

A Traditional and Non-traditional Export Performance Assessment: An empirical examination of factors enhancing the competitiveness of Zambia's Exports

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| Article Info | ABSTRACT |
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| <p>Article history:</p> <p>Received : 28 November 2023 Revised : 08 December 2023 Accepted : 20 January 2024 Available Online : 30 January 2024</p> <p>Keywords:</p> <p>Exports, Multi-Facility Economic Zone, Gravity Model.</p> | <p>This study examined the performance of traditional and non-traditional exports and further analyzed the factors that determine their performance in Zambia using a time series analysis (1960 and 2021). With the aid of the Vector error correction model, the study found that increases in the Real GDP, and Foreign Direct Investment of Zambia positively and significantly affected the volume of exports. In the analysis of aggregate exports, the non-significance of the relative price elasticity (Foreign Exchange rate) suggests that trade policies that concentrate overly on expenditure switching such as tariff and non-tariff restrictions or devaluations do not effectively assist trade policy reform efforts. The study thus recommends the need to promote inclusiveness, diversification and growth in investment towards the production of export commodities, particularly through the Multi-Facility Economic Zones by providing incentives to expand export diversification and growth at the local level through revising the Fiscal and non-Fiscal incentive thresholds in MFEZs to reflect the financing capacity of local investors.</p> |



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INTRODUCTION

The performance of both Traditional and non-traditional exports has over the years been essential for many nations in promoting inclusive and sustainable growth, as the capacity to export has evolved into a key factor and gauge of a nation's competitiveness due to the growing openness of many economies on the African Continent and around the globe ([Filatotchev et al., 2009](#)). This has been partially explained by the capacity of exports to increase an economy's market share and mobilize resources to raise the nation's income and socioeconomic standards ([Filatotchev et al., 2009](#)) which has further motivated the advancement of research on export performance over the past 50 years. While Numerous has pinpointed the managerial and organizational precursors of export success and evaluated the comparative significance of these precursors, there isn't much consensus in the

literature about a conceptual analysis of export performance, despite these attempts. Given the limited understanding of factors determining an economy's export competitiveness for developing nations, a study of export determinants in this context is a valuable addition to the body of literature already in existence. Our analysis's goal is to pinpoint the dynamic empirical characteristics and carry out an export performance evaluation of the variables influencing these exports, which any suitable improvement strategy should effectively leverage on.

While exports and their drivers have a major influence on a country's economic capability and wellbeing, data on such an important part of people's well-being is often undocumented, unregistered, or lost during processing due to high rates of smuggling and porous borders that hinder developing nation's ability to compete regionally and globally. Due to the unreliability of export statistics resulting from smuggling and deliberate non-reporting, policymakers are unable to develop export-oriented policy reforms that promote economic growth and export demand collectively. Nevertheless, every aspect of policies meant to encourage the growth of these exports necessitates a deep comprehension of the performance and variables affecting a country's exports. There is thus a great deal of vagueness, uncertainty, and gray area around the variables that affect export potential. While a number of macroeconomic factors seem to play a huge role, it is still unclear how much of an impact they exert. In this study, we used traditional models to motivate our approach, but with very little regard on whether export advantage stems from origins of exporters as established in most conventional theories which have proven to be obsolete for contemporarily trade. The exporter origin impact, however is incorporated in our study as a nation's export capacity in a sector, regardless of where it originated. Our study aims to determine the general properties of export performance distribution over time by focusing on the dynamics of export performance and the corresponding determinants, such as net barter terms of trade, Gross domestic product, exchange rates, Foreign direct investment.

Additionally, we abstracted a measure of Zambia's productive capacity from the structural gravity model of trade together with other variables and further assess how changes in these factors affect export performance. Unlike [Waugh \(2010\)](#); [Levchenko and Zhang \(2011\)](#); [Costinot et al. \(2012\)](#) and other recent studies, we assess Zambia's export prowess without including industry output or pricing data. Rather, we only use aggregated export data, which enables us to study the manufacturing and nonmanufacturing sectors in great context and over an extended period of time, while also imposing less structural constraints on the factors that determine exports. These analytical properties enable us to identify consistent and previously overlooked export dynamic trends. Our analysis also reveals that although there is an abundance of literature on the performance of exports, very few studies have focused on specific landlocked countries.

