



TRADE OPENNESS, BANK LOANS AND ECONOMIC GROWTH IN TÜRKİYE AND AZERBAIJAN: AN EMPIRICAL ANALYSIS OF DYNAMIC EQUILIBRIA

Atilla ÜNLÜ¹

Abstract

One of the countries with which the Republic of Türkiye shares the strongest historical and cultural ties is the Republic of Azerbaijan. While relations between the two nations remained relatively limited until the 2000s, they gained significant momentum thereafter, driven by shifts in Turkish foreign policy. Against this backdrop, the present study investigates the dynamics of economic deepening between the two countries by examining the impact of bank loans to the private sector and trade openness on economic growth over the period 1992–2023. Methodologically, the analysis applies the ADF unit root test to assess the stationarity properties of the variables, the ARDL bounds test to explore long-run cointegration relationships, the Toda–Yamamoto causality test to identify causal linkages, and coefficient estimation to evaluate parameter effects. The empirical findings suggest that in Türkiye, bank lending to the private sector and trade openness are both bidirectionally linked with economic growth, whereas in Azerbaijan the relationship is more limited. Furthermore, coefficient estimates indicate that while both credit expansion and trade openness positively influence growth in Türkiye, it is trade openness in particular that exerts a strong and decisive effect on economic growth in Azerbaijan.

Keywords: Economic Growth, Credits, Trade Openness, Causality.

JEL Classification: O40, E50, F10, C50

TÜRKİYE VE AZERBAIJAN’DA TİCARİ AÇIKLIK, BANKA KREDİLERİ VE EKONOMİK BÜYÜME: DİNAMİK DENGELERİN AMPİRİK ANALİZİ

Öz

Türkiye Cumhuriyeti’nin tarihsel ve kültürel bağlarının en güçlü olduğu ülkelerden biri Azerbaycan Cumhuriyeti’dir. İki ülke arasındaki ilişkiler 2000’li yıllara kadar sınırlı bir düzeyde seyretmiş, ancak bu tarihten sonra Türk dış politikasındaki değişimle birlikte kayda değer bir ivme kazanmıştır. Bu kapsamda iki ülke arasındaki ekonomik derinleşmenin dinamiklerini belirlemek amacıyla hazırlanan bu çalışmada, 1992-2023 yılları arasında Türkiye ve Azerbaycan’da bankaların özel sektöre sağladığı krediler ile ticari açıklığın ekonomik büyüme üzerindeki etkisi incelenmiştir. Çalışmada, değişkenlerin durağanlık düzeyini belirlemek için ADF birim kök testi, seriler arasındaki eş bütünleşme ilişkisini incelemek için ARDL sınır testi, değişkenler arasındaki nedensellik ilişkisini analiz etmek için Toda-Yamamoto nedensellik testi ve son olarak parametre katsayı tahmin analizi yapılmıştır. Analiz bulguları, Türkiye’de bankaların özel sektöre sağladığı krediler ile ticari açıklığın ekonomik büyüme üzerinde çift yönlü bir nedensellik ilişkisine sahip olduğunu, Azerbaycan’da ise bu ilişkinin daha sınırlı kaldığı yönündedir. Katsayı tahmin analizinde ise, Türkiye’de hem krediler hem de ticari açıklık ekonomik büyüme üzerinde pozitif bir etki oluşturduğu, Azerbaycan’da ise özellikle ticari açıklığın ekonomik büyüme üzerinde güçlü ve belirleyici bir etkiye sahip olduğu tespit edilmiştir.

Anahtar Kelimeler: Ekonomik Büyüme, Krediler, Ticari Açıklık, Nedensellik.

JEL Sınıflandırması: O40, E50, F10, C50

¹ Lecturer, Dr., Malatya Turgut Özal University, atilla.unlu@ozal.edu.tr, ORCID: 0000-0002-4900-3144

1. Introduction

While the relations between Türkiye and Azerbaijan rose to the level of alliance with the Shusha Declaration signed on June 15, 2021, a strong integration process was prepared thanks to multidimensional cooperation covering military, economic, educational and social fields. This integration process is influenced by ethnic, cultural and religious affinities, but also by Azerbaijan's rich natural resources and its potential to be the gateway to Central Asia for Türkiye, and Türkiye's potential to be a hub for exporting Azerbaijan's natural resources to Europe (Kasım, 2011). (Kasım, 2011). In this context, in the recent period of deepening economic relations between the two countries, the volume of foreign trade increased by 26% between 2022 and 2023, reaching 4.23 million dollars; Türkiye ranks second after Italy with a share of 15.8% in Azerbaijan's exports, and third after Russia and China with a share of 13.3% in imports. Türkiye's exports to Azerbaijan are dominated by automobiles, petroleum oils and cleaning products, which increased by a striking 849% in the 2022- 2023 period. On the other hand, oil accounts for 65% of imports from Azerbaijan. In this process of deepening economic ties, the total investment volume between the two countries reached 31.9 billion dollars in 2023, of which 19.9 billion dollars was directed from Azerbaijan to Türkiye. Despite the strong alliance relationship between Türkiye and Azerbaijan, it is observed that the economic reflections of this relationship are not at the level seen in the political and military fields. When the Gross Domestic Product (GDP) data of the two countries are analyzed, it is seen that Türkiye's GDP is 1,344 billion dollars by 2024, while Azerbaijan's GDP is 74.3 billion dollars. This difference can be considered as a factor limiting the potential of strong cooperation between the two countries in terms of economic equality and depth. At this point, identifying the factors affecting GDP in the two countries and developing policies for these factors will contribute to increasing the bilateral trade volume. This study will seek answers to the following questions in order to contribute to this purpose;

- How does the impact of bank lending to the private sector on economic growth vary in Türkiye and Azerbaijan?
- What is the role and contribution of trade openness on economic growth in Türkiye and Azerbaijan?
- What are the causal effects of bank lending to the private sector and trade openness on economic growth in Türkiye and Azerbaijan?

