MEHMET AKİF ERSOY ÜNİVERSİTESİ
İKTİSADİ VE İDARİ BİLİMLER FAKÜLTESİ DERGİSİ
Mehmet Akif Ersoy University
Journal of Economics and Administrative Sciences Faculty

ISSN: 2149-1658
Cilt: 8 Sayı: 3 s.1456-1475
Volume: 8 Issue: 3 p.1456-1475
Kasım 2021 November

DOES HIGHER GEOPOLITICAL RISK LIMITS TURKISH FOREIGN DIRECT INVESTMENTS?

YÜKSEK JEOPOLİTİK RİSK, TÜRKİYE'NİN DOĞRUDAN YABANCI YATIRIMLARINI SINIRLIYOR MU?

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Makale Türü	Article Type
Araştırma Makalesi	Research Article

Başvuru Tarihi	Application Date
12.01.2021	01.12.2021

Yayına Kabul Tarihi	Admission Date
20.05.2021	05.20.2021

DOI
https://doi.org/10.30798/makuiibf.859137

Abstract

The acceleration of capital transfers between countries after globalization has increased the importance of foreign direct investment in developing countries. The lack of capital in developing countries, such as Turkey, is an obstacle to investment. In this context, foreign direct investment that will come to the country is important in terms of eliminating the negativities caused by the lack of capital. Foreign direct investment is influenced by many factors. One of them is the geopolitical risk of the country. This study aims to investigate the effect of geopolitical risk on foreign direct investment in Turkey using ARDL Bound Test and Granger Causality Analysis for the period 1998-2018. In addition to geopolitical risk, real exchange rate, labor force, real GDP and savings affecting FDI were also included in the study. The results of the analysis show that geopolitical risk and labor force have a negative effect on FDI while real GDP, real exchange rate and savings have a positive effect on FDI. On the other hand, according to the results of Granger causality test, there is a one-way causality relationship from geopolitical risk to FDI.

Keywords: Geopolitical Risk, Foreign Direct Investment, ARDL.

Öz

Ülkeler arasındaki sermaye transferlerinin küreselleşme ile birlikte hız kazanması, özellikle gelişmekte olan ülkelerde doğrudan yabancı yatırımların önemini arttırmıştır. Türkiye gibi gelişmekte olan ülkelerde, sermaye yetersizliği sorunu ekonomik büyümeyi sağlayacak yatırımların önünde önemli bir engel oluşturmaktadır. Doğrudan yabancı yatırımlar (DYY) bu bağlamda, sermaye yetersizliğinin yarattığı olumsuzlukların giderilmesinde destekleyici bir öneme sahiptir. Bir ülkeye yönelik doğrudan yabancı yatırımların birçok belirleyicisi bulunmaktadır. Bunlardan birisi de ülkenin jeopolitik risk düzeyidir. Bu çalışmada Türkiye için 1994- 2018 döneminde, ARDL Sınır Testi yaklaşımı ve Granger Nedensellik Analizi ile jeopolitik riskin doğrudan yabancı yatırımlar üzerindeki etkisi analiz edilmiştir. Ayrıca jeopolitik riskin yanı sıra, doğrudan yabancı yatırımları etkileyen reel döviz kuru, toplam iş gücü, reel GSYH ve tasarruf oranları da analize dahil edilmiştir. Yapılan analiz sonucunda, jeopolitik risk ile toplam işgücü DYY üzerinde negatif bir etkiye sahipken; reel GSYH, reel döviz kuru ve tasarruf oranları ise DYY üzerinde pozitif bir etkiye sahip olduğu bulunmuştur. Öte yandan, Granger nedensellik testi sonuçlarına göre, jeopolitik riskten doğrudan yabancı yatırımlara doğru tek yönlü bir nedensellik ilişkisi vardır.

Anahtar Kelimeler: Jeopolitik Risk, Doğrudan Yabancı Yatırımlar, ARDL.

GENİŞLETİLMİŞ ÖZET

Çalışmanın Amacı

Bir ülkeye yapılacak doğrudan yabancı yatırımları belirleyen birçok faktör bulunmaktadır. Bu faktörlerden birisi de alıcı ülkenin jeopolitik risk düzeyidir. Bu tür bir risk düzeyinin yüksek oluşu, ülkeye girecek yabancı yatırımcıların gelecekle ilgili belirsizlik artışına bağlı olarak, yapmaya planladıkları yatırımlardan vazgeçmelerine neden olacağı, riskten kaçmak anlamında anlaşılabilir bir durumdur. Bu bağlamda çalışmada Türkiye'de jeopolitik riskin doğrudan yabancı yatırımlar üzerindeki etkisi ampirik olarak analiz edilecektir.

Araştırma Soruları

Çalışmada Türkiye'de jeopolitik riskin, doğrudan yabancı yatırım girişleri üzerine etkisini ampirik olarak analiz etmek ve jeopolitik riskin doğrudan yabancı yatırımlar üzerinde yarattığı olumsuz etkileri önleyici öneriler sunmaktır.

Literatür Araştırması

Literatürde doğrudan yabancı yatırımları etkileyen faktörlerin araştırıldığı çalışma sayısı oldukça fazla olmasına rağmen, doğrudan yabancı yatırımları belirleyen faktörlerin arasında jeopolitik risk kavramını inceleyen çalışma sayısı oldukça azdır. Jeopolitik Risk İndeksi (GPR) kavramı, ekonomi literatürüne 2018 yılında Caldara ve Lacoviello ile beraber girmiştir. Yeni bir indeks olan jeopolitik risk indeksini ve doğrudan yabancı yatırımları konu alan çalışma sayısının az olması, bu alanın daha çok araştırılmaya ihtiyaç olduğunu göstermektedir.

