Chapter 9

The Role of Geopolitical Risk in Turkey's Economic Growth: An Analysis with Regional and Global Dimensions

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Abstract

This study analyzes the impact of geopolitical risks on economic growth in Türkiye using quarterly data from 2010Q1-2025Q4 and the ARDL bounds test approach. The dependent variable is GDP, and the independent variables are Türkiye's geopolitical risk index (TGRI), the global geopolitical risk index (GGRI), foreign direct investment (FDI), and final consumption expenditure (CPI).

The ARDL bounds test results show a strong long-term cointegration relationship between the variables. Furthermore, empirical analysis results, based on long-term coefficient estimates, indicate that a one-unit increase in Türkiye's geopolitical risk index reduces GDP by approximately 8.49 units, while a one-unit increase in the global geopolitical risk index similarly causes a 0.04-unit decrease in GDP.

The findings also demonstrate that short-term shocks reach equilibrium quite rapidly in the long term. This situation means that the economic recovery process occurred at a high speed, and the economic recovery after the geopolitical shock was 104%. This shows that although the Turkish economy experienced sudden losses due to the shock effect of geopolitical risks, it showed a recovery trend of over 100% compared to the period when the risk started, once the geopolitical risk disappeared.

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1. Introduction

Turkey is located in one of the most complex and fragile regions in the world geopolitically. Situated at the intersection of the Middle East, the Caucasus, the Balkans, and the Eastern Mediterranean, the country has historically been exposed to numerous geopolitical risk factors such as regional conflicts, political tensions, terrorist incidents, and refugee crises. This situation has the potential to affect the growth performance of the Turkish economy through direct and indirect channels. On the other hand, with the deepening of globalization, not only domestic but also international geopolitical risks are shaping the macroeconomic indicators of countries. The war in Ukraine, instability in the Middle East, US-China competition, and uncertainties in energy supply have led to significant increases in the Global Geopolitical Risk Index (GGRI), threatening global growth, especially in developing countries.

In this context, the main motivation of this study is to empirically demonstrate the effects of Turkey's geopolitical position on its economic growth and to comparatively analyze the role of domestic and global geopolitical risks on growth. While there are studies in the literature examining the effects of geopolitical risks on stock markets, foreign direct investment, tourism revenues, and exchange rates, there is a perceived lack of a comprehensive study specifically for Turkey that evaluates both long-term and short-term effects using the ARDL method. This gap constitutes the unique value of this study.

The rationale for the variable selection is as follows: GDP was chosen as the dependent variable, as it is the most comprehensive indicator of economic growth. Geopolitical risk variables were considered in two dimensions: (i) Turkey-specific geopolitical risk index (TGRI) – calculated using the Caldara & Iacoviello (2022) methodology, this index measures geopolitical events within the country and directly affecting it (terrorist attacks, border conflicts, political crises); (ii) World geopolitical risk index (GGRI) – reflecting global wars, conflicts, and terrorist acts. This distinction is critical for differentiating the different effects of domestic shocks and global fluctuations on growth.

In addition, foreign direct investment (FDI) and final consumption expenditure (CPI), which are frequently included in growth theories, were included in the model as control variables. FDI can support growth through technology transfer and capital accumulation, but it can also cause capital outflows during periods of increased geopolitical risk. Consumption expenditure, the most important component of domestic demand, was included in the model to control how geopolitical uncertainties affect growth through consumer confidence and spending.

In this study, the ARDL bounds test approach developed by Pesaran, Shin, and Smith (2001) was used to test the long-term relationship between the variables. This method was preferred because it allows the variables to have different degrees of integration (I(0) or I(1)) and produces reliable results in small samples. Quarterly data from 2010Q1-2025Q4 were used in the analysis.