The aim of the study is to analyze the impact of bank lending to the private sector and trade openness on economic growth in Türkiye and Azerbaijan and to provide a better understanding of the economic dynamics of the two countries. In this context, firstly, a theoretical framework for the study, then an analysis of the empirical literature, then an econometric analysis modeled by comparative methodological methods, and finally an evaluation and conclusions are presented. It is observed that the number of recent studies on the economic perspective of Türkiye-Azerbaijan relations is quite limited in the literature. The study aims to contribute to the literature by providing both academics and policy makers with an in-depth understanding of the economic dynamics of the two countries.

2. Theoretical Framework

Today, many researchers emphasize the benefits of trade openness for national economies and argue that trade flows and policies can contribute to sustainable economic growth (Emirkadi, 2022). This has paved the way for a comprehensive theoretical background in the literature on the relationship between trade openness and economic growth. In this framework, first, a theoretical framework on the relationship between trade openness and economic growth will be presented, followed by a theoretical assessment of the relationship between credit and economic growth. Afterwards, the strategic corridors and economic outlook between Türkiye and Azerbaijan will be discussed.

2.1. The Theoretical Framework of Trade Openness and Economic Growth

The 16th century Mercantilist doctrine was based on the idea that in the process of achieving economic growth, a country's balance of payments should be in surplus, or in other words, exports should exceed imports. David Hume, who opposed this policy, criticized Mercantilism with the "specie-flow mechanism" approach and stated that an increase in the amount of coins in a country would lead to an increase in domestic prices; this would reduce exports and increase imports, and therefore the surplus balance in the balance of payments would be unsustainable (Akbaý, 2015). The physiocratic view, which was formed by French reformers, associated economic growth with the increase in production in agriculture. They argued that it would not be possible for foreign trade to give a surplus balance, and that a good produced in this context would be exchanged for another good through mutual exchange, in other words, it could not be bought without selling (Öztürk, 2003).

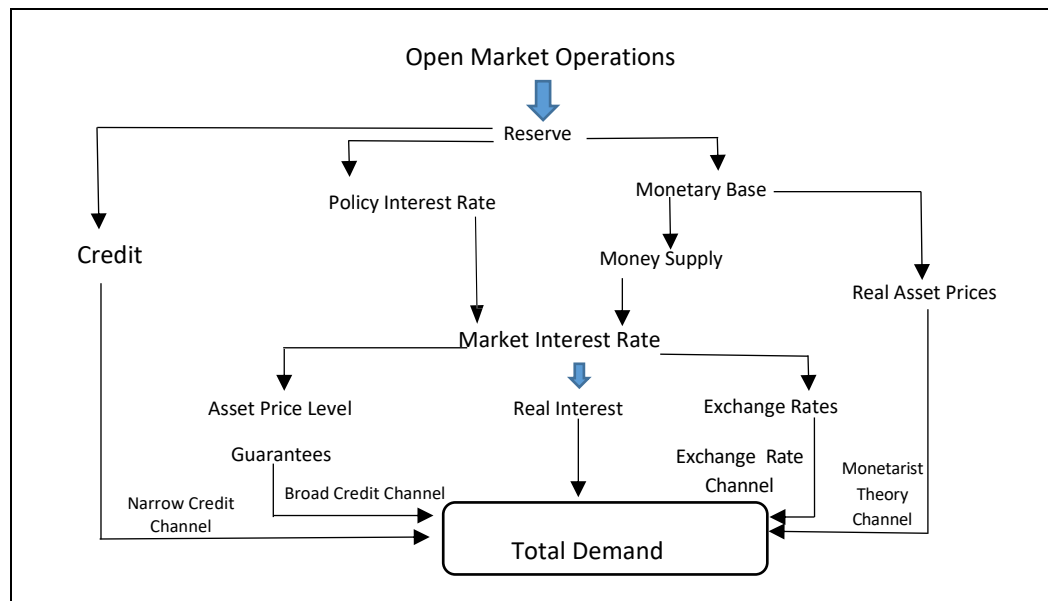
Adam Smith, the pioneer of the classical economics approach that shaped the world economy between 1776 and 1936, and David Ricardo, one of its important representatives, argued that foreign trade would increase the welfare levels of countries with the theories of absolute and comparative advantages. The basis of these theories is the idea that economic growth is possible through the increase in productivity and expansion of production capacity to be achieved through division of labor, specialization and trade (Boçutoğlu, 2013). The Heckscher-Ohlin theory, developed by neoclassical economists, aims to explain the source of differences in the cost of goods between countries that the theory of comparative advantage cannot explain. This theory argues that the main reason for cost differences is based on the relative abundance of factors of production (capital and labor) that countries possess. In this context, in the process of economic growth, countries should export goods using relatively cheap and abundant factors of production and import goods using relatively expensive and scarce factors of production (Aslan and Terzi, 2006). The Rybczynski Theorem, which deals with the effect of trade on economic growth, points out that an increase in a factor of production will increase production in sectors where this factor is used intensively, but the level of production will decrease in sectors where other factors are used intensively (Uzlaşır and Çetenak, 2024). While Romer (1986) accepted technological development as an endogenous variable in the process of economic growth based on the assumption of increasing returns to scale, Lucas (1990) argued that economic growth can be realized by enabling human capital to increase productivity in labor and physical capital through learning by doing method (Çiftçi and Aykaç, 2011). The theory of monopolistic competition, developed by Paul Krugman in the 1980s, envisages that although the factor endowments, technology levels and preferences of countries are similar, product differentiation and positive economies of scale will reduce costs and foreign trade will become profitable for both sides and economic growth will be achieved (Kamacı, 2024).

