Measuring And Analyzing the Influence of International Trade on Economic Growth in Turkey for The Period (1985-2022): Evidence from The ARDL Approach

Shanaz Hakim Mhamad[1], Younis Ali Ahmed[2]

[1,2] Department of Economics, College of Administration and Economics, University of Sulaimani, Kurdistan Region, Iraq

ABSTRACT

International trade, the exchange of goods and services between countries, plays a crucial role in driving economic growth. By opening up markets, it allows countries to specialize in the production of goods and services they are most efficient at, leading to increased productivity and innovation. This, in turn, boosts real Gross Domestic Product, enhancing the overall economic health, standard of living, and wealth of a nation. The research investigates the effect of international trade on Turkey's economic growth for the period 1985 to 2022. By using the ARDL approach, the study meticulously evaluates the long- and short-term impact of international trade and foreign direct investment (FDI) on economic growth. Despite liberalization efforts aimed at enhancing Turkey's integration into the global economy, our findings reveal a consistent negative influence of international trade on economic growth. This adverse impact is largely attributed to chronic trade deficits, which occur when a nation imports more products and services than it exports, structural economic vulnerabilities, fluctuations in currency value, and competitive disadvantages in main industrial sectors. Based on these results, the study recommends targeted economic reforms. Policymakers should refine trade policies to manage trade deficits, enhance industrial competitiveness and productivity, stabilize the currency, and promote technological advancements and skills development. These recommendations aim to optimize Turkey's trade strategy, leveraging global economic integration to promote growth.

KEYWORDS: International Trade, Foreign Direct Investment, Economic Growth, Turkey, ARDL Approach.

1. INTRODUCTION

International trade entails the swapping of goods and services across nations, guided by the principle of comparative advantage that prompts countries to focus on producing what they do most efficiently. Trade is shaped by policies like tariffs and trade agreements that can either promote or limit the movement of goods. The advantages of international trade encompass a broader selection and reduced costs for consumers, economic expansion through the optimal utilization of resources, and the stimulation of foreign direct investment (FDI), which enhances productivity and overall economic effectiveness (Salvatore, 2013).

Economic growth, typically measured by GDP, reflects a rise in production, trade, and business activities driven by productivity improvements, investments, technological advancements, and trade. It enhances a nation's welfare by increasing production, consumption, income, and living standards (U.N., 2015; Özparlak, 2022). The correlation between Turkey's international trade and economic growth was studied. Exports have been found to drive economic growth through the exchange of goods, services, ideas, and technology. High and increasing exports enhance efficiency and growth by fostering specialization based on comparative advantage (Boame, 1998).

Mercantilist theory, one of the earliest economic theories, suggests that a nation's wealth is maximized by minimizing imports and maximizing exports,

Koya University Journal of Humanities and Social Sciences (KUJHSS), Volume 7, Issue 2, 2024.
Received 24 June 2024; Accepted 13 August 2024,
Regular research paper: Published 30 December 2024
Corresponding author's e-mail: shanaz.mhamad@univsul.edu.iq

Original Article |DOI: https://doi.org/10.14500/kujhss.v7n2y2024.pp506-516

emphasizing the accumulation of wealth through trade surpluses. Classical economists like Adam Smith and David Ricardo discussed the benefits of international trade for all nations by focusing on specific areas of expertise and effectively providing resources. Adam developed the idea of total advantage while David formulated the principle of comparing advantages, suggesting that nations should focus on manufacturing items in which there is the lowest cost of opportunity. The Heckscher-Ohlin hypothesis explains that comparative advantage results from inequalities in resource endowments of different nations, advocating for exporting item that use abundant resources and importing that require scarce resources. Modern endogenous growth models highlight international trade as a key driver of economic growth, emphasizing the role of trade in facilitating technology transfer, enhancing knowledge spillover, and boosting productivity.

Major reforms and global events significantly influenced Turkey's economic growth and international trade. In 1985, Turkey shifted from a protectionist import-substitution strategy to an export-oriented growth model, liberalizing trade policies and reducing barriers. By 1990, these policies had integrated Turkey further into the global economy, enhancing exports and economic resilience. Following the 2008 global financial crisis, Turkey implemented structural reforms, boosting economic growth and further liberalizing trade. In 2015 and 2017, strategic investments in infrastructure and technology increased productivity and competitiveness. By 2022, Turkey had established itself as a major global trade actor, significantly contributing to economic growth through substantial exports.

The main problem statement is despite significant efforts in trade liberalization and economic reforms, Turkey continues to experience chronic trade deficits, economic vulnerabilities, and currency fluctuations. These issues raise concerns about the effectiveness of international trade and foreign direct investment (FDI) in fostering economic growth.

The significance of this research comes from analyzing the long- and short-term-term relationship between international trade and economic growth in Turkey. International trade and economic growth are two critical factors for the development and progress of nations, serving both as means and goals for contemporary economic policies.

Therefore, the objective of this research is to reach a definite evaluation of the effect of international trade on Turkey's economic growth from 1985 to 2022 by employing the ARDL approach and analyzing both long- and short-term effect of trade balance and foreign direct investment on Turkey's economic growth.

This research hypothesizes that international trade and foreign direct investment (FDI) have significant long-term and short-term impacts on Turkey's economic growth from 1985 to 2022. It also posits that chronic trade deficits, structural economic vulnerabilities, currency fluctuations, and competitive disadvantages in key industrial sectors negatively affect Turkey's economic growth during this period.

The rest of the research is structured into five sections. Section 1 includes an introduction Section 2 includes relevant experimental research literature that has used different variables and models. Section 3 highlights Turkey's economic history from 1985 to 2022. Section 4 describes the data and methodology using the ARDL approach, and section 5 concludes with empirical results, Conclusions and recommendations are presented in the last part.

