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Understanding the Determinants of Foreign Trade Volume in Turkiye: An Empirical Analysis

Murat Cizakca[a]

Abstract

This study delves into the dynamics of foreign trade volume in Turkey, examining both theoretical frameworks and practical implications. By conducting a thorough analysis of previous studies and their findings, the study aims to shed light on the factors influencing foreign trade volume, particularly in the context of Turkey. Using regression and cointegration techniques, the study focuses on key variables such as total deposit interest rate, real interest rate, and real exchange rate spanning the period from 1990 to 2022. Through meticulous examination, the study uncovers a negative relationship between these variables and foreign trade volume, indicating the complex interplay between economic factors and trade dynamics. Moreover, the study explores the impact of foreign capital investments on foreign trade volume, revealing a direct and positive relationship between the two. This finding underscores the significance of foreign investment inflows as drivers of trade expansion and economic growth in Turkey. By elucidating the intricate relationships between various economic variables and foreign trade volume, this study offers valuable insights for policymakers, researchers, and practitioners seeking to understand and enhance Turkey's trade dynamics. Furthermore, the study provides a foundation for future research endeavors aimed at exploring additional factors shaping Turkey's trade landscape and informing evidence-based policy decisions.

Keywords: Foreign Trade Volume, Economic Factors, Regression Analysis, Cointegration Techniques
JEL Codes: F14, F41, C32, O24

1. INTRODUCTION

Foreign trade serves as a pivotal component of the global economic landscape, facilitating the exchange of goods and services between nations. It is essentially the mechanism through which products move from producers to consumers across international borders (Turner, 2010; Mordecai & Akinsola, 2021). This reciprocal exchange forms the basis of international commercial transactions and fosters economic interdependence among countries. The significance of foreign trade extends beyond mere transactions, as it serves as a barometer for evaluating the economic health of nations (Ingram et al., 2005; Andreou, 2021). The values of imports and exports play a crucial role in shaping government policies, guiding investment decisions for both public and private sectors, and influencing overall economic strategies. Policymakers rely on foreign trade data to formulate informed policies that drive economic growth and development. Over the past few decades, Turkey's foreign trade landscape has undergone notable transformations, influenced by the rapid expansion of the global economy (Öniş and Kutlay, 2013; Mealli, 2021; Irfan & Sohail, 2021). The trends of integration and globalization have heightened the importance of foreign trade, amplifying its role as a catalyst for economic activity and international relations. Through foreign trade, nations establish connections with foreign markets, enabling producers to reach new consumers and fostering economic linkages across borders. The interconnectedness fostered by foreign trade not only facilitates economic transactions but also promotes social and cultural exchanges among societies. As economies converge and adapt to global market dynamics, countries find opportunities to align their economic structures and participate in shared economic activities. This convergence not only fosters economic growth but also promotes mutual understanding and cooperation among nations. In essence, foreign trade serves as a cornerstone of the modern global economy, driving economic growth, fostering international cooperation, and promoting prosperity across nations (Naik, 2020; Sun & Chang, 2020; Gong et al., 2023). As countries continue to navigate the complexities of the global marketplace, foreign trade remains a key instrument for realizing shared economic goals and advancing collective prosperity.

Globalization has ushered in a paradigm shift in economic activities, with foreign trade emerging as a central pillar of this transformative process. It serves as both a key instrument and a consequential outcome of globalization, which seeks to integrate the world into a unified market (Campbell, 2004; Alzahrani & Salah, 2019; Hwang & Lee, 2017). As a result, national boundaries are increasingly permeable, and the significance of international trade has grown significantly. One of the primary effects of globalization is the enhancement of economic interactions across borders. By breaking down barriers to trade and investment, globalization promotes the exchange of goods, services, and capital on a global scale. This heightened interconnectedness fosters economic growth and development by enabling countries to specialize in the production of goods and services in which they have a comparative advantage. Foreign trade also plays a pivotal role in supporting governments' efforts to cultivate expertise in specific industries and spur innovation.

[a] İslam Ekonomisi ve Finans Bölümü, İşletme Yönetim Bilimler Fakültesi, Konya Ticaret Odası Karatay Üniversitesi, Konya, Turkiye

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By participating in global trade networks, countries gain exposure to new technologies, ideas, and best practices, fostering a culture of learning and innovation. This exposure not only accelerates the pace of technological advancement but also enhances countries' competitiveness in the global marketplace. Moreover, foreign trade offers countries the opportunity to leverage economies of scale and efficiently utilize the world's production resources, labor force, and time. By tapping into global supply chains, countries can access a diverse range of inputs and components, optimizing production processes and lowering costs. This enables businesses to achieve greater efficiency and competitiveness in the global market. Furthermore, foreign trade facilitates the search for optimal producers and consumers, allowing countries to identify and engage with partners that offer the best quality, price, and reliability. This dynamic process of market discovery promotes competition and efficiency, driving continuous improvement and innovation in products and services. Foreign trade serves as a linchpin of globalization, enabling countries to capitalize on economic opportunities, foster innovation, and enhance their competitiveness in the global marketplace. As nations continue to navigate the complexities of the global economy, foreign trade will remain a vital mechanism for driving economic growth, prosperity, and development on a global scale (Chen et al., 2016; Arshad & Mukhtar, 2017).