2.2. The Theoretical Framework of the Relationship between Bank Loans and Economic Growth

The banking sector, which is the leading institution of the financial sector, provides a wide range of banking services to economic actors in order to establish sustainable growth. Although there is no consensus in the economics literature on the impact of the units in the financial sector on economic growth, it is observed that the relationship in question is positive in most of the studies. Bagehot (1873) argues that banks contribute positively to economic growth by performing an intermediary function in the process of channeling the resources collected through fund raising into investments, while Schumpeter (1912) emphasizes that bank loans are one of the most fundamental factors in the capitalist system and play a complementary role in the realization of economic innovations. Neo-classical theory, on the other hand, states that financial development will provide a temporary impetus to economic growth through more efficient use of resources, increasing savings rates and encouraging investments (Apaydın, 2018; Şentürk, 2005). Minsky's "Financial Instability Hypothesis" states that the capitalist system contains instability due to its

structural characteristics and that this situation negatively affects economic growth with the occurrence of financial markets (Varlık, 2011). Reinhart and Rogoff (2010) found that excessive borrowing has a negative impact on economic growth. The monetary transmission mechanism affecting aggregate demand within the scope of open market operations is summarized in Figure 1 Figure.

Figure 1: Channels of the Monetary Transmission Mechanism



References: (Kuttner and Mosser, 2002).

The framework of this mechanism is based on banks' credit systems in the narrow and broad sense. Monetary policies administered by central banks affect banks' reserve levels and direct their capacity to provide credit. Thus, the credit channel plays a decisive role on consumption, investment decisions, production and growth in the economy by increasing or decreasing the credit volume of banks under the influence of monetary policies (Holtemöller, 2002).

The relationship between credit and economic growth interacts with each other in the context of monetary policy, interest rates, money supply, aggregate demand and production-employment dynamics. Expansionary monetary policies implemented by increasing the money supply reduce credit costs by lowering interest rates, and this reduction in costs leads to an increase in aggregate demand by encouraging consumption and investment. The expansion in demand has positive effects on the level of economic growth by increasing production and employment rates. Figure 2 shows the interaction dimension of this relationship.

Figure 2: Monetary Transmission Mechanism and Economic Growth Relationship



References: (Bocutoglu, 2013).

2.3. Strategic Corridors and Economic Outlook in Türkiye and Azerbaijan

Azerbaijan, which gained independence in 1991 after the collapse of the Soviet Union, has been struggling to integrate itself into the global system since then. Although Azerbaijan's rich natural gas and oil resources are seen as an encouraging factor in the process of integration into the international system, Türkiye's wrong policies on the region until the 2000s delayed the integration process in political and economic terms (Fidan, 2010). With the change in foreign policy since the 2000s, Türkiye's economic relations with Azerbaijan, especially in the field of energy, provide a significant advantage in meeting its energy needs and offer opportunities for strategic cooperation at the global level. Strengthening economic ties and increasing mutual interaction between the two states enables the development of more strategic policies from an economic perspective (Tüysüzöğlu, 2012; Erdağ, 2013). As a result of these policies, two important projects have been realized between the two states: "Baku-Tbilisi-Ceyhan Pipeline (BTC)" and "Trans Anatolian Natural Gas Pipeline (TANAP)". The first tanker loading on the BTC Line was realized in 2006. The line has a total length of 1,776 kilometers, of which 1,076 kilometers pass through Türkiye's borders. With an annual transportation capacity of 50 million tons, the line has transported 3.8 billion barrels of crude oil to the world market since 2006, with 5,000 tanker shipments (BOTAS, 2024).

Picture 1: Baku-Tbilisi-Ceyhan Pipeline & TANAP Line



References: (Anadolu Agency, 2024).

The Trans Anatolian Natural Gas Pipeline (TANAP), another strategic corridor between Türkiye and Azerbaijan, the South Caucasus Pipeline (SCP) and the Trans Adriatic Pipeline (TAP) constitute the most critical component of the Southern Gas Corridor. Connecting the Middle East and Europe, TANAP is one of the largest and most strategic natural gas projects in the region with a length of 1811 kilometers and a diameter of 56 inches. TANAP, which undertakes the mission of transporting natural gas extracted from Azerbaijan's Shah Deniz field to Europe via Türkiye, increases the security of energy supply and further strengthens the economic and strategic ties of the two brotherly countries. Especially the energy supply security problem that emerged in Europe with the Russia-Ukraine War has made this project more important for Europe (BOTAŞ, 2024; Erdağ, 2013).