Yöntem

Jeopolitik risk ve doğrudan yabancı yatırımlar arasındaki ilişkinin incelendiği çalışmada, jeopolitik riski temsil etmesi açısından jeopolitik risk indeksi (GPR) kullanılmıştır. Türkiye için yapılan çalışmada jeopolitik Risk İndeksinin yanı sıra doğrudan yabancı yatırımları belirleyen diğer faktörlerden literatürde sıklıkla yer alan reel döviz kuru (RER), reel gayri safi yurtiçi hasıla (GDP), Sabit sermaye yatırımları (INVEST) ve toplam işgücü (LBR) değişkenleri kullanılmıştır Veriler TCMB Elektronik Veri Dağıtım Sistemi ve Dünya Bankasından elde edilmiş olup 1990- 2018 dönemini içermektedir. Jeopolitik Risk ve doğrudan yabancı yatırımlar arasındaki ilişkinin incelendiği bu çalışmada Pesaran vd. (2001) tarafından geliştirilen Autoregressive Distributed Lag (ARDL) modeli ve Granger Nedensellik analizi yöntemi kullanılmıştır.

Sonuç ve Değerlendirme

Çalışmada elde edilen bulgulara göre; jeopolitik riskte meydana gelen artış, doğrudan yabancı yatırımları negatif etkilemektedir. Bununla beraber işgücü değişkeni de doğrudan yabancı yatırımları negatif etkilerken, tasarruflar, reel döviz kuru ve reel GSYH değişkenleri ise doğrudan yabancı yatırımları pozitif yönde etkilemektedir. Öte yandan, Granger nedensellik testi sonuçlarına göre ise jeopolitik riskten doğrudan yabancı yatırımlara doğru tek yönlü bir nedensellik ilişkisi vardır. Çalışmanın bulgularını Jeopolitik risk özelinde ele alırsak; jeopolitik risk artışının ülkeye giren

doğrudan yabancı yatırımlar üzerinde etkili olduğu tezini kanıtlar nitelikte olduğunu görmekteyiz. Yabancı yatırımcı için ülkelerin ekonomik büyümeleri, cari açıkları ve enflasyon gibi makroekonomik göstergeleri ne kadar önemliyse o ülkenin dış politikalarda aldığı kararlarda o ölçüde önemlidir. İç tasarruf oranlarının düşük seyrettiği Türkiye gibi gelişmekte olan ülkelerde yatırımların artması ve ekonomik büyümenin gerçekleşmesi için doğrudan yabancı yatırımlar büyük öneme sahiptir. Bu sebepten dolayı, jeopolitik riskin yarattığı belirsizlik unsurunun ortadan kaldırılması için hükümet politikalarında daha dikkatli adımlar atılması gerekmektedir.

1. INTRODUCTION

Foreign direct investment (FDI) is a crucial factor for economic development, particularly in countries with a shortage of savings. The fact that capital can freely enter the international markets thanks to globalization has increased the importance of foreign direct investments (FDI). Especially in developing countries, low domestic saving rates made the size and prevalence of overall investments highly dependent on foreign direct investments. Thus, foreign direct investments for developing countries is seen as a viable long-term source of economic growth.

Foreign direct investments are considered as an opportunity to increase employment rates and a factor of technological innovation for the recipient countries. Multinational companies prefer to produce in countries that they consider to be advantageous during the production phase. It is generally accepted that this situation contributed positively to the economic growth of those countries. Therefore, the importance of foreign direct investments has become a general acceptance, especially for developing countries. For this reason, policies are being developed in many developing economies to attract foreign direct investments. On the other hand, economic and political developments may have an impact on foreign direct investments. Determining the strength and direction of these effects is important for determining the course of the policies to be implemented (Aslan et al., 2019).

Several factors determine foreign direct investment in a country. One of these factors is the geopolitical risk level of the recipient country. For the entering investors, the high level of such risk brings uncertainty about the outcome of their investment. On the other hand, the uncertainty and instability created by geopolitical risk can harm investments and cause productivity losses in the economy. Moreover, increases in risk can affect the profitability of investments. This creates concerns for investors planning to invest in foreign markets. As a result, there is a possibility that the investments planned by the investors will not be made in the country. In this context, this study analyzes the effect of geopolitical risk in Turkey on foreign direct investment inflows. However, the relationship between geopolitical risk and FDI is a complex issue that involves various macroeconomic factors. For example, macroeconomic factors such as GDP, real exchange rate, and savings affect the investment decisions of foreign investors.

Gross domestic product, the first of these factors, refers to the market size of the host country. The gross domestic product of the country is a very important factor in attracting foreign direct investment to that country. Both the income of the country and the level of per capita income play an important role in the preference of foreign capital for the country in question. In fact, in most studies that examine the relationship between GDP and FDI, which expresses market size in the economics literature, it is concluded that as market volume increases, FDI flows increase (Chakrabarti, 2001: 97; Erçakar and Yılgör: 2010). Another factor whose effect on FDI is examined in the study is the real exchange rate. The volatility of exchange rates causes different interest rates between countries. In such

a case, the country whose money is valuable will attract foreign investors and the country whose money is less valuable will attract foreign investment. Therefore, the real exchange rate is among the factors that affect the profitability of investors and in which country they will invest (Narin, 2007: 52; Özel and Akaner, 2020: 95).