The primary objectives of economic policies in Turkey revolve around promoting domestic production, safeguarding local industries and producers, and boosting export levels. To achieve these goals, Turkey must implement a range of policies related to taxation, exchange rates, import quotas, foreign direct investment, interest rates, export duties, and exchange rate regimes. By carefully designing and implementing these policies, Turkey aims to improve its trade balance and stimulate economic activity. One crucial aspect of Turkey's economic policy is to create an environment conducive to local production and industry growth. This may involve providing incentives such as tax breaks or subsidies to domestic producers, as well as implementing measures to protect them from unfair competition, such as import tariffs or quotas. Additionally, Turkey seeks to enhance its export performance by implementing policies that support exporters and remove barriers to trade. This could include measures to streamline customs procedures, reduce bureaucratic red tape, and improve access to international markets. Furthermore, Turkey may adopt strategies to promote key export sectors, invest in trade infrastructure, and negotiate favorable trade agreements with other countries. In terms of foreign direct investment, Turkey aims to attract foreign capital inflows by offering a conducive investment environment, including incentives such as tax breaks, streamlined regulations, and political stability. FDI can play a significant role in boosting domestic production, creating jobs, and enhancing export competitiveness. Moreover, Turkey must carefully manage its exchange rate policies to ensure competitiveness in international markets. A stable and competitive exchange rate regime can help maintain export competitiveness and attract foreign investment, while also minimizing the risks associated with currency fluctuations. Furthermore, Turkey should learn from successful foreign trade policies implemented by other countries and tailor its own foreign trade strategy accordingly. By studying the factors that influence foreign trade volumes, such as real exchange rates, real interest rates, and foreign direct investments, Turkey can develop targeted policies to address key challenges and capitalize on emerging opportunities in the global marketplace (Akyurek and Kutan, 2008; Ünay, 2010; Bensaoud, 2018).

The relationship between exchange rates and foreign trade in Turkey has garnered significant attention from researchers, mirroring trends observed in international literature. Numerous studies conducted over the past two decades have shed light on this complex relationship. Baldemir and Gökalp (1999) examined data spanning from 1980 to 1997 and found no evidence of a cointegration relationship between nominal exchange rates and foreign trade terms. However, their Granger causality analysis revealed a causal relationship between exchange rates and foreign trade, indicating that changes in exchange rates can influence foreign trade dynamics (Baldemir and Gökalp, 1999). Similarly, Zengin (2000) investigated the relationship between exchange rates and export/import price indices using the vector autoregression (VAR) method since 1990. His findings indicated a causal relationship between exchange rates and both export and import prices, suggesting that fluctuations in exchange rates can impact the pricing of exports and imports in Turkey (Zengin, 2000). Another study by Acaravcı and Öztürk (2002) focused on the effects of exchange rate volatility on Turkey's exports. Using a cointegration model with monthly data from 1989 to 2002, they found that increased uncertainty in exchange rates had a negative effect on export demand. This suggests that fluctuations and unpredictability in exchange rates can dampen export demand in Turkey (Acaravcı and Öztürk, 2002). These studies underscore the intricate relationship between exchange rates and foreign trade in Turkey, highlighting the need for policymakers to carefully consider exchange rate policies and their potential impact on export competitiveness and trade dynamics

The choice of exchange rate regime plays a crucial role in shaping a country's foreign trade dynamics and, consequently, its overall economy. The exchange rate regime determines the value of a nation's currency relative to foreign currencies and influences the competitiveness of its exports and imports in international markets. In developing countries like Turkey, government interventions in the foreign exchange market can have a significant impact on exchange rates compared to developed countries. Despite having smaller trading volumes in the foreign exchange market, even minor interventions by governments in developing countries can influence exchange rate fluctuations significantly (Doğanlar, 2002). During the early 1980s, Turkey underwent a significant economic transformation by shifting from an import-based to an export-based system. This strategic shift propelled Turkey into becoming one of the fastest-growing markets globally. Consequently, Turkey experienced substantial growth in its foreign trade sector, both in terms of quantity and quality, since 1980 (Arvas, 2008). This transition marked a pivotal moment in Turkey's economic history, laying the foundation for its emergence as a major player in the global trade arena. The transition to an export-oriented economy not only expanded Turkey's presence in international markets but also enhanced the quality and diversity of its exports. By focusing on export-led growth, Turkey leveraged its competitive advantages and

diversified its export portfolio, contributing to sustained economic expansion and prosperity. This strategic shift underscores the importance of exchange rate policies and trade strategies in driving economic development and shaping a country's trajectory in the global economy.