2. Literature Review

The Global Risks Report published by the World Economic Forum (2026) indicates a turbulent second half of the decade. This report analyzes global risks across three timeframes: the current or near term (in 2026), the short and medium term (until 2028), and the long term (until 2036). Uncertainty is the defining theme of the global risk outlook in 2026. The report specifically points to a turbulent and stormy period expected in the next two years, and suggests this period will intensify further in the next 10 years. Furthermore, 2026 is described as the age of competition. According to the report, this new era brings with it a decline in mutual trust between states, as well as a decrease in trust, transparency, and respect for the rule of law, coupled with increasing protectionism, threatening long-standing international relations, trade, and investment, and increasing the tendency towards conflict. This situation confirms the existence of a new era of geopolitical upheavals, as well as an increased risk of state-sponsored armed conflicts. In his study aimed at addressing the role of geopolitical risk in explaining tourism demand in India, Ghosh (2022) used the geopolitical variable risk index developed by Caldara and Iacoviello in 2016 and concluded that geopolitical tensions (GPR) increase economic vulnerability and that militaristic policies that increase geopolitical risk hinder regional economic development. Doğan and Doğan (2021) conducted an empirical study on the impact of geopolitical risk on economic growth in the Fragile Five countries and analyzed it using the Augmented Mean Group estimator method with a panel dataset covering the period 1985-2017 and including the Fragile Five countries. In the study, the impact of geopolitical risk on economic growth in the Fragile Five countries was found to be negative and statistically significant. On the other hand, the impact of labor and fixed capital investments on economic growth was observed to be positive and statistically significant. Demiralp (2025), in his study, examined the relationship between military expenditures in Turkey and geopolitical risks (LJRI), the world uncertainty index (LDBI), and economic growth (GDP) using the ARDL bounds test and Toda–Yamamoto causality analysis. According to the examination, while geopolitical risk and growth have no significant effect in the long term, world uncertainty reduces military expenditures; in the short term, uncertainty increases expenditures, while

growth decreases them. Causality exists only from uncertainty and growth to military expenditures. Uçkun and Ersoy (2021), in their study examining the impact of geopolitical risks and economic growth on per capita life insurance premiums in Turkey, revealed that the increase in geopolitical risks causes a decrease in premiums in the long term, and that life insurance is seen as a secondary need. In their study, Efe and Aydın (2024) examined the relationship between geopolitical risk and political stability and military spending in BRICS-T countries using panel ARDL/PMG. In the long term, political stability negatively impacts military spending, while there is no significant relationship between geopolitical risk and spending; in the short term, varying causalities were found depending on the country (negative in India, Turkey, and South Africa; positive in Brazil and China). Jha, Bhushan, and Nirola (2024) conducted a panel FGLS study covering the years 2000-2020 for 41 countries and concluded that the overall effect of geopolitical risk is positive. However, while developed countries turn risks into opportunities, developing countries experience negative impacts. Soybilgen, Kaya & Dedeoğlu (2019) conducted a panel data test covering the years 1986-2016 for 8 developing countries and concluded that a 10-point increase in the geopolitical risk index resulted in a 0.2-0.4% decrease in GDP growth. Nair and Tripathi (2026) aimed to examine how geopolitical risks affect service trade flows between countries and concluded that geopolitical tensions, measured by the GPR Index, negatively impact bilateral service trade between countries. Pak et al. (2015), in their study investigating whether geopolitical threats posed by North Korea affect the stock prices of South Korean companies traded on the New York Stock Exchange (NYSE), concluded that news related to North Korea has a direct and indirect effect on stock prices on the NYSE. Kim (2025), in his study investigating the indirect environmental impact of geopolitical risk through participation in the global value chain (GVC), shows that geopolitical risk reduces GVC participation, which increases emissions in developed economies but decreases them in developing economies.

The literature review reveals that geopolitical risk negatively impacts economic growth in developing countries, but the direction and magnitude of this impact vary depending on the country's level of development, institutional structure, political stability, and whether the risk is local or global. While developed countries can turn geopolitical risks into opportunities, fragile and developing economies are more vulnerable to these risks. Furthermore, geopolitical risks not only directly suppress growth but can also harm the economy through indirect channels such as military spending, insurance premiums, and investment decisions. A review of the existing literature shows that studies directly and holistically addressing the impact of geopolitical

risk on economic growth specifically in Turkey are limited. Existing Turkey-focused research has mostly concentrated on indirect channels such as military spending or insurance premiums; there is no comprehensive analysis measuring the direct impact of geopolitical risk on economic growth. Moreover, while most of these studies represent geopolitical risk with a single index, there is a lack of studies that separate local and global geopolitical risks and examine their different effects on growth. Multi-country panel studies, however, often fail to adequately reflect the institutional, political, and economic structures specific to Turkey.

3. Data Set and Variables

This study uses quarterly data covering the period 2010Q1 – 2025Q4 to investigate the impact of geopolitical risks on growth in the Turkish economy. The sample size is 60 observations. The variables are defined below:

Variable	Variable Description	Source
GDP	Gross Domestic Product	TCMB
TGRI	Turkey Geopolitical Risk Index	https://www.matteoiacoviello.com/gpr.htm
GGRI	Global Geopolitical Risk Index	https://www.policyuncertainty.com/index.html
FDI	Foreign Direct Investments	TCMB
CPI	Consumer Price Index	TCMB

• GDP (dependent variable): Turkey's gross domestic product (real, seasonally adjusted, 2015 base).

