following is a representation of the econometric model:

$Y = \beta_1 X_t + \beta_2 X_t + e_i$

Where, Y = Export value;

X_t are explanatory variables and are defined as

X_1 = Exchange rate

X_2 = FDI

e = error term

Table 1

Description of Variables Used in Study

Description	Operational definition
Dependent variable	
Export Performance	Total exports of goods and services in USD
Independent variables	
Exchange rate	Exchange for the period of analysis (Tshs to USD)
Foreign direct investment inflows	Foreign direct investment to Tanzania in USD

IV. FINDINGS AND DISCUSSION

4.1 Descriptive statistics

The study used secondary data from the World Bank with 30 observations to determine Tanzania's export performance from 1992 to 2021. Table 2 summarises the characteristics of the data used.

Table 2

Descriptive Statistics of the Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Total exports	30	4,679.397	3,339.477	576.3	9,873.381
Exchange rate	30	1,287.311	635.587	297.708	2,297.764
FDI inflows	30	772.822	583.284	12.2	2,087.261

Source: Research findings (2024)

Table 2 shows that on average, the export was USD 4,679.39 million, ranging from USD 576.3 million to USD 9,873.38 million. On average, the USD to Tshs exchange rate was 1,287.31, ranging from Tshs 297.71 to Tshs 2,297.76. On average, FDI inflows were USD 772.82 million, which ranged from USD 12.2 million to USD 2,087.26 million.

4.1.1 The Time Series Plot of Variables to Analyze the Trend

Figure 2 illustrates the raw data for total export, exchange rate, and FDI, indicating that the data are non-stationary.