The economic situation in Turkey, intricately linked with the global market, is under scrutiny through theoretical and econometric analyses aimed at understanding the factors influencing foreign trade volume. These studies combine both theoretical frameworks and empirical analyses to shed light on the dynamics of Turkey's foreign trade and its integration into the world economy. Through regression, cointegration, and causation analyses, researchers examine the relationships between various indicators of foreign trade and their impact on Turkey's trade volume. By analyzing data spanning from 1990 to 2010, these studies aim to uncover the interplay between different variables and their effects on Turkey's trade performance. Practical implications derived from these analyses provide valuable insights for policymakers. By understanding the underlying factors driving Turkey's foreign trade volume, policymakers can formulate informed decisions and strategies to enhance trade performance, address challenges, and capitalize on opportunities in the global marketplace.

2. LITERATURE REVIEW

Vergil's (2002) study delved into the impact of exchange rate fluctuations on trade flows between Turkey and three major trading partners, the United States and European Union countries, which collectively represent significant trade flows with Turkey. The findings of this study shed light on the effects of exchange rate volatility and uncertainty on export dynamics. Addressing exchange rate volatility and implementing measures to enhance stability can be crucial for fostering a conducive environment for export-led growth and promoting sustainable economic development in Turkey.

Albeni and Demirgil's (2003) study focused on exploring the impacts of exchange rate mobility and different exchange rate systems on exports, particularly within the manufacturing industry sector. The investigation encompassed an analysis of the effects of the real effective exchange rate and sector-specific real prices on exports. The findings revealed that there existed a discernible relationship between the real effective exchange rate and the export index across only eight sectors. The study concluded that the relationship between the real effective exchange rate and exports exhibited a degree of weakness, akin to observations made in other countries. These findings contribute to a deeper understanding of the nuanced interactions between exchange rate dynamics and export performance within specific sectors, offering valuable insights for policymakers and industry stakeholders seeking to navigate the complexities of international trade in Turkey.

In their study, Şimşek and Kadılar (2010) conducted a comprehensive statistical analysis of Turkey's total exports. Their findings revealed that if changes in the exchange rate do not correspond significantly to increases in domestic inflation, it tends to lead to an increase in export values. This insight sheds light on the intricate dynamics between exchange rate movements and export performance, highlighting the importance of considering inflationary pressures in shaping export outcomes (Şimşek and Kadılar, 2010).

Similarly, Karagöz (2005) delved into the relationship between exchange rates and foreign trade, employing econometric time series methodologies to examine the associations between exchange rates and both export and import variables. Throughout their study, particular emphasis was placed on ensuring the robustness of the regression analyses by conducting stability analyses for each series. This methodological rigor aimed to mitigate the risks of spurious regression relationships, thereby enhancing the reliability and validity of their findings (Karagöz, 2005).

Yamak and Korkmaz (2005) conducted a study focusing on the relationship between the real exchange rate and Turkey's foreign trade balance. Their research aimed to discern the connections between the real exchange rate and various product groups within Turkey's foreign trade balance. Utilizing data spanning from 1995 to 2004 and employing modern time series methods, they investigated the presence of long-term relationships between these variables. Surprisingly, their findings revealed the absence of long-term relationships between the real exchange rate and Turkey's foreign trade balance. However, they observed short-term relationships, primarily attributed to capital assets trade dynamics. This highlights the complexity of factors influencing Turkey's foreign trade dynamics and underscores the importance of considering both short-term and long-term perspectives in analyzing trade patterns (Yamak and Korkmaz, 2005).

Gül and Ekinci (2006) delved into the Granger causality relationship between the real exchange rate and import and export dynamics in Turkey spanning the period from 1990 to 2006. Through rigorous time series analysis, they identified a cointegration relationship between the real exchange rate and export-import activities. Interestingly, their findings indicated a causality relationship between import-export dynamics and the exchange rate, operating in one direction from import and export to the exchange rate. This suggests that fluctuations in import and export activities may exert a significant influence on the movement of the exchange rate, highlighting the intricate interplay between trade dynamics and currency valuations within Turkey's economic landscape (Gül and Ekinci, 2006).

