Türkiye: Terrorist Incidents and Foreign Direct Investment

Mahir TERZİ

Abstract: This study aims to evaluate whether there is a correlation and unidirectional or bidirectional causality between terrorist incidents and foreign direct investment in Türkiye. Toda Yamamoto elucidates that there is no long-term relationship. RLS, on the other hand, reveals that there is a short-term relationship, and that produces a more fascinating result. While foreign direct investment does not increase terrorist incidents, terrorist incidents possess a positive effect on foreign direct investment. In this case, terrorist actions increase foreign direct investment to Türkiye in the short term. It also appears that terrorist incidents concentrated in big cities do not possess a deterrent effect on foreign direct investments concentrated in big cities.

Keywords: Terrorist incidents, foreign direct investment, RLS, Toda Yamamoto causality, Türkiye.

Introduction

The relevance of this study is to evaluate the two-way relationship between terrorist incidents and foreign direct investment (FDI) in the case of Türkiye. Considering the international literature, it is possible to say that respected studies are testing the link between terrorism and the economy. These studies include particularly themes such as welfare (Burgoon, 2006; Piazza, 2011), economic growth (Korotayev *et al.*, 2019; Meierrieks & Gries, 2013; Kumar & Sanjeev, 2020; Gaibulloev & Sandler, 2011), consumption, savings and investments (Shah *et al.*, 2016), foreign direct investments (Osgood & Simonelli, 2020) and tax loss (Terzi, 2019) and so forth.

Concerning the studies specific to Türkiye, the studies on terrorism concerning tourism

Mahir TERZİ
Assoc. Prof., Foreign Affairs Department,
Ministry of Culture and Tourism, Ankara, Türkiye
E-mail: mahirterzi@yahoo.com

Conflict Studies Quarterly
Issue 49, October 2024, pp. 84–103

DOI: 10.24193/csq.49.5
Published First Online: October 04 / 2024

seem dominant. Sezgin and Kıroğlu (2019), for instance, researched the influences of terrorist actions on Turkish tourism, and their data were between 2000 and 2016. Other variables in that study were the exchange rate and the score of terrorist incidents abroad. The authors examined how terrorist incidents affected tourism activities in Türkiye and how terrorist incidents and the size and severity of these incidents formed the number of tourists coming to Türkiye. They concluded that the terrorist incidents in Türkiye thrilled the number of tourists coming to the country decreasing way. In contrast, the terrorist attacks worldwide caused an increase in the number of tourists to Türkiye (Sezgin & Kıroğlu, 2019).

Çelik and Karaçuka (2017) reached different evaluations. The authors used data from 1992 to 2011 with the subject in their studies. They statistically evaluated that terrorism did not possess a significant effect on tourism at the general country level, but pointed out that the tourism capacity of Eastern and Southeastern Anatolia could not develop due to the concentration of terrorist attacks in those regions. The authors pointed to the bidirectional causal relationship between terrorism and welfare in those regions (Çelik & Karaçuka, 2017).

Yaya's (2009) study was under data on terrorist attacks and the number of tourists between 1985 and 2006 in Türkiye. In Yaya's study, a one-way relationship was determined between terrorism and tourism; that is, terrorism affected tourism, not vice versa. According to Yaya's study results, terrorism had a negative but small effect on Turkish tourism. A little drop in the progress of tourism occurred because of terrorist incidents, but the cumulative effect was significant. Nine years of terrorism reduced the score of tourists to Türkiye by nearly six million people, and in 2006 merely, the charge of terrorism to Turkish tourism exceeded 700 million dollars (Yaya, 2009).

Another one close to the above period was Feridun's (2011) study. Feridun's dates were between 1986 and 2006. He applied the ARDL procedure of limit test in his study. The writer utilized two databases, the Association of Turkish Travel Agencies (TÜRSAB) for tourism data and the Memorial Institute for the Prevention of Terrorism (MIPT) for terrorist attacks. The outcomes concerning short-run and long-run parameter estimates point to a causal relationship between tourism and terrorism. The authors considered the possibility that terrorism may have targeted the touristic destinations of Türkiye, an international actor in tourism, to create an international impact (Feridun, 2011).

The other study, which was not directly related to tourism in Türkiye but evaluated the influence of terrorism on gross domestic product (GDP) per capita, belongs to Bilgel and Karahasan (2015). The data of their study covered the years between 1975 and 2001. In that study, they concluded by evaluating the actual and synthetic situation. The actual situation was terrorism in the regions, while the synthetic situation was that there was no terrorism in the regions. They wanted to find the answer to the real GDP per capita in Eastern and Southeastern Anatolia if those regions had lacked terrorism. In their study titled The Economic Costs of Separatist Terrorism in Turkey [Türkiye], they manifested by using

the synthetic control method that terrorism caused a decrease of approximately 6.6 percent in the GDP per capita in Eastern and Southeastern Anatolia (Bilgel & Karahasan, 2015).

Another study testing the influence of terrorism on macroeconomic indicators in Türkiye belonged to Şimşek and Özkaya (2018). The authors analyzed the connection between terrorism and primary macroeconomic indicators, including real gross domestic product per capita, consumer price index, and total investment quanta through the VAR method and Pairwise Granger causality test over the 1986–2015 data. The outcomes made clear that while there was unidirectional Granger causality from terrorism to the whole investments, there was unidirectional causality from terrorism to real gross domestic product per capita. Decomposition outcomes also made clear that real gross domestic product per capita, total investment, and consumer price index expressed the most significant effect in explaining an alteration in terrorism as a dependent variable in the short run. The whole investment, real gross domestic product per capita, and consumer price index possessed the most significant impact, respectively, in the long run (Şimşek & Özkaya, 2018).

Under data from 1984 to 2009, Çimen *et al.* (2016) examined the intercourse betwixt terrorist activity and economic performance, using the Standard Vector Autoregressive (VAR) model and impulse response functions. The authors' study concluded that while spending on terrorism and terrorism-related areas contributed to economic growth, albeit at the expense of other investments towards production, an excellent economic performance contributed to reducing terrorism cases with a three-year lag. In short, they flagged that terror affected economic performance positively, while economic performance influenced terror negatively in that period (Çimen *et al.*, 2016).