Another factor believed to influence FDI is labor. The influence of labor on FDI is controversial in the literature. Thus, the quality of labor force in a country is important in determining the direction of the relationship between labor force and FDI. If the productivity of the labor force is low and the wages correspond to a relatively small share of the production costs of the firm that will invest in the country, the abundance of the labor force in that country will not be an investment opportunity for the firm (Yapraklı, 2006: 29). On the other hand, labor cost of labor is also important for FDI decisions. While economies with low labor costs may be more attractive for FDI, economies with high labor costs may be less preferred. Another factor considered in the study is savings. An increase in savings helps to increase the interest of potential investors in the country, thus encouraging FDI inflows.

In the study workflow, Geopolitical Risk Index was used as numerical representation of geopolitical risk. In addition to the Geopolitical Risk Index, savings, real exchange rate, total labor force and economic growth variables, all of which are common indices in empirical studies, were included in the model as they reflect the main determinants of foreign direct investments.

In the first part of the study, the concept of geopolitical risk is discussed in the context of its definition and importance. In the next section, previous studies focusing on the geopolitical risk and FDI are presented as a literature review. In the last part of the study, the model and data set used are introduced, and the analysis results and our political suggestions are presented.

2. GEOPOLITICAL RISK CONCEPT AND ITS IMPORTANCE

There is a clear correlation between the growth and development of an economy and the volume of investments and their accessibility (Busse and Hefeker, 2007). Similar economic indicators such as the market structure, economic stability, exchange rate risks, labor costs of the receiving country constitute significantly to the achievement of accessible and profitable investments. Furthermore, political and geopolitical risk factors, which represent the country's risk situation, also have an impact on investments.

Political risk refers to the unexpected changes that the government may make in investment decisions due to political events (Butler & Joaquin, 1998). Another risk affecting foreign direct investments is geopolitical risk. The word "geopolitics" consists of the combination of the word "geo", which means soil, and "politeia", which means the word policy in Greek. In this context, the word "geopolitics" means that determination of foreign policy is based on the geography of a country. In other words, the concept of geopolitics refers to the relationship between the geography of the states over

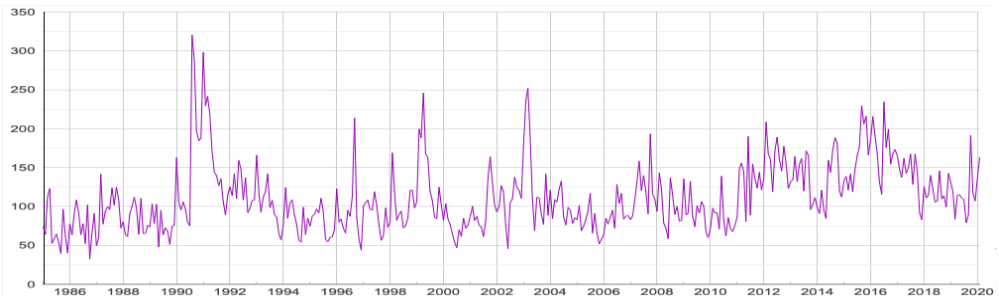
political and economic decisions. Additionally, the geopolitical concept has a use that expresses the cross-country competition and controlling the borders of the country in the historical process as an environmental concept containing different subconcepts. Especially in recent years, we witness that the concept in question has a wider range of meanings. Today, various elements including company struggles, the behavior of non-governmental organizations and the activities of political parties, are all included in the concept of geopolitics. Hence, geopolitical risk is associated with all kinds of tensions, wars and terrorist activities that cannot be deescalated quickly or resolved peacefully during the attempt of keeping a territory of a country, institution or a competing rival in control.

Given these, the concept of geopolitical risk refers to the risk that arises when political turmoil and institutional struggles that arise as a result of the political actions in the country are resolved through non-democratic means (Caldara and Lacoviello, 2018, p.8). In other words, geopolitical risk is a concept that includes all kinds of tense domestic or international actions affecting foreign relations, and it measures the rising risk of the country due to external factors. Investors, company managers, analysts, economy leaders in the country all consider the geopolitical risk, which indicates potential new risks due to an increase of geopolitical events in the country, as the main determinant of their investment decision and the projection of the local economy (Çetin, 2019, p.109).

High geopolitical risk means lower returns while real activities decrease in the economy. This is very important as it causes capital movements and hence foreign direct investments to shift from developing countries to advanced economies. For example, when looking at the Middle East region, instabilities, uncertainties and risks arising from negative situations such as the Iranian Revolution in 1979, the Gulf War in 1990-1991 and civil war in Syria in 2000s had a clear impact on the global economy.

Turkey is a transcontinental country connecting Western Asia and Southeastern Europe. Turkey has faced continuous problems near its borders due to its location. Especially the constant political turmoil in the Middle East has closely affected Turkey. Hence, the events occurring in the Middle East expectedly makes an impact on the judgement of the geopolitical risk from the investors' viewpoint. Based on these factors, the course of Turkey's geopolitical risk level are presented in Figure 1.

Figure 1. Historical Overview of Turkey's Geopolitical Risk Level (1986-2020**)**



Source: https://www.matteoiacoviello.com/gpr.htm

According to this graph, the risk level of the specified date range in Turkey has followed a volatile trend. It can clearly be seen that the geopolitical risk index showed significant deviations especially in the early 1990s and 2000s. These spikes correlate with the timing of the Gulf crisis, the Iraq War, the Arab Spring and the Jasmine revolution, all of which have affected Middle East. In this study, "Geopolitical Risk Index (GPR)" created by "Caldara and Lacoviello" was used to represent the geopolitical risk. The Geopolitical Risk Index, developed by Caldara and Lacoviello, was created based on the number of incidents occurring in English-language newspapers, where articles discussing risks related to geopolitical events are intense.