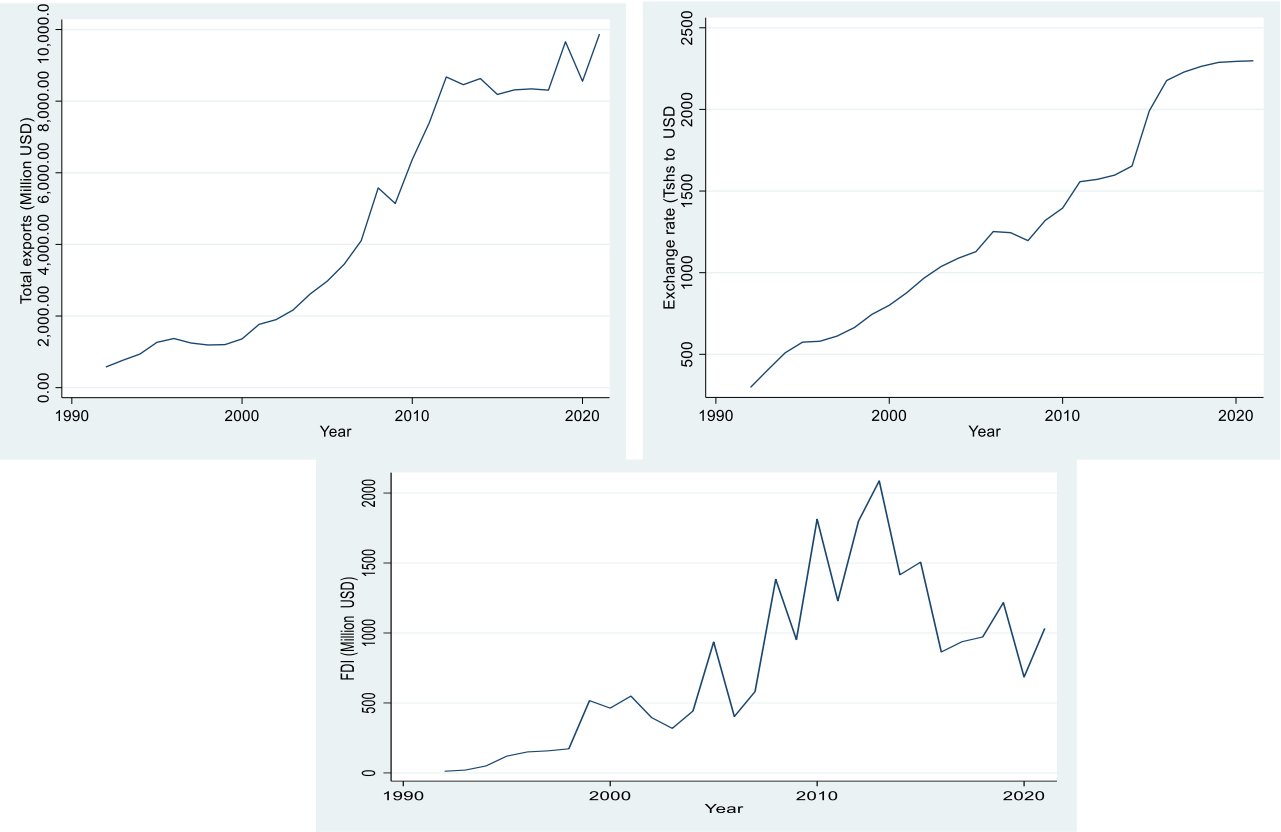


Figure 2
Time Series Plot of Variables to Analyze Trend

Table 3
ADF Stationary Test

Variables	Stationary Orders	ADF Test Statistics	Critical Values			P - Value
			1%	5%	10%	
Export value	AR (1)	-6.410	-4.352	-3.588	-3.233	0.0000
Exchange rate	AR (1)	-3.853	-4.352	-3.588	-3.233	0.0141
FDI inflows	AR (0)	-2.096	-2.473	-1.703	-1.314	0.0228

Table 3 above illustrates the order in which the variable was stationary. The export value was stationary at AR (1), the exchange rate at AR (1), and FDI inflows at AR (0), and Figure 2 displays the stationarity of the variables.

Table 4
Lag-Order Selection Criterion

Lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-602.087				3.3e+16	46.5452	46.587	46.6904
1	-527.023	150.13	9	0.000	2.1e+14	41.4633	41.6305	42.044*
2	-519.965	14.118	9	0.118	2.5e+14	41.6127	41.9053	42.6288
3	-503.809	32.311*	9	0.000	1.5e+14*	41.0622*	41.4803*	42.5139
4	-502.359	2.9001	9	0.968	3.3e+14	41.643	42.1864	43.5302