Apart from the studies mentioned above, there are also descriptive studies on the financing of terrorism in Türkiye and its prevention (Turan & Gemici, 2020; Özkaya & Şimşek, 2017). However, it is possible to say that quantitative statistical studies are at the forefront. A study with a similar purpose to this study belonged to Omay *et al.* (2013), whose data included the length from December 1991 to December 2003. Various newspapers in Türkiye provided data on that study. The authors, in their studies, concluded that terrorism had an adverse influence on foreign direct investments via linear and nonlinear models. The authors evaluated that both low and high numbers of terrorist attacks hurt foreign direct investments, and this negative effect was even higher during the period of high terrorist attacks. However, the results here raise serious doubts. Figures 1 and 2 in this study show that although there was a downward trend in terrorist incidents between 1991 and 2003, foreign direct investment did not have a high splash. In addition, although the Global Terrorism Database has data on Türkiye since 1970, it is not understood why the period between 1970 and 1991 was not included in the analysis of Omay *et al.* (2013).

The study that reached a conclusion that contrasted with the study of Omay *et al.* (2013) belongs to Çelik and Bayrak (2020). Their data covered the time between 1998 and 2018. The authors who performed the ARDL bounds test concluded that terrorist attacks did not affect foreign direct investments in the short and long term. However, they investigated

only whether there was a causal relationship between terrorist attacks to foreign direct investment. In other words, they have not investigated if foreign direct investment influences terrorist incidents.

The Study's Purpose, Importance and Limitations

The goal of this study is to comment on whether terrorist incidents in Türkiye affect foreign direct investment and whether foreign direct investment to Türkiye influences terrorist incidents. Therefore, the correlation hypothesis H_0:r=0 and H_1:r≠0 and the regression hypothesis H_0: β1=0 and H_2: β_1≠0 are tested.

The literature review's outputs denote that no study of two-way relationships *(from terrorist incidents to foreign direct investment and from foreign direct investment to terrorist incidents)* has been conducted in Türkiye since the time this paper was written. Therefore, this study hopes to contribute to the literature.

The literature review also clarifies that the studies carried out on the hypothesis tests mainly focus on studies from disciplines such as economics, econometrics, and public administration. The international relations discipline's structure provides barren opportunities in terms of developing this capability based on hypothesis tests because this kind of study necessitates numerical data to test hypotheses and it is not easy to obtain these numerical data (Kalaycıoğlu *et al.*, 2019). In this sense, creating various indexes provides an essential convenience in this kind of study.

The study's main limitation consists of two basic parameters that are the subject of the study: The number of terrorist incidents and the amount of FDI. The data subject to the study is between 1970 and 2000. This study used two databases including the Global Terror Database (GTD) for terrorist incidents and the World Bank for FDI. GTD was controlled regularly between December 2022 and October 2023, and it was seen that the number of data (number of terrorist attacks) was updated to 4,485 in the last check on October 30, 2023. As for FDI data, those are based on the World Bank database. According to GTD, Palestinians in Istanbul carried out the first terrorist attack, for which information is available, in 1970 due to the Palestinian-Israeli issue. Terrorist attacks targeted airports and aircraft. The Kurdistan Workers' Party (PKK) in Viranşehir, Şanlıurfa on December 10, 2020, carried out the last attack in the relevant database. Terrorists carried out a suicide attack with a bomb.

The study assumes that terrorist incidents have a high deterrence on foreign direct investments to Türkiye and that foreign direct investment has also an influence on terrorist incidents.

Conceptual Framework

Although there are differences and conceptual developments against the typology of terrorism in particular, terrorism briefly refers to politically motivated violence concerning political, religious, economic, or social purposes.[1] And this is what it means in this study.

Attacks subject to the GTD include assassination, armed assault, unarmed assault, hostage taking (barricade incident and kidnapping), bombing/explosion, hijacking, and facility/infrastructure attack. There are three criteria for entering the records of GTD except reserve records. There are records that the data subject to the database meet at least two criteria, especially criterion 1 and criterion 2. Criteria 1 means that the action needs to be intended to accomplish a political, economic, ecclesiastical, or social purpose. Seeking benefits alone is not enough in terms of economic goals. Systemic economic change needs to be designed. Criterion 2 means that there are very strong proofs for intending to coerce, horrify, or send another message to a wider spectator rather than sacrifices. Whether each individual acting is conscious of this end is not of importance. The important matter is to contemplate the action entirely. Intentionality is important and means that the designers or decision-makers behind the attacks are for coercion, intimidation, or public disclosure. Criterion 3 means that the action does not have to be in the situation of legitimate war activities. The action must not be within the domain made feasible by international humanitarian law. Civilians or non-combatants must not be purposely aimed. If the opposite is true, then criterion 3 is met.[2]

Apart from the criteria set in the database, there is another issue. This is the reserve record called Doubt Terrorism Proper. Doubt Terrorism Proper means to record reservations for GTD analysts whether the incident is terrorism or not. However, such uncertainty is included in this category when it is not sufficient to prevent the processing of the data. Furthermore, GTD analysts following one of four likely alternative definitions code such indecision as 1) Insurgency/Guerrilla Movement, 2) Internecine Conflict Action, 3) Mass Murder, or 4) Purely Criminal Act.[3]

Method

The quantitative research model is going to be used in this study. In this framework, correlation and regression analyses are going to be performed. The sample of the research consists of 4,485 terrorist incidents between 1970 and 2020. The distribution of the data

1 For definitions of terrorism, see also Kojove (2001, p. 145); Marighella (2003, p. 97); Aydın (2005, p. 10); Carlton and Schaerf (1975, pp. 13–15); Thornton (1964, p.73); Schmid (2004, pp. 403–404); Schmid (1983, p. 111); Crenshaw (1981, p. 300), Terzi and Yenal (2019, pp. 158–70).