Related Literature

Theoretical framework

To give a more comprehensive analogy of export performance, a relevant and adequate theory is necessary. Nevertheless, there are currently few theories that can fully account for the pattern and extent of all referents in international trade. Firstly, despite being extensively used, the Resource based theory of trade presents structural drawbacks. According to [Kraaijenbrink et al. \(2010\)](#), it is limited in its capacity to account for deviations in the export performance of companies with comparable resource endowments. Furthermore, the theory is seen as static in nature because of its fundamental assumption of stability in the endowment of resources, which leads to two issues. The first, as noted by [Peng et al. \(2008\)](#); [Villar et al. \(2014\)](#) being that the Resource base theory lacks the ability to explain the competitive edge of most firms in unstable and changing marketplaces. Secondly, as [Kraaijenbrink et al. \(2010\)](#) state, the Resources base theory is unable to explain the process of transformation that cannot be attributed to any resource endowments change that converted a previous resource into a persistent comparative advantage.

Moving on, theories that build on the postulates of the resource base theory such as the dynamic Model theory further show that maintaining a comparative edge over rivals requires the capacity to respond to the market with greater speed, accuracy, and appropriateness ([Helfat and Peteraf, 2003](#)). According to [Eisenhardt and Martin \(2000\)](#), this further clarifies the comparative advantage in more developed markets in comparison to the emerging ones. [Antràs \(2003\)](#) further suggested a model that establishes the borders of large conglomerates in addition to outlining the structure of firm specific trade. [Melitz \(2003\)](#) also modeled a dynamic industry that took into account the variations in firms and showed how trade affects an entities' exports. His model showed how exposure to global trade influences exporting endeavors both successfully and unsuccessfully. Specifically, it outlined the process underlying international departure behavior, which is critical to the success of exports in the future but is little understood in the field of international trade ([Sousa and Tan, 2015](#)). Furthermore, several recent papers on export performance have taken into account previous export performance as a predictor of future strategy changes and management actions ([Lages et al. 2008](#)).

Moreover, the amalgamation of several theoretical constructs yields a beneficial variety of perspectives articulated in theories and facilitates the development of more logical conjectures. Combining the Resource base theory and institutional based theory can offer a collaborative viewpoint on the factors that affect exports from a combination of national structures and firm resources, which is especially useful in developing nations. In terms of individual theory, the resource base theory alone is unable to fully clarify the globalizing strategy of small enterprises in developing nations, as small entities from these nations tend to have scarce assets ([Filatotchev et al., 2009](#); [Yi, Wang and Kafouros, 2012](#)). Since the scale and speed of organizational shifts are unheard of, developing countries usually have more prominent organizations. This presents more obstacles for export enterprises ([Pla-Barber and Alegre, 2007](#)). This impact of societal pressures is emphasized by the Institutional based theory ([Peng, Wang and Jiang, 2008](#)) However, most of prior

research only considers formal and informal institutions which are inadequate to fully clarify how businesses behave strategically and how well they export ([Peng, Wang and Jiang, 2008](#)). According to [Peng et al. \(2008\)](#), the Institutional based theory suggests that both local and international institutions influence export policies, as companies must adhere to institutional mandates both within and outside of their nation of origin. Considering the strengths and weaknesses of each perspective, it is clear that combining the resource base theory and institutional base theory can better explain the export outcomes of emerging economies by capturing the complex and ever-changing connections between organizations ([Lipuma, Newbert and Doh, 2013](#)). Comparably, the comprehensiveness of the resource base theory may be strengthened by combining it with the theory of contingency, which changes the emphasis from capabilities and resources to the unpredictability between these capabilities and resources. A heuristic perspective provided by contingency theory highlights the fit between internal resources and capabilities and external pressures, suggesting that good export performance depends on organizational and external influences being in conformity ([Hultman, Katsikeas and Robson, 2011](#)). However, not every environmental scenario will benefit from a comparable variety of export promotional strategies ([Robertson and Chetty, 2000](#)). This thus necessitates the fit between actual resources and superior strategy. Furthermore, the Resource base theory by itself cannot account for the substandard export results or even the failure of certain resource-rich export companies.

Recognizing that the application of contingency theory firmly implies the presence of limiting variables is also crucial. Certain papers that has been examined employ contingency theory to create their theoretical frameworks, but they do not take moderating impacts into account ([Navarro et al., 2010](#)). The contingent environment that statistically reflects the theory of contingency arguments is specified by the moderation parameters. Studies have to prove that the interaction between both inside and outside causes affects export performance in order to support the contingency theory ([Hartmann and Moers, 1999](#)). The contingent interactions cannot be adequately explained by the theoretical framework in the absence of moderating effects. Since outside factors could dampen the connections between assets and export earnings and business capabilities can additionally impact the connections between institutions and export results.

