

Investigating the Nexus Between Foreign Direct Investment and Export Performance: Empirical Evidence from Somalia

Sid-Omar Osman Farah

Faculty of Economics, SIMAD University

Cumarcagacdae@simad.edu.so

Abstract. This study examines the impact of foreign direct investment (FDI) on export performance in Somalia from 1977 to 2017, using annual time series data from the World Bank and the Statistical, Economic, and Social Research for Islamic Countries (SESRIC). The research utilized a vector error correction model to examine the relationship between foreign direct investment (FDI) and export performance, while controlling for GDP and exchange rate. Other econometric techniques employed are correlation tests, the Johansen Cointegration test, and Granger causality tests.

The results indicate a weak but positive correlation between FDI and exports and a negative association between GDP, exchange rate, and exports. The Cointegration test confirms the existence of a long-run equilibrium relationship among the variables. However, the Granger causality test reveals no causal relationship between FDI and export performance, suggesting that FDI does not significantly influence exports in Somalia. Limitations of the study Somalia faces many challenges including civil war, pirates, currency depreciation, corruption, lack of human capital, macroeconomic stability and corruption not owing to data availability. The study highlights the need for policymakers to develop targeted strategies to attract export-oriented FDI and create an enabling environment for domestic firms to benefit from spillover effects. Further research is recommended to explore the sector-specific impact of FDI on exports and the role of institutional factors in mediating the relationship between FDI and export performance in Somalia.

Keywords: Exports, FDI, VECM, GDP, Somalia

1. Introduction

The prevailing view suggests that foreign direct investment (FDI) has the potential to enhance productivity in host nations. This belief is supported by numerous empirical studies illustrating the strong performance of FDI-involved firms within host countries and showcasing the transfer of technology from these firms to their local counterparts (Wang & Wang, 2015). The internalization theory is a conceptual framework employed to elucidate the underlying incentives and trends behind foreign direct investment (FDI). The fundamental principles of this approach encompass ownership advantage, location advantage, and internalization. This theory can offer valuable insights on the dynamics of Foreign Direct Investment (FDI) in Somalia. Specifically, in comprehending the motivations and investment patterns of multinational businesses in the country.

In practice, it is widely acknowledged that FDI not only increases the domestic capital available for export but also facilitates the transfer of technology and new products for export purposes. Additionally, it opens up new and substantial foreign markets, providing training to the local workforce, and enhancing technical and managerial capabilities.

However, contrasting opinions have been put forth, arguing that FDI might diminish or eliminate domestic savings and investment. Critics contend that FDI could introduce low-level or inappropriate technologies that do not align with the host country's factor proportions. Moreover, concerns are raised about FDI focusing primarily on the domestic market of the host nation, potentially neglecting export growth. Detractors also suggest that FDI could impede the growth of domestic companies poised to become exporters and hinder the development of the nation's dynamic comparative advantages by concentrating solely on local, inexpensive labor, and raw materials (Abor et al., 2008).

In 2022, global foreign direct investment (FDI) witnessed a 12% drop, reaching \$1.3 trillion. This decline was primarily attributed to the global poly crisis, which encompassed events such as the war in Ukraine, elevated food and energy prices, and heightened debt pressures. Despite the overall downturn, FDI exhibited a 4% increase, reaching \$916 billion, in emerging nations, constituting nearly 70% of the total global flows—a record percentage. However, despite the overall downturn, FDI exhibited a 4% increase, reaching \$916 billion, in emerging nations. This constituted nearly 70% of the total global flows, a record percentage. Notably, there was a 37% surge in the number of greenfield investment projects announced in developing nations, accompanied by a 5% uptick in international project finance arrangements. These developments suggest a positive outlook for infrastructure and industry investments (UNCTAD, 2023).

Reflecting these global trends, Africa has experienced a substantial increase in foreign direct investment (FDI) in recent years, with FDI in Africa rising from US\$5 billion in 1995 to US\$48 billion in 2015 (UNCTAD, 2016). The increased globalization has simultaneously exposed many African states to the challenges of global trade rivalry, leading to the investigation of whether Foreign Direct Investment (FDI) could help improve export competitiveness in Africa (Gamariel & Hove, 2019). Furthermore, Africa experienced a resurgence in FDI, reaching \$45 billion in 2019, following unusually high levels in 2021 driven by a singular financial transaction. Announcements of greenfield projects observed a substantial 39% increase, while deals involving international project finance rose by 15%. The most significant surge occurred in the energy sector, encompassing both energy generation and extractive industries (UNCTAD, 2023).

Somalia, located in East Africa, spans an area of 637,657 square kilometers and is home to approximately 16 million people. The country boasts geographical diversity but is characterized by a singular ethnic population. While agriculture and livestock play pivotal roles in the economy, sectors like fisheries also contribute significantly. Nonetheless, the country is confronted with a plethora of significant challenges that impede its economic progress and its capacity to draw in foreign direct investment (FDI). The unsteady economic climate resulting from ongoing conflicts between the national government, local governments, and terrorist organizations such as Al-Shabaab is one of the main challenges. Foreign investors looking for peace and stability to safeguard their interests are

discouraged by the unpredictability created by this political unrest. The weaknesses in the institutions of Somalia's government exacerbate this problem. It is very difficult for the government to implement and enforce laws that could attract foreign direct investment (FDI), such as investment protection measures and business-friendly regulations, because of widespread corruption, an ineffective judiciary, and a general lack of openness and the rule of law. In addition to its administrative and political shortcomings, Somalia has extremely poor infrastructure. For both domestic and foreign businesses, deteriorating utilities, telecommunications, and transportation networks present major logistical challenges. The unreliability and high expense of this infrastructure make Somali products less competitive in international markets. When combined, the interconnected problems of poor infrastructure, weak government, and political instability create an extraordinarily risky environment that discourages foreign investment. Somalia struggles to establish a strong, competitive export sector in the absence of the foreign cash and skills that foreign direct investment (FDI) may offer. The contributions made by the Somali diaspora remain vital to maintaining the economy of the nation despite these enormous challenges. Rebuilding Somalia's state capability and economic foundations, however, would take sustained, coordinated efforts to overcome the country's deeply ingrained structural issues. The interconnected problems of institutional fragility, political instability, and inadequate infrastructure create a high-risk environment that deters foreign investment and impedes the growth of a competitive export industry. and investments from the Somali diaspora continue to play a crucial role in sustaining the economy.