2 See University of Maryland.

3 *Ibidem*.

is as follows as of January 30, 2023—since it is seen that updates are made in the database regularly, the data in the last review made on October 30, 2023, have been taken into account. The distribution of these data by years is as follows: 12 for 1970, 35 for 1971, nine for 1972, one for 1974, 10 for 1975, 35 for 1976, 189 for 1977, 52 for 1978, 141 for 1979, 95 for 1980, eight for 1981, five for 1982, five for 1983, 19 for 1984, two for 1985, seven for 1986, 43 for 1987, 42 for 1988, 114 for 1989, 195 for 1990, 293 for 1991, 514 for 1992, 300 for 1994, 133 for 1995, 54 for 1996, 44 for 1997, 23 for 1998, 109 for 1999, 35 for 2000, 19 for 2001, five for 2002, 19 for 2003, 27 for 2004, 41 for 2005, 43 for 2006, 30 for 2007, 32 for 2008, 13 for 2009, 20 for 2010, 51 for 2011, 190 for 2012, 42 for 2013, 95 for 2014, 425 for 2015, 544 for 2016, 181 for 2017,94 for 2018, 70 for 2019 and 20 for 2020. The data collection is executed through the database of GTD and the World Bank via the Internet. The analysis of the data is descriptive-statistical in testing the hypotheses determined for the study. Data on terrorist incidents for 1973 and 1993 are not available (Figure 1, see also endnote 11). The World Bank's datum between 1970 and 2020 regarding FDI to Türkiye is also given in the illustration below (Figure 1).

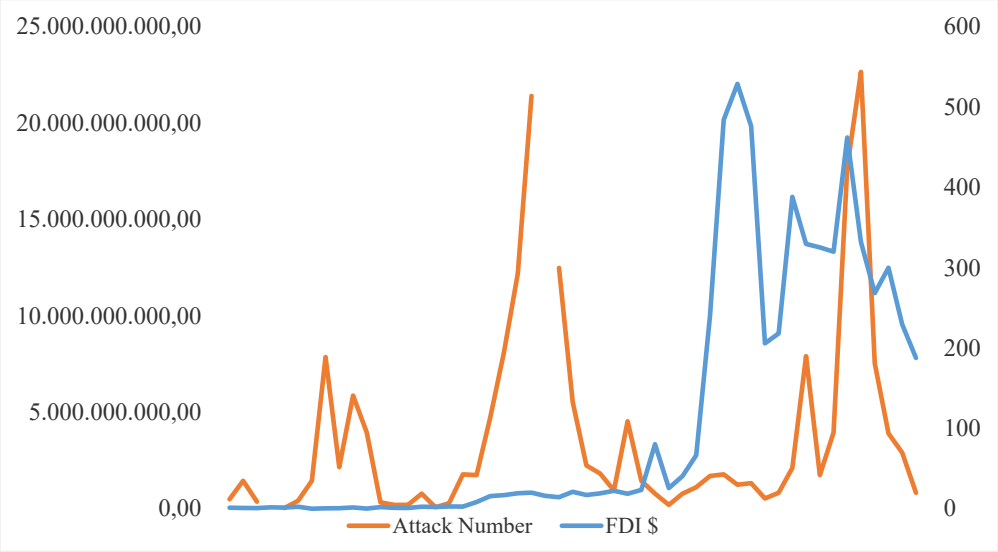

Figure 1. Terrorist incidents (TI) and foreign direct investment (FDI) concerning Türkiye
Source: The data extracted from the GTD and World Bank and formatted for the study.

Findings

The study will test the correlation hypothesis concerning correlation.

Correlation Hypothesis: The number of terrorist incidents by year affects foreign direct investments, or foreign direct investment affects terrorist incidents. This hypothesis can

be established both ways because correlation examines the impact of variables on each other.

H_0: $R^2=0$ and H_1: $R^2\neq0$

The regression analysis to be tested in the study is the following. β_1 represents the constant coefficient. In this analysis, each variable will be included in the analysis as both a dependent and independent variable to investigate whether there is a two-way relationship.

H_0: $\beta_1=0$ and H_1: $\beta_1\neq0$

Correlation Analysis and Obtained Data

Hypothesis: The number of terrorist incidents by year affects foreign direct investments.

H_0: $R_2=0$; H_1: $R_2\neq0$

Table 1 shows that both variables subject to the analysis have a non-normal distribution predominantly. Figures 2 and 3 also display that the variables do not prove a normal distribution. Spearman correlation test is performed for this reason. Yet, the Spearman correlation test (Table 1) sets forth that the result is not statistically significant because the significance value (0.066) is bigger than 0.05 ($p > 0.05$).

Table 1. Normality test results for the hypothesis

Evaluation parameters	Values of a terrorist incident		Values of foreign direct investment		Reference value	Results	
	Skewness	*Kurtosis*	*Skewness*	*Kurtosis*		*Terror incidents*	*Foreign direct investment*
Investigation of skewness / kurtosis values	2.295	5.110	1.198	0.068	between -1.50 and +1.50	Non-normal distribution	Normal distribution
Dividing skewness / kurtosis values by standard error	6.75	7.65	3.52	0.10	between -1.96 and +1.96	Non-normal distribution	Non-normal distribution
The absolute values of the skewness coefficients	6.75	-	3.52	-	Skewness coefficients less than twice the standard errors	Non-normal distribution	Non-normal distribution
Control of extreme values / Z score	Two extreme values (Years 1992 and 2016)		No extreme value		between -3 and +3	Non-normal distribution	Normal distribution
Test results to be applied						**Spearman correlation test**	