2. LITERATURE REVIEW

Several research studies have examined the impact of international trade on growth in the economies of nations; this review will concentrate on a select number of scientific studies done before, and they obtained various results based on methodologies used. For example, the objective of Silajdzic and Mehic's (2018) study was to examine the impact of open trading on the economic development of central and eastern European nations from 1995 to 2013. Using panel data analysis, the researchers used the Prais-Winsten correlated panels corrected standard errors (PSCE) approach and the dynamic least squares dummy variable (LSDVC) method to address heteroscedasticity, autocorrelation, and indigeneity issues. The study found that trade liberalization policies negatively affected economic growth.

Abdulla and Ali (2019) examined the causal relationship involving imports and exports and growth in the economy in Iraq from 1980 to 2017 using Granger causality and Johansen co-integration tests. They found that exports and imports are co-integrated with GDP in the long run, with exports positively affecting economic growth and imports also having a positive impact. However, while increases in exports lead to higher imports, the reverse does not hold. Similarly, Taghavi et al. (2012) found in Iran that imports negatively affect economic development; however, exports have a positive long-term effect. Akhter (2015) reported in Bangladesh that exports benefit growth of the economy, whereas imports have the opposite effect. Adegboyega (2017) found a small and stable long-term association among imports, exports, and growth of the economy in Nigeria. Devkota (2019) in India showed through VECM that

imports and economic development and causality are unidirectionally linked.

Mukit (2020) vector autoregressive and co-integration techniques were used to evaluate the influence of macroeconomic factors on the Bangladeshi economy; findings revealed that imports had a minimal and negative relationship with GDP when exports had a positive but statistically insignificant correlation in GDP. Hussain (2014) used the co-integration test and Granger causality in Pakistan, finding a causal connection between exports and economic development. Conversely, Jiying et al. (2020) found that both growth-led import plans and export-led import plans drive economic expansion in Burundi. Alotaibi, Almohaimeed, and Alharbi (2020) investigated Saudi Arabia from 1980 to 2018, using various econometric tests and discovering a long-term equilibrium correlation between exports, imports, consumer prices, and GDP. Their Granger test causality indicated that economic growth drives exports and affects consumer prices, but imports do not influence GDP in the short-term.

Joy (2023) analyzed the effect of international trade on the growth of the economic in the Philippines, using both quantitative and qualitative data. They found an important long-term correlation between economic development, foreign investment, and trade openness with trade policies promoting exports and FDI. However, the Philippine economy's reliance on traditional exports limits the benefits of trade liberalization. A study conducted by Jebli (2015) examined the ongoing connection between FDI, exports and GDP in certain Asian countries. The result shows that the absence of long-term associations among FDI and GDP exports dose not the main determinant of economic growth. ASEAN-5 countries particularly South Korea, have leveraged FDI to enhance technological capabilities and economic development (Ridzuan et al., 2018; Kolk, 2016).

Tunçsiper and Horoz (2023) looked into the impact of trade on the economic growth of Turkey from 1980 to 2021, finding a major and favorable correlation between exports and GDP in the short and long term, while imports oppositely affect GDP and investment impacts growth positively. Gökmen (2023) analyzed the correlation in economic growth and global trade in Turkey, highlighting that trade openness and foreign trade policies significantly related to economic growth through improved resource allocation, productivity, and technological transfers. Khalid (2016) studied trade openness in Turkey from 1960 to 2014, confirming a positive but statistically insignificant long-term relationship with economic growth. Mustafa (2011) also found a long-term positive but insignificant correlation across economic development and trade openness, emphasizing the importance of human and capital formation. Additionally, Shingil and Panshak (2017) noted the favorable long-term effects of a strong exchange rate on growth, while Uddin and Khanam (2017) found imports negatively correlated with GDP growth in Bangladesh. Were (2015) pointed out that trade development has a limited impact in the world's least developed countries, particularly in Africa.

Srdelić and Dávila-Fernández (2024) analyze the impact of foreign trade on Croatia's economic growth over the past 20 years. Using a space of states model with Kalman smooth and the WALS Bayesian model averaging method on data from 2000 to 2020, they find that trade significantly influences long-term growth, with R&D investments and human capital playing key roles.

Summing up the studies reveals that international trade negatively impacts GDP in both the long- and short-term-term, contrasting with most studies that report a positive effect. My research highlights how a persistent trade deficit undermines domestic industries and economic growth, while foreign direct investment (FDI) positively influences economic growth. This study differs from previous research by using a time series data approach and the ARDL bounds testing methodology, focusing on secondary data from 1985 to 2022. This allows for a detailed analysis of both long-term and short-term relationships between international trade and Turkey's economic growth, providing new and up-to-date insights.

3. AN OVERVIEW OF THE TURKEY'S ECONOMY

From 1985 to 2022, Turkey's economic trajectory has been significantly influenced by its trade policies, transitioning from protectionism to liberalization. Beginning in the mid-1980s, Turkey shifted from a protectionist, import-substitution strategy, which focused on fostering domestic industries through protective measures, to an export-oriented growth model. This change was marked by liberalization policies that reduced trade barriers, encouraged foreign investment, and integrated Turkey into the global economy. In the 1990s, despite facing economic crises and political instability, Turkey's exports grew steadily, contributing to GDP growth. The early 2000s witnessed robust economic expansion fueled by structural reform, EU accession prospect, and a booming global economy, which amplified trade volumes. The 2008 global financial crisis temporarily disrupted this growth but Turkey rebounded quickly due to diversified trade partnerships

TABLE 1
Turkey's economic indicators, GDP, exports, imports, trade balance and FDI (1985-2022).