Sample: 1996 thru 2021 Number of obs = 26

* *Indicates the lag order selected by the criterion*

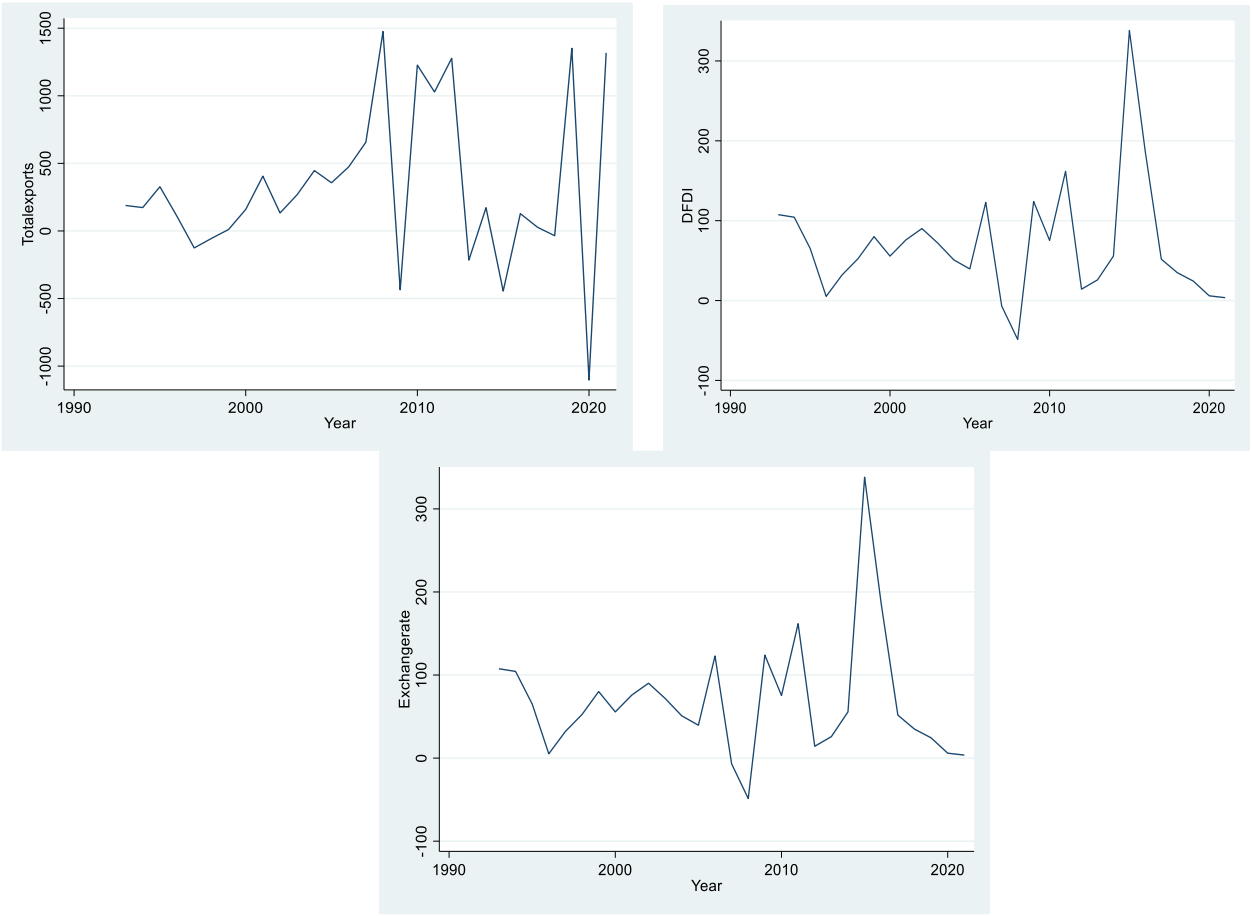
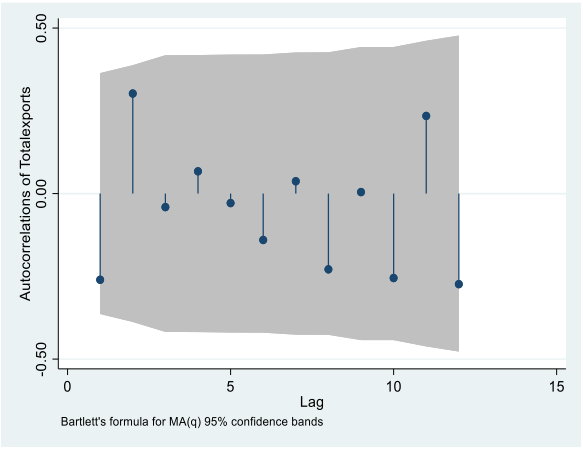


Figure 3
Time Series Plot of Variables Depict Stationarity

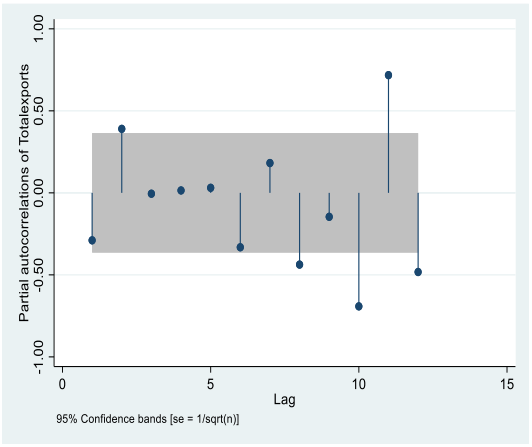
The study used the practical test to establish the correct number of lags to be used by STATA through the final prediction error (FPE), Akaike's information criterion (AIC), Schwartz's Bayesian information criterion (SBIC), and Hannan and Quinn information criterion (HQIC). Table 4 illustrates lag-order selection statistics (varsoc), in which for all variables, the most convenient and optimal lag was at lag three (3).