The effectiveness of governing bodies in Somalia is significantly hampered by safety, financial, and political complexities in the region. As a result, informal money transfer routes have emerged, raising concerns about corruption, potential financing of terrorism, and money laundering. A research study by the World Bank in 2015 emphasizes the need to establish transparent and reliable investment channels for both the Somali diaspora and non-diaspora individuals, as well as the international community. Such channels are essential to address these challenges and foster the growth of businesses in need of funding (**World Bank, 2018**).

In 2014, the World Bank estimated that Somalia received a substantial sum of US\$1.3 billion from its global diaspora, constituting a noteworthy 24 percent of the country's Gross Domestic Product (GDP). Beyond this significant financial inflow, diaspora capital plays a vital role in fostering private-sector investment, primarily through remittances. These remittances serve as a crucial means of covering monthly household expenses and are contributed by diaspora members who maintain strong connections with their families and friends back home. Importantly, these diaspora individuals often allocate funds to support micro-start-ups. A growing number of diaspora communities express a desire to return to their home country. The prospect of a favorable business environment and a secure economic outlook is pivotal in providing reassurance to individuals contemplating repatriation. Such conducive conditions would not only strengthen the ties between the diaspora and their homeland but also stimulate further investment and economic development (**World Bank Group, 2018**). In 2021, Somalia experienced Foreign Direct Investment (FDI) inflows amounting to 455.8 million USD, indicating a decline of 8.5 million USD compared to the previous year. This decrease is attributed to the global economic downturn resulting from the pandemic. The Ministry of Planning reports that the ratio of FDI to Gross Domestic Product (GDP) stands at approximately 9 percent. Notably, the majority of FDI in Somalia is concentrated in the healthcare and education sectors. Recent developments include the Central Bank of Somalia granting licenses to two multinational banks from Egypt and Turkey, with anticipated commencement of their activities shortly (**The National Economic report, 2023**). Despite the potential benefits of FDI for host countries, the empirical evidence on the impact of FDI on export performance remains mixed and inconclusive, particularly in the context of developing countries (**Abor et al., 2008; Jawaid et al., 2016**). While some studies have found a positive relationship between FDI and export performance e.g., (**Nguyen & Do, 2020; Sahoo & Dash, 2022**) others have reported a negative or insignificant relationship e.g., (**Mala., 2020; Kuntluru et al., 2012**). This study aims to

contribute to this ongoing debate by examining the impact of FDI on export performance in Somalia, a country that has received limited attention in the literature despite its unique economic and political challenges.

2. Literature Review

2.1. Theoretical literature

Several theories contribute to the understanding of foreign direct investment (FDI), including the theory of internalization, the theory of monopolistic advantage, the theory of product life cycle, the multinational enterprise theory, and the eclectic paradigm theory. Among these, the eclectic model, particularly Dunning's Ownership, Location, and Internalization (OLI) framework, offers a comprehensive approach to explaining global manufacturing. Dunning's paradigm identifies three key advantages associated with FDI: internalization, location advantage, and ownership advantage **(Mohamed et al., 2023)**.

Trade and foreign direct investment are analyzed in the context of various macroeconomic theoretical models, with the expectation that they may have a complementary or substitutive relationship. This relationship is examined from the perspectives of both home and host countries, given that many of these theories are based on general equilibrium models. In most cases, the host country's viewpoint is considered as part of the comparative statics analysis within these models. A substitutive relationship typically implies a negligible or negative influence on host nation exports, while a complementary relationship suggests a positive impact **(Kastratović, 2020)**.

The study adopts the Internalization theory as its theoretical foundation. This theory is grounded in the concept that corporations prefer to establish internal marketplaces when transactions can be conducted more cost-effectively within the organization. Internalization, within this context, involves a form of vertical integration where new operations and activities, once managed by intermediaries, are brought under the ownership and supervision of the organization **(Morgan & Katsikeas, 1997)**. The internalization theory suggests that multinational enterprises (MNEs) Internalizing their operations allows firms to leverage their unique advantages, such as advanced technology, managerial expertise, and brand reputation, to reduce costs in foreign markets. This theory posits that foreign direct investment (FDI) can boost a nation's export performance by transferring these advantages, resulting in increased productivity, competitiveness, and market expansion for local firms. FDI also grants access to global distribution networks, advanced production methods, and skilled management expertise, enabling domestic companies to overcome export barriers and expand their global market presence. By integrating these established theoretical frameworks, this study formulates precise and verifiable assumptions concerning the long-term relationships between FDI, exports, GDP, and the exchange rate in Somalia. By employing the VECM technique, researchers can empirically analyze the dynamic interactions among these variables and offer valuable insights into the potential factors that drive export-led growth in the Somali context.

As per Dunning's framework (1979), a company might opt for foreign direct investment (FDI) instead of exports under certain conditions. This decision could be motivated by the possession of ownership advantages, the presence of location advantages in the foreign market (such as access to a significant domestic market or production resources), or the potential benefits of internalizing market access operations. The relationship between FDI and trade can vary, acting either as complements or substitutes, contingent on the specific benefits that influence the investor's decision to engage in foreign investment **(Africano, 2007)**.

2.2. Empirical Literature

Researchers have extensively studied the correlation between foreign direct investment (FDI) and exports, yielding diverse and occasionally contradictory results. The body of writing on this issue reveals several noteworthy themes and ideas. Firstly, certain research has revealed a mutual cause-and-effect link between the two factors. For instance, **(Rehman & Ding, 2020)** established a correlation between outward foreign direct investment (FDI) and the level of export sophistication in China. Similarly, **(Rehman & Ding, 2020)** identified interdependent connections among economic growth, exports, FDI, and unemployment in the European Union. Furthermore, a multitude of studies have shown empirical evidence supporting the existence of long-term equilibrium (cointegration) connections between foreign direct investment (FDI), exports, and various other macroeconomic variables. **(Ahmed et al., 2023)** and **(Dritsakis & Stamatiou, 2018)** discovered long-term cointegration. Similarly, **(Dritsakis & Stamatiou, 2018)** **(Abrar Ullah, Rohaizat Bin Baharum, 2020)** confirmed the presence of long-term cointegration between exports and foreign direct investment (FDI) in Pakistan. Nevertheless, the link is not consistently direct. **(Nguyen & Do, 2020)** discovered that higher import values can initially enhance export performance, but with time, export performance may decline, especially in the presence of greater foreign investment. Similarly, **(Bhasin & Gupta, 2017)** established a symbiotic connection between GDP, exports, and FDI inflows in both the short and long term. However, they also revealed that FDI inflows had a detrimental impact on India's long-term exports. Furthermore, the research suggests that the impact of foreign direct investment (FDI) on exports varies based on the development level of the country receiving the investment. **(Sahoo & Dash, 2022)** found that foreign direct investment (FDI) had the greatest effect in developing nations and the least effect in lower-income countries. The current body of research emphasizes the intricate and perhaps conflicting connection between foreign direct investment (FDI) and exports. This relationship exhibits mutual causality, a wide range of long-term and short-term effects, and variations based on degrees of development and sectors. These findings emphasize the necessity for more research to acquire a more profound comprehension of the underlying mechanisms and contextual elements that impact the connection between foreign direct investment (FDI) and exports. Furthermore, more investigation is required to examine the indirect and industry-specific channels through which foreign direct investment (FDI) can influence export performance.

