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A PANEL ANALYSIS FOR DETERMINING THE VARIABLES AFFECT FDI INFLOWS TOWARDS FRAGILE FIVE COUNTRIES

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ABSTRACT

Globalization is increasing since the mid-1990s. Along with the globalization, increased international trade caused the foreign direct investment (FDI) inflows for economies. Economists often emphasize that FDI contributes developing countries to confront the international competition by boosting their economy, increasing productivity and export capacity. This paper aims to investigate the factors that affect the FDI flows towards the Fragile Five countries (Turkey, Brazil, India, Indonesia, South Africa) for 1994-2017 through panel data analysis. The results from the panel ordinary least square indicate that political freedom as a proxy variable of institutional quality, real exchange rate, and the degree of productive knowledge and capability of the Fragile Five countries are statistically significant determinants of FDI attraction. Thus, developing countries, aiming to increase FDI inflows have to strengthen their political conditions and stabilization of their exchange rates. As well as, it is important to increase these countries' export shares of the more complex product in order to be able to attract more FDI.

Keywords: *FDI, Economic Complexity, Political Freedom, The Fragile Five*

JEL Codes: *C23, F23, O14*

KIRILGAN BEŞLİ ÜLKELERE YÖNELİK DOĞRUDAN YABANCI YATIRIMLARI ETKİLEYEN DEĞİŞKENLERİN BELİRLENMESİNE İLİŞKİN BİR PANEL ANALİZ

ÖZ

1990'ların ortasından itibaren küreselleşmenin etkileri artmıştır. Küreselleşmenin etkisiyle birlikte artan ekonomilere yönelik uluslararası ticaret yabancı yatırımları artırmıştır. İktisatçılar genellikle doğrudan yabancı yatırımların gelişmekte olan ülkelerin ekonomilerini büyüterek, verimliliklerini ve ihracat kapasitelerini artırarak uluslararası rekabetle başa çıkabilmelerine katkıda bulunduğunu vurgulamaktadır. Bu çalışma, 1994-2017 yılları için panel very analizi yardımıyla Kırılgan Beşli ülkelerinde (Türkiye, Brezilya, Hindistan, Endonezya ve Güney Afrika) doğrudan yabancı yatırımları (DYY) etkileyen faktörleri araştırmayı amaçlamaktadır. Panel En Küçük Kareler yönteminden elde edilen sonuçlar kurumsal kalitenin yaklaşık değişkeni olan politik özgürlüklerin, reel döviz kurunun ve üretken bilgi düzeyi ve kapasitelerinin doğrudan yabancı yatırımları çeken istatistiksel olarak anlamlı belirleyenleri olduğunu göstermiştir. Bu nedenle, DYY'nin girişini artırmayı amaçlayan gelişmekte olan ülkelerin politik koşullarını ve döviz kurlarının istikrarlılığını güçlendirmeleri gerekmektedir. İlaveten daha fazla DYY'yi ülkelerine çekebilmek için bu ülkelerin daha karmaşık ürünlerin ihracat paylarını arttırmaları da son derece önemlidir.

Anahtar Kelimeler: *Doğrudan Yabancı Yatırımlar, Ekonomik Karmaşıklık, Politik Özgürlük, Kırılgan Beşliler*

JEL Kodları: *C23, F23, O14*

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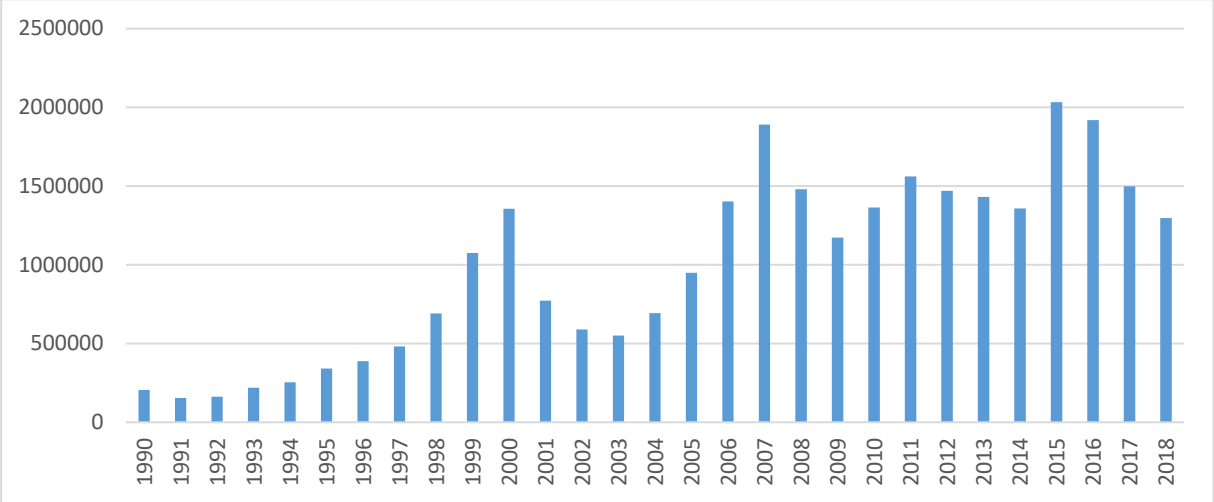
1. INTRODUCTION

Foreign Direct Investment (FDI) has increased as an global capital transaction form over the past twenty years. During the period 1980-1990, FDI inflows have witnessed remarkable growth and The FDI level on the global scale has experienced significant increases after 1990s. The global FDI rose up continuously in the 1990-2000 period then it has decreased significantly since 2000 in Figure 1. In 2007 has reached its highest level with the increasing trend since 2004. Following the downward trend because of the Global Financial Crisis, FDI increased its historical level in history in 2015, and then tended to decline due to global developments. According to UNCTAD (2018) data, foreign direct investments (FDI) on a global scale expected to reach at $ 1.2 trillion in 2018 (UNCTAD, 2019).