Table 1, which presents the economic outlooks of Türkiye and Azerbaijan, shows that both countries have experienced a moderate increase in their GDP. In this context, Azerbaijan's GDP increased from 56.745 billion dollars in 2022 to 57.383 billion dollars in 2023, while Türkiye's GDP increased from 1.194 trillion dollars to 1.255 trillion dollars. However, growth rates in Azerbaijan fell from 4.71% to 1.12%, while in Türkiye they declined from 5.53% to 5.11%. GDP per capita also increased in both countries, while the inflation rate and unemployment rate fell. In foreign trade, Azerbaijan's exports declined from \$38.1 billion to \$33.8 billion, while imports increased from

\$13.9 billion to \$17.2 billion. Türkiye, on the other hand, has increased its foreign trade volume from \$254 billion and \$255 billion in 2022 to \$363 billion and \$361 billion in 2023, respectively.

Table 1: **Macroeconomic Indicators of Azerbaijan and Türkiye**

	Azerbaijan		Türkiye	
	2022	2023	2022	2023
GDP	56.745	57.383	1.194.401	1.255.449
Growth Rate %	4.71	1.12	5.53	5.11
PERGDP	5.595	5.651	14.055	14.713
Inflation	13.8	8.79	72.2	53.8
Unemployment	5.65	5.63	10.4	9.3
Export	38.1	33.8	254	363
Imports	13.9	17.2	255	361

References: (World Bank, 2024; TUIK, 2024).

3. Empirical Literature Review

The empirical literature of the study is presented under two main headings. The first section presents the studies in the literature on the relationship between trade openness and economic growth, while the second section presents the studies on the relationship between bank loans and economic growth.

3.1. Trade Openness and Economic Growth

When the literature on the relationship between trade openness and economic growth is analyzed, it is seen that the findings are heterogeneous. In this context; Türedi and Berber (2010), Pata (2018), Aliyev (2019) Alam and Sumon (2019), Yılmaz (2022) Yenipazarlı et al. (2022) Aktop (2023) found a positive relationship or causality relationship between the variables in their studies, while Vlastou, (2010), Şerefli (2016), Yijun and Sesay (2021) found that this relationship is negative or there is no causality relationship.

Türedi and Berber (2010) analyzed the impact of trade openness on economic growth in Türkiye between 1970-2007 using VAR causality test. Within the scope of the analysis, it is found that there is a bidirectional causality relationship between trade openness and economic growth. Pata (2018) analyzed the effect of trade openness on economic growth in Türkiye between 1971-2014 using the Toda- Yamomota causality test. In his research, he found that there is a unidirectional causality relationship from trade openness to economic growth. Aliyev (2019) analyzed the effect of money supply and trade openness on economic growth in Azerbaijan with the Granger causality test within the scope of quarterly data between 2006-2018. In his research, he found that there is a positive relationship between these variables and also determined that trade openness has a stronger effect on economic growth compared to money supply. Alam and Sumon (2019) analyzed the effect of trade openness on economic growth in 15 Asian countries between the years by using Panel data analysis method. In his research, he found that trade openness positively affects economic growth. Yılmaz (2022) analyzed the effect of trade openness on economic growth in Türkiye for the period 1970-2019 with the Toda- Yamomota causality test. He found that there is a unidirectional causality relationship from trade openness to economic growth. Yenipazarlı et al.(2022) analyzed the effect of trade openness on economic growth in BRICS countries in the period 1996-2019 using Panel data analysis method. They found that trade openness positively affects the level of economic growth. Aktop (2023) examined the effect of trade openness on economic growth in OECD countries in the period 1997-2020 using Panel data analysis method. The study found that there is a bidirectional causality relationship between trade openness and economic growth and that trade openness positively affects the level of economic growth.

Vlastou, (2010) analyzed the effect of trade openness on economic growth in 34 African countries between 1960-2003 using Panel data method. He found that trade openness had a negative impact on economic growth in the period in question. Şerefli (2016) analyzed the effect

of trade openness on economic growth in Türkiye for the period 1975-2014 with Granger causality test. Within the scope of the analysis, he found that there is no causality relationship between these variables. Yijun and Sesay (2021) investigated the effect of trade openness on economic growth for 27 countries in Sub-Saharan Africa between 1996-2016 using panel data method. They found that trade openness has a negative impact on economic growth.

3.2. Bank Loans and Economic Growth

A review of the literature on the relationship between bank loans and economic growth reveals that there is a positive relationship between these variables. In this context, Ceylan and Durkaya (2010), for the period 1998-2008, and Özen and Vurur (2013), for the period 1998-2012, analyzed the effect of bank loans on economic growth in Türkiye using Granger causality test and found the existence of a unidirectional causality relationship from economic growth to bank loans. Karahan et al. (2018) analyzed the impact of bank loans on economic growth in Türkiye using the time series method within the scope of quarterly data for the period 2012-2016 and found a bidirectional causality relationship between the variables in their study. Liu and Zhang (2020) analyzed the impact of bank loans on economic growth in 29 regions of China for the period 1996-2013 using Panel data method. Within the scope of the analysis, they found that there is a positive and bidirectional relationship between the variables. Saeed et al. (2021) analyzed the impact of bank loans on economic growth in Pakistan for the period 2006-2016 using Panel data. Within the scope of the analysis, it was found that there is a positive and bidirectional relationship between the variables. Alam et al. (2021) analyzed the effect of bank loans on economic growth in India between 2009-2019 using parameter coefficient estimation method. In their study, they determined the existence of a positive relationship between the variables. To summarize the literature, studies examining the relationship between trade openness and economic growth and between bank credit and economic growth generally reveal a positive relationship between these variables. However, it is also found that causality relationships vary across different periods and countries.