For instance, **(Ahmed et al., 2023)** conducted a study using annual time-series data from 1972 to 2019 to explore the association between FDI inflows and export performance in Bangladesh. Unit root tests, including the ZA test, LP test, ADF test, and PP test, were performed. The Johansen test of cointegration was employed to assess if variables were co-integrated. Their findings indicated a long-run equilibrium relationship (cointegration) for three variables (LRGDPGR, LRFDI, and LREX), and the Vector Error Correction Model (VECM) suggested a positive, one-way causal relationship between REX and RFDI in Bangladesh.

Rehman & Ding (2020) utilized data spanning 1990 to 2017 and employed autoregressive distributed lag (ARDL) techniques to investigate the bidirectional causal link between export sophistication and outbound foreign direct investment (ODI) in China. Their results revealed a bidirectional causal link between ODI and export sophistication, along with evidence of cointegration.

Dritsakis & Stamatiou (2018) employed panel data from 1970 to 2015 to investigate causal links between exports, FDI, unemployment, and economic development in fifteen older EU nations. The Hausman test was used to compare Fixed Effect and Random Effect approaches for estimating panel VAR equations in Granger causality testing. Their results indicated three unidirectional causalities, including FDI to economic growth, FDI to unemployment, and economic growth to unemployment. Additionally, three bidirectional causalities were identified between economic growth and exports, exports and FDI, and exports and unemployment.

In a study by **Sekuloska (2018)** investigating the relationship between export performance in the Macedonian economy and foreign direct investment (FDI) in the automobile sector, regression analysis

was employed to examine the link between export and FDI inflow. Additionally, the Granger causality test was utilized to explore the relationship between increased exports and FDI inflow. The findings suggest that FDIs play a crucial role in shaping changes in the export structure of the Macedonian economy, both in terms of quantity and quality.

Nguyen & Do (2020) conducted a study in Vietnam, focusing on the effects of Exchange Rate Shocks, Inward FDI, and Import on Export Performance. Using a time-series sample dataset covering the years 2009–2018, the study applied the vector error correction model with Cointegration analysis and the enhanced Dickey-Fuller test. The results indicate that while higher import values slightly enhance export performance in the short term, in the medium and long terms, export performance tends to decline, especially with increasing foreign investment. Historically, nations have often devalued their currencies to stimulate export growth, but the study concludes that while exchange rate volatility has no short-term impact on foreign trade, it does exert a long-term influence.

Gebremariam & Ying (2022) analyzed the empirical relationship between foreign direct investment (FDI) and export performance in Ethiopia, utilizing annual time series data spanning the years 1992–2018. The study employed the autoregressive distributed lag (ARDL) model as the analytical framework. Following pre-estimation tests, the long-run model results indicated a limited correlation between FDI and export performance. The calculated long-run equation further revealed that Ethiopia's export performance demonstrated improvement with an increase in real GDP. Additionally, the coefficient of the real effective exchange rate index in the long-run equation suggested that export performance is positively influenced by exchange rate depreciation.

Sahoo & Dash (2022) utilized panel data analysis to examine the effects of foreign investment on exports from 2000 to 2017 across 93 developing nations. The study also differentiated between various categories of developing countries, dividing the sample into lower-income countries (LICs), lower- and middle-income countries (LMICs), and emerging countries, to assess the varying effects of FDI for each group. According to the findings, FDI contributes positively to enhancing exports, with the effectiveness of this impact varying based on the degree of development in the host nation. The study suggests that FDI tends to be most effective in boosting exports for developing nations, while its impact is least pronounced for lower-income countries.

(Abrar Ullah & Rohaizat Bin Baharum, 2020) conducted a study using data from 1974 to 2019 to explore the relationship between exports and foreign direct investment (FDI) in Pakistan. The autoregressive distributed lag model (ARDL) approach was employed, along with the limits test for coherence. Cointegration test results indicated a long-term cointegration link between the variables. However, the calculated results revealed an insignificant relationship between the two variables in the long run, although FDI had a positive impact on exports in the short term. Notably, the anticipated term for mistake correction is noteworthy, carrying an expected sign.

Mala (2020) examined the impact of foreign direct investment on Nigerian exports using data spanning 1970–2017. The study employed the ARDL approach to investigate the link. The findings suggested that while FDI does not significantly and directly affect exports, economic growth does. The study concludes that FDI significantly influences the economy's export performance indirectly.

Bhasin & Gupta (2017) delved into the dynamics of the relationship between key macroeconomic indicators—India's GDP, exports, and currency rate—and foreign direct investment (FDI) inflows. Utilizing yearly time series data from 1980 to 2012, the study found significant evidence of a long-run link between variables using the ARDL approach. However, there was no proof of long-term cointegration when the exchange rate was the dependent variable. The results indicated a mutually positive and substantial link, both in the short and long term, between GDP and exports and FDI inflows. Conversely, FDI inflows had a negative long-term impact on exports. Additionally, an increase in exchange rates boosted exports and FDI inflows but ultimately had a negative effect on GDP. The error-correction term (ECT) in the models indicated a relatively rapid rate of equilibrium recovery after a

shock, and the study observed long-run causality between explanatory variables and corresponding dependent variables.

Kuntluru et al (2012) conducted an empirical investigation into the relationship between foreign direct investment and the export capabilities of Indian pharmaceutical companies. The sample dataset included 103 pharmaceutical companies, and the study covered eight years from 1997–1998 to 2004–2005. The findings indicated a negative impact of foreign ownership on export performance in the pharmaceutical industry. Unlike other sectors, foreign-owned pharmaceutical companies were observed to prioritize domestic demand and host country-specific benefits over exports. The study concluded that FDI significantly and indirectly affects the economy's export performance.

The previous literature studies have investigated the relationship between foreign direct investment (FDI) and export performance using diverse econometric techniques in different countries. However, the use of varied time periods and the emphasis on direct effects may restrict the generalizability and applicability of the findings. This study focuses exclusively on Somalia, a market situation that has been given little consideration in earlier research. The aim is to provide a comprehensive analysis, explore a broader set of export performance indicators, and potentially enhance our understanding of the complex dynamics and policy implications of the FDI-export relationship.