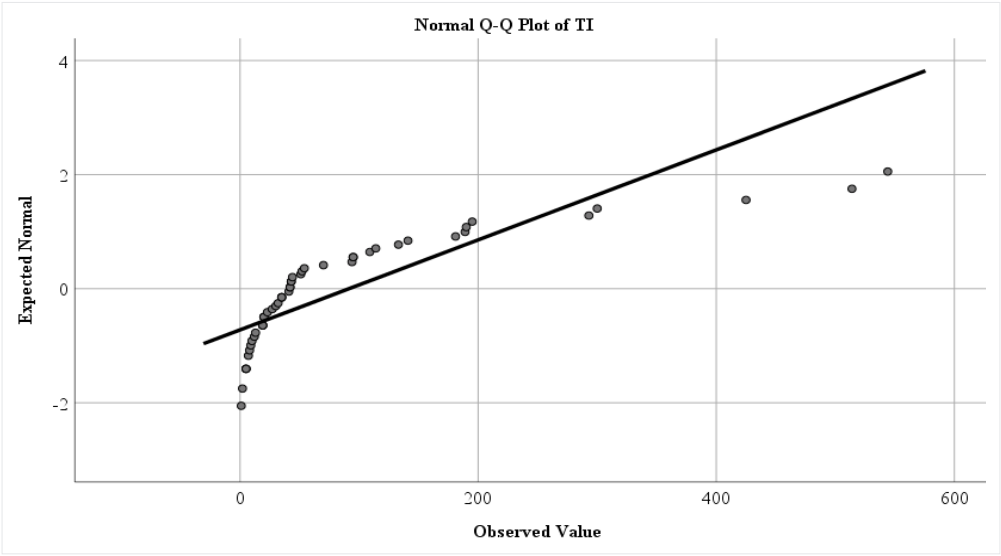

Figure 2. Normal Q-Q plot of terrorist incidents

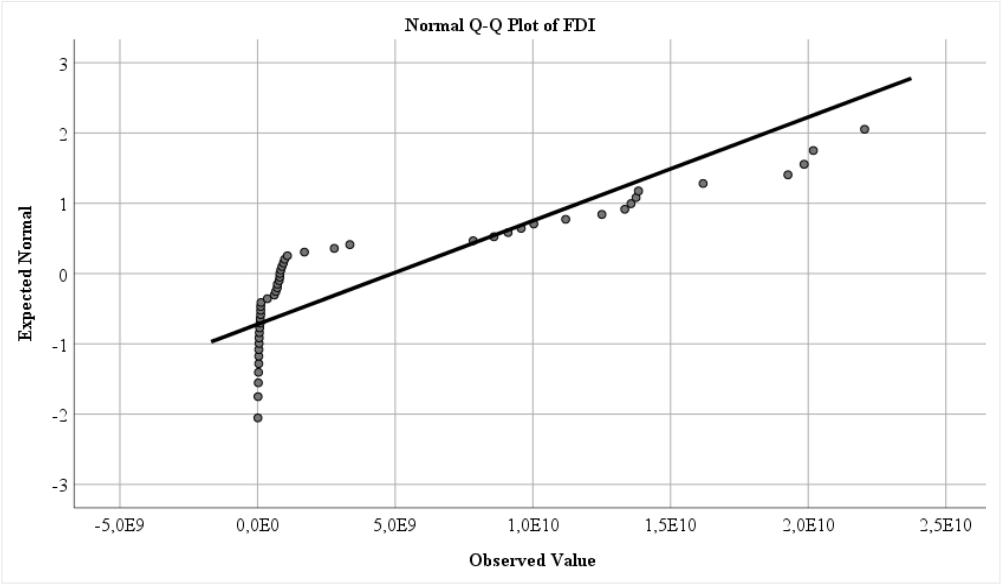

Figure 3. Normal Q-Q plot of foreign direct investment

Spearman correlation test (Table 2) requires the acceptance of the H0 hypothesis. That is, the null hypothesis H_0: $R^2=0$ is accepted. In other words, the number of terrorist incidents by year does not have a statistically significant effect on foreign direct investments.[4] This result can also point to *a relation tendency* if $0.05 \leq p = 0.066 < 0.10$. This relationship trend may mean more in further analysis on the following lines.

Table 2. Spearman correlation results for the hypothesis

		Terror incidents	Foreign direct investment
Terror incidents	Spearman's rho	1	.265
	p		**.066**
	n	49	49
Foreign direct investment	Spearman's rho	.265	1
	p	**.066**	
	n	49	51

Regression Analysis and Obtained Data

Since the variables do not possess normal distribution as Table 1 clarifies, they are not suitable for regression analysis.[5] To say differently, there is no causal relation between the variables of the hypothesis. In addition, the regression models established for the hypothesis display that the established model is not of significance. The data on the ANOVA results denoting that the model established for the hypothesis is not significant are below.

Table 3. ANOVA[a] results

	Model	Sum of squares	df	Mean square	F	Sig.
1	Regression	25755.785	1	25755.785	1.623	**.209**[b]
	Residual	745656.419	47	15865.243		
	Total	771422,204	48			

a. Dependent variable: TI; b. Predictors: (Constant), FDI.

4 When there is not enough savings to finance investments in any country, financing from abroad to sponsor investments is important for not only developed countries, but also underdeveloped and developing countries. For studies evaluating the influence of FDI on economic growth, see Davaakhuu *et al.* (2014); Bahmani and Toms (2015); Pavlinek *et al.* (2009); Kumarasamy and De (2019); Taşdemir and Erdaş (2018); Demir (2018); Chen *et al.* (2014); Komiya and Wakasugi (1991); Satyanand (2011); Angelis and Harvie (2018); Jawaid *et al.* (2016); Noh and Mah (2011); Siddikee and Rahman (2020); Lee and Mah (2018); Yusoff and Nuh (2015).

5 Criterion 1 means that the dependent variable should be equally spaced or proportionally measured and a continuous variable. Criterion 2 means that both variables should have a normal distribution. Criterion 3 means linear relationship. Criterion 4 means having no extreme values. Criterion 5: Cook Distance value should be a maximum one. Criterion 6: Errors should be normally distributed. Criterion 7: Variables should be covariate. Criterion 8: Errors should be independent of each other. Durbin Watson's coefficient should be a value between zero and four. Before the regression analysis, the first four criteria are to be satisfied. Therefore, the regression analysis could not be continued because criterion 2 was not met. See also Tez Yardım Platformu (2023).

The significance value of the model is 0.209, intimating that the regression models established for the hypothesis are not significant. The results make clear that there is no normal causation. Therefore, the regression hypothesis H_0: $\beta_1=0$ is accepted.

Advanced Test Results for Regression Analysis

For a further analysis that notices lags, the unit root test of the data will be performed and lag degrees will be determined. Thus, it has been desired to learn which causality test will be appropriate. ADF unit root test has been applied in this context (Appendix 1). The outcomes mark the series are stationary upon the first difference being taken. Only the TI (Terrorist Incidents) serial is stationary at the 10 percent significance level in the model without trend and constant at the random order. When the first difference (I1) is taken, all models are stationary at a one percent significance level ($p < 0.01$).[6] Toda Yamamoto test is proper since the series becomes stationary upon the first difference being taken. The reason why the Toda-Yamamoto causality test, in other words, is preferred is that no matter what level the variables are cointegrated, they are included in the analysis in their random order (Toda and Yamamoto 227).

After the causality analysis to be applied is assigned, it is time to find the lag value. The VAR analysis performed to assign the variables' lag degrees uncloses that the most appropriate lag is one (Table 4 and Figure 4) in addition to the SC and AIC results, the part with the most stars. Figure 4 also reveals that the process becomes stagnant when the lag length is taken as one by VAR analysis for the Hypothesis.