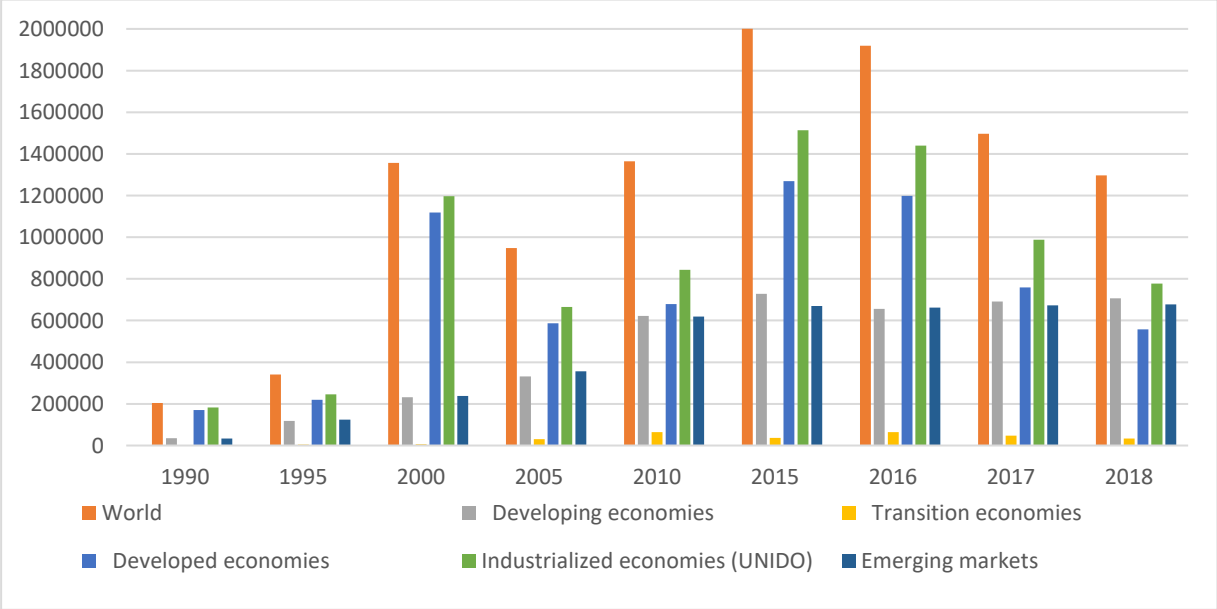


Source: UNCTAD Database.

Figure 1. Global Foreign Direct Investment (US Dollars, in millions)

When we analyze the FDI flows in accordance with the development levels of the countries and the world, it is noteworthy that in Figure.2, transition economies have significant FDI deficiency. After 2000, FDI flows for emerging markets and developing countries have rose up steadily and amounted to around $ 60 billion. FDI flows for developed countries affected by global economic and political developments and it represents a volatile structure in. Despite the significant increase in FDI towards developing countries after 2000, it decreased in 2005 and 2010, showed a significant increase in 2015-2016 and decreased again in 2017-2018. It is noteworthy that FDI flows to industrialized countries increased significantly in 2015-2016, during 2005-2010, when it increased significantly in 2000, and decreased significantly in recent years. From a global perspective, it is noteworthy that FDI flows in the world increased

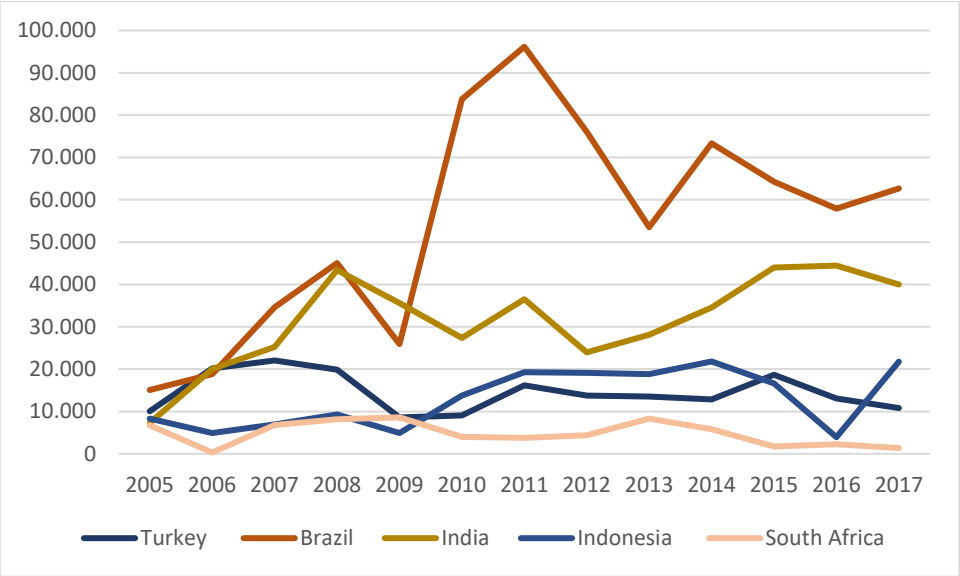
significantly in 2015 and 2016 since the 1990s, but that the volume of FDI has shrunk in recent years. The recent global economic and political tensions play an important role in FDI flows.