3. Methodology

This section discusses the methodologies employed in the study, including the techniques utilized for data collection and analysis. It encompasses the types of data utilized, their sources, and the specifications of the model. Additionally, it outlines the techniques employed for data analysis.

3.1 Data

The objective of this research is to examine the relationship between foreign direct investment (FDI) and export performance in Somalia. The study utilizes time series data covering the years 1977 to 2017. Primary data sources include the World Bank, the International Monetary Fund (IMF), the Central Bank of Somalia, official government publications, and the Statistical, Economic, and Social Research and Training Center for Islamic Countries (SESRIC) online database. The dataset incorporates variables such as gross domestic product, exchange rate, exports, and foreign direct investment. To mitigate the potential issue of heteroscedasticity, natural logarithms were applied to all variables, except for the real effective exchange rate index. Table 1 provides a detailed description of the research variables. This study posits that foreign direct investment (FDI) positively impacts Somalia's export sector, enhancing its ability to export through advanced technology, managerial knowledge, and global distribution networks. The Gross Domestic Product (GDP) also has a favorable long-term impact on exports, leading to enhanced production capacity, economies of scale, and increased export competitiveness. However, the exchange rate in Somalia has a detrimental long-term impact on exports, as conventional trade theory suggests that a devaluation of the home currency can enhance export competitiveness in international markets, thus improving export performance.

Table 3.1: Research Variables (Meaning, Measurements, and Sources)

Symbol	Variable description and measurement	Sources
EXP	The export (as a % of GDP). Annual Export measured in %.	(SESRIC).
FDI	Foreign direct investment (inflow % of GDP). FDI which is measured in %.	(SESRIC).
RGDP	Real gross domestic product	World Bank database
EXCH	Official exchange rate (LCU per US\$, period average).	World Development indicators

The choice of variables and their measurement is based on previous studies and economic theory. Export performance is measured as the ratio of exports to GDP, which is a commonly used indicator of a country's export competitiveness (Gebremariam & Ying, 2022). FDI is measured as the ratio of FDI inflows to GDP, which captures the relative importance of FDI in the host economy (Mala, 2020). GDP and the exchange rate are included as control variables to account for the potential effects of economic growth and currency fluctuations on export performance (Bhasin & Gupta, 2017). The VECM approach is chosen because it allows for the estimation of both short-run and long-run relationships among the variables, while accounting for potential cointegration and endogeneity issues (Engle & Granger, 2015).

3.2 Model Specification

After reviewing earlier research studies such as Popovici (2018), (Mala (2020), and Gebremariam & Ying (2022). this study introduces real GDP and real effective exchange rate as additional independent variables alongside foreign direct investment inflows. The objective is to explore the influence of FDI on Somalia's export performance. Consequently, the study employs the following model parameters:

$$EXP_t = \beta_0 + \beta_1 FDI_t + \beta_2 RGDP_t + \beta_3 EXG_t + U \tag{1}$$

3.3 Estimation Technique

This study utilized a dependent model to determine the effect or control of various elements. The researchers employed E-Views computer program version 10, obtained from (Poku et al., 2022), for this investigation. To illustrate the levels of a VAR, one can utilize the following equation in a series of representations:

$$y_t = \beta_1 y_{t-1} + \beta_2 y_{t-2} + \dots + \beta_l y_{t-l} + \varepsilon_t \tag{1}$$

Where y_t represents a $(n \times 1)$ vector of a commodity, β is a $(n \times n)$ matrix of coefficients. In a general format, this relationship can be represented as Vector Error Correction (VECM) and it is formulated as:

$$\Delta y_t = \delta_1 \Delta y_{t-1} + \delta_2 \Delta y_{t-2} + \dots + \delta_{l-1} \Delta y_{t-l+1} + \Pi \Delta y_{t-l} + \varepsilon_t \tag{2}$$

$$\delta_i = \sum_{i=1}^{l-1} -\beta_i; \quad \Pi = I_n + \delta_{l-i}$$

3.4 The Cointegration Test

Cointegration tests play a crucial role in time series research, especially when investigating the enduring connections between variables. (Engle & Granger, 2015) co-integration theory states that linear combinations have the ability to transform non-stationary variables into stationary ones. The joint trace test is an essential element of the Johansen cointegration test, employed to ascertain the presence of cointegrating correlations among various time series variables. This test was conducted to ascertain the quantity of cointegrating vectors, which represent the enduring connections between these variables. The test statistic that corresponds to it is as follows:

$$\lambda_{trace}(r) = -n \sum_{i=r+1}^m \ln(1 - \hat{\lambda}_i) \quad (3)$$

The test is conducted sequentially and under the null at most $r = 0, 1, \dots, m - 1$ co-integrating vectors such that:

$$H_0: r = 0 \text{ vs } H_1: r > 0 \quad H_0: r \leq 1 \text{ vs } H_1: r > 1 \quad H_0: r = m - 1 \text{ vs } H_1: r = m$$

$H_0: r(\Pi) \leq m$ a maximum of r co-integration vector groups, $H_1: r(\Pi) > m$ where Π symbolized the number of groups of independent vector-matrices, i.e. the number of Eigen values that varied from 0; n denoted the number of samples; r denoted the number of co-integrated vector groups; $\hat{\lambda}_i$ denoted the estimated value of the i th Eigen value; and m denoted the resultant number of Eigen values that obeyed the 2 distribution and were under investigation.

The second method is Maximum Eigenvalue Test. The regression statistics equation is formulated as:

$$\lambda_{max}(r, r + 1) = -n \ln(1 - \hat{\lambda}_{r+1}) \quad (4)$$

The test is conducted sequentially and under the null at most $r = 0, 1, \dots, m - 1$ co-integrating vectors such that:

$$H_0: r = 0 \text{ vs } H_1: r = 1 \quad H_0: r = 1 \text{ vs } H_1: r = 2 \quad H_0: r = m - 1 \text{ vs } H_1: r = m$$

$H_0: r(\Pi) = m$ and there were m groups of co-integration vectors, $H_1: r(\Pi) = m + 1$. In the given context, n represents the sample number, m indicates the number of groups of co-integrated vectors, and $\hat{\lambda}_i$ is the estimated value of the Eigen value, which follows the chi-square distribution and is being-analyzed. This study utilized the "JJ" methodology, which was created by (Johansen & Juselius, 1990). The notable benefit of the JJ technique lies in its capacity to be applied to I(2) or higher-order series, as long as the series possesses the same level of integration. Since the studied variables demonstrate stationarity in their first differences, the authors utilized the JJ approach to examine the presence of cointegration among the variables.