Years	GDP (Billions of USD)	Export (Billions of USD)	Exports as a Percentage of GDP	Import (Billions of USD)	Imports as a Percentage of GDP	Trade Balance (Billions of	Trade Balance as a Percentage	FDI (Billions of USD)	FDI as a Percentage of GDP
1985	67.23	10.66	15.86	12.75	18.97	-2.09	-3.11	0.1	0.15
1990	150.66	20.14	13.37	26.48	17.58%	-6.35	-4.21	0.72	0.47
1995	169.32	33.68	19.89	41.23	24.35	-7.55	-4.46	0.89	0.52
2000	274.29	54.53	19.88	61.64	22.47	-7.11	-2.59	0.98	0.36
2005	506.31	110.76	21.88	122.86	24.27%	-12.1	-2.39	10.03	1.98
2010	776.97	164.67	21.19%	198.13	25.50	-33.46	-4.31	9.1	1.17
2015	864.31	212.03	24.53	229.54	26.56	-17.51	-2.03	19.26	2.23
2020	720.34	209.77	29.12	232.11	32.22	-22.35	-3.10	7.7	1.07
2022	907.12	350	38.58	386.3	42.59	-36.3	-4.00	13.09	1.44

Source: The table was prepared by the researchers based on the data in www.macrotrends.net

and resilient domestic policies (Gökmen, 2023).

Turkey has made significant strides in diversifying its export base and achieving strong economic growth. The past decade demonstrates the important part of international trade in Turkey's economic trajectory, highlighting the interplay between trade liberalization, economic policy reform, and global market dynamics. Turkey's dedication to open trade policies served a major part in its ability to roll back from economic crises and achieve stable economic growth and stability. As a result, Turkey has become a powerful competitor in the global market (Tunçsiper et. al., 2023). The following table shows economic indicators in Turkey from 1985 to 2022, including GDP, imports, exports, trade balance, and FDI inflows. Analyzing these tables helps us understand trends in Turkey's economic growth, particularly focusing on international trade and economic growth.

This table shows primary growth and volatility in the 1980s, Turkey's economy was relatively smaller with a GDP of $67.23 billion in 1985, in this period GDP and trade volumes exports, and imports increased gradually. For example, GDP grew to $90.88 billion by 1988, exports and imports increased accordingly, and international trade was often negative, like in 1985, with a deficit of -$2.09 billion, reflecting higher import volumes relative to exports. The notable growth in 1988, when international trade turned positive ($1 billion), indicated a temporary improvement in export.

Economic Expansion and Crisis The late 1990s saw significant economic expansion, with GDP reaching $169.32 billion in 1995 and continuing to grow. However, this period also experienced high volatility and deficits. By 2001, despite a substantial GDP of $201.75 billion, Turkey faced a severe economic crisis, leading to a sharp GDP contraction. The trade balance improved significantly to a surplus of $9.06 billion in 2001, driven by a drop in imports due to economic contraction and a devaluation of the Turkish lira that boosted exports.

Post-2001, Turkey's economy recovered robustly, with GDP rising to $240.25 billion in 2002 and further to $770.45 billion by 2008. This period saw substantial increases in trade volumes, with exports reaching $181.57 billion by 2008. Despite this growth, the trade balance remained negative due to higher import growth, exemplified by a deficit of -$26.32 billion in 2008. The rapid economic expansion was partly fueled by foreign investment, with FDI peaking at $22.05 billion in 2007. The 2008 global financial crisis affected Turkey, leading to a GDP decline to $649.29 billion in 2009. The international trade briefly improved to nearly neutral (-$0.3 billion) due to a contraction in imports. The subsequent decade saw a recovery, with GDP stabilizing around $761.01 billion by 2019. During this period, international trade fluctuated, showing a surplus of

$22.49 billion in 2019, driven by stronger export performance and relatively controlled import growth.

The COVID-19 pandemic in 2020 caused significant economic disruptions, with GDP down to $720.34 billion and expanding the trade balance deficit to -$22.35 billion. Signs of recovery emerged by 2021 with GDP increasing to $819.87 billion and the trade balance turning positive at $3.32 billion due to an increase in exports. By 2022, GDP grew to $907.12 billion but the trade deficit widened considerably to -$36.3 billion, driven by imports outpacing exports influenced by global economic conditions and domestic policy. From 1985 to 2022, Turkey's economy has undergone growth, crises, recovery, and recent challenges. Key years like the 2001 crisis, post-2008 recovery, and the COVID-19 pandemic have significantly impacted international trade and GDP, reflecting external economic conditions, policy decisions, and structural changes.

4. DATA AND RESEARCH METHODOLOGY

The study employed the ARDL approach testing technique to evaluate the impact of international trade on Turkey's economic growth from 1985 to 2022. The primary data source was www.macrotrends.net. The ARDL methodology, a co-integration procedure developed by Pesaran (2001), examines the presence of long-term relationships between variables. There are some beneficial things about this newer method compared to older co-integration tests, and it can be used whether the series is stationary or not. A useful model known as an error correction model (ECM) can be obtained by using an easy linear transformation to the ARDL bounds testing; this model effectively captures both long-term and short-term dynamics and empirical evidence suggests that the approach is more effective and produces results, particularly with small sample sizes (Nkoro and Aham, 2016). The study focuses on a single dependent variable, gross domestic product (GDP), and employs two independent variables, international trade and foreign direct investment. These variables have extensive time series data, making them suitable for empirical analysis in the models. The ARDL bound test is crucial because it can be applied regardless of whether the variables are I(0) or I(1), making it versatile for mixed-order integration. It is also effective in identifying both long-term and short-term relationships between variables, which is essential for understanding the comprehensive impact of international trade and FDI on economic growth over time. To achieve the objective of this research, the following equations were formulated: This equation represents the ARDL model that captures long-run dynamics and short-run equilibrium correlation between GDP, IT, and FDI.