Source: UNCTAD Database.

Figure 2. FDI Inward and Outward Flows and Stock in Accordance to Development Level (US Dollars, Current Prices, in millions, Annual)

The FDI flows to fragile five countries are presented in Figure.3. Brazil is most popular country in Fragile Five and receives the most FDI recently. Particularly FDI flows towards to Brazil had increased significantly after 2008 the Global Crisis until 2011, then declining and fluctuating. The FDI flows ranking in Fragile Fives is Brazil, India, Indonesia, Turkey and South Africa, respectively. Turkey has experienced significant narrowing of the FDI flows in 2016 then returned previous level in 2017.



Source: OECD Database.

Figure 3. FDI Inward Flows for Fragile Five (In USD millions)

FDI is an efficient instrument in the process of economic growth of a country. On the one hand, FDI provides an important source for technology transfer, for export encouragement and an access to foreign exchange; on the other hand, FDI is a source for international finance for low developed countries, which substitutes commercial bank loans.

FDI inflows have important implications for both origin and destination countries in the way of economic growth, productivity, increasing capital accumulation, and employment. FDI provides low cost of production and more profit for investors, while transferring technology increasing productivity, and being more competitive in both domestic and foreign markets to the host country. For the aspect of developing countries, increasing in FDI makes important economic contributions such as more efficient use of internal resources, elimination of capital deficiency, reduction of foreign exchange constraint, improvement in balance of payments, increase in employment and economic growth. Beyond this benefits of FDI for emerging markets, FDI also provides to be more integrated to them with the rest of World. In order to be more integrated the world and to pull the more FDI, the emerging markets implemented radical liberalization programs and reforms after the 1980s (Ayhan,2018).

There are several pushing and pulling factors for FDI. The main variables that play a key role in making a FDI decision can be summarized as follows; limits on trade, market size, exchange rates, transaction costs, trade openness, labor costs, financial incentives, economic and financial stability and political risks. Political stability generally includes democracy and freedom, red tape, improperly functioning bureaucracy, civil war, internal conflicts, strikes and

riots, absence of appropriate socioeconomic terms, insufficient institutional quality (Busse and Hefeker, 2007; Jensen et. al, 2012; Elleuch et al.,2015).

However, FDI has two fundamental disadvantages as follows (CFI, 2019):

- Displacement of local businesses: The entrance of large firms displaces local businesses. Large firms drive out local businesses, since local businesses cannot compete with their low prices.

- Profit repatriation: In this case, firms will not invest the profits back into the host country again. This can cause to capital outflows. Thus, many countries have made restrictive regulations in FDI inflows.

Figure.4 illustrates trends of the stock of FDI in the Fragile Five countries over time. As revealed in Figure.4, the stock of FDI worldwide has significantly increased. If compared, between year 1990 and 2017, it is noticeable that the stock of inward FDI has increased large amount. The year 2009, shows a decrease. 2008 global financial crisis helps explaining this decrease.

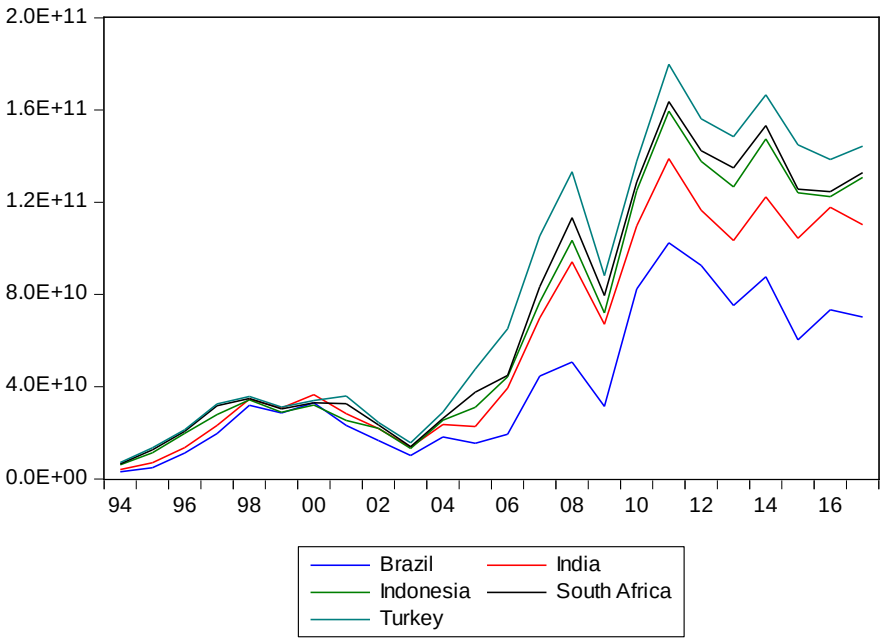


Figure 4. The Stock of FDI in the Fragile Five Countries

The article investigates the effects of institutional quality, real exchange rate and economic complexity index, which shows the degree of productive knowledge and capability a country on FDI inflows to the Fragile Five countries from 1994 to 2017. It is expected to contribute to the literature by introducing the main determinants of attracting more foreign capital in sensitive economies such as fragile five countries by using an updated methodology.