4.1.2 Autocorrelation Function and Partial Autocorrelation Function

Figure 4 illustrates the Autoregressive (AR) and Moving Average (MA) of exports, exchange rates, and FDI. It was used to identify the orders of AR and MA terms in an ARIMA model.



Differenced Total export Autocorrelation



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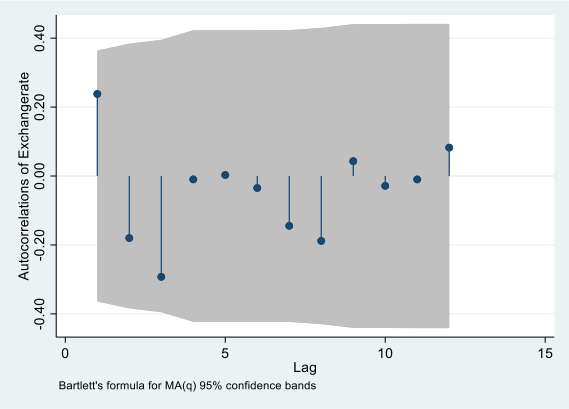
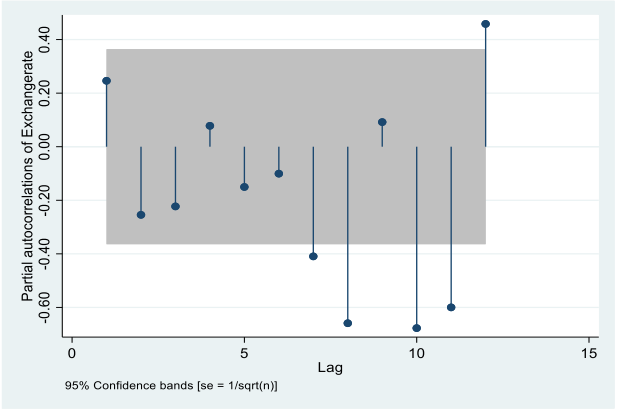
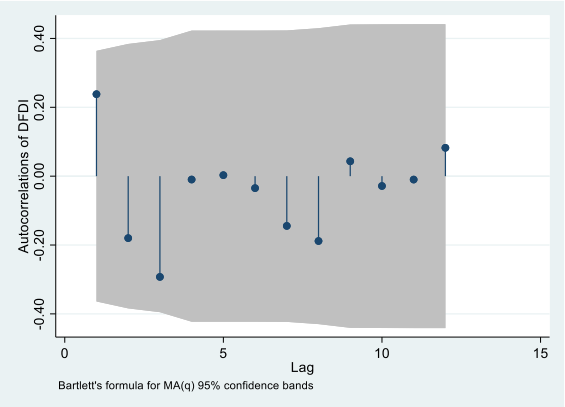
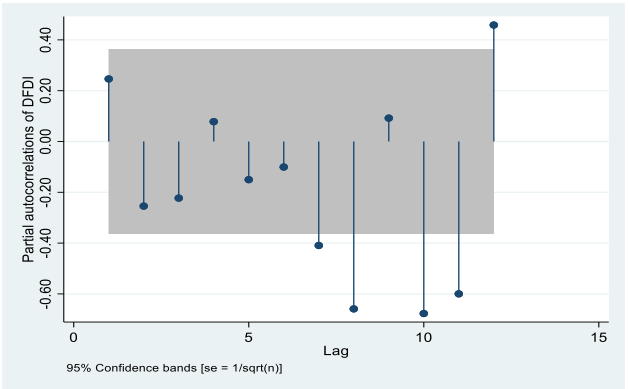