$$\Delta \ln GDP_t = \alpha 0 + \sum_{i=1}^{p} \alpha 1 \Delta \ln GDP_{t-i} + \sum_{i=0}^{q} \alpha 2 \Delta \ln IT_{t-i} + \sum_{i=0}^{r} \alpha 3 \Delta \ln FDI_{t-i} + \lambda (\ln GDP_{t-1} - \beta 0 - \beta 1 \ln IT_{t-1} - \beta 2 \ln FDI_{t-1}) + Ut \quad \ldots\ldots (.1)$$

Long Run Equation (ARDL)

$$\ln GDP_t = B0 + B1 \ln TB_t + B2 \ln FDI_t + (Ut) \quad \ldots\ldots (2)$$

Where:

- lnGDPt is the natural log of GDP at time t.
- β0 is the constant term
- β1 is the long-run coefficient of IT
- β2 is the long-run coefficient of FDI
- Ut is the error term

Short Run Equation (ARDL)

$$\Delta \ln GDP_t = ao + \sum_{i=1}^{p} \alpha 1 \Delta \ln GDP_t - i + \sum_{i=0}^{q} \alpha 2 \Delta \ln IT_t - i + \sum_{i=0}^{r} \alpha 3 \Delta \ln FDI_t - i + Ut \quad \ldots\ldots (3)$$

Where:

- Δln GDPt is the change in a natural log of GDP at time t
- α0 is the constant term.
- α1 is the coefficient of lagged changes in GDP.
- α2 is the coefficient of lagged changes in IT.
- α3 is the coefficient of lagged changes in FDI.
- Ut is the error term.

5. EMPIRICAL RESULTS

This section provides the recorded outcomes and related conclusions based on empirical evidence. The study examines the impact of international trade on Turkey's economic growth over a specific period, from 1985 to 2022, to determine the outcome.

5.1 Descriptive Statistics

TABLE 2
Testing results of some (Descriptive Statistics) for the variables

Variables	GDP	IT	FDI
Mean	457.9295	-11.7254	6.8675
Median	314.6000	-7.1100	2.7900
Maximum	957.8000	22.4900	22.0500
Minimum	67.23000	-61.3700	0.1000
Std. Dev.	317.2976	16.6541	7.1082

Source: the table was prepared by the researchers based on the results of the E-views 12 program.

Descriptive statistics in econometrics provide a summary of a dataset's main features. The mean represents the average value of a variable. For example, LGDP has a mean of 457.9295, indicating that, on average, LGDP values are around 457.9295. LIT and LFDI have mean values of -11.72541 and 6.867568, respectively. When ordering data, the median represents the middle value.

For LGDP, the median is 314.6000, meaning half the data points are below and half are above this value. LIT and LFDI have medians of -7.110000 and 2.790000, respectively. The maximum value is the highest observed value; LGDP's maximum is 957.8000, while LIT and LFDI have maximums of 22.49000 and 22.05000. The minimum value is the lowest observed value; LGDP's minimum is 67.23000, and LIT and LFDI have minimums of -61.37000 and 0.100000, respectively.

5.2 Stationarity test

TABLE 3
Unit Roots tests

Variables	ADF				PP: Phillips Perron			
	Level		First difference		Level		First difference	
	Intercept	trend	Intercept	trend	Intercept	trend	Intercept	trend
GDP	-0.6502 (0.8465)	-1.4411 (0.8310)	-5.2849 (0.0001)	-5.1996 (0.0009)	-0.7095 (0.8317)	-1.7379 (0.7133)	-5.3524 (0.0001)	-5.2729 (0.0007)
IT	-3.1776 (0.0297)	-3.3122 (0.0804)	-7.4734 (0.0000)	-7.5795 (0.0000)	-3.2588 (0.0246)	-3.4718 (0.0579)	-8.6750 (0.0000)	-8.7835 (0.0000)
FDI	-1.5718 (0.4863)	-3.1607 (0.1088)	-4.9559 (0.0003)	-4.8648 (0.0021)	-1.3934 (0.5746)	-2.4047 (0.3711)	-6.4902 (0.0000)	-6.2103 (0.0001)

Source: the table was prepared by the researchers based on the results of the E-views 12 program

The result of the unit root tests appears in Table (3), according to the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests. GDP and FDI are not stationary at the level for both intercept and intercept with trend, but they become stationary at the first difference. IT is stationary at the level for intercept but not for intercept with trend in the ADF test and marginally non-stationary for intercept with trend in the PP test; however, IT becomes stationary at the first difference in both tests. After taking the first difference, all variables become stationary, confirming stationarity by rejecting the null hypothesis of a unit root.

5.3 Correlation

TABLE 4
Result of correlation test

Variables	GDP	IT	FDI
GDP	1.0000	-0.6012	0.8702
IT	-0.6012	1.0000	-0.5924
FDI	0.8702	-0.5924	1.0000

Source: the table was prepared by the researchers based on the results of the E-views 12 program.

The correlation matrix for the variables LGDP, LIT, and LFDI provides insights into the relationships between these economic indicators. The moderate negative correlation (-0.6012) indicates that higher GDP is associated with negative international trade. The strong positive correlation (0.8702) suggests that higher GDP is associated with higher levels of foreign direct investment

5.4 Estimation

TABLE 5
F-Bounds Test result

	Value	Significant level	Lower I(0)	Upper I(1)
		Asymptotic: n=1000		
ARDL bound test	F-statistic = 7.111 K=2	10%	2.63	3.35
		5%	3.1	3.87
		2.5%	3.55	4.38
		1%	4.13	5

Source: the table was prepared by the researchers based on the results of the E-views 12 program.