Using panel estimation technique, Section 2 presents the findings of former researches that investigate the factors determining the FDI inflows, Section 3 gives some details about the dataset and methodology and reports the estimations strategy, results and their interpretations, Section 4 presents conclusion and policy implications.

2. LITERATURE REVIEW

When empirical researches are examined in the related literature, it is noteworthy that the factors determining FDI differ considerably. The literature review of empirical and theoretical researches on exchange rate and political risk, which are considered as variables explaining FDI, will be presented in this section.

2.1. Literature Review on Exchange Rate and FDI Relationship

There are many studies explaining the theoretical nexus between exchange rate and FDI in literature. The main starting point of this theoretical relationship is that the changes in the local currencies of the countries affect the values of the relative assets. The depreciation of the local currency makes foreign investors' money more valuable and increases their wealth relatively. Thus, it is possible to increase foreign direct investments with the increase in welfare arising from exchange rate differentiation. The changes in exchange rate volatility besides level exchange rate affect FDI (Chowdhury and Wheeler, 2008:2; Asmah and Andoh, 2013; 2). When the host country's currency depreciates, these countries will become more attractive in terms of FDI as the labor and input costs will become cheaper and the purchasing power of the foreign currency will increase (Husek and Pankova,2008). Exchange rate volatility is another important point about FDI due to the causing increases in production costs. The increase in exchange rate volatility negatively affects long-term expectations for that country. This situation leads to an increase in risk and reduces the expectations for future return on FDI (Cushman, 1985).

Uncertainty becomes even more important due to sunk costs if investments are irreversible. When this uncertainty arises from the exchange rate, investing abroad becomes an option. Since the change in the exchange rate will influence the option prices, the investor will have to decide between adhering to the option and investing abroad. Thus the uncertainty of exchange rate changes the FDI outflows volume (Kogut and Chang (1996), Darby et al.(1999)).

The main theoretical models on the nexus between exchange rate level, exchange rate volatility and FDI are frequently used in literature (Cushman (1985), Goldberg and Kolstad (1995). According to Cushman (1985), when it is expected to real exchange rate appreciation causes to decrease in the foreign cost of capital and increases the FDI. There are several studies

that support the dollar depreciation causes to increase in FDI for USA and set up inverse relationship between exchange rate level and FDI ((Froot and Stein (1991); Goldberg and Kolstad (1995), Dewenter (1995), Gopinath et al. (1998), McCorriston and Sheldon (1998), Kiyota and Urata (2004)).

However, there are several studies that support the opposite idea about the dollar appreciation causes to increase in FDI, such as Campa (1993) and Alba et al. (2009).

Tomlin (2000), Yang et al. (2000), Amuedo-Dorantes and Pozo (2001), De Sousa and Lochard (2004) find that there is insignificant relationship between FDI, and exchange rate level. Gast (2005) and Kosteletou and Liargovas (2000) find that an appreciation of currency in origin country causes to increase FDI outflows.

Campa (1993) examines the factors affecting the number of FDI entries into US wholesale product industries for the 1981-1987 period. According to his findings, an expected dollar appreciation rises up FDI but exchange rate volatility discourages the firm entries, and also sunk costs are important factor for FDI entries.

Iannizzotto and Miller (2005) tests the exchange rate influence on FDI for UK with firm level data and they find that a real appreciation of Sterling decreased the FDI in UK. Jeanneret (2005) finds an inverse relationship between exchange rate volatility and FDI in several OECD countries.

Alba et al. (2009) examines the relationship FDI inflows and exchange rate level for USA in 1982-1997-time span. According to their results, FDI inflows for USA positively affected by exchange rate level.

Froot and Stein (1991) analyses the relationship between US Dollar depreciation and FDI inflows for US in 1973-1988 time period. According to their findings, when there is a real depreciation, it causes to increase in FDI inflows.

Stevens (1998) finds a weak nexus between exchange rate and FDI relationship for the 1973-1991 year in USA unlike Froot and Stein (1991). Kogut and Chang (1996), in the survey of Japanese firms entering the US market for the period 1976-1986, concludes that the real appreciation of the Japanese yen trigger to further the inflows of more Japanese firms in the US market.

Blonigen (1997) suggests that the real exchange rate had a positive impact on the number of firm purchases, as an indicator of FDI, particularly in the manufacturing sector in

the United States. Farrell, Gaston and Sturm (2004) analyses the 15 countries and eight manufacturing industries and they conclude that the exchange rate had a negative but insignificant effect on FDI.

Liu (2010) examines the FDI inflows from 18 major countries investing in China for the period 1989-2006 and find a positive relationship between FDI and exchange rate. Vijayakumar et al. (2010) find a negative relationship between FDI and real exchange rates in their analysis on Brazil, Russia, India, China and South Africa for the period 1975-2007.

Lily et al. (2014) analyze the relationship between exchange rate movements and foreign direct investment (FDI) in Malaysia, Philippines, Thailand and Singapore (ASEAN) for the period 1971-2011 with the ARDL Bound test approach. According to their results, exchange rate has a positive effect on FDI entries in Singapore, Malaysia and the Philippines.

Hanush, Naguyen and Algu (2018), in their panel data analysis for 80 countries for the period 1990 and 2015, show that a 10% reduction in exchange rate volatility rise up the GDP 0.48 point. They also find that this effect of exchange rate volatility on FDI investments is effective in the long term.