4. Data and Methodology

Purpose and Type of Research: This study aims to analyze the impact of banks' loans to the private sector and trade openness on economic growth in Türkiye and Azerbaijan for the period 1992-2023.

Population and Sample of the Study: The sample countries of the research are Türkiye and Azerbaijan. In addition, annual time series data for the period 1992-2023 are used. Since Azerbaijan gained its independence in 1991, there is a data limitation, so the starting year is set as 1992.

Data Collection and Analysis: The data in the study were obtained from the World Bank database and Gauss 6.0 package programs and Eviews 9.0 were used for the analysis of the empirical model.

5. Empirical Analysis

In this section of the study, an empirical analysis is conducted examine the impact of bank loans and trade openness on economic growth in Türkiye and Azerbaijan. In this context, firstly, information on the data set, the model and variables used will be explained, and then the methodology and the results of the econometric analysis will be presented.

5.1. Model Data Variable

The dependent variable in the study is GDP, while the independent variables are CREDIT and TRADE. The functional model created to examine the relationship between these variables is presented below.

$$GDP=f(CREDIT, TRADE) \quad \ln GDP=\alpha_{it}+\beta_1 \cdot \ln CREDIT_{it}+\beta_2 \cdot TRADE_{it}+\varepsilon_{it} \quad (1)$$

Descriptive statements of the variables used in the study are summarized in Table 2.

Table 2: Data and Variables

Variables	Description	Period	Source
GDP	Gross Domestic Product	1992-2023	World Bank
CREDIT	Domestic credit extended by banks to the private sector	1992-2023	World Bank
TRADE	(Imports+Exports)/GDP	1992-2023	World Bank

5.2. Empirical Findings

ADF (Augmented Dickey-Fuller) unit root test analysis was applied to determine whether the variables of the study contain unit roots and at which level they are stationary (I(0) or I(1)). Then, ARDL bounds test method was applied to the series whose stationarity levels were tested and the existence of cointegration relationship was examined. Then, the causality relationship between the series is analyzed by Toda-Yamamoto causality test. Finally, coefficient estimators are used for the parameter estimation results and the findings are evaluated and interpreted respectively.

5.3. Unit Root Test

The ADF unit root test developed by Dickey and Fuller (1981) is constructed by integrating the lagged values of the dependent variable into the model as an independent variable. This test ensures that the series used in the research are reliable and contributes to the elimination of bias. There are three model specifications for adding lagged values to the model in the ADF unit root test and these are summarized below (İğde, 2010; Çelik et al., 2020).

$$\Delta Y_t = \delta Y_{t-1} + \sum_{i=1}^m \alpha Y_{t-i} + \varepsilon_t \quad (2)$$

$$\Delta Y_t = \beta_1 + \delta Y_{t-1} + \sum_{i=1}^m \alpha \Delta Y_{t-i} + \varepsilon_t \quad (3)$$

$$\Delta Y_t = \beta_1 + \beta_{2t} + \delta Y_{t-1} + \sum_{i=1}^m \alpha \Delta Y_{t-i} + \varepsilon_t \quad (4)$$

Hypotheses;

H0: $\alpha \geq 0$ $\alpha \geq 0$, the series contains a unit root, indicating that the series is non-stationary.

H1: $\alpha < 0$ $\alpha < 0$, the series does not contain a unit root, indicating that the series is stationary.

Table 3: Unit Root Test Results

		Variables	ADF		Variables	ADF
Türkiye	Level	Fixed	GDP	0.39(0.97)	GDP	-5.60 (0.00)***
			TRADE	-1.23 (0.99)	TRADE	-5.69(0.00)***
			CREDIT	-1.14 (0.68)	CREDIT	-3.84(0.00)***
	Fixed +Trend	GDP	-2.55(0.30)	GDP	-5.67(0.00)***	
		TRADE	-1.59 (0.40)	TRADE	-5.58(0.00)***	
		CREDIT	-1.68(0.73)	CREDIT	-4.93(0.00)***	
Azerbaijan	Level	GDP	-2.39 (0.15)	GDP	-3.10(0.03)	
		Fixed	TRADE	0.30(0.97)	TRADE	-5.66(0.00)***
			CREDIT	-0.91(0.76)	CREDIT	-3.51(0.01) ***
	Fixed +Trend	GDP	-2.17(0.48)	GDP	-3.50((0.05)	
		TRADE	-2.63(0.26)	TRADE	-5.70(0.00)***	
		CREDIT	-2.70(0.24)	CREDIT	-5.00(0.00) ***	

Note: Indicators in parentheses denote probability values. ***, ** and * indicate that the series are stationary at 1%, 5% and 10% significance levels, respectively.

Table 3 presents the findings of the ADF unit root test for the variables of Türkiye and Azerbaijan. When the findings are analyzed, it is found that all variables are free from unit root and become stationary at all levels when first differences are taken. This implies that hypothesis H1 is valid within the scope of this analysis.