Empirical Literature

While there aren't many empirical studies on the economy of Zambia that focus on trade and exports, [Mwiinga \(2018\)](#) examined the factors influencing Zambia's industrial exports by employing the gravity model of trade. The findings showed that Zambia's trade flows are significantly influenced by economic size, rates of inflation, and currency rates in addition to foreign direct investment. In employing an error correction model, [Mwansakilwa, 2013](#) also analyzed the improvement and profitability of Zambia's flower exports with its main trading partners, which include the United Kingdom and Netherlands after evaluation data from 1990 to 2010. the

study reviewed that Flower exports were shown to be significantly influenced by export credit, flower output, and real exchange rate on the demand side. Flower exports also exhibited cointegration with variables such as importing countries' populations, prices levels, real exchange rates, real gross domestic product, and exports by other nations. In addition, a huge amount of work has also been carried out to investigate the impact of gross domestic product on export quantities. Using yearly time-series statistics on India for gross domestic product and exports spanning from 1980 to 2012, [Kumari \(2015\)](#) investigated the validity of the export-led growth model in India using co-integration and causality analysis. The findings indicated that there was no long-term equilibrium link between GDP and exports. Bidirectional causation between exports and gross domestic product was however exhibited via the Granger causality test.

On the monetary side, [Kiganda et al. \(2017\)](#) identified the link between exports and inflation in Kenya using an integrated econometric method. They performed an in-depth examination of the link between commodity prices and exports in Kenya using Granger causality and impulse response after utilizing the Vector Error Correction model. The findings showed a strong and positive long-term correlation between inflation and total exports which was ascertained by their variance decomposition and impulse analysis. they thus concluded that there exists a unidirectional causal relationship between aggregate inflation and exports, with historical levels of total exports having a negative short-term impact on inflation. Using data on Turkey, [Aydin et al. 2014\)](#) also investigated the link between gross domestic product and exports and found that there was a unidirectional causal relationship between gross domestic product and exports. [Travkina \(2015\)](#) went on to suggest that there is either short and middle-term causation between GDP growth and exports when he examined the link between global trade, particularly exports, and economic expansion as measured by Lithuania's gross domestic product between 2000 and 2015. According to the study, the export-driven growth hypothesis was validated by the Granger causality analysis in the export–GDP network.

In assessing the validity of the gravity model, [Tripathi et al. \(2015\)](#) applied the structural gravity model to study India's trade flows with 20 important trading nations from 1998 to 2014. The findings showed that the gravity model accounted for the trade trend within the bloc. More specifically, India's bilateral trade was greatly impacted by its economic scale, closeness to other cultures, shared border, and political globalization in line with the postulates of the gravity model. Similar to this, [Sheng \(2014\)](#) used an extended gravity model to analyze constituent trade in the ASEAN-PRC free trade area (ACFTA) and found that liberal trade agreements caused bilateral trade flows between ASEAN and PRC to be significantly greater and more dramatic than would be anticipated by a traditional gravity model. Additionally, a strong and favorable correlation between exports and foreign direct investment was identified by [Gani and Sharma \(2003\)](#) when he concentrated on how growing foreign direct investment in the country affects export supply capacity as he was evaluating India's export practices. According to Sharma, the prosperity of the

nations in East and South East Asia indicated that foreign direct investment plays a significant role in promoting exports. In his paper on the relationship between China's export performance and foreign direct investment, [Zhang \(2006\)](#) further pointed that one of Foreign direct investments main potential growth contributions is to increase exports from member nations and came to the conclusion that Foreign direct investment boosts exports from both home and host countries.