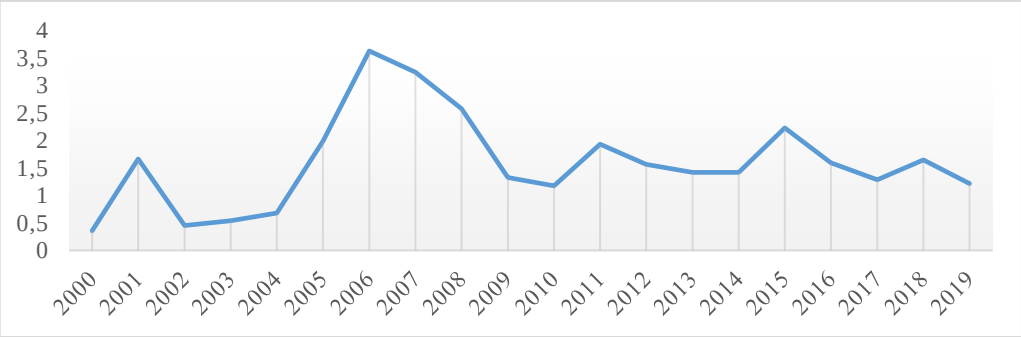
This index was created according to the newspapers The Boston Globe, Chicago Tribune, The Daily Telegraph, Financial Times, The Globe and Mail, The Guardian, Los Angeles Times, The New York Times, The Times, The Wall Street Journal and Washington Post. For Turkey and other 17 developing countries, data are available on a monthly basis since 1985 (Caldara and Lacoviello, 2018). The important advantage of the GPR Index is that it reveals inferences more reliably for examining how certain events affect the market and investments (Antonakakis et al., 2017).

While other indicators are insufficient in identifying geopolitical risk, the GPR index is accessible to researchers and offers a wide measurement period. In this respect, the GPR Index is important in terms of reflecting the fluctuations in the geopolitical risk level for the country under the period of consideration.

There are many evaluation criteria that foreign investors look at when making an investment decision in a country. In this context, geopolitical risk is at the top of the evaluation criteria under consideration. Turkey is a country with high geopolitical risks due to its geography. This increases the likelihood of developments that are often a cause of concern for foreign investors coming to the country.

Figure 2 shows the foreign direct investment inflows to Turkey between the years 2000-2019. According to this figure, during the period from 2000 to 2006, foreign direct investment in Turkey generally increased. In addition to Turkey, FDI also increased worldwide in 2004 and 2005. After the growth process of FDI, with the financial crisis in 2007 and the global recession in 2008, FDI continued to grow at a slower rate. On the other hand, there was a further decline in FDI, especially after 2015. This decline was associated with the fragility of economic conditions as well as the increase in geopolitical risks (UNCTAD, 2015; Dedeoglu et al., 2019).

Figure 2. Foreign Direct Investment Inflows to Turkey (% GDP)



Source: World Bank, 2021.

3. LITERATURE REVIEW

Although the number of studies investigating the factors affecting foreign direct investments is quite high in the literature, the number of studies examining the concept of geopolitical risk among the factors determining foreign direct investments is relatively low. In this context, the selected literature focused on studies that examine the geopolitical risk factor in addition to the determinants of FDI.

The concept of Geopolitical Risk Index (GPR) was introduced into the economic literature in 2018 by Caldara and Lacoviello. The relatively low number of studies on the relationship between the geopolitical risk index and foreign direct investments indicates that this area would benefit from further research.

Arslan (2019) analyzed the effect of geopolitical risk on foreign direct investments for 17 developing countries in the period of 1994-2017 using a panel regression method. According to this analysis, a statistically significant and negative relationship was found between the Geopolitical risk index and FDI.

Chanegriha et al (2016) have attempted to determine the factors that have an impact on FDI for 168 countries. In this direction, panel data method was used with the data of 1970-2006 period. Various macroeconomic and socioeconomic variables such as inflation, growth rate, current account balance, external trade taxes and population are used in the study. They concluded that with the improvement in human capital, infrastructure and openness data, FDI increased while the increase in government debt and expenditure decreased FDI. No significant results were obtained for other variables.

Dedeoğlu et al. (2019) analyzed the relationship between governance quality, geopolitical risk and FDI for 18 developing countries using dynamic panel data method with the data for the period 1996-2016. As a result of the analysis, it was found that governance quality has a positive impact on FDI, while geopolitical risk has a negative impact on FDI.

Bezgin (2010) dealt with the period of 2009-2018 and used ARDL Bound Test approach in his study to investigate the effect of geopolitical risk on the returns of Borsa İstanbul Index. According to

their results, Turkey's geopolitical risk had a statistically significant and negative impact on the returns of the index based on the movements of Istanbul Stock Exchange 100 (BIST100), industry, finance, services and technology. Moreover, the study concluded that a 1% increase in geopolitical risk reduced the returns of the BIST100 by 4%.

Rauf et al (2016) in their study for Pakistan analyzed the impact of growth, openness, political stability and terrorist attacks on FDI for the period 1970-2013 using OLS method. As a result of the study, it was found that growth, openness and political stability have positive impact on FDI and terrorist attacks have negative impact on FDI.

Cheng and Chiu (2018) analyzed the effects of global geopolitical risk for 38 developing countries. In the study, 1980-2011 period was covered, and structural VAR model was used. Findings of the study showed that global geopolitical risk had an adverse effect on the economic business cycles in the period under consideration.