5.4. ARDL Border Test

The existence of a long-run and permanent relationship between variables is tested by cointegration tests. In this context, the determination of the stationarity of the variables at the first level in the unit root test analysis enabled the use of the ARDL bounds test method developed by Peseran et al. (2001) in the process of determining the cointegration relationship between the variables in question. The functional expression for the ARDL bounds test within the scope of the research is as follows;

$$\Delta LNGDP_t = \beta_0 + \sum_{i=1}^p \beta_{1i} \Delta LNGDP_{t-i} + \sum_{i=0}^{q1} \beta_{2i} \Delta LNCREDIT_{t-i} + \sum_{i=0}^{q2} \beta_{3i} \Delta TRADE_{t-i} + \gamma_1 LNGDP_{t-1} + \gamma_2 LNCREDIT_{t-1} + \gamma_3 TRADE_{t-1} + \varepsilon_t \quad (5)$$

The ARDL bounds test method provides a criterion to the existence of a long-run cointegration relationship between variables within the framework of critical F-statistic values calculated at 1%, 5% and 10% levels. In this context, if the F-statistic obtained within the scope of the analysis is above the critical lower and upper bounds at the selected significance level, it is concluded that there is a long- term relationship between the variables. See Table 4 for the ARDL bounds test findings.

Table 4: ARDL Bounds Test Results

			<i>Türkiye F Statistic: 16.89</i>
			<i>Azerbaijan F Statistic: 11.94</i>
Critical Value Limits	I(0)	I(1)	
%10	3.17	4.14	
%5	3.79	4.85	
%2.5	4.41	5.52	
%1	5.15	6.36	

Table 4 shows that the F-statistic value for Türkiye is 16.89 and 11.94 for Azerbaijan. The results obtained from the ARDL bounds test indicate the existence of a long-run cointegration relationship between the variables in both Türkiye and Azerbaijan.

5.5. Toda and Yamamoto Causality Test

Toda and Yamamoto (1995) found that the VAR model using level values can be estimated even when the series contain unit roots and in this context, the transformed WALD (MWALD) analysis can be applied. In this analysis, the basic condition of the Toda-Yamamoto approach is that the maximum degree of integration of the variables ($d_{\max_d_{\max}}$) is smaller than the number of lags (k) in the VAR model. In this context, regardless of the level stationarity, the VAR model is estimated by using the level values of the variables and additional lags equal to the maximum degree of integration ($k + d_{\max} + d_{\max}$) and then the hypotheses are tested with the MWALD test.

Table 5: Toda and Yamamoto Causality Test

TÜRKİYE	Chi-sq	Prob.
TRADE → GDP	4.74	0.00
CREDIT → GDP	6.32	0.00
GDP → CREDIT	5.55	0.00
TRADE → CREDIT	3.56	0.05

Table 5 (Continued): Toda and Yamamoto Causality Test

TÜRKİYE	Chi-sq	Prob.
CREDIT → TRADE	4.89	0.00
GDP → TRADE	6.18	0.00
AZERBAIJAN	Chi-sq	Probe.
TRADE → GDP	7.40	0.00
CREDIT → GDP	6.14	0.09
GDP X CREDIT	0.66	0.15
TRADE → CREDIT	7.88	0.00
CREDIT X TRADE	0.69	0.18
GDP → TRADE	6.50	0.00

Examining Table 5, it is observed that there are statistically significant and clear reciprocal causality relationships among the variables in Türkiye. Significant causal links are identified from trade to economic growth, from credit to economic growth, and from economic growth to credit. In addition, bidirectional causality is detected between trade and credit, as well as between economic growth and trade. These findings indicate a strong and reciprocal interaction among economic growth, credit, and trade in Türkiye. The findings for Azerbaijan, however, are more limited. In this context, significant causal relationships are observed from trade to economic growth, from trade to credit, and from economic growth to trade. However, no significant causal relationships are found from credit to economic growth, from economic growth to credit, or from credit to trade. Therefore, it is concluded that trade openness plays a decisive role in economic growth and credit volume in Azerbaijan, whereas the impact of credit on economic growth is limited.

5.6. Parameter Estimation Results

In this study, parameter coefficient analysis was applied to determine the size and direction of the long-term relationship between the variables. In this context, the DOLS (Dynamic Least Squares) method developed by Stock and Watson (1993), the FMOLS (Fully Modified Ordinary Least Squares) method developed by Hansen and Phillips (1990) and the CCR (Canonical Cointegration Regression) technique developed by Park (1992) were applied to assess the strength of this relationship.

Table 6: Parameter Coefficient Analysis

	Variables	FMOLS		DOLS		CCR	
		Coefficient	Probability	Coefficient	Probability	Coefficient	Probability
Türkiye	TRADE	1.16	0.00***	1.14	0.00***	1.13	0.00***
	CREDIT	0.43	0.00***	0.38	0.00***	0.43	0.00***
Azerbaijan	TRADE	6.78	0.00***	6.79	0.00***	6.86	0.00***
	CREDIT	0.67	0.00***	0.69	0.00***	0.57	0.00***

According to FMOLS, DOLS and CCR methods, a one-unit increase in TRADE variable in Türkiye increases GDP by 1.16-1.13 units and a one-unit increase in CREDIT variable increases GDP by 0.38-0.43 units. In Azerbaijan, a one-unit increase in TRADE variable increases GDP by 6.78-6.86 units and a one-unit increase in CREDIT variable GDP by 0.67-0.57 units.