[Teweldemedhin et al. \(2013\)](#) also employed the extended gravity model and incorporated factors like nominal exchange rates, Distance, the gross domestic product and dummy variables that indicated if the trade partner was a member of any regional organization. His findings showed that fresh beef consumption in Western and Southern Africa was shown to be positively correlated and significant with GDP per capita. Goats and sheep meat were shown to be substantial only in East Africa, but meat from cattle was found to be relevant in all situations. [Suresh \(2016\)](#) also examined the factors influencing India's exports of manufactured goods to two groups of nations: emerging and advanced using panel data encompassing the years 1992 to 2012. The paper discovered that gross domestic product, the variation in per capita income, and gross domestic product similarity were important factors that had a favorable impact on India's exports to both groups of nations. Conversely, distance was found to be detrimental on India's exports to emerging nations. With regards to the relationship between export performance and the exchange rate, [Rodrik \(2009\)](#) found that real undervaluation or depreciation boosts the profitability of the tradable industry and expands the percentage of tradable goods in domestic value added, whereas real appreciation or overvaluation hinders exports and lowers growth and which supports [Easterly \(2005\)](#); [Johnson et al.'s \(2010\)](#) idea that real exchange rates have a positive and significant impact on export performance. Rodrik (2009) however contends that only nations with low per capita income may benefit significantly from real undervaluation in terms of export expansion. According to him, in developing nations where the per capita income is less than \$2,500, a five-year period of increased exports above gross domestic product correlates with a fifty percent increase in real undervaluation. Real undervaluation on the other hand has a negligible contemporaneous effect in emerging nations whose per capita income is between \$2,500 and \$6,000 ([Rodrik, 2009](#)).

Other papers such as [Haddad and Pancaro \(2010\)](#); [Eichengreen and Gupta \(2013\)](#), warn that a country cannot sustain a depreciated real exchange rate permanently, thus exchange rate depreciation can only be used as a short-term policy tool to promote economic growth and exports. [Eichengreen and Gupta \(2013\)](#) further contend that inflation might be a consequence of prospective costs, such as the build-up of foreign exchange reserves on which capital losses happen. In fact, as showed [Rodrik \(2009\)](#) showed, the impact of a real exchange rate undervaluation on exports is negligible over the long term which suggests that strong macroeconomic policies and high savings rates are also necessary for a competitive real exchange rate to successfully increase exports ([Eichengreen and Gupta, 2013](#)). The conventional knowledge of the factors influencing real international trade patterns appears to be

lacking in light of the persistent discrepancy between the predictions of standard theoretical models and empirical data on the dynamics of international trade outlined in the literature. Thus, the goal of our paper is to fill in the gaps in the body of current literature.

METHODS

Data Type and Sources

The paper employed a time series data design spanning from 1960 to 2022, and all analyses were conducted using secondary data. The data used in this paper came from the World Bank's World Development Indicators. The GDP/Exports and the variable's level were both expressed in US dollars at the current exchange rate.

Method of Analysis

the statistics and data software 16 (STATA 16) was employed to analyze secondary data that was gathered from World Development Indicators. Both descriptive and inferential analysis were employed in the study. The summary statistical analysis made use of the analysis's descriptive aspect while the model estimation (The vector error correction model) and post- and pre-estimation studies were employed in the inferential aspect of the analysis.

Choice and Summary of the variables

With regards of exports, the two main categories of export success metrics are typically non-economic and economic metrics. According to ([Diamantopoulos and Kakkos, 2007](#)), export volumes offer a more accurate analysis of measuring performance because they adhere to the standards of pertinent literature. The paper considered the aggregate level of total traditional and non-traditional exports in each fiscal year for Zambia at constant prices in US dollars to allow for international comparability. In explaining the gross domestic product-export nexus, ([Thornton, 1996](#)) points that nations that export a significant portion of their gross domestic product appear to expand more quickly than others. Through technical spillovers and other externalities, the expansion of exports stimulates the economy as a whole. Data on gross domestic product included the annual gross domestic product measured at constant prices in US dollars to counter the effect of inflation. There is also a wealth of theoretical literature that shows how changes in exchange rates affect a country's decisions about what to export. These models are based on the fundamental premise that entrance costs are buried for non-exporters seeking to enter export markets. We thus analyzed exchange rates at their annual average nominal value. We also analyzed the impact of foreign direct investment which we measured at current dollar prices using net inflows. The ratio of the prices of imported and exported commodities was also employed in our study to calculate the net barter terms of trade. In this case, an improvement in the terms of trade indicates that the average price of exporting goods has increased relative to imported goods.

Table 1. Table of summary statistics

| Trade | Stats | Exports | GDP | Exchange Rate | Investment | Terms of |
|-------|-------------|-------------|------------|---------------|------------|------------|
| | mean | (2621484) | (7670516) | (2.833339) | (1842843) | (296.8424) |
| | max | (11100000) | (28000000) | (20.01849) | (2855343) | (1187.893) |
| | min | (335000.00) | (693142.9) | (0.0006432) | (1616999) | (51.11587) |
| | Co. of Var. | (1.1860180) | (1.115526) | (1.513775) | (1.396668) | (1.115443) |
| | skewness | (1.4746370) | (1.26428) | (2.235519) | (2.414593) | (1.422329) |
| | kurtosis | (3.6571670) | (2.976013) | (8.217626) | (8.944149) | (3.467515) |
| | St. Dev. | (3109127.0) | (8556663) | (4.289037) | (33.9172) | (331.1106) |