Table (5) represents the ARDL bound test results, showing an F-statistic of 7.111, which is greater than the critical values at the 1%, 5%, and 10% significance levels. This indicates strong evidence of a long-run relationship, justifying the use of the ARDL model for short- and long-run estimations.

TABLE 6
ARDL for long run Estimation

Variables	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
TRADE	-9.671416	3.936673	-2.456749	0.0196
LFDI	33.66829	7.745039	4.347079	0.0001
C	208.5503	68.76239	3.032912	0.0048

Source: the table was prepared by the researchers based on the results of the E-views 12 program.

The ARDL model's long-run results in Table 6 show a significant negative relationship between TRADE and LGDP (coefficient: -9.671416, p = 0.0196) and a significant positive relationship between LFDI and LGDP (33.66829, p = 0.0001). The constant term is also significant (coefficient: 208.5503, p = 0.0048). The negative impact of international trade on Turkey's economic growth may be due to trade deficits, where imports exceed exports, leading to capital outflow. Additionally, reliance on low-value-added exports and exposure to global market volatility can hinder domestic economic stability and growth, which is appropriate with economic theory.

TABLE 7
ARDL for short run Estimation

Variables	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	35.33350	14.33079	2.465565	0.0192
LGDP(-1)*	-0.169424	0.046556	-3.639157	0.0010
TRADE**	-1.638573	0.545440	-3.004134	0.0051
LFDI**	5.704229	2.103608	2.711641	0.0107
ECM Regression				
CointEq(-1)*	-0.169424	0.030374	-5.577973	0.0000

Source: the table was prepared by the researchers based on the results of the E-views 12 program.

Table (7) represents the short-run results from the Conditional Error Correction

The regression shows that the constant term (C) has a significant coefficient.35.33350, p = 0.0192). TRADE has a significant negative impact on LGDP. (coefficient: -1.638573, p = 0.0051), while LFDI has a significant positive impact (coefficient: 5.704229, p = 0.0107). The error correction term, CointEq(-1), with a coefficient of -0.169424 (p=0.0000), confirms a significant long-run equilibrium relationship, indicating that about 16.94% of any deviation from the long-run equilibrium is corrected each period. The ARDL model results indicate a significant long-run and short-run negative relationship between international trade and economic growth in Turkey, suggesting that trade deficits and reliance on low-value-added exports negatively impact growth in both time frames.

TABLE 8
Model Fitting

Model	R-squared	Adj- R squared	S.E of regression	AIC	SSR	F-statistic
GDP	0.9788	0.9768	47.8972	10.6804	73412.62	493.1541 [0.0000]

Source: the table was prepared by the researchers based on the results of the E-views 12 program.

Table (8) shows some of the key statistical indicators; high R-squared (0.9788) and adjusted R-squared (0.9768) indicate that it explains about 97.88% of the variance in GDP, suggesting a very good fit. The standard error of the regression is 47.8972, and the Akaike Information Criterion (AIC) is 10.6804; a lower value generally indicates a better-fitting model. The sum of squared residuals (SSR) is 73412.62, and the F-statistic (493.1541, p = 0.0000) suggests the model is highly significant.

5.5 Diagnostic tests for estimation models

A)

TABLE 9
LM Test) Breusch-Godfrey test for Serial Correlation

F-statistic	1.371140	Prob. F(2,30)	0.2693
Obs*R-squared	3.015125	Prob. Chi-Square(2)	0.2214

Source: the table was prepared by the researchers based on the results of the E-views 12 program.

The Breusch-Godfrey Serial Correlation LM Test results indicate no problem with serial correlation. The F-statistic is 1.371140 with a p-value of 0.2693, and the Obs*R-squared value is 3.015125 with a p-value of 0.2214. Both p-values are greater than 0.05, indicating that we fail to reject the null hypothesis of no serial correlation at up to 2 lags.

B)

TABLE 10
Variance Inflation Factors test for Multicollinearity

variable	Coefficient Variance	Uncentered VIF	Centered VIF
IT	3.314657	2.911864	1.460250
LFDI	34.46403	2.886117	1.460250
C	729.6886	2.262088	NA

Source: the table was prepared by the researchers based on the results of the E-views 12 program.

There is no significant multicollinearity problem, as the centered VIF values for TRADE and LFDI are both 1.460250, which are well below the threshold of 10.

C)

TABLE 11
ARCH test for Heteroskedasticity

F-statistic	0.021178	Prob. F(1,33)	0.8852
Obs*R-squared	0.022447	Prob. Chi-Square(1)	0.8809

Source: the table was prepared by the researchers based on the results of the E-views 12 program.

There is no problem with heteroskedasticity in the model. The F-statistic for the ARCH test is 0.021178 with a p-value of 0.8852, and the Obs*R-squared value is 0.022447 with a p-value of 0.8809. Both p-values are much greater than the common significance level of 0.05, indicating that we fail to reject the null hypothesis of homoskedasticity. Therefore, heteroskedasticity is not a concern in this model.

D)

TABLE12
Ramsey Reset test for Identification

	Value	Df	Probability
t-statistic	1.361740	31	0.1831
F-statistic	1.854337	(1, 31)	0.1831
Likelihood ratio	2.091476	1	0.1481

Source: the table was prepared by the researchers based on the results of the E-views 12 program.

The Ramsey RESET Test results show no identification problem, as the p-values for the t-statistic (0.1831), F-statistic (0.1831), and Likelihood ratio (0.1481) are all greater than 0.05, indicating correct model specification.