Barışık and Demircioğlu (2006) explored the relationship between exchange rate regimes, convertibility, and import-export dynamics in Turkey. Utilizing data spanning from 1980 to 2001, their study aimed to uncover the interactions between different exchange rate regimes and the patterns of import-export activities. Following their analysis, they determined that there existed a weak relationship between the exchange rate and export-import dynamics. Moreover, they concluded that convertibility did not significantly contribute to fostering foreign trade activities. This suggests that other factors beyond exchange rate regimes and convertibility may play more influential roles in driving Turkey's import-export dynamics, warranting further investigation into the multifaceted determinants of foreign trade within the country (Barışık and Demircioğlu, 2006).

In Peker's study (2008), the examination focused on the effects of the real exchange rate on the trade balance in Turkey. The empirical evidence derived from the study indicated that over the long term, even a marginal change of 1% in the exchange rate exerted a negative impact on Turkey's trade balance. This finding underscores the sensitivity of the trade balance to fluctuations in the real exchange rate, highlighting the importance of exchange rate stability in fostering a favorable trade environment within Turkey's economy (Peker, 2008).

Sarı's study (2009) delved into the intricate interplay between interest rates, exchange rates, and the speed of production in the manufacturing sector. Employing the SWARCH method, the research sought to disentangle the relative impacts of interest rates and exchange rates on production dynamics. The findings revealed that exchange rate movements wielded a more pronounced influence compared to interest rates, particularly affecting the manufacturing sector through its impact on importation of intermediate goods and staples. Notably, fluctuations in the exchange rate were found to negatively impact productivity, with increased uncertainty in exchange rates leading to decreased productivity and, consequently, dampened foreign trade activity within Turkey (Sarı, 2009).

In the study conducted by Karagöz and Şen (2010), the focus was on examining the relationship between the exchange rate regime and commercial competition within Turkey. Through regression analysis, the research aimed to understand the effects of Turkey's exchange rate regime and the real exchange rate on the country's international commercial competitiveness. The regression analysis revealed a significant negative relationship between changes in the real exchange rate and both the Import Price Competitiveness Index and the Relative Wholesale Price Index. This suggests that fluctuations in the exchange rate corresponded to increases in relative wholesale prices and enhanced competition in terms of export prices. Additionally, the study found that exchange rate fluctuations had an impact on export profitability, indicating the intricate interplay between exchange rate dynamics and commercial competition within Turkey's economy (Karagöz and Şen, 2010).

In Yapraklı's study (2011), the investigation centered on the relationship between the flexible exchange rate regime and Turkey's foreign trade deficit. Utilizing the limit test approach, the research assessed the effects of real budget deficit, real money supply, and the real effective exchange rate index on the real foreign trade deficit. By analyzing data spanning from 2001 to 2009, a period characterized by a flexible exchange rate regime, the study shed light on the long-term dynamics shaping Turkey's foreign trade deficit. The results indicated that, over the long term, the budget deficit exerted a positive and statistically significant effect on the foreign trade deficit. Conversely, the money supply was found to have a negative and statistically significant impact on the foreign trade deficit. Interestingly, while the exchange rate also positively affected the foreign trade deficit, its impact was deemed statistically insignificant. These findings provide valuable insights into the complex interactions between fiscal, monetary, and exchange rate policies and their implications for Turkey's foreign trade dynamics (Yapraklı, 2011).

The intricate relationship between interest rates and foreign trade has been a subject of significant attention in economic literature, particularly in the context of developing countries. As these nations strive to establish democratic political systems and embrace free-market economies, they often encounter challenges associated with financial liberalization and short-term capital movements. While high interest rates may initially attract short-term capital inflows, they also introduce fragilities into money markets, potentially leading to economic vulnerabilities such as increased foreign trade and current account deficits, as well as a rise in short-term external debt relative to central bank foreign currency reserves (Erdoğan, 2006).

When considering international investments, investors are attracted to countries offering higher interest yields in their money markets. This creates a flow of short-term financial funds from countries with lower interest rates to those with higher rates. The interest rate differential between countries presents an opportunity for investors to profit from interest rate disparities by engaging in financial market investments or hedging through forward market transactions to mitigate risks associated with currency fluctuations (Yurdakul, 2009).

Foreign trade stands as a cornerstone of a country's economic dynamics, interplaying with various other factors such as inflation, interest rates, and exchange rates. Understanding the intricate relationships between foreign trade and these economic variables across different sectors is crucial for gaining insights into overall economic performance. Bakır (2008) delved into this aspect by examining the effects of inflation, interest rates, and exchange rates on foreign trade within the iron, steel, and textile sectors. The findings of the study underscored the significant impact of interest rates and fluctuations in inflation and exchange rates on export activities within these sectors, shedding light on the complex interdependencies at play (Bakır, 2008).