Table 1 shows that despite the mean exchange rate was lowest, exports had the second-largest mean, behind the gross domestic product. Another important statistic that was used to describe the data was the coefficient of variation. The smaller the values of the coefficient of variation, the more accurate this estimate is. The most exact figures were found in exchange rates, but terms of trade showed the least precision. Another statistic that was employed to gauge the dispersion around the mean was the standard deviation. As table 1 shows, the GDP varied the most from the mean. The other statistic used to characterize the data was kurtosis. The degree to which the tails of a distribution depart from the normal distribution is shown by this statistical measure. Table 1 also demonstrates that, in comparison to all other variables included, GDP had longer tails than a normal distribution, but its kurtosis value was below 3, indicating that GDP had lighter tails than a normal distribution.

Estimation Technique

The study employed due to the presence of long run cointegration among the variables, a cointegrated Vector Autoregressive Model (Vector Error Correction Model) with a continuous dependent variable.

The Econometric model can then be expressed as follows:

Given a vector autoregressive of I(1) x_t 's with no exhibition of trends : $x_t = \Phi_1 x_{t-1} + \dots + \Phi_p x_{t-p} + t$

We show that the error correction term can be represented as:

$$\Delta x_t = \Pi x_{t-1} + \sum_{i=1}^{p-1} \Phi_i^* \Delta x_{t-1} + t, \text{ With; } x_t = x_{t-1} + \Delta x_t$$

Where Π and the Φ^* are functions of the Φ 's. Specifically,

$$\Phi_j^* = - \sum_{i=j}^{p-1} \Phi_i, j = 1, \dots, p-1$$

$$\Pi = -(I - \Phi_1 - \dots - \Phi_p) = -\Phi(1)$$

With the characteristic polynomial being; $I - \Phi_1 z - \dots - \Phi_p z^p = \Phi(z)$.

- $\Pi=0$, (all $\lambda(\Pi)=0$) shows non presence of cointegration. As a remedy to this, there is need to employ the differencing method to ensure stationary of the series.
- If Π has full rank, k , then the x_t 's cannot be I(1) but are stationary ($\Pi^{-1} \Delta x_t = x_{t-1} + \dots + \Pi^{-1} \epsilon_t$).

- The interesting case is, $\text{Rank}(\Pi)=m, 0 < m < k$, as this is the case of cointegration. The representation thus follows as; $\Pi = \alpha\beta'$ which is a matrix form $(k \times k) = (k \times m)[(k \times m)']$

Where the columns of β contain the m cointegrating vectors, and the columns of α and m are adjustment vectors: $\text{Rank}(\Pi) = \min[\text{Rank}(\alpha), \text{Rank}(\beta)]$

There is an adjustment to the equilibrium x^* or long-term relation described by the cointegrating relation.

Setting $\Delta x = 0$, we obtain the long-run relation: $\Pi x^* = 0$. This may be written as,

$$\Pi x^* = \alpha(\beta x^*) = 0$$

In the case $0 < \text{Rank}(\Pi) = \text{Rank}(\alpha) = m < k$ the number of equations of this system of linear equations which are different from zero is m .

$$\beta x^* = 0_{m \times 1}$$

The long run relation does not hold perfectly in $(t-1)$. There will be some deviation, an error,

$$\beta' x_{t-1} = \xi_{t-1} = 0$$

The adjustment coefficients in α multiplied by the errors: βx_{t-1} induce adjustment. They determine Δx_t , so that the x 's move in the correct direction in order to bring the system back to equilibrium. And the vector error correction adjustment can be re-specified as;

$$\Delta \log Y_{t-1} = B_0 + \sum_{i=1}^{k-1} \gamma_i \Delta \log Y_{t-i} + \sum_{i=1}^{k-1} \eta_i \Delta \log X_{t-j} + \sum_{m=1}^{k-1} \xi_m \Delta R_{t-m} + \lambda ECT_{t-1} + \mu_t$$