• TGPR (Turkey Geopolitical Risk Index): Quarterly geopolitical risk index calculated for Turkey (based on Caldara & Iacoviello, 2022 methodology). This index reflects Turkey's geopolitical tensions (terrorist incidents, political crises, the impact of conflicts in neighboring countries on Turkey, etc.).

• GGRI (Global Geopolitical Risk Index): Index measuring geopolitical risks at the global level (taken from the same source). It covers international conflicts, wars, terrorist acts, and political uncertainties.

• FDI (Foreign Direct Investment): Net foreign direct investment inflows into Turkey (real, quarterly, as a percentage of GDP).

• CPI (Final Consumption Expenditures): Real final consumption expenditures (a component of GDP, quarterly, as a percentage of GDP).

Data was compiled from the Turkish Statistical Institute (TUİK), the Central Bank of the Republic of Turkey (TCMB) EVDS, and Caldara & Iacoviello's geopolitical risk database and policy uncertainty database.

4. Empirical Findings

4.1. Unit Root Test Result

In the empirical application, the Augmented Dickey-Fuller test was used to determine whether the time series is stationary. The constant and trend models of the ADF unit root test are shown in Table 1. In addition, the analysis results show that all series contain a unit root at the level. Furthermore, it is understood that the series become stationary at the 1% and 5% statistical significance levels in the first difference. Therefore, it is seen that the series are I(1) and also integrated. Based on this result, it is understood that the assumption that the series should not be I(2), but should be I(0) or I(1) in order to apply the ARDL bounds test is valid.

Table 1. ADF Unit Root Test Results

Variables	Level/First Difference	Constant	Probability	Trend and Constant	Probability
TGRI	Level	-5.522037	0.0000	-5.447394	0.0002
FDI	Level	-7.850699	0.0000	-7.789656	0.0000
GDP	Level	-4.807995	0.0002	-5.048199	0.0006
CPI	Level	-3.414974	0.0140	-4.668075	0.0019
GGRI	Level	-1.740631	0.4062	-3.063591	0.1244

4.2. Cointegration Analysis (ARDL Bounds Test)

After determining that the stationarity levels of the series were suitable for the ARDL bounds test approach, the long-term relationship in the established model was tested. The long-term test results are shown in Table 2.

Table 2. ARDL Bounds Test Approach Results

Test Statistics	Value	K
F-statistic	6.520207*	4

Critical Bound Values

Significance Levels	I(0) Bound	I(1) Bound
1%	3.71	4.965
5%	2.743	3.792
10%	2.323	3.273

Note: * represents p < 0.1.

The results obtained from Table 2 show that the F-statistic is 6.520207. When this value is compared with the critical limit values determined for k = 4 and finite sample (n=60): the upper limit I(1) = 4.965 at the 1% significance level. Since the calculated F-statistic (6.520) > 4.965, the null hypothesis (no cointegration) is rejected at the 1% level. From this, it is concluded that there is a strong and significant long-term cointegration relationship between the variables. This means that GDP, geopolitical risk index (instead of TGPR), world geopolitical risk index (GGRI), FDI and CPI move together and are balanced in the long term. The fact that the F-statistic exceeds the 1% critical value proves that the relationship is significant at a very high confidence level ($p<0.01$).

In conclusion, since the F-statistic (6.520) of the ARDL Bounds Test exceeds the upper critical value (4.965) at the 1% significance level, there is a long-term cointegration relationship between the variables.

Table 3. Diagnostic Test Results

Test	Test Statistic	Probability Value	Result (at 5% Significance Level)
Breusch-Godfrey Serial Correlation LM Test	F(2,41) = 1.4696	0.2419	No serial correlation
Breusch-Pagan-Godfrey Heteroskedasticity Test	F(16,43) = 1.7111	0.0814	No heteroskedasticity
Ramsey RESET Test (Model Specification Error)	F(1,42) = 2.3893	0.1297	Model is correctly specified

Note: CUSUM and CUSUMQ graphs were also used for stability (checked visually). Since the lines in the graphs remain within the critical bounds, the model can be considered stable.

The model passed all diagnostic tests at the 5% significance level. This indicates that the estimated coefficients are reliable and that the economic interpretations derived from the model are valid.

Long-term coefficient estimates were obtained by analyzing the long-term relationship using the ARDL bounds test approach. The relevant results are shown in Table 4.