Table 4. VAR analysis for TI and FDI

Internal cause variables: TI FDI
External cause variables: C
Sample:1970 2020
Included Observations: 38

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1155.139	NA	9.65e+23	60.90204	60.98823	60.93270
1	-1115.502	73.01515*	1.48e+23*	59.02642*	59.28498*	59.11841*
2	-1112.470	5.266414	1.56e+23	59.07735	59.50830	59.23068
3	-1109.209	5.320730	1.63e+23	59.11624	59.71957	59.33090
4	-1106.706	3.819346	1.78e+23	59.19507	59.97077	59.47106

* Indicates lag order selected by the criterion

According to Toda Yamamoto's analysis, lag degree (k as freedom degree) and integration degree (dmax as maximum order of integration) are summed (k+dmax) and this number

6 The PP unit root test in Appendix 1 displays a similar result.

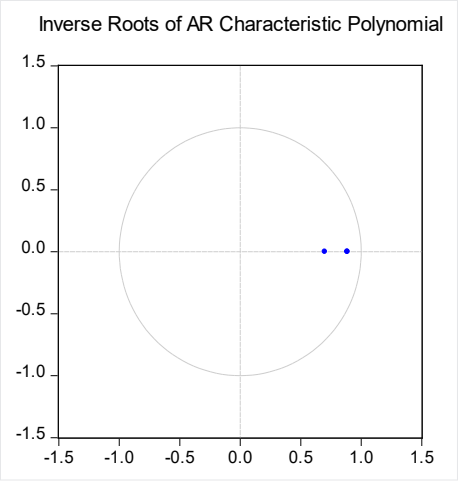

Figure 4. Stationarity for the hypothesis variables

(k+dmax) is included in the analysis (Toda and Yamamoto 227). According to this formula, the lag length contained in the analysis is two (k+dmax). Thus, a two-lag Toda Yamamoto equation is solved (Tables 5 and 6). After the main equations are created, the Wald test is used to evaluate whether the variables have a causal relationship with each other over these main equations[7] (Tables 7 and 8).

The following equations (Equations 1 and 2) are obtained through a two-lag Toda Yamamoto analysis for the Hypothesis.

Table 5. Toda Yamamoto equation for TI

Estimation method: Seemingly unrelated regression				
Sample: 1972 2020				
Included observations: 45				
Total system (unbalanced) observations: 88				
Linear estimation after one-step weighting matrix				
	Coefficient	**Probability**	**R-squared**	**Durbin-Watson statistic**
C(1)	0.873	0.000	0.463	1.720
C(2)	-0.208	0.219		
C(3)	7.19E-09	0.142		
C(4)	-7.26E-09	0.146		
C(5)	35.134	0.100		
Equation 1: TI = C(1)*TI(-1) + C(2)*TI(-2) + C(3)*FDI(-1) + C(4)*FDI(-2) + C(5)				

7 See also Çiğdem (2021).

Table 6. Toda Yamamoto equation for FDI

Estimation method: Seemingly unrelated regression				
Sample: 1972 2020				
Included observations: 45				
Total system (unbalanced) observations: 88				
Linear estimation after one-step weighting matrix				
	Coefficient	**Probability**	**R-squared**	**Durbin-Watson statistic**
C(6)	-5363990.	0.235	0.818	1.964
C(7)	3250288.	0.524		
C(8)	1.116869	0.000		
C(9)	-0.238102	0.113		
C(10)	9.55E+08	0.130		
Equation 2: FDI = C(6)*TI(-1) + C(7)*TI(-2) + C(8)*FDI(-1) + C(9)*FDI(-2) +C(10)				

The above formulas are obtained with the Toda Yamamoto test. In the formulas, values such as (-1) and (-2) mean the lags of the relevant variable. Since the data in the time series is annual, it means that one (-1) or two (-2) year-lag of the variables in front of them are included in the formula. The first equation for the Hypothesis expresses whether there is causality from FDI towards terrorist incidents (TI). Here, the coefficients in front of the FDI, namely C(3) and C(4) are taken into account.[8] The second equation expresses whether there is causality from terrorist incidents (TI) to foreign direct investment (FDI). Here, the coefficients in front of TI, namely C(6) and C(7) are taken into account.[9] Then, the Wald test makes clear if the variables are significant or not below.

Table 7. Wald test for causality for equation 1

Test statistic	Value	df	Probability
Chi-square	2.460	1	0.117
Null hypothesis: C(3) = C(4) = 0			

Table 8. Wald test for causality for equation 2

Test statistic	Value	df	Probability
Chi-square	1.444	1	0.230
Null hypothesis: C(6) = C(7) = 0			

8 According to the formula, the Wald test used for Toda Yamamoto calculates the degree of freedom one value more than the specified value. In other words, the Wald test performs this analysis at the level of df 2. However, since the appropriate number of lags determined for the time series is one, they are again calculated over the df 1 value in the table. The df 2 probability values are 0.2923 and 0.4857 respectively. For Toda Yamamoto's causality analysis, see Göger and also Çiğdem (2022).

9 See footnote 8.

As seen thanks to the tables, because the probability value for both equations of the Hypothesis is greater than 0.05 ($p > 0.05$), there is no unidirectional or bidirectional causality between the variables of the Hypothesis. To say differently, there is no causality from terrorist incidents to FDI, and vice versa.

Table 9. Toda Yamamoto test results

Null hypothesis	Test statistics Chi-square value	Probability p
TI is not the Granger cause of FDI	1.444	0.229
FDI is not a Granger cause of TI	2.460	0.117

Figure 5 shows that the primary targets of terrorist organizations are public personnel including military and police, and private citizens and property.

Figure 6 demonstrates that although attacks against the business world occur in industrially dense big cities, they cannot be a deterrent because these cities continue to grow. Industry-dense cities in Figure 6 include İstanbul (360), Ankara (56), İzmir (25), Adana (18), and Bursa (2). Other cities include all locations except industry-dense cities. No specific location data express those places not mentioned specifically.