$k - 1 = \text{Reduced lag length by a factor of } 1$

$\gamma, \eta, \theta, \xi = \text{Long and short run adjustment coefficients}$

$\lambda_i = \text{parameter adjustment speed}$

$ECT_{t-1} = \text{Long run cointegrations equation}$

$u_i = \text{residuals}$

Since the primary goal of this study was to ascertain whether factors like terms of trade, foreign direct investment, exchange rates, and GDP are important predictors of a nation's exports, we treat exports as the dependent variable and the other factors as independent variables. The VECM Model was then re-specified as;

$$\Delta \log EXP_t = B_0 + \sum_{i=1}^{k-1} \gamma_i \Delta \log EXP_{t-i} + \sum_{i=1}^{k-1} \psi_i \Delta \log GDP_{t-j} + \sum_{i=1}^{k-1} \eta_i \Delta \log TOT_{t-j} + \sum_{i=1}^{k-1} \theta \Delta \log FDI_{t-j} + \sum_{i=1}^{k-1} \delta \Delta \log EXCH RATE_{t-j} + \lambda ECT_{t-1} + \mu_t$$

RESULTS AND DISCUSSIONS

Stationarity analysis

Table 2. Augmented Dickey Fuller test results.

| Variable name | Augmented dickey-fuller: level | Augmented dickey-fuller:1st difference |
|---------------|--------------------------------|--|
|---------------|--------------------------------|--|

| | Statistic | Crit v 5% | P-value | Statistic | Crit v. 5% | P-value | ord. of stationarity |
|----------------|-----------|--------------|---------|-----------|------------|---------|----------------------------|
| Exports | -0.48 | -2.92 | 0.8951 | -5.5 | -2.923 | 0 | I(1) |
| GDP | -1.1 | -2.92 | 0.7152 | -5.13 | -2.923 | 0 | I(1) |
| Exchange rate | -0.82 | -2.92 | 0.8147 | -4.75 | -2.923 | 0.0001 | I(1) |
| Terms of Trade | -0.63 | -2.92 | 0.8642 | -6.1 | -2.923 | 0 | I(1) |
| Investment | -2.62 | -2.92 | 0.0882 | -6.81 | -2.923 | 0 | I(1) |

As Table 2 shows, the study detected the presence of non-stationary in the level form of the variables which inhibited inference and estimation to be made on the raw form of the data as it would prove to be unreliable. This can be seen from the P-values of the variables which are above 0.05. Thus, if a time series is not stationary, taking the first difference of that time series will yield stationarity and these first difference transformed variables could in-turn be used for inference and forecasting. After transforming the time variables to first difference, all the variables became highly stationary as their P-values fail to zero. The study thus employed these first difference transformed variables for estimation and inference.

Cointegration Analysis

Table 3. Johansen test for Cointegration

| Johansen tests for cointegration | | | | | |
|----------------------------------|-------|------------|--------------------|----------|-------------|
| Trend: constant | | | Number of obs = 61 | | |
| Sample: 1961 - 2021 | | | Lags = 1 | | |
| maximum | | | | | |
| rank | parms | LL | eigenvalue | trace | 5% critical |
| 0 | 5 | -655.81611 | 0 | 70.0200 | 68.52 |
| 1 | 14 | -641.48581 | 0.37490 | 28.3594* | 47.21 |
| 2 | 21 | -634.75239 | 0.19810 | 14.8926 | 29.68 |
| 3 | 26 | -630.57041 | 0.12813 | 6.5286 | 15.41 |
| 4 | 29 | -627.63801 | 0.09167 | 0.6638 | 3.76 |
| 5 | 30 | -627.30611 | 0.01082 | 0 | 0 |

The presence of co-integration among the variables was ascertained by Table 3 as the trace statistics' absolute value was smaller than the 5% critical value at maximum rank of 1, which influenced the employability of the Vector Error Correction Model (VECM).

Vector Error Correction Regression Model

Table 4. Johansen normalization restriction imposed

| beta | Coef. | Std. Err. | z | P> z |
|----------------|---------------|-------------|---------|---------|
| Exports | 1 | | | |
| GDP | (-0.5294337)* | (0.0805932) | (-6.57) | (0.000) |
| Exchange Rates | (0.0215446) | (0.013867) | (1.55) | (0.120) |
| Investment | (-0.0082347)* | (0.0034143) | (-2.41) | (0.016) |
| Terms of trade | (-0.0015747)* | (0.0002814) | (-5.60) | (0.000) |
| _cons | (-5.45343) | | | |

Note: * implies significance at 5% level

NOTE: In interpreting the long Run coefficients, it is important to reverse the signs because: Given the error correction equation: *ECM = Cointegrating Vector*

$$ECM = Exports_t - 0.529(GDP) + 0.022(Exch. R) - 0.008(FDI) - 0.0016(Terms\ of\ trade)$$