3.5 Granger-Causality Test

The Granger causality test proves to be a valuable technique for analyzing correlations and causal relationships between foreign direct investment, exports, and other variables. This analysis offers unique insights into the long-term impacts of changes in foreign direct investment on export growth in Somalia. It equips policymakers with crucial knowledge to inform their decisions regarding trade and investment policies. The key advancement attributed to the Granger causality test is its reliance on a data-driven methodology, enabling researchers to identify directional connections between variables, even in the absence of prior domain knowledge. This phenomenon is observed when two or more variables exhibit co-integration, indicating the presence of Granger causation between them. The test is formulated in the following manner:

$$x_t = \alpha_0 + \sum_{i=1}^p \omega_i x_{t-i} + \sum_{j=1}^q \varphi_j y_{t-j} + e_t \quad (5)$$

$$y_t = \beta_0 + \sum_{i=1}^p \delta_i x_{t-i} + \sum_{j=1}^q \eta_j y_{t-j} + v_t \tag{6}$$

Variable x is regarded to have a significant impact on variable y when the data show that only the null hypothesis has been disproven. A causal relationship between variables x and y can be established when the null hypotheses H₀ and H₁ are both rejected. Although the literature is widely-used, it does have several drawbacks that have been suggested. Furthermore, the inclusion of the **Toda & Yamamoto, (1995)** study enhances the effectiveness of the Granger-Causality test. The authors of the publication are **(Doran & Rambaldi, 1997)**

4. Results and Discussion

4.1 Descriptive Statistics

Table 1 presents a descriptive analysis for four variables: LEXPR, LFDI, LGDP, and EXCH. The LEXPR variable has an average value of 16.45 units, with a standard deviation of 1.17 units. A higher standard deviation signifies greater variability in the data, with a maximum value of 18.61 units and a minimum value of 14.97 units. The LFDI has a mean value of 14.35 units and a standard deviation of 2.53, indicating a significantly higher degree of variance. The LGDP has a mean value of 21.50 units and a low standard deviation of 0.14, suggesting that there is very little variance across the observations. The variable EXCH has an average value of 10953 units, accompanied by a substantial standard deviation over 10,000. This indicates a considerable amount of variance in exchange rates among the data points. In addition, the table presents statistics such as skewness and kurtosis, which offer further insights into the distribution of data for each variable.

Table 1: Descriptive Statistics

	LEXPR	LFDI	LGDP	EXCH
Mean	16.45166	14.53551	21.50189	10953.34
Median	15.95086	14.34614	21.53335	7972.333
Maximum	18.61171	18.76427	21.70589	31585.42
Minimum	14.96924	9.210340	21.23609	6.295000
Std. Dev.	1.166295	2.533139	0.142374	10567.96
Skewness	0.297636	-0.055489	-0.308381	0.496107
Kurtosis	1.661229	2.232470	1.878892	1.937818
Jarque-Bera	3.667205	1.027423	2.797019	3.609228
Probability	0.159837	0.598271	0.246965	0.164538
Sum	674.5180	595.9558	881.5776	449087.0
Sum Sq. Dev.	54.40973	256.6718	0.810817	4.47E+09
Observations	41	41	41	41

Sources: computed by author (2024).

4.2 Correlation Tests

Table 2 shows The correlation analysis reveals a modest but nevertheless favorable association between foreign direct investment (FDI) and exports, in accordance with the internalization idea. The negative correlation coefficient between Gross Domestic Product (GDP) and exports indicates a tenuous inverse association between GDP and exports. The data shows a significant negative correlation (-0.82108582025) between exports and exchange rates. This indicates that when the domestic currency strengthens, export volumes decrease. This supports the common economic hypothesis that a stronger home currency reduces the price competitiveness of exports in international markets.

Table 2: Correlation Pairs

	LEXPORT	LFDI	LGDP	EXCHANGE_ RATE
LEXPORT	1.000	0.046715088 10	- 0.1256636870	- 0.82108582025
LFDI	0.04671508 81	1.000	0.3716156463	0.1232650768
LGDP	-0.12566368	0.371615646 39	1.0000	0.0589598489
EXCHANGE_ RATE	-0.8210858	0.12326507	0.0589598489	1.000

Sources: computed by author (2024)

4.3 Unit root test

The Vector Error Correction Model (VECM) approach to capture long-term equilibrium relationships between non-stationary, cointegrated variables. The VECM framework effectively captures dynamic adjustments towards long-run equilibrium and considers short-term disequilibria. The non-stationarity in variables indicates stochastic tendencies, contradicting normal regression models and potentially leading to 'spurious regression', where significant associations may be caused by trending patterns rather than genuine economic connections. The VECM technique resolves this issue by taking the difference of variables to achieve stationarity, resulting in more accurate long-run correlation estimations.

The results of the Augmented Dickey-Fuller (ADF) test are presented in Table 3, indicating a lack of stationarity for all variables at the level. This implies no evidence of zero-order integration, or I(0), for LEXPORT and all other independent variables. However, after first-order differencing, the ADF unit root test results demonstrate that all variables become stationary, indicating the absence of a unit root. Therefore, they are classified as belonging to the first level of integration, or I(1).

The subsequent phase involves conducting Cointegration analysis and assessing correlations between the independent variables—LFDI, LGDP, and the exchange rate—and the dependent variable, LEXPORT, in both the short and long terms. The application of Johansen Cointegration tests will facilitate this objective. In the presence of Cointegration evidence, a Vector Error Correction Model (VECM) will be employed. Conversely, if there is no indication of Cointegration, a Vector Auto-regression Model (VAR) will be applied. Additionally, an extensive series of diagnostic tests will be conducted, encompassing evaluations for serial correlation, heteroscedasticity, normality, and stability. As part of the stability investigation, an analysis of AR roots will be carried out.

Table 3: Unit root test

Variables	Level		First difference	
	Intercept	Trend & intercept	Intercept	Trend & intercept
LEPORT	-0.987640	-2.559853	-5.418283**	-5.342984**
LFDI	-2.243907	-2.475576	-5.988376**	-5.954153**
LGDP	-1.928788	-1.891987	-6.657654**	-6.582126**
LEXCH	-0.890019	-3.315063	-4.699216**	-4.633183**

The four tests are indicated by the ** symbol: the first difference of the variables and ADF are significant at the 5% level.

Source: Sources: computed by author (2024)

In summary, the unit root test findings indicate that all the variables of interest (exports, FDI, GDP, and exchange rate) are integrated of order one, denoted as I(1), which implies that they become stationary after undergoing the first difference. This finding aligns with the research objectives and hypotheses, which likely seek to investigate the long-term and short-term connections between these factors. Next, the analysis will involve examining the cointegration between these variables and estimating the suitable econometric model, such as an Error Correction Model (ECM), to capture the dynamic interactions and infer significant policy implications.