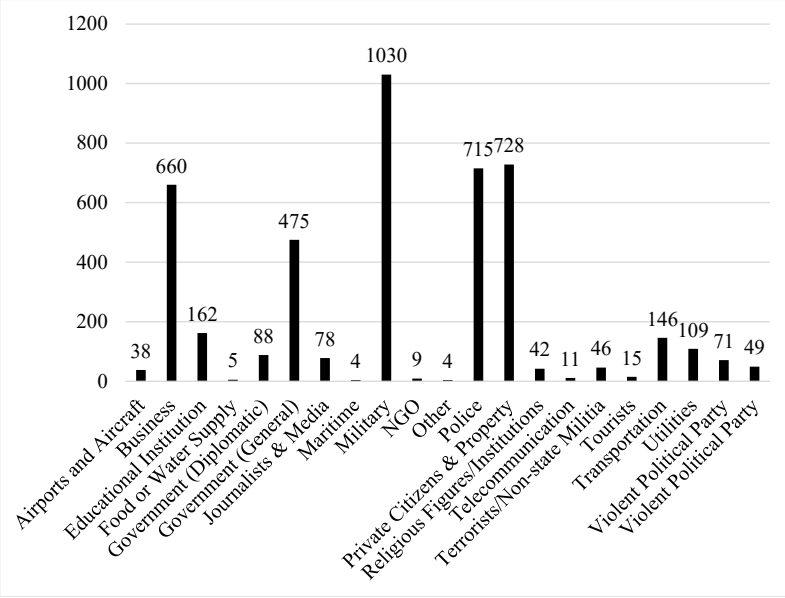

Figure 5. Terrorist incidents by target

Source: The data extracted from the GTD and formatted to suit the purpose of the study.

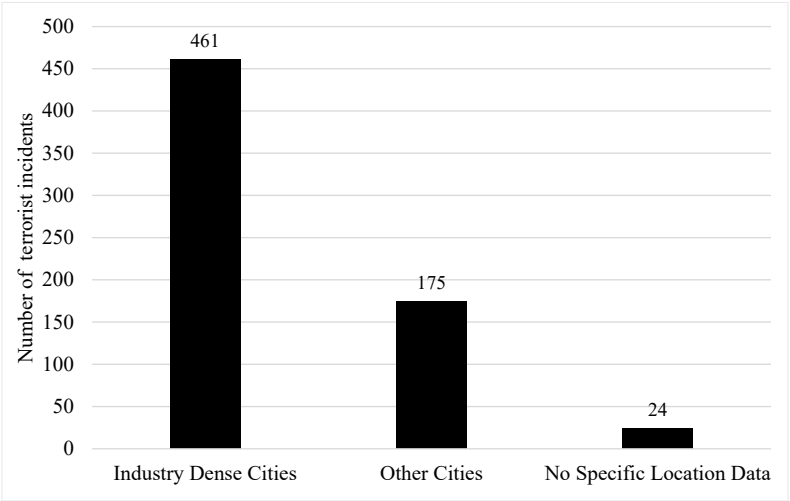

Figure 6. Terrorist incidents against businesses by location

Source: The data extracted from the GTD and formatted to suit the purpose of the study.

Another regression analysis is robust least squares (RLS) to consider extreme values. In this analysis, different estimates are used depending on the status of the variables. If there are extreme values in the dependent variable, the M-estimation method is used (Table 10), if there are extreme values in the independent variable, the S-estimation method is used (Table 11), and if there are extreme values in both dependent and independent variables, the M-estimation method is used. As can be seen in the normality test, the terrorist incidents variable takes extreme values. Therefore, below, RLS as a robust regression analysis of this variable is performed as both the dependent variable and the independent variable.

In the model where the terrorist incident (TI) is the dependent variable, the coefficient in front of the constant (C) is statistically significant, but the coefficient in front of foreign direct investment (FDI) is not statistically significant. In this case, it is not possible to say FDI is the cause of TI. On the other hand, in the model where FDI is the dependent variable, both the coefficient in front of the constant (C) and the coefficient in front of

Table 10. RLS results for TI as dependent variable

Dependent variable: TI Method: Robust least squares Sample: 1970 2020 Included observations: 51 Method: M-estimation			
Variable	**Coefficient**	**Prob.**	**Robust statistics** R-squared
FDI	9.95E-10	0.295	0.008
C	34.59732	0.000	

Table 11. RLS results for FDI as the dependent variable

Dependent variable: FDI			
Method: Robust least squares			
Sample: 1970 2020			
Included observations: 51			
Method: S-estimation			
Variable	**Coefficient**	**Prob.**	**Robust statistics** R-squared
TI	1636854.	0.001	0.121
C	1.77E+08	0.024	

the independent variable (TI) are statistically significant. Table 11 exhibits this causal relationship.

In this model, the explanatory power of the independent variable (TI) for the dependent variable (FDI) is approximately 12 percent (0.120637). Considering the significant coefficients, an equation as follows emerges. 1.77E+08 means exactly 176,638,452.591349 in this equation and means nearly 177,000,000.

Equation: FDI= 1.77E+08 C + 1,636,854 TI

reveals a much more interesting result. According to this equation, TI increases FDI. For example, one attack increases FDI by $1,636,854. Such a result either teaches a spurious causality or coincides with the unusual results in the literature that terrorism stimulates the economy.[10]

Türkiye case proves no relationship between terrorist incidents and foreign direct investment in this study. Moreover, RLS presents a positive causality from terrorist incidents to foreign direct investment. This evidence manifests that terrorist incidents increase foreign direct investment in Türkiye in the short term. The related literature makes clear that there are different country experiences.[11] Therefore, what is important from a theoretical perspective for future studies may be to focus on why country experiences differ.

Conclusion

This study departs from the existing scholarship concerning results, method, and investigating two-way causality. This study has evaluated whether terrorist incidents' yearly scores in Türkiye affect FDI and vice versa. The correlation test asserts there is a relationship

10 For the results presenting that terrorist incidents increased consumption in Pakistan, see Shah *et al.* (2016, pp. 216–235).

11 In this sense, Enders and Sandler's work on Spain and Greece can be cited as an example. They specified a unidirectional relationship between terrorist attacks to foreign direct investment. For details, see Enders and Sandler (1996).

tendency. The causality results divulge a unidirectional short-term relation but no long-term relation. Toda Yamamoto explains that there is no long-term relation between the variables.[12] On the other hand, RLS exposes that there is a short-term relationship between terrorist incidents to foreign direct investment.

In terms of the supposition of the study, the assumption that terrorism has a high deterrence on FDI in Türkiye is not valid, and the assumption that foreign direct investment influences terrorist incidents (TI) in Türkiye is not acceptable, either. This study within the data of 50 years about the case of Türkiye is also remarkable since it emerges that there is a one-way positive causal relationship between terrorist incidents to foreign direct investment. Attacks mostly direct against uniformed targets such as military and police targets, and civilian citizens. The results unveil that terrorist incidents concentrated in big cities do not have a deterrent effect on foreign direct investments, which are also concentrated in big cities.