Soltani et al (2021) analyzed the impact of geopolitical risk and financial development on economic growth in the MENA region for the period 1995-2020 using the PVAR method. As a result of the analysis, it was found that the effect of financial development on the growth rates of countries is different in each country, but geopolitical risk increases economic fragility in the countries in the sample group, which reduces the entry of foreign investment in the country and as a result, geopolitical risk has a negative effect on economic growth.

Fania et al (2020) investigated the impact of geopolitical risk on FDI in their study for 16 countries in West Africa. The study was conducted using Generalized Linear Model and the findings obtained show that although geopolitical risk has an impact on FDI, not all components of geopolitical risk have the same relationship with FDI.

Wang et al. (2019) investigated whether geopolitical risk affected the corporate investments for the period of 1987-2016 in their study. Their findings showed that geopolitical risk had significantly reduced future investments.

Liv et al. (2019) analyzed the impact of geopolitical risk on firms' investment decision form an international perspective. The study covered the period of 1995-2014 and was conducted on the basis of companies covering 17 developing countries. Based on the findings of the study, they concluded that the geopolitical risk had a negative impact on investment decisions of weak firms.

Pan (2019) analyzed the relationship between the geopolitical risk and corporate R&D investments with the data from 1985-2018 period using 11,164 firm-specific, unbalanced panel data method. According to the study, a negative relationship was found between geopolitical risk and corporate R&D investment. It was observed that the R&D investment decreased rapidly within a few

quarters after an increase in the geopolitical risk, and the risk was too important to be neglected for the companies with high growth potential.

Das et al. (2019) analyzed the impact of international economic policy uncertainty, geopolitical risk and financial stress on 24 emerging markets with a nonparametric causality test for the 1997M1-2018M5 period. They reported that their findings varied based on the size of the market and countries.

Akdag et al. (2019) analyzed the relationship between the geopolitical risk and the stock market indices in 12 countries with different economic and financial characteristics with the help of panel cointegration and panel causality analysis within the period 1997-2018. According to the results they reported, a significant causality from geopolitical risk indices to stock market indices was observed. Moreover, an incline in geopolitical risk indices caused a decline in stock market indices.

Bilgin et al. (2018), on the other hand, analyzed the impact of geopolitical risk on government investments by using panel fixed effects and least squares method for the period of 1985-2015 in 18 different countries. At the end of their investigation, they concluded that an increase in geopolitical risks had a positive effect on state investments.

4. MODEL, DATA AND METHODOLOGY

4.1. Data

In this study examining the relationship between geopolitical risk and FDI in Turkey, the geopolitical risk index (GPR) was chosen to represent the geopolitical risk. In addition to the GPR, real exchange rate (RER), real gross domestic product (GDP), savings (SAVINGS) and total labor (LBR) variables were used to represent the economy. The data was obtained from the Central Bank of the Republic of Turkey (CBRT) Electronic Data Distribution System (EDDS) and the World Bank Development Indicators (WDI) covering the period of 1990-2018.

Table 1. Variables and Definitions

Variables	Definition	Obtained From	Expected Sign
FDI	% Share of Foreign Direct Investments in GDP	World Bank-WDI	
GPR	Geopolitical Risk Index	Caldara and Lacoviello, 2018	-
GDP	Real Gross Domestic Product	World Bank-WDI	+
RER	Real Exchange Rate	CBRT-EDDS	+
LBR	Total Labor force	World Bank-WDI	-/+
SAVINGS	% Share in GDP of Savings	World Bank-WDI	+

The following model has been established to estimate the relationship between geopolitical risks and foreign direct investment in Turkey:

$$\Delta FDIt = \beta 0 + \beta 1 \Delta LGPRt + \beta 2 \Delta LLBRt + \beta 3 SAVINGSt + \beta 4\ \Delta LRERt + \beta 5 \Delta LGDPt + \varepsilon t \quad (1)$$

The t index stated in the Equation #1 indicates that the data used in the model are time series. β 0 expresses the constant coefficient of the model; β1,2,3,4,5 expresses the coefficient values of the independent variables. Finally, εt is the error term of the model.

4.2. Empirical Model and Econometric Methodology

Cointegration tests are used to determine long-term relationships between variables, and are developed according to the steady state of the variables. In the cases with the same unit root degrees of the variables, Johansen Test and Engle-Granger Test, are often used for cointegration analysis.

When the variables are stationary to different degrees, Johansen and Engle-Granger Cointegration Tests do not give accurate results. In such cases, Auto Regressive Distributed Lags (ARDL) Bound Test approach is utilized to eliminate the errors present in the model (Kurt et al., 2019, p.5). ARDL Model explains the cointegration relationship by giving more accurate results than Johansen and Engle-Granger Cointegration Tests if the variables contain different unit roots.

The ARDL model has several advantages compared to another models. First, it allows testing of the model regardless of whether the variables to be used in the analysis are I (0) or I (1) (Pesaran et al., 2001, p. 290; Pamuk & Bektaş, 2014, p. 82). Second, as the Unrestricted Error Correction Model (UECM) is used, it produces statistically more meaningful results than Engle-Granger (Narayan and Narayan, 2005, p. 429). The final advantage of the ARDL Model is that it produces more reliable results compared to Engle-Granger in studies with a limited number of observations (Narayan & Smyth, 2005, p. 103).