6. Conclusion

Azerbaijan and Türkiye, which are brother and sister countries, have started to follow the same policies in political and military perspectives, especially after 2000. However, the economic reflections of these policies have not yet reached a satisfactory level. Although two important projects with multidimensional effects such as BTC and TANAP are being implemented between the two states, a wide range of policies need to be pursued to realize stronger economic integration. Although Azerbaijan's low GDP is seen as the most important problem, the country's rich oil and natural gas resources allow the terms of trade to improve in favor of the country.

Türkiye, on the other hand, has an important position on a global scale in terms of GDP ranking, but it does not have a stable economic outlook due to structural macroeconomic problems. In order to increase the economic interaction between the two states, it is important to first determine the current situation.

This study was conducted to examine the effects of bank loans to the private sector and trade openness on economic growth in Türkiye and Azerbaijan from 1992 to 2023, in order to gain a deeper understanding of the economic dynamics in both countries. Initially, the series used in the study were tested for stationarity using the ADF unit root test, and when the first differences of the series were taken, it was found that they became stationary in both the constant and constant+trend models. Then, the ARDL bounds test was applied to determine the cointegration relationship between the variables, and it was seen that the series had values above the $I(0)$ - $I(1)$ critical values, confirming the existence of a cointegration relationship. Toda-Yamomata causality test was first applied to answer the research questions, and then parameter coefficient estimation analyses were conducted. The first research question, "How does the effect of bank loans to the private sector on economic growth differ between Türkiye and Azerbaijan?", was addressed using the results obtained from the parameter coefficient analysis. The findings show that the effect of bank credits to the private sector on GDP is stronger in Azerbaijan than in Türkiye. This can be explained by the fact that there are more alternative financial institutions as well as the banking sector in Türkiye and the capital markets in Türkiye are stronger than in Azerbaijan. In addition, macroeconomic fluctuations in Türkiye are expected to weaken the credit-growth relationship. The second question, "What is the role and contribution of trade openness to economic growth in Türkiye and Azerbaijan?" is answered based on the findings obtained from the parameter coefficient analysis. The results show that trade openness has a strong and positive effect on GDP in Azerbaijan, while in Türkiye this effect is positive but not as pronounced as in Azerbaijan. Azerbaijan's energy supply and trade surplus are the main factors that increase the effect of trade openness on economic growth. In contrast, Türkiye's trade openness, which focuses more on imports, has limited the scope of this relationship. Finally, the third question, "What are the causal effects of bank credits to the private sector and trade openness on economic growth in Türkiye and Azerbaijan?" In Türkiye, there is a bidirectional causality relationship between all variables, while in Azerbaijan there is a bidirectional causality relationship between TRADE-GDP and TRADE-CREDIT, while CREDIT-GDP shows a unidirectional causality relationship. These findings are consistent with the studies conducted by Türedi and Berber (2010), Pata (2018), Aliyev (2019), Alam and Sumon (2019), Yılmaz (2022), Yenipazarlı et al. (2022), Aktop (2023), Saeed et al. (2021) and Alam et al. (2021).

Within the framework of current findings, several strategic approaches are proposed to strengthen economic integration and cooperation between Türkiye and Azerbaijan. First, central banks can deepen cooperation between money and capital markets by offering each other interest-free financial instruments throughout the integration process. Furthermore, it is important to create an ecosystem that brings together commercial and corporate-level companies in Azerbaijan with companies in Türkiye, focusing on the production and export of high value-added products. Academics and successful students from universities in Türkiye can also be included in this ecosystem to encourage innovative and complex knowledge production. Finally, Türkiye and Azerbaijan can develop co-branded products and effectively market them in the global market, thereby transforming economic integration into a tangible, sustainable, and long-term gain.

References

- Aktop, V. S. (2023). The Relationship Between Trade Openness and Economic Growth in OECD Countries: Panel Data Analysis. *Journal of Academic Research and Studies (AKAD)*, 15(28), 202–214.