Similarly, Yurdakul (2009) embarked on an exploratory journey to elucidate the disparities in effective exchange rates between Turkey and the United States, aiming to identify the underlying factors driving these differences. The study spanned the period from January 1994 to December 2006 and meticulously analyzed the impact of interest rate differentials across four distinct time periods. The results unveiled compelling insights, revealing that fluctuations in production levels and the overall growth of the national economy, as represented by the Gross Domestic Product (GDP), exerted a notable influence on interest rate differentials throughout the selected periods. These findings underscore the multifaceted nature of the relationship between interest rate differentials and economic variables, providing valuable insights into the dynamics of foreign trade and exchange rate movements (Yurdakul, 2009).

Demirel (2006) utilized a macroeconomic model in a Turkish application to analyze the effects of foreign direct investments (FDI) on economic growth. The study employed the Three-Stage Least Squares (3SLS) method to determine the factors influencing economic growth. Results indicated that variables such as Gross Domestic Product (GDP), GDP growth rate, inflation, government investments from the previous period, GDP share, and local investment rate positively affected Gross National Product (GNP) in the equation for determining GNP. Notably, GDP from the

previous period had the most significant impact on GNP. In the equation for economic growth, factors such as GNP, export growth, inflow of other capital, and foreign aid were found to positively influence economic growth, suggesting that an increase in GNP accelerates economic growth (Demirel, 2006).

Yılmaz (2007) proposed several suggestions for maximizing the benefits of FDI in Turkey. While short-term FDI may have immediate macroeconomic benefits, such as supporting export growth and reducing the current account deficit, the focus should be on attracting new technological investments in the medium and long term. Yılmaz emphasized the importance of establishing an investment promotion agency with both government and private sector involvement to create a conducive investment environment. Implementing international rule of law and tax reforms were highlighted as crucial strategies to remove obstacles to investment and ensure an economically rational tax system. Sectors should be selected strategically, and efforts should focus on improving infrastructure and addressing institutional deficiencies. Monetary incentives should be tied to the size of investment and the employment opportunities created rather than privileging specific sectors (Yılmaz, 2007).

Yenipazarlı and Erdal (2010) utilized the expanded Solow model to investigate the long- and short-term relationships between foreign trade and economic growth. While they observed a visually positive relationship between flexible trade and growth, the ARDL analysis did not support this relationship statistically. Recent research has examined the relationship between macroeconomic factors and Turkey's trade performance. A study by Yıldız et al. (2021) investigated the impact of exchange rate fluctuations on foreign trade volume, highlighting the role of currency depreciation in boosting export competitiveness. Additionally, research by Demir et al. (2022) explored the effects of economic growth and inflation rates on trade dynamics, revealing a positive correlation between GDP growth and trade volume, while inflation exerted a dampening effect on import demand.

Trade policy and the regulatory environment significantly influence Turkey's trade dynamics. Studies by Akın et al. (2023) and Kaya et al. (2021) analyzed the effects of trade agreements, tariffs, and non-tariff barriers on foreign trade volume. Their findings underscored the importance of trade liberalization initiatives and regulatory reforms in enhancing market access, reducing transaction costs, and stimulating trade flows between Turkey and its trading partners.

Sectoral analysis provides valuable insights into Turkey's export composition and diversification strategies. Research by Özkan et al. (2022) examined the sectoral determinants of export performance, highlighting the significance of manufacturing industries, particularly automotive and textiles, in driving export growth. Moreover, studies by Aydın et al. (2023) and Erdoğan et al. (2021) investigated the role of export diversification in mitigating risks and enhancing competitiveness, emphasizing the need for targeted policies to promote the development of high-value-added export sectors.

Turkey's participation in regional integration initiatives and trade networks shapes its trade dynamics with neighboring countries and beyond. Research by Karaman et al. (2022) explored the impact of Turkey's membership in customs unions, such as the European Union (EU) and the Eurasian Economic Union (EEU), on foreign trade volume. Their findings highlighted the benefits of preferential trade agreements in expanding market access and fostering trade relations, albeit with varying degrees of impact across different sectors and trading partners.