E) Jarque – Bera test for Normality

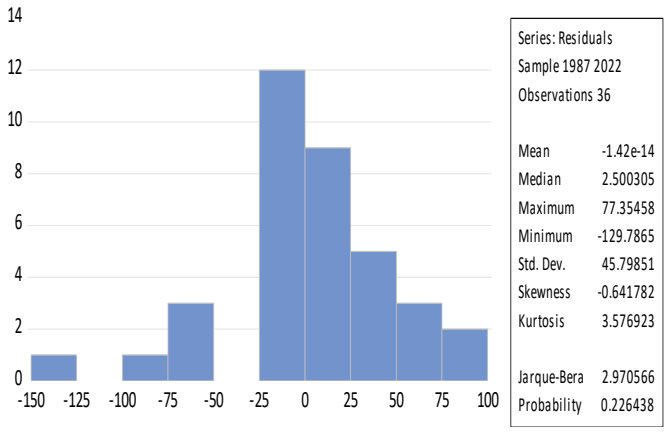

Fig. 1. shows normal distribution of the residuals

The residuals appear to be normally distributed based on the given histogram and statistics. The histogram shows a roughly bell-shaped curve centered on zero, and the Jarque-Bera statistic is 2.970566 with a p-value of 0.226438, which is greater than the common significance level of 0.05. This indicates that we fail to reject the null hypothesis of normally distributed residuals.

5.6 Stability tests (CUSUM, CUSUM of Squares):

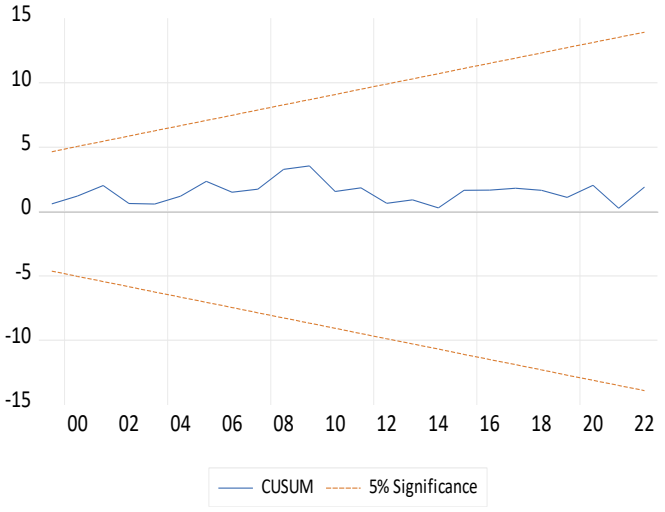

Fig. 2. Cusum test

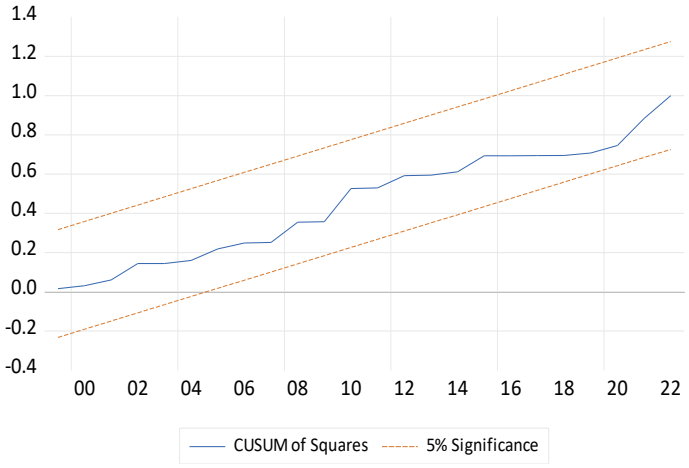

Fig. 3. Cusum of squares

Figures 2 and 3 illustrate the CUSUM and CUSUM of Squares tests, respectively, to assess the stability of regression coefficients. The CUSUM test (Figure 2) shows that the blue line remains within the 5% significance bounds (dashed red lines), indicating stable coefficients. Similarly, the CUSUM of Squares test (Figure 3)

demonstrates that the blue line stays within the 5% significance bounds, further confirming the stability of the regression coefficients. Thus, both tests support the null hypothesis that the factors are stable over time.

6. CONCLUSION

The study concludes that international trade significantly influences Turkey's economic growth. Utilizing the ARDL bounds testing method, it is evident that international trade negatively impacts economic growth in both the long- and short-term runs, whereas FDI has a positive effect on economic growth in both periods. International trade negatively influences economic growth in Turkey due to a persistent trade deficit where imports exceed exports. This imbalance leads to more money flowing out of the country for imports than coming in from exports, undermining domestic industry and reducing their contribution to economic growth. Large trade deficits can increase national debt, cause currency devaluation, and further strain economic growth. Structural issues like low competitiveness and insufficient diversification in exports also contribute to this negative impact. This study recommends fine-tuning international trade mechanisms to boost Turkey's economic growth by revising export strategies, improving import substitution, and updating trade policies for global adaptability. Expanding trade partnerships can reduce dependency on single countries and spread risks, while enhancing customs and logistics can lower costs and increase efficiency. These strategies aim to correct trade imbalances, stimulate growth, and build a resilient economic framework.

ACKNOWLEDGMENT

The Authors would like to thank anonymous reviews and editorial board.

REFERENCES

Abdulla, S. M. K., & Ali, H. K. (2019). An analysis of exports and imports and their effect on the economic growth in Iraq. UKH Journal of Social Sciences, 3(2), 68-76. https://doi.org/10.25079/ukhjss.v3n2y2019.pp68-76

Adegboyega, R. R. (2017). The impact of export and import on economic growth in Nigeria: Evidence from VAR approach. Journal of Management and Social Sciences, 6(2), 349–364. https://fountainjournals.com/index.php/JMSS/article/view/148

Akhter, M. (2015). The impact of export and import on economic growth in Bangladesh. World Vision, 9(1), 66–81.