Taking the expected value of the error as $E(X) = E(ECM) = E(\varepsilon) = 0$, yield the equation;

$$0 = Exports_t - 0.529(GDP) + 0.022(Exch. R) - 0.008(FDI) - 0.0016(Terms\ of\ trade)$$

And thus, the equation for the error correction term was re-written as:

$$Exports_t = 0.529(GDP) - 0.022(Exch. R) + 0.008(FDI) + 0.0016(Terms\ of\ trade)$$

The study results shown in Table 4 were consistent with those of [Mijiyawa \(2017\)](#) who similarly established that FDI had a positive impact on export performance. This emphasizes the need of assessing FDI's contribution to export performance enhancement because it provides a means of funding export expansion and development. Foreign direct investment inflows have improved for Zambia in the recent past as the [\(Bank of Zambia, 2023\)](#) reported a 125 USD million rise in FDI during the third quarter of 2023.

A particularly important component of foreign direct investment with regards to export is the amount of investment directed towards the production of export commodities. The country has since 2005 been implementing Multi-Facility Economic Zones (MFEZs) which are special industrial zones for both export-oriented and domestic-oriented industries [\(Zeng, 2016\)](#). The MFEZs blend the best features of the free trade zones (FTZs), export processing zones (EPZs) and the industrial parks/zones concept and create the administrative infrastructure, rules, regulations etc. that benchmark among the best dynamic economies. The country has, as of 2019 6 Multi-facility Economic Zones namely; Chambishi MFEZ (investment of 1.4 billion USD) with 38 companies, Lusaka South MFEZ (120 million USD) with 11 companies, Lusaka East MFEZ (19 USD million) with 10 companies, Roma Park (54 USD million), Sub-Saharan Gemstone Exchange Industrial Park (15 USD million) with 6 companies [\(UNECA, 2022\)](#).

While the development and growth of these Zones has over the years been gradually growing as for example in the first half of 2021, the state-owned Lusaka South MFEZ attracted the most investment of 316.5 USD million [\(huaxia, 2021\)](#). UNECA (2022) points that the MFEZ have faced a challenge of linkage with regards to incorporating local Micro, Small and Medium Enterprises, particularly agribusinesses that are financially and structurally constrained in meeting quality and volume standards required. This further undermines the extent to which the Zones have been able to promote export diversification and growth that is reflective of local contribution and empowerment. The paper thus argues that in considering infant firms operating locally, the aspect of selective protectionism comes to the discussion as

only the most productive of this class of domestic firms go on to become exporters due to the diversification of their production capacities. Due to their inexperience and lack of understanding, infant firms that start exporting first incur greater expenses, which temporarily reduces their capacity for production ([Melitz, 2003](#)). Export growth eventually leads to reduced average costs over time and thus increased productivity when export market diversity surpasses a threshold level and investments accumulate. According to [Xuefeng and Yaşar \(2016\)](#), this creates a U-shaped link between diversification of exports and increased domestic involvement and efficiency of infant firms.



Figure 1. Lusaka South Multi-Facility Economic Zone

Source: Industrial Development Cooperation website and Maambo (2017)

Moving on, in their evaluation of how special economic zones (SEZs) affect export performance, [Nazarczuk and Umiński \(2019\)](#) also found that SEZs have a strong and favorable relationship with exports at firm-level. Their findings offer consistent proof of the impact of Special Economic Zones (SEZs) on the likelihood of exports for businesses operating inside the zones as opposed to those operating far from them. [Tantri \(2012\)](#) however further argued that while introduction of SEZs in place of, the Export Processing Zone, has a significant and positive impact on the performance of exports at an aggregate level, in terms of contribution to national trade, the zones have not performed well as the policy guiding their development in most nations does not foster diversifying of the exports basket and does very little to foster foreign direct investment towards this sector, which in turn affects the direction of exports by the SEZs. Moreover, the zones have over the years been found to be highly susceptible to external shocks. On the other hand, the fact that the advantages of trade and foreign direct investment may be concentrated in one area, as is usually the case with special economic zones (SEZs), this can be extremely advantageous for innovation even if these benefits can theoretically be gained anywhere in the nation. In fact, SEZs' concentration, closeness, and density, especially if they're adjacent to a metropolis or other metropolitan area, may be essential for facilitating the transfer of information

and technology between businesses and individuals ([Florida](#) and [Gates, 2001](#)). All things considered, SEZs may be a crucial instrument for the growth of inventive capacities in developing nations as they facilitate localized interactions between individuals and businesses and encourage the acquisition of information from overseas sources.