Differenced exchange rate autocorrelation *Differenced exchange rate partial autocorrelation*





Differenced FDI autocorrelation *Differenced FDI partial autocorrelation*

Figure 4
Illustrates the Autocorrelation and Partial Autocorrelation Functions of Export, Exchange Rate, and FDI.
Source: Author Calculation

Table 5
ARIMA Regression Model

Total exports	**Coef.**	**St.Err.**	**t-value**	**p-value**	**[95% Conf**	**Interval]**	**Sig**
Exchange rate	3.848	0.732	5.26	0.000	2.413	5.283	***
FDI	1.131	0.419	2.70	0.007	0.309	1.953	***
Constant	-1032.845	1201.319	-0.86	0.39	-3387.387	1321.696	
L1	0.641	0.221	2.90	0.004	0.207	1.074	***
L2	0.331	0.262	1.26	0.207	-0.183	0.844	
L3	-0.234	0.282	-0.83	0.407	-0.786	0.319	
Constant	528.136	83.476	6.33	0.000	364.526	691.745	***
Mean dependent var		4679.397	SD dependent var			3339.477	
Number of obs		30	Chi-square			171.767	
Prob > chi2		0.000	Akaike crit. (AIC)			476.325	

*** p<.01, ** p<.05, * p<.1*
ARIMA total exports, exchange rate, and FDI ARIMA (3,0,0).

Table 5 shows the relationship between variables. At a 1% significance level, total exports had a relationship with the exchange rate and FDI inflows. The initial lag for exports, exchange rates, and FDI predicts their future value.

Therefore, exchange and FDI inflows contribute greatly to the Tanzanian export volume. Also, FDI indicates a relationship with export performance, which stimulates productivity and eventually increases the volume of exports and their value.

4.2 Discussion

The total exports had a relationship with the exchange rate and FDI inflows at a 1% significance level. The first lag for export, exchange rate, and FDI predicts the relationship between the variables, whereby the first lag (L1) is significant at 1%. This result is similar to Osman (2023), who conducted a study on the determinants of export performance in Uganda (1989–2020) and indicated a positive relationship between foreign direct investment net inflows, real exchange rates, and other variables on export performance. This means that FDI contributes to improving exports. This is in line with the results by Ikenna et al. (2023) on inflation, exchange rate, and agricultural exports in Nigeria, which indicated the exchange rate had a positive and significant relationship with agricultural export value. Furthermore, the results are also in support of the findings from the study that was conducted by Gebremariam and Ying (2022) on the foreign direct investment export performance nexus in Ethiopia, which illustrated that the depreciation of the exchange rate improved the export performance. Also, the relationship of FDI with export performance stimulates productivity and eventually increases the volume of exports and their value. Therefore, the exchange rate and FDI inflows contribute greatly to the Tanzanian export volume.

V. CONCLUSIONS & RECOMMENDATIONS

5.1 Conclusion

Drawing upon the findings, the study concludes that exports have an undeniable contribution to the economic growth of the country by enabling the inflow of foreign currency, which further smoothening international trade. The significance of this study lies in the fact that it highlights the relationship between FDI, exchange rate, and export performance. Export performance is predicted to be affected by FDI and exchange rates, underscoring the importance of a comprehensive macroeconomic policy and strategy. Furthermore, this study offers practical suggestions to policymakers anchored in empirical evidence, assist them in making informed decisions regarding export promotion endeavours.

The study makes a significant scholarly contribution by elucidating the complex interplay among multiple factors that affect the performance of exports in emerging economies. This study offers valuable insights that can be utilised by policymakers, practitioners, and scholars to develop more effective strategies and policies pertaining to the promotion of FDI and exchange rate management, with the ultimate goal of enhancing the country's export performance.

5.2 Recommendations

To this effect, the study recommends that the country needs to create a conducive environment for FDI to stimulate its economic growth, which will further strengthen its export performance. It further recommends that in order to encourage exportation, the country must continue to consolidate its monetary and fiscal policies for managing the exchange rate and value of the national currency.