2.2. Literature Review on Politic Risk and FDI Relationship

In the literature, there are many studies examining the relationship between macroeconomic variables, institutional quality, political risk, socio-political instability, and FDI flows. Different results were obtained in these studies. The studies analyzing the relationship between FDI and political risk are summarized below.

Some researchers investigated that corruption, political stability and corporate quality have meaningful effect on FDI inflows ((Tallman (1998), Grosse and Trevino (1996), Smarzynska and Wei (2000), Kolstad and Tondel (2002), Habib and Zurawicki (2002), Li and Resnick (2003), Globerman and Shapiro (2004), Trevino and Mixon (2004), Daude and Stein (2007), Busse and Hefeker (2007), Jadhav (2012)).

However, the other researchers have heavily investigated that political stability has insignificant effect on FDI inflows e.g. Wheeler and Mody (1992), Noorbakhsh et al. (2001), Harms and Ursprung (2002), Steiner (2010). Meanwhile several researches indicated that internal political strikes, armed conflict terrorism, riots, and external conflicts affect negatively the FDI as a political risk factor ((Erramilli and Krishna (1993), Singh and Jun (1995), Rodrik (1996), Smarzynska and Wei (2000), Stoever (2002), Grosse and Trevino (2005), Lee and Rajan (2009), Krifa-Schneider and Matei (2010), Hayakawa et al. (2011), Sedik and Seoudy

(2012), Aguiar et al. (2012), Khan and Akhbar (2013), Goswami and Haider (2014), Nashreen and Anwar (2014), Sissani and Belkacem (2014), Benacek et al. (2014), Erkekoglu and Kılıcarslan (2016).

Tallman (1988) concluded that there is a nexus between political and economic conditions and FDI for developed countries in 1974 to 1980. Wheeler and Moody (1992) implemented micro-level analysis for the United States. They found insignificant relationship between FDI and corruption them.

Erramilli and Krishna (1993) surveyed on the relationship between political risk and FDI with 114 firms in USA in order to investigate foreign market entry decisions. According to the study results, while the sovereign risk prevents foreign direct investments and multinational companies hesitate to invest regions that have higher political risk.

Singh and Jun (1995) examined the relationship between FDI and macroeconomic and socio-political variables in their research and they found that there was a significant relationship between political risk and business operating conditions.

In his study examining the relationship between democracy and FDI, Rodrik (1996) found that US-based FDIs tend to be less directed towards countries with low democratic rights. Grosse and Trevino (1996) found that political risk has a significant effect on FDI in USA for the period 1980-1991.

Smarzynska and Wei (2000) found a significant relationship between corruption and FDI in their analysis of mutual investments between 14 source countries and 45 host countries for the period 1990-1991. The increase in corruption reduces FDI and negatively affects capital imports both volume and structure.

Globerman and Shapiro (2004) used 6 different political risk indices for 144 countries and revealed that governance has significant and positive effect on FDI flows in 114 countries. Noorbakhsh et al. (2001), in this analysis of 36 different developing countries for the period 1980-1994 revealed that FDI was not significantly affected by democracy and political risk factors.

Stoever (2002), in his analysis of Korea for the period 1962-2000, found that the lower the political risk, the higher the increase in FDI. Kolstad and Tondel (2002), in their study on 61 different developing countries for the period 1989-2000, civil liberty, political rights, religious and ethnic tension, democratic accountability, and internal conflict indexes affect the FDI significantly.

Harms and Ursprung (2002), In their review of 62 emerging countries for the period 1989-1997, found that 6 different political risk indices had no significant effect on FDI according to their findings. Habib and Zurawicki (2002) used aggregate index of political risk to explore the relationship between FDI inflow and political stability. The result of the study revealed that political stability significantly increases the flow of FDI in 89 countries.

Li and Resnick (2003), in their analysis for 53 developing countries for the period 1982-1995, found that the protection of property rights and the protection of property rights related to democracy positively affected foreign direct investment inflows, but democratic institutions reduced FDI inflows.

In their analysis on Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela for the period 1988-1999, Trevino and Mixon (2004) found that institutional reform encourage the foreign direct investment. They concluded that eliminating the differences between the host country and the origin country's institutions support FDI flows.

Grosse and Trevino (2005) implemented a research about the relationship between FDI and institutional variables for 13 Central and Eastern European countries during the 1990-1999 period, concluded that corruption and political risk factors had a negative effect on foreign direct investment flows.

Busse and Hefeker (2007) conducted a study on 83 developing countries for the period of 1984-2003, and showed that there is a significant relationship between bureaucracy, political risk, institutional quality indicators and FDI.

Daude and Stein (2007) resulted that there was a positive relationship between institutional quality and FDI in their studies which analyzed the relationship between foreign direct investment and institutional quality between 34 origin countries and 152 host countries for the period 1982-2002.

Lee and Rajan (2009) analysis of the 17 APEC member countries for the period 1998-2007, both the low level of political risk positively affects the FDI flow according to their findings and improving institutional quality, reducing corruption, improving socio-economic conditions will enable APEC countries to attract more FDI inflows.

Krifa-Schneider and Matei (2010), in their study of business environment, political risk, and FDI relationship on 33 different developing countries for the period 1996-2008, stated that low political risk would increase FDI and the business environment were found to be an important factor in order to encourage FDI inflows.