The results also showed that the Gross Domestic Product positively affected the Country's volume of exports which supports the Gravity Model hypothesis and validates its postulation that GDP (Economic Mass) Positively and Significantly affects the volume of exports. This aligns with the conclusions of [Tripathi \(2013\)](#), who used a gravity model to study India's trade flows with 20 important trading partners between 1998 and 2014. Tripathi's findings showed that the gravity model well describes the trade pattern of the bloc as India's trade volumes were positively and significantly impacted by the bloc's economic size. [Ronit and Divya \(2014\)](#) also showed, using a Vector Autoregressive model, Impulse Response Functions and Granger Causality Test that growth in exports depends positively on growth in gross domestic product. This is consistent with the theory of growth led exports, as their Impulse Response Functions demonstrated significantly higher export responses in response to changes in GDP.

While GDP plays a key role in the enhancement of export volumes, Zambia however continues to face daunting challenges in stimulating growth in GDP which would in turn transit to the growth of exports. Particularly, GDP growth has in the recent past been on the decline from 4.7% in 2022 to 3.6% in 2023 ([IMF, 2023](#)), 1.1% worsening in the productive capacity. This decrease was a result of a decline in economic activity in several sectors of the economy such as manufacturing and tourism due to restrictions implemented during the Covid-19 pandemic which negatively impacted consumption, investment and a decline in global copper demand during the pandemic, which is a major source of foreign exchange reserves for Zambia. To tackle these imbalances and promote growth in GDP that will transcend into an improvement in the performance of exports, the country is through its current 8th National Development moving towards taping into regional and global markets and value chains a national supplier development policy developed to enable local value addition and participation of local players in the mining supply chain. Key to this is the promotion of both domestic and foreign direct investment in the production of components for batteries, electric motor vehicles and renewable energies.

After using econometric models to examine the stages of diversification, [Imbs and Wacziarg \(2003\)](#) initially presented a non-linear U-shaped association between product diversification and GDP per capita was found by their study. Their results showed that the production structures of low-income nations are highly specialized. The distribution of economic activity across sectors diversifies as GDP per capita rises in a nation. The tendency of diversification however diminishes as GDP per capita rises, and the sectoral distribution shows signs of re-specialization following a tipping point that occurs at a very high-income level. while most previous researches have solemnly focused on variables in the income identity when trying to explain the

determinants of exports, the results of this study show that net barter terms of trade too positively and significantly affect the volume of exports. These results do not fit with those by [Hamori \(2008\)](#) who in his study found that exports and the terms of trade do not have co-integrating relations for the G-7 countries. This implies that the deterioration of the terms of trade will not necessarily improve a country's Export volume in the long Run. Thus, the study provides a new insight into the relationship between Exports and a county's net barter terms of trade. Our results were however in line with those found by [Aparicio \(2014\)](#), when he Investigated the causal effect of an improvement in an economy's term of trade on nontraditional exports using a dynamic analysis which showed that nontraditional a negative and significant effect of terms of trade on nontraditional exports. Our findings also complement those of [Ghirmay et al. \(2001\)](#), who investigated the causal link between export and income terms of trade instability and discovered long-term correlations between exports, net barter terms of trade instability and production.

Robustness Check

We carried out the Eigen Value stability condition test in order to determine the stability of our dynamic time series model and ascertain robustness. Model stability is essential as it guarantees or determines if the parameter or data have structural fractures over time, in which case it would be challenging to draw conclusions and make predictions from the data.

Table 5. Eigen value stability condition.

| Eigenvalue | Modulus |
|-------------------------|----------|
| 1 | 1 |
| 1 | 1 |
| 1 | 1 |
| 1 | 1 |
| -0.725167 | 0.725167 |
| -0.3684768 | 0.368477 |
| 0.2385883 | 0.238588 |
| 0.05620082 + 0.1370356i | 0.148112 |
| 0.05620082 - 0.1370356i | 0.148112 |
| -0.00048431 | 0.000484 |

The study concluded that the model fulfilled the stability criterion over time, allowing for the drawing of conclusions after a considerable amount of time, as the two repeated Eigen values after 1 were negative.

CONCLUSIONS

In conclusion, the study emphasizes that increasing export quantities and demand requires a multi-sectoral strategy that all significant participants in the Zambian economy should work to implement. This endeavor requires full domestic economic

integration as well as a functioning legal system that ensures that everyone's goals, benefits, and efforts are commensurate with the amount of effort required to achieve them.

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