In the study where the relationship between Geopolitical Risk and FDI is examined, the model of the cointegration relationship is expressed in the Equation #2 shown below:

$$\Delta FDI = \beta_0 + \sum_{i=1}^{p} \beta_1 \Delta FDI_{t-p} + \sum_{i=1}^{p} \beta_2 \Delta LGPR_{t-p} + \sum_{i=1}^{p} \beta_3 \Delta LLBR_{t-p} + \sum_{i=1}^{p} \beta_4 SAVINGS_{t-p} + \sum_{i=1}^{p} \beta_5 \Delta LRER_{t-p}$$

$$\sum_{i=1}^{p} \beta_6 \Delta LGDP_{t-p} + \beta_7 \Delta FDI_{t-1} + \beta_8 \Delta LGPR_{t-1} + \beta_9 \Delta LLBR_{t-1}$$

$$+\beta_{10} SAVINGS_{t-1} + \beta_{11} \Delta LRER_{t-1} + \beta_{12} \Delta LGDP_{t-1} + \varepsilon_t \quad (2)$$

In order to apply ARDL Bound Test, it is necessary to determine the length of the lag, which us expressed by p in Equation #2. The appropriate lag length is determined with the help of AIC (Akaike), SIC (Schwarz) and HQ (Hannan&Quinn) information criteria. In the study, the most appropriate lag length was determined by using AIC information criterion. After this stage, the F-statistic is applied to

the first period values of both dependent and independent variables to investigate the cointegration relationship between the variables, and the following hypotheses are tested.

H0: $\beta7=\beta8=\beta9=\beta10=\beta11=\beta12=0$ (No Cointegration)

H1: $\beta7\neq\beta8\neq\beta9\neq\beta10\neq\beta11\neq\beta12\neq 0$ (There is Cointegration)

The F-statistics calculated based on the hypotheses shown above were compared with the critical lower and upper values tabulated by Pesaran et al. (2001). If the F-statistic value is below the critical lower bound, it can be inferred that there is no cointegration relationship between the variables, showing a short-term relationship. Similarly, if the F-statistic value is above the critical upper limit, there is a cointegration relationship between the variables, meaning a long-term relationship. However, if the calculated F value represents a value between the critical lower and upper bound, no interpretation can be made regarding the cointegration relationship of the variables. In such a case, it is recommended to use Engle-Granger or Johansen cointegration methods (Yenisu, 2019).

After comparing the F-statistic value with the critical values and testing the existence of the cointegration relationship, the ARDL error correction model for the short term and the long term coefficient can be calculated using Equation #3 and Equation #4.

$$\Delta FDI = \beta_0 + \sum_{i=1}^{p} \beta_{1i}\, \Delta FDI_{t-p} + \sum_{i=1}^{p} \beta_{2i}\, \Delta LGPR_{t-p} + \sum_{i=1}^{p} \beta_{3i}\, \Delta LLBR_{t-p} + \sum_{i=1}^{p} \beta_{4i}\, SAVINGS_{t-p} + \sum_{i=1}^{p} \beta_{5i}\, \Delta LRER_{t-p} + \sum_{i=1}^{p} \beta_{6i}\, \Delta LGDP_{t-p} + \varepsilon_t \quad (3)$$

$$\Delta FDI = \beta_0 + \sum_{i=1}^{p} \beta_{1i}\, \Delta FDI_{t-p} + \sum_{i=1}^{p} \beta_{2i}\, \Delta LGPR_{t-p} + \sum_{i=1}^{p} \beta_{3i}\, \Delta LLBR_{t-p} + \sum_{i=1}^{p} \beta_{4i}\, SAVINGS_{t-p} + \sum_{i=1}^{p} \beta_{5i}\, \Delta LRER_{t-p} + \sum_{i=1}^{p} \beta_{6i}\, \Delta LGDP_{t-p} + \beta_5 ECT_{t-1} \quad (4)$$

Another method used in the study is the Granger Causality test, which is conducted to test the direction of causality relationship between variables. Models 5 and 6 are used to estimate the direction of the relationship between geopolitical risk and foreign direct investment.

$$\Delta FDI_t = \sum_{j=1}^{m} \alpha_t \Delta FDI_{t-j} + \sum_{j=1}^{m} b_t \Delta LGPR_{t-j} + \epsilon_t \quad (5)$$

$$\Delta LGPR_t = \sum_{j=1}^{m} c_t \Delta FDI_{t-j} + \sum_{j=1}^{m} b_t \Delta LGPR_{t-j} + \delta_t \quad (6)$$

$$E(\epsilon_t \epsilon_s) = E(\delta_t \delta_s) = 0 \qquad t \neq s \quad (7)$$

ΔFDI_t and $\Delta LGPR_t$ are two stationary time series at I (1) level, m denotes the lag length in the equation. The test of Granger causality from ΔLGPR to ΔFDI is tested with the basic hypothesis

$H_0 = b_1 = b_2 = \cdots b_m = 0$. Whether ΔFDI is the cause of Granger causality of ΔLGPR or not is revealed by testing the basic hypothesis $H_0 = c_1 = c_2 = \cdots c_m = 0$ by estimating equation 6. The rejection of the basic hypothesis implies the conclusion that there is no causality relationship between these two variables (Pamuk and Bektaş, 2014).

4.3. Empirical Findings

In the study, Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) Unit Root Tests were used, and the test results are given in Table 2.

Table 2. ADF and PP Unit Root Test Statistics

Variables	ADF	PP
FDI	-2.26	-2.26
ΔFDI	-4.26***	-4.25***
LGPR	-2.27	-2.27
ΔLGPR	-5.52***	-12.92***
LGDP	-1.91	-2.13
ΔLGDP	-4.33**	-4.33**
LLBR	-0.42	-0.43
ΔLLBR	-4.41***	-4.39***
SAVINGS	-3.69**	-3.66**
LRER	0.73	-0.62
ΔLRER	-4.58***	-8.22***

Note: ***,**, and * indicate the level of significance of 1%, 5%, and 10%, respectively.