Hayakawa et al. (2011), in their studies investigating the effect of financial and political risk on FDI inflow in 93 countries for 1985-2007, they found that political risk had important influence on FDI inflows, and that investment conditions, external conflicts and socio-economic conditions were other important variables affecting FDI.

In their panel data analysis for 116 different countries with 12 different risk factors for the period 1984 and 2008, Baek and Qian (2011) found that political risk is an important variable for FDI. Moreover, political risk for developed countries has become an important indicator of FDI after the 9/11 attacks.

Aguiar et al. (2012) found that FDI affected by political risks in Brazil, which has high country risk, using data from 180 different countries. The study found that the FDI of the host country decreased if the political risk was high.

According to Sedik and Seoudy (2012), the analysis conducted for 20 MENA countries with the data of the period 1999-2010, FDI is positively affected if the political risk is low and it is positively but insignificantly affected by financial and economic risk.

According to Jadhav (2012), panel data analysis conducted on Brazil, Russia, India, China and South Africa (BRICS) for 2000-2009 period, economic indicators are more effective on FDI than institutional and political indicators.

Khan and Akhbar (2013) revealed a negative relationship between political risk and FDI for 94 countries for the period 1986-2009. However, this effect is strongest in the upper middle income countries according to analysis result.

Goswami and Haider (2014), in their studies examining the effects of 12 political risk indicators on FDI in 146 different countries for the period 1984-2009, cultural conflict, governance failure and partners' attitudes have negative effects on FDI flows, however; trade openness, growth rate of real GDP, market size, infrastructural facilities increase the FDI flows.

Nashreen and Anwar (2014), in their studies analyzing the relationship between FDI inflows and institutional quality and political risk indexes on Pakistan with using ARDL for 1981-2012 period, revealed that political risk factors have a decreasing effect on FDI inflows in both long and short term. In addition, they found that per capita GDP and infrastructure had a positive effect on FDI inflows and that exchange rate and inflation would have a negative impact.

Sissani and Belkacem (2014) studied the relationship between political and financial risk on FDI in Algeria for the period 1992-2012. According to their findings, it is seen that political risk factors decrease the flow of FDI inflows towards to Algeria.

Benacek et al. (2014), in their study on 35 European countries for the period 1995-2008, it was found that the increase in political and economic instability would reduce FDI inflows for host countries.

Erkekoğlu and Kılıçarslan (2016), in their analysis on 91 different countries for the period of 2002-2012, while the high political risk, stability and violence environment reduces the FDI inflow, ensuring the effectiveness of the management increases the FDI. Economic factors such as export growth, population size and economic growth lead to increase in FDI inflow.

3. DATA AND MODEL

We examined the possible effects of political freedom, economic complexity index and real exchange rate on FDI flows from the Fragile Five countries (Brazil, India, Indonesia, South Africa and Turkey) during the period 1994-2017 with a panel data analysis. The model is as follows:

$$FDI_{it} = \gamma_0 + \gamma_1.PF_{it} + \gamma_2.ECI_{it} + \gamma_3.REXR_{it} + u_{it} \quad \textbf{(1)}$$

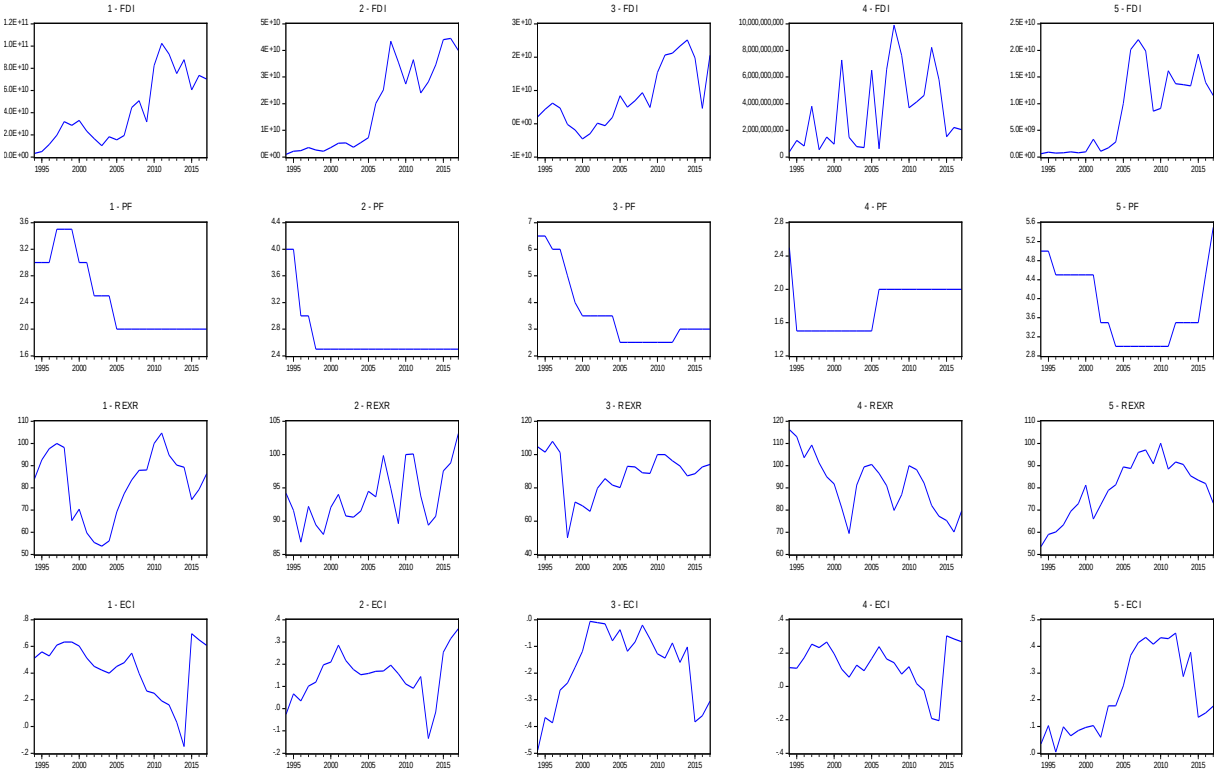
The dependent variable is FDI, which refers to an investment in a host country by the firm or the individual in order to maximize its commercial interests (US$). The data on FDI are retrieved from World Bank's World Economic Outlook Database.