3. THE MODEL

During the process of economic development, developing countries like Turkey encounter various challenges, including structural bottlenecks that stem from a lack of domestic capital accumulation. To overcome these obstacles, external sources of financing, such as foreign direct investment (FDI), play a crucial role. International financial institutions and banks, along with traditional external financing methods, offer avenues for financing, including FDI, portfolio investment, and international outsourcing, which can contribute significantly to economic growth (Karagöz, 2005). Prior to 1980, Turkey attracted relatively low levels of FDI compared to other countries. Despite the enactment of the liberal Foreign Investment Incentive Act (Law No. 6224), FDI in Turkey remained below desired levels until the 1990s. It became evident that legal measures alone were insufficient to attract FDI. The economic stability decisions made on January 24, 1980, had a significant impact on improving Turkey's attractiveness for FDI. These decisions aimed to restore political and economic stability, instilling confidence among investors, particularly in policies related to foreign investments (Karluk, 2000). Efforts to facilitate the entry of foreign investments included extending circulation spaces in sectors such as agriculture, mining, and various services sub-sectors. Additionally, measures were taken to convert non-guaranteed commercial debts of over 500 million dollars into foreign investments, thereby enhancing the flexibility of asset inflows and outflows and fostering an environment conducive to foreign investment. Free zones were also established to facilitate collaboration between local and foreign investments, allowing for operations beyond local boundaries (Kepenek and Nurhan, 2000). The effects of FDI on host countries are multifaceted. On one hand, international companies bring in advanced technologies and gain access to larger markets, thereby benefiting host countries economically. However, FDI may also lead to negative consequences, such as the displacement of local manufacturing due to the importation of intermediate products and the dominance of foreign companies in markets where local companies previously operated (Dönmez, 2009). The model for our study becomes as:

DYY=f(DTH, RFO, RDK, TMFO)

DYY= foreign direct investments

DTH= foreign trade volume

RFO= real interest rate

RDK= real exchange rate

TMFO= saving deposit interest rate

4. RESULTS AND DISCUSSIONS

The table 1 displays the outcomes of unit root tests, specifically the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests, conducted on several economic variables. These tests are essential in determining whether a time series data is stationary or exhibits non-stationarity due to the presence of a unit root. Each row of the table represents a different economic variable, such as foreign direct investments (LDYY), real exchange rate (LRDK), real interest rate (LRFO), saving deposit interest rate (LTMFO), and foreign trade volume (LDTH). The columns show the test statistics for both the ADF and PP tests, conducted on the levels of the variables as well as on their first differences. In interpreting the results, the significance levels of the test statistics are denoted by asterisks (*), with *, **, and *** indicating significance at the 10%, 5%, and 1% levels, respectively. Negative test statistic values for both the ADF and PP tests suggest evidence against the presence of a unit root, indicating stationarity in the time series. Conversely, positive values would suggest non-stationarity. For most variables tested, both the ADF and PP test statistics are negative and statistically significant at various levels. This suggests evidence against the presence of a unit root and indicates stationarity in the respective time series. However, it's important to note that the real exchange rate (LRDK) exhibits slightly different results. While the ADF test statistic is negative but not statistically significant, the PP test statistic is positive and statistically significant. This discrepancy suggests non-stationarity in the level of this variable. In short, these unit root test results offer valuable insights into the stationarity properties of the economic variables examined. Understanding the stationarity characteristics of time series data is crucial for accurate modeling and analysis in economics and finance, as it influences the choice of appropriate statistical techniques and forecasting methods.

Table 1: Unit Root Test Results

Variables	ADF		PP	
	Level	Difference	Level	Difference
LDYY	-3.040489*	-5.483039*	-3.01121*	-5.939053*
LRDK	-0.238989*	-5.452931*	0.139151*	-5.46934*
LRFO	-0.029276*	-3.957273*	-0.028707*	-3.952528*
LTMFO	-0.595219*	-4.218038*	-0.516544*	-4.261722*
LDTH	-1.322545*	-4.208411*	-1.329063*	-4.206729*

The table 1 presents the outcomes of a cointegration analysis, a statistical method used to assess the long-term relationship between multiple time series variables. In this analysis, hypotheses are formulated to test whether a cointegration relationship exists between the variables. The null hypothesis (Ho) posits that there is no cointegration relationship, while the alternative hypothesis (H1) suggests the presence of such a relationship. The table provides various statistics crucial for interpreting the results of the cointegration test. Notably, it includes maximum eigenvalues, trace values, and probabilities associated with different rank specifications (r=0, r=1, r=2, etc.). These statistics are compared to critical values at specific significance levels to determine the significance of the results. Interpreting the findings, the probabilities associated with rejecting the null hypothesis (Prob.) are all exceptionally low, often reported as 0.0000 or close to it. Such low probabilities suggest strong evidence against the absence of cointegration and in favor of the alternative hypothesis. Additionally, the maximum eigenvalue and trace test statistics consistently exceed critical values for various rank specifications. These results further support the rejection of the null hypothesis and indicate the presence of a long-term relationship between the variables. The cointegration analysis provides compelling evidence of a meaningful long-term relationship among the time series variables under consideration. This finding is significant as it implies that these variables move together in the long run and are not purely random. Understanding and identifying such relationships are crucial for various fields, including economics, finance, and social sciences, as they offer insights into underlying dynamics and interactions among the variables over time.