According to these results, FDI, GPR, LBR, GDP and RER variables were stationary after their first differences were taken, while SAVINGS variable was determined as stationary at the level. In this context, the FDI, GPR, LBR, GDP and RER variables are stationary degrees I (1) and the SAVINGS variables are stationary degrees I (0).

Table 3. Cointegration Test Results

K	F-Statistic	Lower Bound	Upper Bound
5	32.56	2.39	3.38

The cointegration test, which expresses the long-term relationship between the variables, is presented in Table 3. The F-statistic value calculated according to Table 3 has a greater value than the critical lower and upper values calculated by Peseran (2001). The magnitude of this value indicates the existence of a long-term relationship between the variables. After testing the cointegration relationship between variables, the long-term and short-term coefficients of the variables can be tested using the ARDL method.

Table 4. ARDL Model Long Term Coefficients

Variables	Coefficients	P Value
LGPR	-1.3182	0.0053***
LGDP	5.1752	0.0184**
LLBR	-9.2326	0.0048***
SAVINGS	0.0569	0.0984*
LRER	1.9072	0.0387**

Note: ***,**, and * indicate the level of significance of 1%, 5%, and 10%, respectively

Within the dataset handled, it is seen that geopolitical risk has a negative impact on foreign direct investments in the long term. Furthermore, the study has shown that 1% increase in geopolitical risk decreased FDI by 1.31%. We can express this situation as geopolitical risk flexibility. In this context, FDI's geopolitical risk flexibility can be said to be high in Turkey. This situation represents how important geopolitical risk is for foreign investments in Turkey, which is a developing country, regardless of the status of other economic indicators. Therefore, disputes occurring around Turkey affect foreign investments to the country negatively due to the increasing risk factor.

Another variable that affects FDI is the Gross Domestic Product (GDP) in terms of representing the increase in income in the country. According to the analysis results, GDP has a positive effect on foreign direct investments in the long term. We observed that a 1% increase in GDP increased FDI by 5.17 %. In the literature, there are also studies in which FDI supported income growth in the country, as well as studies in which income increase supported FDI. In this framework, Johnson (2006) and Zhang (2001) argued that FDI supported income growth. Agayev (2010) and Vijayakumar et al. (2010), showed that the increase in income in the country positively affected FDI. Our findings agree with the results from Agayev (2010) and Vijayakumar et al. (2010). Foreign direct investments depend not only on the economic and political stability in a country but also on high income growth. Foreign capital aims to achieve a high return on investment. For this reason, considering the risks in the country, they prefer investing in countries with higher growth and income potential from which they can earn higher profits. The positive relationship between Gross Domestic Product and Foreign Direct Investment in our study also proves this.

Another variable that affects FDI is the total labor force. The relationship between labor force and FDI in the literature is a highly discussed and two-dimensional issue. In this context, while Shamsuddin (1994) and Pistoresi (2000) argued that if their costs are low, the increase in the labor force will affect FDI positively, whereas Wheeler and Mody (1992) claimed that the impact of the labor force on FDI is negative, even if the cost is low. Consequently, the quality of the labor force in the country becomes a major factor when deciding on the direction of the relationship between the labor force and FDI. If the productivity in the labor force is low, and the wages correspond to a relatively small proportion in the production cost, the abundance of the labor force in that country will not create an opportunity for the investing company (Yapraklı, 2006, p.29). In this study, it was found that 1% increase in labor force reduced FDI by 9.23%.

Another variable whose impact on FDI was investigated is savings. In our study, we observed that 1% increase in savings increased FDI by 0.05%. This result can be interpreted as the increase in savings affects foreign investments positively. In other words, growth in gross domestic savings attracts more foreign direct investment to Turkey significantly. empirical evidence shows that foreign direct investment and domestic saving are complements in the long run in case Turkey.Therefore, Increase in savings contribute to raising the interest of potential investors to the country hence promoting in the inflow of high foreign direct investment.

The last variable to be discussed in this study is the real exchange rate. Increasing real exchange rates leads to an increase in the use of national inputs for investors who make their production focused on exports. Thus, both the rate of profit and the rate of export for the investor increase. Subsequently, these improving rates lead to an increase in the amount of investment. In our findings, a 1% increase in real exchange rate increased FDI by 1.90%.

Table 6. Error Correction Model Test Results

Variables	Coefficient	T-statistics	P-value
D(FDI(-1))	0.1929	3.8194	0.0051
D(LGPS)	-0.6885	-4.1335	0.0033
D(LLBR)	-15.0737	-7.9069	0.0000
D(LLBR(-1))	-11.2250	-5.9879	0.0003
D(SAVINGS)	0.0190	0.8098	0.4415
D(INVEST(-1))	0.1641	6.3371	0.0002
D(LRER)	0.6534	1.9265	0.0902
D(LRER(-1))	2.7935	8.0561	0.0000
ECM(-1)	-0.5790	-16.4751	0.0000

Error Correction Model (ECM), which expresses short-term dynamics of variables, is provided in Table 6. ECM denotes the last period's deviation (i.e. error) from the long-term equilibrium of variables. An ECM coefficient indicates how likely an imbalance will be eliminated in the long term. Error Correction Coefficient is expected to be negative and statistically significant. In this context, the ECM Coefficient expressed as -0.57 in Table 6 is statistically significant and negative as expected.