References

1. Angelis, M. D., & Harvie, D. (2018). Globalization? No question? Foreign direct investment and labor commanded. *Review of Radical Political Economics*, *40*(4), 429–444.
2. Aydın, N. (2005). *Küresel terör ve terörizm*. Kocacık Yayıncılık İletişim.
3. Bahmani, S., & Toms, J. (2015). Assessing the effect of quantitative easing on foreign direct investment in Brazil. *The American Economist*, *60*(2), 76–182.
4. Bilgel, F., & Karahasan, B. C. (2015). The economic costs of separatist terrorism in Turkey [Türkiye]. *Journal of Conflict Resolution*, *61*(2), 457–479.
5. Burgoon, B. (2006). On welfare and terror: Social welfare policies and political-economic roots of terrorism. *Journal of Conflict Resolution*, *50*(2), 176–203.
6. Carlton, D., & Schaerf C. (1975). *International terrorism and world security*. Croom Helm.
7. Chen, Y., Gao, Y., Ge, Y., & Li, J. (2014). Regional financial development and foreign direct investment. *Urban Studies*, *52*(2), 358–373.

12 The results in this study have been retested by taking into account arithmetic means for missing data. However, the result does not change as it is not statistically significant ($p > 0.05$). Missing data have been supported by two methods. In the first one, the arithmetic average of periods with similar data has been taken. For the missing data of 1973, the period between 1970 and 1976 has been taken into account and an average of 17 was reached. For the missing data of 1993, the period between 1989 and 1996 has been taken into account and the average of 258.16 has been reached. In the second method, in the statistical analysis performed via SPSS, the number 91.53 has been reached for missing data. However, the data obtained with both methods does not change the result. VAR analyses also exhibit that there are no short-run relationships. The cointegration analysis, which is framed to investigate whether there is a long-term relationship, also does not reveal contradictory results. No cointegration has been detected between the parameters of the hypothesis.

8. Crenshaw, M. (1981). The causes of terrorism. *Comperative Politics*, *13*(4), 379–399.
9. Çelik, N., & Bayrak, R. (2020). Does terrorism hinders foreign investments in Turkey [Türkiye]? An empirical study with ARDL bounds test. *Savunma Bilimleri Dergisi*, *38*, 23–42.
10. Çelik, N., & Karaçuka, M. (2017). The effects of terror attacks on tourism sector: An empirical analysis in Turkey [Türkiye] example. *Ege Academic Review*, *17*(3), 313–322.
11. Çiğdem, G. (June 2021). *Toda-Yamamoto nedensellik testi* [Video]. YouTube. https://www.youtube.com/ watch?v= 2kg2oW3rA5k.
12. Çimen, A., Yıldırım, S., & Bayraktutan, Y. (2016). Terror incidents and economic growth: The case of Turkey [Türkiye]. *Kocaeli Üniversitesi Sosyal Bilimler Dergisi*, *32*, 1–14.
13. Davaakhuu, O., Sharma, K., & Bandara, Y. M. W. Y. (2014). Foreign direct investment in a transition economy: Lessons from the experience of Mongolia. *Global Business Review*, *15*(4), 663–675.
14. Demir, Ö. (Ed.), (2018). *Uluslararası politik ekonomi*. Anadolu Üniversitesi Yayınları.
15. Enders, W., & Sandler, T. (1996). Terrorism and foreign direct investment in Spain and Greece. *KYKLOS*, *49*(3), 331–352.
16. Feridun, M. (2011). Impact of terrorism on tourism in Turkey: Empirical evidence from Turkey [Türkiye]. *Applied Economics*, *43*(24), 3349–3354.
17. Gaibulloev, K., & Sandler, T. (2011). The adverse effect of transnational and domestic terrorism on growth in Africa. *Journal of Peace Research*, *48*(3), 355–371.
18. Göger, K. (January 2022). Toda Yamamoto causality test. https://www.youtube.com/ watch?v=YWGlTK9Hkqk.
19. Jawaid, T., Syed, T., Raza, S. A., & Mustafa, H. (2016). Does inward foreign direct investment lead export performance in Pakistan. *Global Business Review*, *17*(6), 1–18.
20. Kalaycıoğlu, E. (2019). Siyaset biliminde bilimsel kavramlaştirma ve ölçme. In A. Çarkoğlu (Ed.), *Uluslararası ilişkilerde araştirma yöntemleri* (pp. 2–25). Anadolu Üniversitesi Yayınları.
21. Kojove, A. (2001). *Hegel felsefesine giriş*. (Trans.) S. Hilav. Yapı Kredi Yayınları.
22. Komiya, R., & Ryuhei, W. (1991). Japan's foreign direct investment. *The Annals of American Academy*, *513*(1), 48–61.
23. Korotayev, A., Vaskin, I., & Tsirel, S. (2019). Economic growth, education, and terrorism: A re-analysis. *Terrorism and Political Violence*, *33*(3), 572–595.
24. Kumar, S., & Sanjeev, M. A. (2020). Terrorism–tourism–economic growth nexus in India: An NARDL evidence. *FIIB Business Review*, *9*(4), 300–308.
25. Kumarasamy, D., & De, P. (2019). Promoting foreign direct investment in the Indo-Pacific region: Scope and opportunities. *India Quarterly*, *75*(4), 1–20.
26. Lee, J., & Mah, J. S. (2018). Korea's foreign direct investment in the automotive industry in China. *China Report*, *54*(2), 1–19.
27. Marighella, C. (2003). Şehir gerillasının elkitabı. (Trans.) Eriş Yayınları. Eriş Yayınları.
28. Meierrieks, D., & Gries, T. (2013). Causality between terrorism and economic growth. *Journal of Peace Research*, *50*(1), 91–104.
29. Noh, S., & Mah, J. S. (2011). The patterns of Japan's foreign direct investment in China. *China Report*, *74*(3), 217–232.