The first independent variable is PF, Political Freedom. It is an index established as an indicator of political rights and civil liberties. In this index, scoring is between 1-7 for each country and 7 indicates the existence of the least freedoms, while 1 indicates the status of having the most freedoms. The data on PF are retrieved from Freedom House.

The second independent variable, ECI is a measurement of the knowledge intensity of a country by evaluating the knowledge intensity of the exported goods. The data on ECI are obtained from Atlas Media.

The third independent variable, REXR is real effective exchange rate. The data REXR are receieved from World Bank's World Economic Outlook Database.

Figure.5 shows trends of FDI, PF, REXR and ECI for the five countries over time.



1: Brazil, 2: India, 3: Indonesia, 4: South Africa, 5: Turkey

Figure 5. Trends of FDI, PF, REXR and ECI for The Five Countries

4. METHODOLOGY AND EMPIRICAL FINDINGS

The empirical analysis begins with the application of CDBP test improved by Breusch and Pagan (1980).

The CDBP test statistic can be obtained through the below model:

$$y_{it} = \chi_i + \delta_i'.x_{it} + e_{it} \quad \text{for i=1,2,…,N;} \quad \text{t=1,2,…,T} \qquad \textbf{(2)}$$

The hypotheses are:

$$H_0 : Cov(e_{it,} e_{jt}) = 0$$

$$H_1 : Cov(e_{it,} e_{jt}) \neq 0$$

The test statistic of Breusch and Pagan (1980) is as below:

$$LM_{BP} = T.\sum_{i=1}^{N-1} \sum_{j=i+1}^{N} \hat{\rho}_{ij}^2 \underset{\sim}{} \chi^2_{N.(N-1)/2}$$

where $\hat{\rho}_{ij}$ indicates the correlation coefficient between estimated residuals from Equation (2). Assuming the null hypothesis that there is no cross-sectional dependence and the test is used T is greater than N.

The CDBP test results are presented in Table 1. The findings in Table 1 showed that, at 5% significance level, the assumption that there is no cross-sectional dependence under the null hypothesis for all countries is rejected.

Table 1. The CDBP Test Results

Data	CDBP Test Statistic	P-value
FDI	93,43***	0,00
PF	73,71***	0,00
ECI	67,92***	0,00
REXR	20,28**	0,02

Note: ***, ** show rejection of the null hypothesis at the 1% and 5% levels of significance, respectively.

Next, this study follows the panel stationary test investigated by Hadri-Kurozumi (2012). The Hadri-Kurozumi test (H-K) permits cross-sectional dependence and serial correlation. In addition, the H-K can be used in situations where both T<N and T>N (Hadri and Kurozumi, 2012).

The null hypothesis of the H-K is that the variables do not have unit root. However, the alternative hypothesis admits that the variables do not have stationary.

Hadri-Kurozumi (2012) used the following equation:

$$y_{it} = k'_t\delta_i + f_t.\gamma_i + \varepsilon_{it}, \quad \varepsilon_{it} = \phi_{i1}.\varepsilon_{it-1} + ... + \phi_{ip}.\varepsilon_{it-p} + v_{it} \quad \text{for i=1,...,N, t=1,...,T} \qquad \textbf{(3)}$$

where k'_t is deterministic, $k'_t\delta_i$ represents the individual effects, f_t is an unobserved common factor, γ_i is the loading factor, and ε_{it} indicates the individual-specific error.

H-K (2012) regress y_{it} on $w_t = \left[k'_t, \bar{y}_t, \bar{y}_{t-1}, ..., \bar{y}_{t-p}\right]$ in order to correct the cross-sectional dependence, for each i, construct the following the statistic:

$Z_A = \frac{\sqrt{N}(\overline{ST} - \xi)}{\zeta}$ where $\overline{ST} = 1/N.\sum_{i=1}^{N} ST_i$ with $ST_i = \frac{1}{\hat{\sigma}_i^2.T^2}\sum_{t=1}^{T} S^w{}_{it}$, where $S_{it}{}^w = \sum_{r=1}^{t} \hat{\varepsilon}_{ir}$, $\hat{\sigma}_i^2$ is the forecaster of the long term variance,

and
$$\left.\begin{array}{l} \xi = \xi_\mu = 1/6,\ \zeta^2 = \zeta_\mu{}^2 = 1/45 \quad \text{when } k_t = k_t^\mu = 1 \\ \xi = \xi_\tau = 1/15,\ \zeta^2 = \zeta_\tau{}^2 = 11/6300 \text{ when } k_t = k_t^\tau = \begin{bmatrix} 1 & t \end{bmatrix}' \end{array}\right\}$$