Alotaibi, M. E., Almohaimeed, M. A., & Alharbi, W. M. (2020). The impact of international trade on economic growth. Journal of Modern Accounting and Auditing, 16(11), 484-501. https://doi.org/10.17265/1548-6583/2020.11.002

Bharti, M. S. (2023). The sustainable development and economic impact of China's belt and road initiative in Ethiopia. East Asia, 40, 175–194. https://link.springer.com/article/10.1007/s12140-023-09402-y

Boame, K. (1998). Primary-export-led growth: The evidence of Ghana. Journal of Economic Development, 23(1), 175–194. https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=db7c6f

Capelleras, J. L., Martin-Sanchez, V., & Zhang, C. (2023). Does social desirability of entrepreneurship matter for early-stage entrepreneurs' internationalization? The moderating role of economic freedom. BRQ Business Research Quarterly, 23409444221144462. https://journals.sagepub.com/doi/abs/10.1177/23409444221144462

Cato, M. A. J. B., Vigonte, F. G., & Abante, M. V. (2023). International trade: Impact on economic growth. World Citi Colleges, Graduate School Department. https://ssrn.com/abstract=4461422

Devkota, L. M. (2019). Impact of export and import on economic growth: Time series evidence from India. Dynamic Econometric Models, 29–40. https://doi.org/10.12775/DEM.2019.002

Dosi, G., Virgillito, M. E., & Yu, X. (2022). Gains from trade or from catching-up? Value creation and distribution in the era of China's WTO accession. Eurasian Business Review, 1–48. https://link.springer.com/article/10.1007/s40821-022-00212-5

Göçer, İ. (2013). Exports as a determinant of economic growth: A panel cointegration analysis with multiple structural breaks under cross-sectional dependence for developing Asian countries. Bankers Journal, 86, 27-42.

Gökmen, A. (2023). International Trade, Economic Growth, and Turkey. In Information Resources Management Association (Ed.), Research Anthology on Macroeconomics and the Achievement of Global Stability (pp. 548-566). IGI Global. https://doi.org/10.4018/978-1-7998-9220-5.ch038

Gylfason, T. (1997). Exports, inflation, and growth (pp. 2–39). International Monetary Fund. https://www.imf.org/external/pubs/ft/wp/wp97119.pdf

Hussain, A. M. (2014). Economic growth, exports, and imports in Pakistan: Granger causality analysis. Journal of Business in Developing Nations, 13, 31–62. http://www.jjay.cuny.edu/sites/default/files/contentgroups/center_international_human_rights/jbdnv1302_0.pdf

Jacob, T., Raphael, R., & Ajina, V. (2021). Impact of exchange rate and inflation on the export performance of the Indian economy: An empirical analysis. BIMTECH Business Perspective, 1–13. https://www.bimtech.ac.in/wp-content/uploads/2023/01/1682imguf_TomJacob_BSP_rev1.pdf

Jebli, M. B., & Youssef, S. B. (2015). The environmental Kuznets curve, economic growth, renewable and non-renewable energy, and trade in Tunisia. Renewable and Sustainable Energy Reviews, 47, 173-185. https://doi.org/10.1016/j.rser.2015.02.049

Jiying, W., Niyonsaba, E., & Adjei, K. B. (2020). Impact of exports and imports on economic growth in Burundi. EPRA International Journal of Economic and Business Review, 8(2), 17–25. https://doi.org/10.36713/epra0713

Kahya, M. (2011). An analysis of the relationship between foreign trade and economic growth in Turkey over the period 1980-2009 (Master's thesis, Lund University).

Khalid, M. A. (2016). The impact of trade openness on economic growth in the case of Turkey. Research Journal of Finance and Accounting,

7(10), 51-61. https://www.iiste.org/Journals/index.php/RJFA/article/view/31866

Mukit, M. H. (2020). An econometric analysis of the macroeconomic determinants impact of gross domestic product (GDP) in Bangladesh. Atlantic Review of Economics – AROEC, 5(2), 9–20. http://www.aroec.org/ojs/index.php/ARoEc/article/view/120/85

Nkoro, E. U., & Aham, K. (2016). Autoregressive Distributed Lag (ARDL) cointegration technique: application an interpretation. Journal of Statistical and Econometric Methods, 5(4), 63–91. ISSN: 1792-6602 (print), 1792-6939 (Online) Scienpress Ltd, London, United Kingdom.

Okyere, I., & Jilu, L. (2020). The impact of export and import to economic growth of Ghana. European Journal of Business and Management, 12(21), 130–138. https://www.researchgate.net/profile/IsaacOkyere/publication/343696008_The_Impact_of_Export_and_Import_to_Economic_Growth_of_Ghana/links/5f3a8ca4299bf13404cb40ea/The-Impact-of-Export-and-Import-to-EconomicGrowth-of-Ghana.pdf

Ridzuan, A. R., Khalid, M. W., (2018). The Impact of Foreign Direct Investment, Domestic Investment, Trade Openness and Population on Economic Growth: Evidence from Asian-5 Countries. International Journal of Academic Research in Business and Social Sciences, 8(1), 128–143. 10.6007/IJARBSS/v8-i1/3799

Salvatore, D. (2013). International economics (11th ed.). John Wiley & Sons.

Shingil, E. M., & Panshak, Y. (2017). Exchange rate dynamics, inflation, and economic growth: Empirical evidence from Turkish economy. IOSR Journal of Humanities and Social Science, 9(3), 42–49. https://www.academia.edu/download/86313831/G2209034249.pdf

Shirokova, G., Ivvonen, L., & Gafforova, E. (2019). Strategic entrepreneurship in Russia during economic crisis. Foresight and STI Governance, 13(3), 62–76. https://foresight-journal.hse.ru/data/2019/10/01/1543331439/Shirokova.pdf

Srdelić, L., & Dávila-Fernández, M. J. (2024). International trade and economic growth in Croatia. Structural Change and Economic Dynamics, 68, 240-258. https://doi.org/10.1016/j.strueco.2023.10.018

Silajdzic, S., & Mehic, E. (2018). Trade Openness and Economic Growth: Empirical Evidence from Transition Economies. In Trade and Global Market.