4.4 Cointegration

The method of cointegration analysis determines the long-term equilibrium relationship between variables. The study examines first-order integrated variables and finds that most p-values are below the significance level of 0.05. The inclusion of cointegration equations in the model indicates a valid rejection of the null hypothesis. The model can support a maximum of one cointegration equation with a significance level of 5%, as determined by the results of the trace and maximum eigenvalue statistical tests. These findings are applicable to both the maximum eigenvalue test and the trace test, indicating a stable and balanced relationship between the variables throughout time. The results supports by some researchers including (Ghauri et al., 2022;Islam, 2023& Ahmed et al., 2023)

Table 4.1 Unrestricted Cointegration Rank Test (Trace)

Hypothesized	No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *		0.523258	55.40386	47.85613	0.0083
At most 1		0.395898	27.25420	29.79707	0.0956

At most 2	0.174497	8.101764	15.49471	0.4546
At most 3	0.021214	0.814790	3.841466	0.3667

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Table 4.2 Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized	No. of CE(s)	Max-Eigen Eigenvalue	0.05 Critical Value	Prob.**
None *		0.523258	27.58434	0.0423
At most 1		0.395898	21.13162	0.0925
At most 2		0.174497	14.26460	0.4558
At most 3		0.021214	3.841466	0.3667

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Furthermore, the results of the Johansen analysis, presented in Tables 4.1 and 4.2, provide evidence of Cointegration. The substantial values observed for the Trace and Maximum Eigenvalue statistics further support this conclusion. Consequently, the Cointegration equation will utilize the data series normalized in relation to EXPORT.

Table 5: Cointegration Equation Normalized

Normalized co-integrating coefficients (standard error in parentheses)

LEXPORT	LFD	LGDP	EXCHANGE_RATE	C
1.000000	-0.111704	1.336294	0.000106	0.059457
	(0.04305)	(0.72794)	(7.3E-06)	(0.08157)

The long-run equation from Table 5 can be expressed as follows:

$$\text{Log_EXPORT}_t = 0.059457 - 0.111704\text{FDI}_t + 1.336294\text{LGDP}_t + 0.000106\text{EX-RATE}_t$$

Cointegration Equation Normalized

The Cointegration equation is employed to establish a correlation between variables such as EXPORT and independent factors such as foreign direct investment, GDP, and currency rate. The equation demonstrates a substantial inverse relationship between export and foreign direct investment, but exports and the foreign exchange rate exhibit a positive but insignificant correlation. The relationship between export and GDP exhibits a significant positive correlation, suggesting that for every one percentage point rise in foreign direct investment, there is a corresponding fall of 0.11% in

export performance. These findings are consistent with conclusions published in other studies, including (Mala, 2020) and (Kuntluru et al., 2012).

Table 6: Pairwise Granger Causality Tests

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
LFDI does not Granger Cause LEXPORT	39 18	1.438	0.251
LEXPORT does not Granger Cause LFDI	74	2.150	0.132
LGDP does not Granger Cause LEXPORT	39 16	3.549	0.039
LEXPORT does not Granger Cause LGDP	83	2.042	0.145
EXCHANGE_RATE does not Granger Cause LEXPORT	39 79	0.171	0.842
LEXPORT does not Granger Cause EXCHANGE_RATE	10	2.001	0.150
LGDP does not Granger Cause LFDI	39 51	1.101	0.343
LFDI does not Granger Cause LGDP	75	0.757	0.476
EXCHANGE_RATE does not Granger Cause LFDI	39 96	1.225	0.306
LFDI does not Granger Cause EXCHANGE_RATE	38	0.651	0.527
EXCHANGE_RATE does not Granger Cause LGDP	39 71	0.013	0.986
LGDP does not Granger Cause EXCHANGE_RATE	91	0.372	0.691

Table 6 analyzes the cause-and-effect correlations between variables by employing Granger causality tests. It investigates if previous values of one variable (cause) may forecast future values of

another variable (effect). The null hypothesis states that there is no Granger causality, indicating that previous values of the first variable (e.g., LFDI) do not include any information that can be used to forecast the second variable (LEXPORT). The table indicates that there is no Granger causality at the 5% significance level between LEXPORT and Foreign Direct Investment (LFDI). This suggests that the previous values of one variable do not have a statistically significant impact on predicting the future values of the other variable. Nevertheless, there is empirical support for a one-way causal relationship known as unidirectional Granger causality between LEXPORT and Gross Domestic Product (LGDP). Specifically, LGDP is found to Granger cause LEXPORT, but not the other way around. There is no Granger causation relationship between the variables LEXPORT and Exchange Rate, LFDI and LGDP, or Exchange Rate and LFDI/LGDP. In summary, the findings indicate that previous LGDP values may be useful in forecasting future LEXPORT. However, there is no statistically significant evidence of additional associations.

Table 7: Diagnosis Results

VEC Residual Heteroscedasticity Tests		
Chi-sq	Df	Prob
170.5212	180	0.6820
VEC Residual Serial Correlation LM		
Lags	LM-Stat	Prob
1	20.92703	0.1813
2	17.35427	0.3630

Sources: computed by author (2024)

Following the diagnostic testing of the VECM model, **Table 7** above displays the results. We performed the VEC Residual Heteroscedasticity Test and the VEC Residual Serial Correlation Test to examine the presence of heteroscedasticity and serial correlation in the model's residuals. The analysis yielded a Chi-square statistic of 170.5212 with a p-value of 0.6820, indicating that the observed data is not statistically significant at the 5% level. This implies that the residuals demonstrate consistent variance, so meeting the assumption of homoscedasticity. Homoscedasticity guarantees the dependability of the standard errors and confidence intervals obtained from the VEC model, as it can result in biased and ineffective estimations. The LM-Statistics for both lag orders exhibited significant p-values, suggesting that the null hypothesis of no serial correlation in the residuals cannot be disproven.