Given the country's heavy dependence on agriculture, it is crucial to attract FDI in the respective area, particularly in technical know-how. This will strengthen and increase productivity, thereby meeting both internal and external demand.

REFERENCE

Afolabi, B., Oladele, R., & Olaniyan, O. N. (2022). Does foreign direct investment really affect economic growth in Nigeria?. Fuoye Journal of Accounting and Management, 5(1), 282-302.

Ahmad, B., Anwar, M., Hammad Badar, M. M., & Tanveer, F. (2021). Analyzing export competitiveness of major fruits and vegetables of pakistan: An application of revealed comparative advantage indices. *Pak. J. Agri. Sci*, *58*(2), 719-730.

Ahmed, S. F., Mohsin, A. K. M., & Hossain, S. F. A. (2023). Relationship between FDI Inflows and Export Performance: An Empirical Investigation by Considering Structural Breaks. *Economies*, *11*(3), 1–17. https://doi.org/10.3390/economies11030073

Babatunde, A. O., & Zhao, Y. Q. (2007). Constructive approaches toward water treatment works sludge management:

an international review of beneficial reuses. *Critical reviews in environmental science and technology, 37*(2), 129-164.

Bhattacharyya, R., & Rit, B. (2018). On the Relationship between the Nominal Exchange Rate and Export Demand in India. *South Asian Journal of Macroeconomics and Public Finance*, *7*(2), 260–282. https://doi.org/10.1177/2277978718795777

Costinot, A., & Donaldson, D. (2012). Ricardo's theory of comparative advantage: old idea, new evidence. *American Economic Review, 102*(3), 453-458.

Dornbusch, R., Fischer, S., & Samuelson, P. A. (1977). Comparative advantage, trade, and payments in a Ricardian model with a continuum of goods. *The American Economic Review, 67*(5), 823-839.

Dunn, R. M., & Mutti, J. H. (2004). *International Economics* (6th ed.). New York, NY: Routledge.

Epaphra, M., & Mwakalasya, A. H. (2017). Analysis of Foreign Direct Investment, Agricultural Sector and Economic Growth in Tanzania. *Modern Economy*, *08*(01), 111–140. https://doi.org/10.4236/me.2017.81008

Gebremariam, T. K., & Ying, S. (2022). The foreign direct investment-Export performance nexus: An ARDL based empirical evidence from Ethiopia. *Cogent Economics and Finance*, *10*(1). https://doi.org/10.1080/23322039.2021.2009089

Gupta, V. (2020). A case study on economic development of Tanzania. Journal of the International Academy for Case Studies, 26(1), 1-16.

Ikenna, N. T., Oluwafemi, E. S., Onyohu, H. C., & Bashiru, B. A. (2023). Inflation, Exchange Rate and Agricultural Export in Nigeria. *Greener Journal of Agricultural Sciences*, *13*(2), 91–98.

Karimov, M. (2020). The Impact of Foreign Direct Investment on Trade (Export and Import) in Turkey. *European Journal of Interdisciplinary Studies*, *6*(1), 6. https://doi.org/10.26417/ejis-2019.v5i1-273

Kingu, J. (2014). Cloves Export response to trade liberalization in Tanzania: A cointegration Analysis. *Journal of Economics and Sustainable Development, 5*(1), 99-120.

Kitole, F. A., & Utouh, H. M. (2023). Foreign direct investment and industrialization in Tanzania admixture time series forecast analysis 1960-2020. *Applied Economics Letters*, 1-8.

Laursen, K. (2015). Revealed comparative advantage and the alternatives as measures of international specialization. *Eurasian Business Review, 5*, 99-115.

NTP. (2003). *National Trade Policy - For a competitive economy and export-led growth*. Ministry of Industry and Trade, February, 1–91.