30. Omay, T., Takay, B. A., Eruygur, A., & Kılıç, İ. (2013). The effects of terrorist activities on foreign direct investment: Nonlinear evidence from Turkey [Türkiye]. *Review of Economics*, *64*(2), 139–158.
31. Osgood, I., & Simonelli, C. (2020). Nowhere to go: FDI, terror, and market-specific assets. *Journal of Conflict Resolution*, *64*(9), 1–28.
32. Özkaya, Y., & Şimşek, T. (2017). The relationship between terrorism and financial structure. *Journal of International Management, Educational and Economics Perspectives*, *5*(1), 9–19.
33. Pavlinek, P., Domanski, B., & Guzik, R. (2009). Industrial upgrading through foreign direct investment in central European automotive manufacturing. *Europeran Urban and Regional Studies*, *16*(1), 43–63.
34. Piazza, J. A. (2011). Poverty, minority economic discrimination, and domestic terrorism. *Journal of Peace Research*, *48*(3), 339–353.
35. Satyanand, P. N. (2011). Foreign direct investment in India's power sector. *Journal of Infrastructure Development*, *3*(1), 65-89.
36. Schmid, A. (2004). Terrorism – the definitional problem. *Case Western Reserve Journal of International Law*, *36*(2), 375–419.
37. Schmid, A. (1983). *Political terrorism: A research guide to concepts, theories, data bases and literature*. Transaction Books.
38. Sezgin, Ş., & Kıroğlu, B. S. (2019). Terör olaylarının Türkiye'nin turizmine etkisinin analizi. *Avrasya Sosyal ve Ekonomi Araştırmaları Dergisi (ASEAD)*, *6*(10), 16–27.
39. Shah, S. H., Hasnat, H., & Ahmad, M. H. (2016). The effects of the human cost of terror on national income, private consumption and investment in Pakistan: An empirical analysis. *South Asia Economic Journal*, *17*(2), 216–235.
40. Siddikee, N., & Rahman, M. M. (2020). Foreign direct investment, financial development, and economic growth nexus in Bangladesh. *The American Economist*, *66*(2), 1–16.
41. Şimşek, T., & Özkaya, Y. (2018). Türkiye'de terörizm ve temel makroekonomik göstergeler arasındaki ilişki. *Gaziantep University Journal of Social Sciences*, *17*(1), 267–290.
42. Taşdemir, D., & Erdaş, H. (2018). Doğrudan yabancı yatırım ekonomik büyüme ilişkisi: Türkiye örneği. *Trakya Üniversitesi İktisadi ve İdari Bilimler Fakültesi E-Dergi*, *17*(1), 140–152.
43. Terzi, M. (2019). Akdeniz'de fakirlik ile istikrarsiz rejimlerin Türkiye'nin güvenliğine etkileri. In H. Çomak and B. Ş. Şeker (Ed.), *Akdeniz jeopolitiği* (volume 1, pp. 752–765). Nobel Yayınevi.
44. Terzi, M., & Yenal, Serkan. (2019). Terrorism. In N. Doğan (Ed.), *International security* (pp. 158–187). Anadolu University Press.
45. Thornton, T. P. (1964). Terror as a weapon of political agitation. In H. Eckstein (Ed.), *Internal war: Problems and approaches* (pp. 71–79). The Free Press.
46. Toda, H. Y., & Yamamoto, T. (1995). Statistical inference in vector autoregressions with possibly integrated processes. *Journal of Econometrics*, *66*(1–2), 225–250.
47. Turan, D., & Gemici, E. (2020). Terörizmin finansman kaynaklari ve karapara aklamanin terörizmin finansmanında ki rolü. *Anadolu Üniversitesi Sosyal Bilimler Dergisi*, *20*(2), 257–278.
48. University of Maryland. (2023, August 17). 4599 incidents-Turkey [Türkiye]. Retrieved from https://www.start.umd.edu/ gtd/search/ Results.aspx?search=Turkey&sa.x=0&sa.y=0.

49. World Bank. (2022, October 5). Foreign direct investment, net inflows (BoP, current US$) – Türkiye. Retrieved from https://data.worldbank.org/indicator/BX.KLT.DINV.CD.WD? locati ons= TR.
50. Yaya, M. E. (2009). Terrorism and tourism: The case of Turkey [Türkiye]. *Defence and Peace Economics, 20*(6), 477–497.
51. Tez Yardım Platformu. (2023, December 12). *SPSS ile Basit Doğrusal Regresyon* [Video]. YouTube. https://www.youtube.com/watch?v=JAAN73QF9e8.
52. Yusoff, M. B., & Nuh, R. (2015). Foreign direct investment, trade openness and economic growth: Empirical evidence from Thailand. *Foreign Trade Review*, *50*(2), 73–84.

Appendix 1.

Unit Root Test Table (ADF)

At level			
		FDI	TI
with constant	t-statistic	-1.6282	-2.3624
	Prob.	*0.4610*	*0.1578*
		no	no
with constant & trend	t-statistic	-3.1366	-2.2884
	Prob.	*0.1095*	*0.4315*
		no	no
without constant & trend	t-statistic	-1.1181	-1.6368
	Prob.	*0.2359*	*0.0953*
		no	*
At first difference			
		d(FDI)	d(TI)
with constant	t-statistic	-5.8799	-5.2897
	Prob.	*0.0000*	*0.0001*
		***	***
with constant & trend	t-statistic	-5.8099	-5.2794
	Prob.	*0.0001*	*0.0005*
		***	***
without constant & trend	t-statistic	-5.9131	-5.3122
	Prob.	*0.0000*	*0.0000*
		***	***

Unit Root Test Table (PP)

At level			
		FDI	TI
with constant	t-statistic	-1.5485	-2.6565
	Prob.	*0.5011*	*0.0894*
		no	no
with constant & trend	t-statistic	-2.3409	-2.6146
	Prob.	*0.4050*	*0.2760*
		no	no
without constant & trend	t-statistic	-1.0439	-1.7860
	Prob.	*0.2635*	*0.0706*
		no	*
At first difference			
		d(FDI)	d(TI)
with constant	t-statistic	-6.5750	-5.6846
	Prob.	*0.0000*	*0.0001*
		***	***
with constant & trend	t-statistic	-6.3363	-5.6411
	Prob.	*0.0000*	*0.0002*
		***	***
without constant & trend	t-Statistic	-6.1575	-5.7293
	Prob.	*0.0000*	*0.0000*
		***	***

Notes:
(*) Significant at the 10 percent; (**) Significant at the 5 percent; (***) Significant at the 1 percent. And (no) not significant *MacKinnon (1996) one-sided p-values.