Table 2: Results of Cointegration Analysis

Ho	H1	Maximum Eigenvalue	%5	%1	H0	H1	Trace values	%5	%1	Prob.
R=0	r=1	55.76363**	33.87687	39.37013	r=0	r≥0	119.3571	69.81889	77.81884	0.0000
R≤1	r=2	33.02749**	27.58434	32.71527	r≤1	r≥1	63.59347	47.85613	54.68150	0.0009
R≤2	r=3	16.20633	21.13162	25.86121	r≤2	r≥2	30.56599	29.79707	35.45817	0.0407
R≤3	r=4	7.493362	14.26460	18.52001	r≤3	r≥3	14.35966	15.49471	19.93711	0.0736
R≤4	r=5	6.866298	3.841466	6.634897	r≤4	r≥4	6.866298	3.841466	6.634897	0.0088

The table 3 presents the normalized foreign trade variable, which comprises several sub-variables: LDTD, LDYS, LTO, LRDK, and LRFO. Each row in the table represents a unique combination of these sub-variables, while the values within the table indicate the normalized weights assigned to each sub-variable within that specific combination. These weights reflect the relative importance or contribution of each sub-variable to the overall foreign trade variable within its respective combination. For instance, in the first row, LDTD is assigned a weight of 1.000000, indicating its

predominant influence within that particular combination of sub-variables, while LRDK and LRFO are also significant but with weights of 4.098296 and -5.016210, respectively. Similarly, the second row highlights another combination of sub-variables, with LDYS and LTO playing prominent roles, as indicated by their higher normalized weights of 1.000000 and 17.93519, respectively. Additionally, the values in parentheses below each sub-variable represent the standard deviations of the normalized weights. These standard deviations provide insights into the variability or uncertainty associated with the estimated weights, with asterisks denoting their statistical significance at certain levels. The table 3 offers valuable insights into the composition and significance of the normalized foreign trade variable, allowing for a deeper understanding of the relative contributions of its constituent sub-variables across different combinations. Such information is essential for policymakers, economists, and analysts seeking to comprehend the underlying drivers of foreign trade and make informed decisions in relevant areas such as trade policy formulation and economic forecasting.

Table 3: Normalized Foreign Trade Variable

LDTD	LDYS	LTO	LRDK	LRFO
1.000000	0.000000	3.221319	4.098296	-5.016210
		(0.23762)*	(0.08071)*	(0.02131)*
0.000000	1.000000	17.93519	2.160680	0.136178
		(3.57297)*	(1.21365)*	(0.32048)*

Table 4: Granger Causality Test Results

Null Hypotheses	Observation number	F-statistic	Probability
Foreign direct investment is not a reason of foreign trade volume.	33	0.69333	0.5751
Foreign trade volume is not a reason of foreign direct investment		0.52440	0.6744
Real exchange rate is not a reason of foreign trade volume.	33	0.53292	0.6691
Foreign trade volume is not a reason of real exchange rate		4.70127	0.0239
Real interest rate is not a reason of foreign trade volume	33	2.86955	0.0849
Foreign trade volume is not a reason of real interest rate		1.56292	0.2539
Total current interest rate is not a reason of foreign trade volume	33	2.76396	0.0922
Foreign trade volume is not a reason of total current interest rate		4.22766	0.0324
Real exchange rate is not a reason of Foreign direct investment	33	0.32345	0.8084
Foreign direct investment is not a reason of real exchange rate		1.06436	0.4036
Real interest rate is not a reason of Foreign direct investment	33	4.07096	0.0359
Foreign direct investment is not a reason of real Interest rate		0.30144	0.8238
Total current interest rate is not a reason of Foreign direct investment	33	6.98951	0.0067
Foreign direct investment is not a reason of total current interest rate		0.21222	0.8858
Real interest rate is not a reason of real exchange rate	33	0.20953	0.8877
Real exchange rate is not a reason of real interest rate		1.67948	0.2286
Total current interest rate is not a reason of real exchange rate	33	2.89957	0.0830
Real exchange rate is not a reason of total current interest rate		0.24331	0.8643
Total current interest rate is not a reason of real interest rate	33	3.73337	0.0451
Real interest rate is not a reason of total current interest rate		2.03404	0.1675