Table 4. ARDL Long-Run Coefficient Results (4,1,3,0,4)

Variables	Coefficient	t-statistic	Probability (p-value)
C (constant)	8.569***	4.5342	0.0000
TGRI	-8.488**	-2.0316	0.0484
FDI	0.0277	1.4993	0.1411
CPI	-0.0312	-0.3914	0.6974
GGRI	-0.0422**	-2.3738	0.0221

Note: *** and ** represent significance levels of p < 0.01 and p < 0.05, respectively. The optimal lag lengths were determined according to the Akaike Information Criterion (AIC), and the model was selected as ARDL(4,1,3,0,4).

According to the ARDL long-term forecast results in Table 4, the geopolitical risk index (TGRI) and the global geopolitical risk index (GGRI) have been found to have negative and significant effects on Turkey's growth performance. A one-unit increase in Turkey's geopolitical risk index (TGRI) reduces GDP by approximately 8.49 units in the long run ($p<0.05$). This high coefficient indicates that geopolitical tensions specific to Turkey (conflicts in neighboring countries, terrorist incidents, political uncertainties) strongly suppress economic growth. A one-unit increase in the global geopolitical risk index (GGRI) reduces GDP by 0.04 units ($p<0.05$), revealing that global risks also negatively affect Turkey's growth significantly, but to a more limited extent. The long-term coefficients for foreign direct investment (FDI) and final consumption expenditure (CPI) were found to be statistically insignificant; no evidence was obtained that these variables make a lasting contribution to growth within the scope of the model. The constant term (C) is positive and highly significant ($p<0.01$), reflecting the baseline level of GDP when geopolitical risks are zero while other factors remain constant.

The ARDL short-term error correction results for the established model are shown in Table 5. The CointEq(-1) coefficient is -1.044729 and is significant at the 1% level ($p<0.01$). The negative sign confirms the existence of a return to long-term equilibrium, while the absolute value exceeding 1 (≈ 1.045) indicates an overshooting effect. This finding shows that economic actors

overreact in the short term to geopolitical risk shocks, but the equilibration process occurs quite quickly. In line with theoretical expectations, the negative and significant coefficient confirms the cointegration relationship.

Table 5. ARDL Short-Run Error Correction Results (4,1,3,0,4)

Variables	Coefficient	t-statistic	Probability (p-value)
C (constant)	8.951547	4.534174	0.0000***
D(GDP(-1))	0.339867	1.964463	0.0560*
D(GDP(-2))	0.600261	4.140365	0.0002***
D(GDP(-3))	0.424827	3.424894	0.0014***
D(TGRI)	-1.036302	-0.268706	0.7894
D(FDI)	-0.003109	-0.457442	0.6497
D(FDI(-1))	-0.030378	-2.769144	0.0083***
D(FDI(-2))	-0.018819	-3.228547	0.0024***
D(GGRI)	0.004416	0.274753	0.7848
D(GGRI(-1))	0.065465	2.770826	0.0082***
D(GGRI(-2))	-0.041173	-1.796844	0.0794*
D(GGRI(-3))	0.042009	1.541339	0.1306
CointEq(-1)	-1.044729	-5.432113	0.0000*

Note: ***, **, and * represent significance levels of $p < 0.01$, $p < 0.05$, and $p < 0.10$, respectively. The error correction coefficient is negative and statistically significant ($p < 0.01$).

All lagged GDP changes are positive and significant (D(GDP(-2)): 0.600; D(GDP(-3)): 0.425; D(GDP(-1)): 0.340, $p<0.10$). This indicates that growth in the Turkish economy has strong momentum, and past growth rates have boosted current growth.

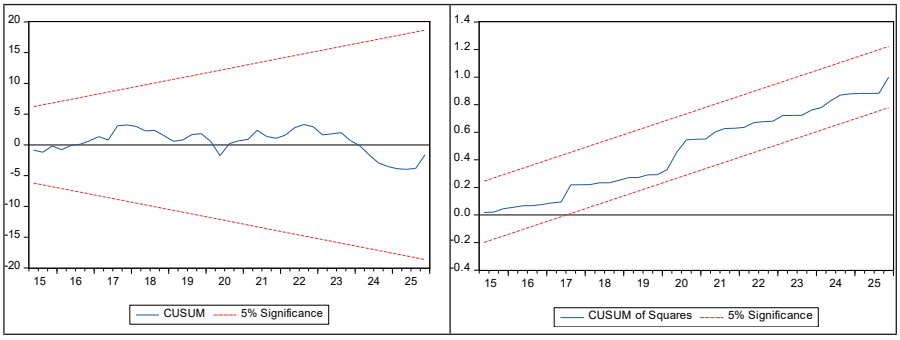
The current period coefficient of Turkey's Geopolitical Risk (TGRI) change is statistically insignificant ($p>0.05$). This suggests that geopolitical risk shocks do not immediately affect growth in the short term, but their effects are more apparent in the long term.