Taghavi, M., Goudarzi, M., Masoudi, E., & Gashti, P., (2012). Study on the impact of export and import on economic growth in Iran. Journal of Basic and Applied Scientific Research, 2(12), 12787–12794. https://www.researchgate.net/profile/Elham-Masoudi

Tunçsiper, Ç., & Horoz, İ. (2023). The effect of exports on economic growth: Türkiye 1980-2021. Journal of Emerging Economies and Policy, 8(1), 65-72. http://dergipark.org.tr/joeep

Uddin, H., & Khanam, M. J. (2017). Import, export, and economic growth: The case of lower-income countries. Journal of Business and Management, 19(1), 37–42. https://www.academia.edu/download/69676138/e04b5413d67e951297209e8fb6

Were, M. (2015). Differential effects of trade on economic growth and investment: A cross-country empirical investigation. Journal of African Trade, 2(1–2), 71–85. https://www.sciencedirect.com/science/article/pii/S2214851515000067.

APPENDIX

Table (1)

Turkey's Economic Indicators: GDP, Exports, Imports, Trade Balance, and FDI (1985-2022)

Years	GDP (Billions of US $)	Export (Billions of US $)	Export as a percentage of GDP	Import (Billions of US $)	Import as a percentage of GDP	Trade Balance(Billions of US $)	Trade Balance as a percentage of GDP	FDI (Billions of US $)	FDI as a percentage of GDP
1985	67.23	10.66	15.86	12.75	18.97	-2.09	-3.11	0.1	0.15
1986	75.67	10.07	13.31	12.18	16.10	-2.11	-2.79	0.13	0.17
1987	87.19	13.58	15.58	15.48	17.76	-1.9	-2.18	0.12	0.13
1988	90.88	16.95	18.65	15.95	17.55	1	1.10	0.35	0.39
1989	107.13	17.36	16.20	19.05	17.78	-1.69	-1.58	0.66	0.62
1990	150.66	20.14	13.37%	26.48	17.58%	-6.35	-4.21	0.72	0.47%
1991	151.03	20.9	13.84	25.12	16.63	-4.22	-2.79	0.81	0.54
1992	159.1	22.9	14.39	27.6	17.35	-4.7	-2.95	0.84	0.53
1993	180.42	24.67	13.67	34.9	19.34	-10.23	-5.67	0.68	0.38
1994	130.65	27.91	21.36	26.63	20.38	1.28	0.98	0.61	0.47
1995	169.32	33.68	19.89	41.23	24.35	-7.55	-4.46	0.89	0.52
1996	181.46	39.09	21.54	50.5	27.83	-11.4	-6.28	0.72	0.40
1997	189.88	46.68	24.58	57.7	30.39	-11.03	-5.81	0.81	0.42
1998	275.94	57.03	20.67	54.44	19.73	2.59	0.94	0.94	0.34
1999	256.4	48.23	18.81	48.34	18.85	-0.11	-0.04	0.78	0.31

2000	274.29	54.53	19.88	61.64	22.47	-7.11	-2.59	0.98	0.36
2001	201.75	54.84	27.18	45.78	22.69	9.06	4.49	3.35	1.66
2002	240.25	60.31	25.11	54.96	22.88	5.35	2.23	1.08	0.45
2003	314.6	72.38	23.01%	73.05	23.22%	-6.45	-0.21	2.79	0.54
2004	408.87	96.59	23.62	103.04	25.20	-12.1	-1.58	2.79	0.68
2005	506.31	110.76	21.88	122.86	24.27%	-12.1	-2.39	10.03	1.98
2006	557.08	124.76	22.39%	146.89	26.37%	-22.13	-3.97	20.19	3.62
2007	681.32	149.14	21.89%	176.88	25.96	-27.74	-4.07	22.05	3.24
2008	770.45	181.57	23.57%	207.88	26.98	-26.32	-3.42	19.85	2.58
2009	649.29	151.74	23.37%	152.04	23.42	-0.3	-0.05	8.59	1.32
2010	776.97	164.67	21.19%	198.13	25.50	-33.46	-4.31	9.1	1.17
2011	838.79	192.87	22.99%	254.24	30.31	-61.37	-7.32	16.18	1.93
2012	880.56	214.51	24.36	250.69	28.47	-36.18	-4.11	13.74	1.56
2013	957.8	227.98	23.79	275.22	28.73	-47.33	-4.94	13.56	1.42
2014	938.93	236.66	25.21	268.17	28.56	-31.5	-3.36	13.34	1.42
2015	864.31	212.03	24.53	229.54	26.56	-17.51	-2.03	19.26	2.23
2016	869.68	200.75	23.08	219.55	25.24	-18.8	-2.16	13.84	1.59
2017	858.99	223.68	26.04	255.31	29.72	-31.64	-3.68	11.19	1.30
2018	778.97	243.29	31.23	244.45	31.38	-1.16	-0.15	12.45	1.60
2019	761.01	251.7	33.07	229.21	30.12	22.49	2.96	9.55	1.25
2020	720.34	209.77	29.12	232.11	32.22	-22.35	-3.10	7.7	1.07
2021	819.87	293.05	35.74	289.73	35.34	3.32	0.40	13.33	1.63
2022	907.12	350	38.58	386.3	42.59	-36.3	-4.00	13.09	1.44

Source: The table was prepared by the researchers based on the data in www.macrotrends.net