Table 7. Diagnostic Test Statistics

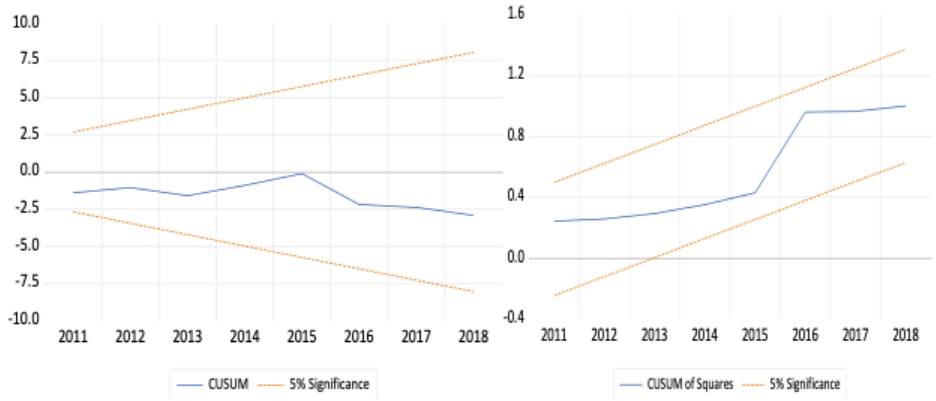
R^2	0.96
Log likelihood	13.00
Breusch Godfrey LM Test	0.38(0.76)
F statistic	21.47(0.00)
Breusch-Pagan-Godfrey Testi	0.38(0.93)

Note: ( ) refers to the probability values of test statistics

Table 7 shows the diagnostic test statistics of the model. There is no autocorrelation problem in the model according to Breusch-Godfrey LM Test. According to the Breusch-Pagan-Godfrey Test, there

is no heteroscedasticity problem in the model. Expressing the explanatory power of the model, the value of R^2 is 0.96 and according to the F-statistic calculations, it is seen that the model is generally significant.

Figure 3. CUSUM and CUSUM of Squares Test



CUSUM and CUSUM of Squares tests were performed to test for the presence of a structural change in the model. In this context, the results testing the stability of the model are presented in Figure 3. Based on these results, there is no structural break in the prediction period of the model, that is, the model is stable.

Finally, in order to verify the obtained results between geopolitical risk and foreign direct investment, the causality relationship between these two variables was analyzed using the Granger causality test. In order to perform the Granger causality test, it is necessary to first determine the appropriate lag number for the variables. Accordingly, the values indicating the selection criteria for the lag length are included in Table 8. According to the values of the lag length selection criteria in Table 8, the appropriate lag length for the variables was determined to be 2. On this basis, the results of Granger causality test between geopolitical risk and FDI were obtained and these results are given in Table 9.

Table 8. Determination of Lag Length

Lag Length	FPE	AIC	SC	HQ
0	3.29e-15	-13.48270	-13.13555	-13.40092
1	9.09e-16	-15.01267	-12.23547	-14.35845
2	9.83e-19*	-23.70784*	-18.50059*	-22.48117*

According to the empirical results in Table 9, the H0 null hypothesis, which states that there is no causality relationship from geopolitical risk to FDI, is rejected. On the other hand, the H0 hypothesis which states that there is no causality relationship between FDI and geopolitical risk was accepted. According to this result, it can be said that there is a one-way causality relationship between geopolitical risk and foreign direct investment. Therefore, the basic hypothesis of the study which was found that geopolitical risk level has a direct effect on foreign direct investment was also confirmed by the results of Granger causality test.

Table 9. Granger Causality Test Results

Causality Direction	F Statistical Value	Probability
GPR➞FDI	5.15	0.01**
FDI➞GPR	0.40	0.67

Note: * 0,10, ** 0,05 and *** 0,01 indicate significance levels.

5. CONCLUSION

Under the influence of globalization, interest in foreign capital has increased in countries where domestic savings are insufficient, such as Turkey. The content of the interest in foreign capital is mostly in the form of foreign direct investments. Foreign direct investments are preferred in terms of many positive factors such as both increasing the production capacity and easing the balance of payments of the country.

There are several factors that determine the level of investment to be made in the country. One of these factors is the level of risk the country has. A country with a high risk level presents uncertainty for foreign investors and may lead to a delay in investment plans. In this context, we analyzed whether geopolitical risk, which is a major risk factor, affected foreign direct investments. Besides GPR, we also utilized real exchange rate, total labor force, real GDP and savings in our framework as explanatory variables. These variables are frequently included in the literature since they play an important role in determining foreign direct investments. The study was analyzed for the period of 1990-2018 using ARDL model approach.

According to our findings, the increase in geopolitical risk affects foreign direct investments negatively. In addition, while the labor force variable negatively affects foreign direct investments, savings, real exchange rate and real GDP variables affect foreign direct investments positively. If we consider the findings of the study in terms of geopolitical risk, we confirm the hypothesis stating that a raise in the geopolitical risk has adverse effects on foreign direct investments entering the country. On the other hand, the results obtained with the help of the Granger Causality test show that there is a one-way causality relationship from geopolitical risk to foreign direct investments. Therefore, this result confirms the hypothesis that geopolitical risk level has a direct impact on foreign direct investments.

For foreign investors, geopolitical risk and the foreign policies of a country are important factors in decision making along with the macroeconomic indicators such as economic growth of countries, current account deficits and inflation.

Domestic saving rates in many developing countries such as Turkey are insufficient. Therefore, foreign direct investments have great importance in order to increase investments and realize economic growth in these countries. For this reason, more careful steps need to be taken in government policies to eliminate the uncertainty caused by geopolitical risks.

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