NFYDP. (2021). *National Five Year Development Plan 2021/22-2025/26: Realising Competitiveness and Industrialisation for Human Development.* United Republic of Tanzania, Ministry of Finance and Planning, June, 321.

Nurdin, A. M. (2020). *International trade and economic growth in Tanzania* (Doctoral dissertation, Institute of Accountancy Arusha).

Osman, O. D. A. & A. M. (2023). Determinants of Export Performance in Uganda (1989-2020). *Journal of Economics and Behavioral Studies*, *15*(3), 34–54.

Gujarati, D. N. & Porter D. C. (2009). *Basic Econometrics. In Introductory Econometrics: A Practical Approach*. McGraw-Hill Irwin.

Porter, M. E. (2011). Competitive advantage of nations: creating and sustaining superior performance. Simon And Schuster.

Sukmaya, G. S., Nurdiani, U., Saptana, Hidayati, R., & Harmaidi, D. (2022). Export Performance and Comparative Advantage of Indonesian Tropical Fruits. E3S Web of Conferences, 361, 02005.

Tile, A., Lihawa, R. M., Sesabo, J. K., Utouh, H. M., & Rwechumgura, F. A. (2023). Does HIV/AIDS Prevalence Affect Labour Force Participation in Eastern African Countries? A Two-Stage Least Squares Approach. *Global Social Welfare*, 1-11.

Toraubally, W. A. (2022). Strategic trading and Ricardian comparative advantage. *Journal of Economic Behavior & Organization*, *195*, 428-447.

Utouh, H., & Tile, A. (2023). The Nexus between Foreign Direct Investment and Nominal Exchange Rate, Real GDP, and Capital Stock In Tanzania. Acta Scientiarum Polonorum. *Oeconomia, 22*(1), 73-87.

Weerasinghe, W. P. M. C. N., & Jayasundara, D. D. M. (2021). Modelling Pepper Export Income in Sri Lanka Using Deterministic Decomposition and Seasonal ARIMA Models. *Statistics and Applications*, *19*(2), 89–100.

World Bank Open Data. (2021). World Bank Open Data. https://data.worldbank.org/indicator/BX.KLT.DINV.CD.WD?locations=TZ: retrieved on 21 March 2024.

World Bank. 2021. “The World Bank in Tanzania.” Accessed 23 March 2024. http://www.worldbank.org/en/country/tanzania/overview

Appendix I

Economic Data on Export, Exchange Rate, and FDI inflows from 1992 -2021

Year	Total exports (Million USD)	Exchange rate (Tshs to USD	FDI (Million USD)
1992	576.30	297.71	12.20
1993	764.80	405.27	20.46
1994	937.70	509.63	50.00
1995	1,265.10	574.76	120.00
1996	1,372.20	579.98	150.10
1997	1,246.60	612.12	157.90
1998	1,191.10	664.67	172.30
1999	1,201.80	744.76	516.70
2000	1,360.96	800.41	463.00
2001	1,766.70	876.41	549.27
2002	1,899.70	966.58	395.57
2003	2,168.61	1,038.42	318.40
2004	2,615.27	1,089.33	442.54
2005	2,971.66	1,128.93	935.52
2006	3,445.71	1,251.90	403.04
2007	4,102.28	1,245.04	581.51
2008	5,577.57	1,196.31	1,383.26
2009	5,142.73	1,320.31	952.63
2010	6,370.02	1,395.63	1,813.20
2011	7,398.24	1,557.43	1,229.50
2012	8,675.63	1,571.70	1,799.65
2013	8,459.72	1,597.56	2,087.26
2014	8,631.75	1,653.23	1,416.09
2015	8,187.01	1,991.39	1,506.02
2016	8,315.28	2,177.09	864.04
2017	8,342.63	2,228.86	937.70
2018	8,307.38	2,263.78	971.58
2019	9,658.58	2,288.21	1,217.24
2020	8,555.48	2,294.15	685.00
2021	9,873.38	2,297.76	1,033.00

Source: World Bank