Table 8: Short-run VECM result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LEXPORT(-2))	0.025297	0.184072	0.137432	0.8918
D(LEXPORT(-3))	0.248662	0.183388	1.355932	0.1877
D(LFDI(-1))	0.003337	0.040016	0.083404	0.9342
D(LFDI(-2))	0.032175	0.038343	0.839134	0.4097
D(LFDI(-3))	0.025783	0.035746	0.721285	0.4777
D(LGDP(-1))	1.793543	1.186388	1.511767	0.1436
D(LGDP(-2))	0.786533	1.043617	0.753661	0.4584
D(LGDP(-3))	2.306882	0.980066	2.353802	0.0271
D(EXCHANGE_RATE(-1))	-7.32E-05	2.33E-05	-3.143515	0.0044
D(EXCHANGE_RATE(-2))	1.55E-05	2.42E-05	0.640862	0.5277
D(EXCHANGE_RATE(-3))	-3.53E-05	2.29E-05	-1.542766	0.1360
C	0.027215	0.071079	0.382879	0.7052
ECM(-1)	0.385535	0.130837	2.946677	0.0070

Sources: computed by author (2024)

The short-run Vector Error Correction Model (VECM) is employed to examine the dynamics and long-term equilibrium of variables like LEXPORT, LFDI, LGDP, and exchange rate. The findings indicate that there is a notable adverse effect on the current fluctuations in exports from both the GDP value with a three-period lag and the exchange rate value with a one-period lag. The regression analysis shows that the coefficients for the lagged dependent variables, namely LEXPORT and LFDI, are not statistically significant. This suggests that previous export values do not have a substantial immediate effect on the current changes in exports. The positive and statistically significant coefficient on the error

correction term (ECM) indicates that any deviations from the long-run equilibrium will be rectified in the short term.

5. Conclusion and Recommendations

5.1 Conclusion

This study investigates the relationship between foreign direct investment (FDI) and export performance in Somalia from 1977 to 2017, using a vector error correction model (VECM) and various econometric techniques. The results indicate a weak but positive correlation between FDI and exports, and a negative association between GDP, exchange rate, and exports. The cointegration test confirms the existence of a long-run equilibrium relationship among the variables. However, the Granger causality test reveals no causal relationship between FDI and export performance, suggesting that FDI does not significantly influence exports in Somalia.

5.2 Practical Implications

The findings have important implications for policymakers and investors in Somalia. Policymakers should leverage the positive short-term impact of FDI on exports. Efforts to attract and facilitate FDI can contribute to enhanced export performance. Creating a favorable business environment, providing incentives, and addressing regulatory barriers can attract more FDI, potentially boosting Somalia's export sector (**World Bank Group, 2018**). The identified negative and statistically significant relationship between exports and the exchange rate indicates the need for careful management of currency policies. Policymakers should monitor and implement strategies to mitigate the potential adverse effects of exchange rate fluctuations on export performance (**Vieira & MacDonald, 2020**).

The unidirectional causal relationship between GDP and exports suggests the need for strategies to stimulate economic growth, which can positively impact exports. Diversification of the economy and investments in sectors with export potential could contribute to sustained export growth (**Agosin, 2009**). Continuous monitoring of economic indicators, exchange rates, and the overall business environment is crucial for informed decision-making and timely policy adjustments. Ongoing research and analysis are essential to unravel the underlying dynamics of the relationships identified in the study. Policymakers should support and engage in further studies to gain deeper insights into the factors influencing FDI, exports, and their interactions (**Jawaid et al., 2016**).

Strengthening institutions involved in trade, investment, and economic planning can enhance the implementation of effective policies (**Zhang et al., 2024**). Capacity-building initiatives for relevant government agencies can improve their ability to attract and manage FDI, as well as formulate export-friendly policies (**Pan et al., 2023**). Collaboration between government bodies, private sector entities, and international organizations is essential for creating a holistic approach to promoting FDI and exports (**HAILU, 2010**). Partnerships with foreign investors, development agencies, and trade partners can bring in expertise and resources to support economic development.

5.3 Study Limitations and Recommendations

The study has several limitations that should be acknowledged. The limited availability of secondary data and potential measurement errors may affect the generalizability and validity of the results. The use of aggregate data may also mask the sector-specific impact of FDI on exports, which could be an important avenue for future research. Additionally, the study does not account for the role of institutional factors, such as political stability, governance quality, and trade policies, which may mediate the relationship between FDI and export performance in Somalia. Moreover, the study is conducted in the context of external factors, such as geopolitical events, global economic conditions, and natural disasters, which are beyond the scope of control. These external factors may influence the study outcomes. The econometric models used, including the Vector Error Correction Model (VECM),

have inherent complexities (Silvia et al., 2023). Model assumptions and limitations may affect the generalizability of the findings. Granger causality tests provide insights into statistical relationships but do not establish causation in a real-world sense (Rezaee et al., 2020).

In conclusion, this study contributes to the limited literature on the relationship between FDI and export performance in Somalia and highlights the need for a more nuanced understanding of the factors that influence export competitiveness in the country. Further research is recommended to explore the sector-specific impact of FDI on exports, the role of institutional factors, and the effectiveness of policy interventions in promoting export-oriented FDI and enhancing the spillover effects for domestic firms.

References

- Abor, J., Adjasi, C. K. D., & Hayford, M. C. (2008). How does foreign direct investment affect the export decisions of firms in Ghana? *African Development Review*, 20(3), 446–465. <https://doi.org/10.1111/j.1467-8268.2008.00193.x>
- Abrar Ullah, Rohaizat Bin Baharum, M. Y. & K. M. N. (2020). Journal of Applied Economics and Business Studies (JAEBS). *Journal of Applied Economics and Business Studies*, 4(2), 181–204.
- Africano, A. P. (2007). “ *A Panel Analysis of the FDI Impact on International Trade* ” *Manuela Magalhães Ana Paula Africano*.
- Agosin, M. R. (2009). Export diversification and growth in emerging economies. *Cepal Review*, 97, 115–131. <https://doi.org/10.18356/27e5d46c-en>
- 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>
- Bhasin, N., & Gupta, A. (2017). Macroeconomic impact of FDI inflows: an ARDL approach for the case of India. *Transnational Corporations Review*, 9(3), 150–168. <https://doi.org/10.1080/19186444.2017.1362860>
- Doran, H. E., & Rambaldi, A. N. (1997). Applying linear time-varying constraints to econometric models: With an application to demand systems. *Journal of Econometrics*, 79(1), 83–95. [https://doi.org/https://doi.org/10.1016/S0304-4076\(97\)00008-0](https://doi.org/https://doi.org/10.1016/S0304-4076(97)00008-0)
- Dritsakis, N., & Stamatiou, P. (2018). *CAUSAL NEXUS BETWEEN FDI , EXPORTS , UNEMPLOYMENT AND ECONOMIC GROWTH FOR THE OLD EUROPEAN UNION MEMBERS . EVIDENCE FROM PANEL DATA*. VII(2), 35–56. <https://doi.org/10.20472/ES.2018.7.2.002>
- Engle, R. F., & Granger, C. W. J. (2015). Co-integration and error correction: Representation, estimation, and testing. *Applied Econometrics*, 39(3), 107–135. <https://doi.org/10.2307/1913236>
- Gamariel, G., & Hove, S. (2019). Foreign Direct Investment and Export Competitiveness in Africa: Investigating the Channels. *Journal of African Trade*, 6(1–2), 30. <https://doi.org/10.2991/jat.k.191115.001>
- 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>
- Ghauri, S., Brohi, H., & Ahmed, R. R. (2022). *The Exports Performance Of Pakistan: Evidence From The ARDL Cointegration Analysis*. December.
- HAILU, Z. A. (2010). Impact of Foreign Direct Investment on Trade of African Countries. *International Journal of Economics and Finance*, 2(3), 122–133. <https://doi.org/10.5539/ijef.v2n3p122>