H-K (2012) presents the forecaster of the long term variance by

$\hat{\sigma}^2_{iSPC} = \frac{\hat{\sigma}^2_{vi}}{(1-\hat{\varphi}_i)^2}$ where $\hat{\sigma}^2_{vi} = 1/T.\sum_{t=1}^{T} \hat{v}^2_{it}$ and $\hat{\varphi}_i = \min\left\{1 - \frac{1}{\sqrt{T}}, \sum_{j=1}^{p} \hat{\varphi}_{ij}\right\}$.

and Hadri-Kurozumi (2012) institutes $Z_A{}^{SPC}$ as below:

$$Z_A{}^{SPC} = \frac{1}{\hat{\sigma}^2_{iSPC}.T^2}\sum_{t=1}^{T}(S_{it}{}^w)^2 \qquad \textbf{(4)}$$

The $Z_A{}^{SPC}$ is preferred over the Z_A in the event of cross-sectional dependence. The H-K states that series do not contain unit root under a null hypothesis, while series contain unit root under an alternative hypothesis.

Table.2 presents the results of the H-K test. The null hypothesis claims that all the panels are stationary. According to Table.2, it's not possible to refuse the null hypothesis.

Table 2. The H-K Test Results

Series	Stat.	Prob-Value
FDI		
Z_A^{SPC}	**-1,66*** **	**0,95**
PF		
Z_A^{SPC}	**-0,93*** **	**0,82**
ECI		
Z_A^{SPC}	**-0,30*** **	**0,61**
REXR		
Z_A^{SPC}	**0,17*** **	**0,43**

Note: *** shows rejection of the null hypothesis at the 1% significance level.

Finally, we estimated the relationship between FDI, PF, ECI and REXCH using panel least squares estimator. Prior to estimation the regression coefficients, in order to reduce the degree of cross-sectional dependence of the variables, the time-demeaned series are used (De Hoyos ve Sarafidis, 2006: 487). The findings are delivered in Table 3.

Table 3. Panel Least Squares Estimation Results

Series	Coeff.	Std. Error	Test-stat	P-value.
C	-1.11E+10*	6.21E+09	-1.784813	0.0769
PF	-1.61E+09**	7.14E+08	-2.251875	0.0262
ECI	9.08E+09**	4.00E+09	2.270914	0.0250
REXR	3.02E+08***	57421998	5.264263	0.0000

Dependent Variable: FDI

Note: *,**,*** indicate the statistical significance at 10, 5, 1% levels, respectively.

The results are statistically significant. The impact of real exchange rate, political freedom used as a measurement of institutional quality and economic complexity, which indicates the presence of a sophisticated productive structure of the Fragile Five countries on FDI inflows, is found positive and significant. Therefore, these factors are statistically

significant determinants of FDI inflows, which are the prime engine to foster growth and employment. Findings of this paper is similar to results of previous researches such as Goswami and Haider (2014), Nashreen and Anwar (2014), Sissani and Belkacem (2014), Benacek et al. (2014), Erkekoğlu and Kılıçarslan (2016).

Since less political freedom as a proxy variable of institutional quality means a higher cost of doing business and higher transaction costs multinational enterprises are likely to avoid countries with high instability, corruption and bureaucracy. So, political freedom is significant driver of inward FDI as is seen the findings of this study.

Emphasizing economic complexity that a society is able to coordinate knowledge in order to make complex product have affected significantly and positively FDI inflows. Economic complexity that also provides crucial information about the economic progress is an important determinant of FDI inflows. The findings of this study revealed that as production of sophisticated products increases FDI inflows increase.

When we investigated the relationship of real exchange rate-FDI, we observed the prediction that a real depreciation increases FDI. Exchange rates can affect both the total amount of foreign direct investment and the allocation of this investment spending across a range of countries. Especially, the host country experiencing real currency depreciation has locational attractiveness. Since real depreciation of the host country currency raises the welfare of foreign investors relative to that of domestic investors and hence increases FDI.

5. CONCLUSION

Developing countries need foreign capital in order to develop their infrastructure, to finance their foreign debts and assure economic growth. Thus, these countries pursue policies like removing trade barriers, liberalizing their financial system, reducing taxes and increasing interest rates. So, investors head towards these countries to get the better opportunities.

This article focuses on FDI inflows to the Fragile Five countries from 1994 to 2017. In doing this, it was used the control variables composed of institutional quality, real exchange rate and economic complexity index. Using panel estimation techniques, the findings of the article showed that real exchange rate, political freedom used as a measurement of institutional quality and economic complexity, which indicates the presence of a sophisticated productive structure of the Fragile Five countries have positive and statistically significant effects on FDI inflows. Therefore, these variables are statistically significant determinants of FDI inflows, which are the prime engine to foster growth and employment.

In this study made difference by the help of using different explanatory variables for FDI unlike the studies presented in the literature review. Moreover, this paper on the linkages between variables used differently from the literature and the FDI on the Fragile Five bring differentiation and innovation the literature. This study contributed to the literature by examining the effects of unique explanatory variables on the FDI of the fragile five countries different from as discussed in the literature.

Considering the crucial contribution of FDI to the economies of developing countries, it needs to develop some policies that will strengthen institutional quality, real exchange rate and economic indicators to attract more FDI inflows for fragile economies as the findings of this study revealed.

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