For Global Geopolitical Risk (GGRI), a complex pattern is observed: The first lag is positive and significant (0.065, $p<0.01$), the second lag is negative and borderline significant (-0.041, $p<0.10$), and the third lag is insignificant. The positive lagged effect indicates that during periods of increased global risk, "safe haven" capital flows or trade channels to Turkey can have a short-term positive impact; however, this effect is temporary and turns negative in the second period.

The first and second lagged coefficients of the FDI change are negative and highly significant (-0.030 and -0.019, $p<0.01$). This unexpected finding suggests that FDI inflows reduce growth in the short term. This can be explained by the fact that it takes time for investments to translate into production. Furthermore, setup and adjustment costs suppress output in the short term. In the long term, since the FDI coefficient is insignificant, a lasting growth effect cannot be proven.

Based on this, the short-term error correction model shows that the Turkish economy overreacts to geopolitical risk shocks but returns to equilibrium very quickly (CointEq = -1.045). While past growth values create positive momentum, FDI inflows unexpectedly have a negative impact in the short term. The short-term effects of global geopolitical risk are changing sign, and Turkey's geopolitical risk does not have a significant short-term impact. These findings indicate that the impact of geopolitical risks on growth is predominantly long-term, and short-term fluctuations are quickly corrected. Cumulative sum (CUSUM) and cumulative sum of squares (CUSUMQ) tests were applied to assess the parameter stability of the model over time. The graphs show cumulative movements (blue line) along with critical limits (red lines) at the 5% significance level.

Figure 1. Distributions of CUSUM and CUSUM2.



According to Graph 1, the CUSUM graph: The cumulative sum line remained within both critical limits. The CUSUMQ graph: The cumulative sum of squares line also moved within the critical limits. Therefore, since no boundary violation was observed for either test, it was concluded that the coefficients of the ARDL model are statistically stable over time. This confirms that the inferences regarding the impact of geopolitical risks on growth remain consistent over time.

Conclusion

This study analyzes the long-term and short-term effects of geopolitical risks on economic growth in Türkiye using the ARDL bounds test approach. After determining that the stationarity levels of the variables are consistent with the ARDL methodology, the bounds test results show that the F-statistic (exceeding the upper critical value at the 1% significance level) reveals a strong long-term cointegration relationship between the variables. This finding indicates that GDP, the Türkiye-specific geopolitical risk index (TGRI), the global geopolitical risk index (GGRI), foreign direct investment (FDI), and the consumer price index (CPI) move together and are in equilibrium in the long term.

Long-term coefficient estimates revealed that the TGRI and GGRI have negative and statistically significant effects on Türkiye's growth performance. Specifically, the fact that a one-unit increase in Türkiye-specific geopolitical risks reduces GDP by approximately 8.5 units demonstrates that regional geopolitical tensions can have a corrosive effect on growth. The effect of the global geopolitical risk index is also negative, but its magnitude is more limited. The insignificant long-term impact of foreign direct investment (FDI) and the consumer price index (CPI) indicates that there is no evidence that these variables make a lasting contribution to growth within the scope of the model.

The short-term error correction model confirms the operation of the long-term equilibrium return mechanism with a negative and statistically significant CointEq(-1) coefficient (-1.045). The absolute value of the coefficient exceeding 1 indicates that economic actors overreact to geopolitical risk shocks in the short term, but the equilibrium process occurs quite rapidly. The positive impact of past growth rates on current growth shows that the growth momentum in the Turkish economy is strong. The fact that geopolitical risk shocks do not immediately affect growth in the short term indicates that the effects of such risks mainly emerge in the long term. The negative impact of FDI inflows in the short term is an unexpected finding and can be explained by the time it takes for investments to translate into production and for adjustment costs.

The findings of the study show an inverse relationship between Türkiye's geopolitical risk index and economic growth. The fact that this ratio represents a significant coefficient of 8.5% reveals the devastating impact of geopolitical risks, which arise at short intervals due to Türkiye's geographical location, on the economy. In particular, recent geopolitical risks such as the Arab Spring, the Syrian civil war, the Nagorno-Karabakh war, the Libyan civil war, exclusive economic zone disputes in the Eastern Mediterranean, the Russia-Ukraine

war, and the US-led 12-day war between Israel and Iran have disrupted Türkiye's regional economic relations and suppressed its growth performance. Therefore, it can be said that Türkiye has a fragile but resilient economy that is negatively affected by geopolitical risks at both regional and global levels.

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