- Islam, M. M. (2023). *The Role of Foreign Direct Investment (FDI) Inflows on Export Performance in Developing Economies : Evidence from Bangladesh. December 2022.* <https://doi.org/10.9734/sajsse/2022/v16i3615>
- Jawaid, S. T., Raza, S. A., Mustafa, K., & Karim, M. Z. A. (2016). Does Inward Foreign Direct Investment Lead Export Performance in Pakistan? *Global Business Review*, 17(6), 1296–1313. <https://doi.org/10.1177/0972150916660394>
- Johansen, S., & Juselius, K. (1990). Maximum Likelihood Estimation and Inference on Cointegration — With Applications To the Demand for Money. *Oxford Bulletin of Economics and Statistics*, 52(2), 169–210. <https://doi.org/10.1111/j.1468-0084.1990.mp52002003.x>
- Kastratović, R. (2020). The impact of foreign direct investment on host country exports: A meta-analysis. *World Economy*, 43(12), 3142–3183. <https://doi.org/10.1111/twec.13011>
- Kuntluru, S., Muppani, V. R., & Khan, M. A. A. (2012). Foreign Direct Investment and Export Performance of Pharmaceutical Firms in India: An Empirical Approach. *International Journal of Economics and Finance*, 4(5), 216–226. <https://doi.org/10.5539/ijef.v4n5p216>
- Mala, B. (2020). Impact of Foreign Direct Investment (Fdi) on Export Performance in Nigeria (1970-2018). *International Journal of Advanced Academic Research | Social and Management Sciences*, 6(4), 4.
- Mohamed, A. N., Abdulle, A. Y., & Abdullahi, A. O. (2023). Factors Influencing Foreign Direct Investment Inflow in Somalia. *International Journal of Professional Business Review*, 8(2), 1–20. <https://doi.org/10.26668/businessreview/2023.v8i2.514>
- Morgan, R. E., & Katsikeas, C. S. (1997). Theories of international trade, foreign direct investment and firm internationalization: a critique. *Management Decision*, 35(1), 68–78. <https://doi.org/10.1108/00251749710160214>
- Nguyen, V. C., & Do, T. T. (2020). Impact of exchange rate shocks, inward FDI and import on export performance: A cointegration analysis. *Journal of Asian Finance, Economics and Business*, 7(4), 163–171. <https://doi.org/10.13106/JAFEB.2020.VOL7.NO4.163>
- Pan, A., Qin, Y., Li, H., Zhang, W., & Shi, X. (2023). Can environmental information disclosure attract FDI? Evidence from PITI project. *Journal of Cleaner Production*, 403, 136861. <https://doi.org/https://doi.org/10.1016/j.jclepro.2023.136861>
- Poku, K., Opoku, E., & Agyeiwaa Ennin, P. (2022). The influence of government expenditure on economic growth in Ghana: An Ardl approach. *Cogent Economics and Finance*, 10(1). <https://doi.org/10.1080/23322039.2022.2160036>
- Popovici, O. C. (2018). The impact of FDI on EU export performance in manufacturing and services. A dynamic panel data approach. *Romanian Journal of Economic Forecasting*, 21(1), 108–123.
- Rehman, F. U., & Ding, Y. (2020). The nexus between outward foreign direct investment and export sophistication: new evidence from China. *Applied Economics Letters*, 27(5), 357–365. <https://doi.org/10.1080/13504851.2019.1616056>
- Rezaee, Z., Aliabadi, S., Dorestani, A., & Rezaee, N. J. (2020). Application of time series models in business research: Correlation, association, causation. *Sustainability (Switzerland)*, 12(12), 1–17. <https://doi.org/10.3390/SU12124833>
- Sahoo, P., & Dash, R. K. (2022). Does FDI have differential impacts on exports? Evidence from developing countries. *International Economics*, 172, 227–237.
- Sekuloska, J. D. (2018). Causality between foreign direct investment in the automotive sector and

export performance of macedonian economy. *Equilibrium. Quarterly Journal of Economics and Economic Policy*, 13(3), 427–443. <https://doi.org/10.24136/eq.2018.021>

Silvia, E., Sihotang, N. V., Sihotang, D., & Silvia, E. (2023). *Causality Analysis of Inflation and Economic Growth Using the Error Correction Model (ECM)*. 11(1), 23–36.

The National Economic report, 2023. (2023). the National Economic report,2023. *Accelerating Economic Reforms and Building Resilience in the Post-HIPC Era*, 1(November).

Toda, H. Y., & Yamamoto, T. (1995). Statistical inference in vector autoregressions with possibly integrated processes. *Journal of Econometrics*, 66(1), 225–250. [https://doi.org/https://doi.org/10.1016/0304-4076\(94\)01616-8](https://doi.org/https://doi.org/10.1016/0304-4076(94)01616-8)

Unctad. (2023). *World Investment Report 2023: Investment and sustainable energy*.

Vieira, F. V., & MacDonald, R. (2020). The role of exchange rate for current account: A panel data analysis. *Economia*, 21(1), 57–72. <https://doi.org/https://doi.org/10.1016/j.econ.2020.05.002>

Wang, J., & Wang, X. (2015). AC. *Journal of International Economics*. <https://doi.org/10.1016/j.jinteco.2015.07.006>

World Bank. (2018). Rebuilding Resilient and Sustainable Agriculture in Somalia. In *International Bank for Reconstruction and Development* (Vol. 1).

World Bank Group. (2018). *Somalia Economic Update 2018: Rapid Growth in Mobile Money: Stability or Vulnerability?* 3, 1–66.

Zhang, S., Chen, C., & Li, H. (2024). Can outward FDI promote export diversification for emerging economies? Firm-level evidence from China. *Structural Change and Economic Dynamics*, 68, 269–280. <https://doi.org/https://doi.org/10.1016/j.strueco.2023.10.009>