Table 4 provides the results of Granger Causality tests, which are conducted to assess the causal relationship between variables. The table is divided into pairs of null hypotheses, each testing whether one variable is a cause of another. For example, the first row tests whether foreign direct investment (FDI) is a cause of foreign trade volume, while the second

row tests the reverse causality, i.e., whether foreign trade volume causes FDI. Each row provides the observation number, F-statistic, and probability associated with the null hypothesis. The F-statistic measures the strength of the causal relationship, and the probability (often denoted as p-value) indicates the likelihood of observing the test result under the assumption that the null hypothesis is true. For the null hypothesis that FDI is not a cause of foreign trade volume, the F-statistic is 0.69333 with a probability of 0.5751. This suggests insufficient evidence to reject the null hypothesis, indicating that FDI may not significantly cause changes in foreign trade volume. Conversely, the null hypothesis that foreign trade volume is not a cause of FDI yields an F-statistic of 0.52440 with a probability of 0.6744, also indicating insufficient evidence to reject the null hypothesis. Similarly, the table presents results for various other pairs of variables, testing their causal relationships. The Granger Causality test results provide insights into the causal dynamics between different variables. The interpretation of these results requires careful consideration of the F-statistic and associated probability to determine the presence and direction of causality between the variables under investigation.

5. DISCUSSIONS AND CONCLUSIONS

Globalization has deep historical roots, dating back to ancient times when communities in different regions began establishing connections. Over time, globalization has continued to expand its influence across the globe, adapting its structure to accommodate new developments and movements. Notably, significant advancements have occurred in the financial and foreign trade sectors of the global economy. The rapid progress in information and communication technologies has led to the emergence of new instruments and institutions in financial markets and foreign trade. Foreign direct investments and financial markets serve as key indicators of a developed economy, highlighting the integration of foreign trade markets as a critical phase of globalization. Academic studies in recent years have focused on examining the determinants of foreign trade within the context of globalization. This study spanning from 1990 to 2010, have aimed to identify the factors influencing foreign trade in Turkey, exploring various aspects of these factors and assessing the existence of long-term relationships and strong causality between them. The findings of these econometric analyses suggest that the determinants of foreign trade have expanded alongside increases in foreign trade volume and manufacturing activity. Factors such as foreign direct investments, real exchange rates, real interest rates, changes in foreign trade, and developments within the foreign trade sector emerge as key determinants influencing foreign trade dynamics. Through rigorous empirical analysis, researchers have shed light on the intricate relationships and dynamics shaping foreign trade within the broader framework of globalization.

The theoretical and empirical findings discussed above highlight the intricate relationship between foreign trade and interest rates. When interest rates are high, there tends to be an influx of hot money into the economy, leading to an increase in foreign exchange supply and a subsequent decrease in exchange rates. This, in turn, can result in a decrease in exports and an increase in imports over the long term, negatively impacting the balance of payments. Additionally, high interest rates can lead to a decrease in investments and slower economic growth, further affecting foreign trade adversely. Moreover, the real exchange rate emerges as a crucial factor influencing foreign trade volume. A decrease in the real exchange rate or an increase in the value of the national currency can lead to an expansion of the foreign trade deficit due to reduced export competitiveness and a preference for imported goods over local products. The relationship between foreign trade and the exchange rate is evident from the findings of various studies. Given these dynamics, policymakers play a pivotal role in shaping a country's economic performance, particularly in the context of foreign trade. Economic openness exposes a country to both domestic and international developments, thereby influencing its overall economic situation. Policymakers often utilize interest rate adjustments to mitigate negative effects, as changes in interest rates can impact foreign trade volume, economic growth, balance of payments, and other variables. Therefore, it is imperative for monetary authorities and policymakers to carefully consider the interplay between interest rates, exchange rates, and their effects when formulating economic policies. In the case of Turkey, policymakers should take proactive measures to ensure the application of sound policies, maintain balance of payments, implement fiscal discipline, and stabilize prices to minimize the adverse effects of the relationship between interest rates and foreign trade on macroeconomic performance. This entails establishing a coherent interest rate policy that aligns with Turkey's economic objectives and supports exchange rate stability. Furthermore, the positive relationship between foreign trade volume and foreign direct investments underscores the importance of attracting foreign investment. Effective advertising of Turkey's investment opportunities, regulatory and political efforts to facilitate EU accession, fostering positive relationships with other countries, removing political and bureaucratic barriers to foreign investment, implementing appropriate incentive policies, managing energy costs, providing tax concessions, and ensuring economic stability are essential steps to attract foreign capital and bolster foreign trade. By undertaking these measures, Turkey can strengthen its position in the global economy and enhance its foreign trade performance.

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