- Alam, K.J., & Sumon, K.K. (2019). Causal Relationship Between Trade Openness and Economic Growth: A Panel Data Analysis of Asian Countries. *International Journal of Economics and Financial Issues*, 10(1), 118–126. Retrieved from <https://ideas.repec.org/a/eco/journ1/2020-01-15.html>
- Aliyev, P. (2019). The Impact of Foreign Trade Balance and Monetary Policy on Economic Growth in the Azerbaijani Economy. (Master's thesis, Social Sciences Institute, Trakya University, Edirne).
- Anadolu Agency. (2024). "TANAP Pipeline". Retrieved from <https://www.aa.com.tr/en/turkiye/tanap-and-tap-merge-at-greece-border-/1317347>
- Apaydın, Ş. (2018). The Effects of Bank Loans on Economic Growth in Turkey. *Journal of Economics and Administrative Sciences, Ömer Halisdemir University*, 11(4), 15–28. <https://doi.org/10.25287/ohuibf.446129>
- Aslan, N., & Terzi, N. (2006). Heckscher-Ohlin-Samuelson (HOS) Theory and Its Evaluation. *Journal of Economics and Administrative Sciences, Marmara University*, 21(1), 1–14.
- Bagehot, W. (1873). *Lombard Street*. King.
- Bocutoğlu, E. (2013). *Macro Economic Theories and Policies*. Murat-han Publishing, Ankara.
- Ceylan, S., & Durkaya, M. (2010). The Relationship Between Credit Use and Economic Growth in Turkey. *Journal of Economics and Administrative Sciences, Atatürk University*, 24(2), 21–35.
- Çelik, S., Künc, S., & Acar, S. (2020). Analysis of the Relationship Between Electricity Consumption and Economic Growth: An empirical study on Turkey. In *Current Macroeconomic Issues*, 72–83.
- Çiftçi, C., & Aykaç, G. (2011). Endogenous Growth Models and the Position of Developing Countries in the Globalization Process. *Sosyoekonomi*, 14(14).
- Emirkadı, Ö. (2022). Trade and Economic Growth Relationship in D8 Countries: Panel Causality Analysis. *International Journal of Academic Research on Economics and Political Science*, 6(15), 52–61.
- Erdağ, R. (2013). TANAP Pipeline Project's Impact on Global Energy Policies: An Evaluation. *Journal of Academic Social Science Studies*.
- Fidan, H. (2010). "Turkish Foreign Policy Towards Central Asia". *Journal of Balkan and Near Eastern Studies*, 12(1), 109–121.
- İğde, E. (2010). Unit Root Tests Under Structural Change and Applications on Some Macroeconomic Variables. (Master's thesis, Çukurova University, Social Sciences Institute).
- Kamacı, A. (2024). Chapter 1: International Trade Theories. In *International Trade*.
- Karahan, Ö., Yılğör, M., & Özekin, A. A. (2018). The Relationship Between Bank Loan Expansion and Economic Growth in Turkey. *Finance Policy and Economic Comments*, (636), 25–36.
- Kuttner, K. N., & Mosser, P. C. (2002). The Monetary Transmission Mechanism: Some Answers and Further Questions. *Economic Policy Review*, 8(1).
- Liu, G., & Zhang, C. (2020). Does Financial Structure Matter for Economic Growth in China? *China Economic Review*, 61, 101194. <https://doi.org/10.1016/j.chieco.2018.06.006>
- Öztürk, N. (2003). New Approaches in Foreign Trade Theory. *Öneri Journal*, 5(19), 109–126.

- Pata, U. K. (2017). Foreign Trade and Economic Growth Relations in Turkey: Toda-Yamamoto Causality Analysis (1971-2014). *Journal of Economics and Administrative Sciences, Atatürk University*, 31(1).
- Rajan, R., & Zingales, L. (1998). Financial Dependence and Growth. *American Economic Review*, 88, 559–587.
- Reinhart, C. M., & Rogoff, K. S. (2010). Growth in a Time of Debt. *American Economic Review*, 100(2), 573–578.
- Schumpeter, J. A. (1912 [1934]). *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle*. Cambridge: Harvard University.
- Şerefli, M. (2016). The Impact of Foreign Trade on Economic Growth: The Case of Turkey. *Journal of Economics and Administrative Sciences, Kastamonu University*, 13(3), 136–143.
- Şentürk, S. H. (2005). The Role of the Financial System in Achieving Economic Growth. *Journal of Economics, Business, and Finance*, 20(237), 112–127.
- Türedi, S., & Berber, M. (2010). The Relationship Between Financial Development, Trade Openness, and Economic Growth: An Analysis for Turkey. *Journal of Economics and Administrative Sciences, Erciyes University*, (35), 301–316.
- Tüysüzoğlu, G. (2012). The Energy Factor in Turkey-Azerbaijan Relations and TANAP.
- Uzlaşır, S. Y., & Çetenak, Ö. Ö. (n.d.). Trade Openness and Poverty Relationship: The Case of Turkey. *Journal of Social Sciences, Niğde Ömer Halisdemir University*, 6(1), 14–25. <https://doi.org/10.56574/nohusosbil.1448844>
- Üste, N.A., & Aydın, S.Ü. (2022). The Importance of the Zangezur Corridor in the Context of Regional Security Complex Theory in the South Caucasus. *Journal of Social Sciences, Manisa Celal Bayar University*, 20 (Special Issue), 261–274.
- Varlık, S. (2011). Searching for Traces of Keynes in Minsky's Financial Instability Hypothesis. *Mediterranean Journal of Economics and Administrative Sciences*, 11(22), 1–27.
- Vlastou, İ. (2010). Forcing Africa to Open Up to Trade: Is It Worth It? *Journal of Emerging Fields*, 44(1), 25–39. <https://doi.org/10.1353/jda.0.0086>
- Yasir Saeed, M., Ramzan, M., & Hamid, K. (2018). Dynamics of Banking Performance Indicators and Economic Growth: Long-Run Financial Development Nexus in Pakistan. *European Online Journal of Natural and Social Sciences: Proceedings*, 7(3(s)), 141.
- Yılmaz, F. (2022). The Connection Between Economic Growth and Foreign Trade: The Case of Turkey. *Journal of Social Sciences, Ahi Evran University*, 8(1), 21–32. <https://doi.org/10.31592/aeusbed.824419>
- Yenipazarlı, A., Cambazoğlu, & Begeç, E. (2022). The Connection Between Trade Openness and Economic Growth: The Case of BRICS. *Pamukkale Journal of Eurasian Socioeconomic Studies*, 9(1), 38–61. <https://doi.org/10.34232/pjess.1094236>

