



RESEARCH PAPERS IN ECONOMICS AND FINANCE

JOURNAL HOMEPAGE: www.ref.ue.poznan.pl

Economic Freedom and FDI: Co-Integration Analysis

Selim Corekcioglu ¹

¹ Szent Istvan University, Budapest, Hungary; <https://orcid.org/0000-0003-3412-2703>

ABSTRACT

These days, economic growth is very important for all countries and this article will discuss the main factors associated with this problem and propose some possible solutions which can be implemented. The importance and relationship of foreign direct investment, economic growth and economic freedom are presented and evaluated by considering literature, and a long run relationship between foreign direct investment and economic freedom in Turkey is empirically analysed in the article. The time period covers the years 1996 to 2018. The data has been obtained from the World Bank and from the Heritage Foundation database. The analysis is based on the time series analysis. An Augmented Dickey-Fuller test has indicated that the variables are not stationary at levels, but they are stationary at the first difference. The Johansen test has shown that variables are co-integrated, which means that they move together in the long run.

Keywords: foreign direct investment, time series, economic freedom, Turkey.

1. Introduction

It is well-known that the key of the economic growth is investment and capital. As a matter of fact, capital movements are determined by risk and profit factors. Despite this fact, finding capital is a very hard issue, especially developing countries such as Turkey. Developing countries usually handle problems such as absence of financial resources, domestic savings deficit and foreign exchange shortages. If these problems are not solved, it is clear that foreign sources are needed.

By examining empirically the relationship between the importance of investment for economic growth and the relationship between economic growth and economic freedom, it is aimed to provide more complete understanding of these variables for the economy.

While the importance of technology increases day by day, the power of governmental intervention is being inevitable (Prause and Günther, 2019). By increasing productivity, technological development also increases the wel-

fare of countries (Sikdar and Mukhopadhyay, 2018). Technology transfer provided by FDI can increase the technological capacity of host countries, so it enhances productivity of production and leads to economic growth. FDI inflows cause an increase in employment, facilities, access to new markets, meeting with new technology and management skills (de Mello, 1997). Thus, it may be said that FDI is largely beneficial for host countries, not only in a financial way, but also other ways.

In recent years, studies related to the effect of non-economic variables on FDI started to gain importance. Capital holders invest their money in other countries by considering economic freedom of the host countries (Blonigen, 2005).

When it is aimed to estimate economic improvement in economies, it is not possible to do that without empirical analysis (Facioni et al., 2019). To overcome these difficulties, empirical analysis such as the co-integration analysis, factor analysis and regression analysis are needed.

There are different definitions of economic freedom. Here, let us consider the definition bro-

ught to the literature by Gwartney et al. (1996): *“Individuals have economic freedom when a property they acquire without the use of force, fraud, or theft is protected from physical invasions by others, and they are free to use, exchange, or give their property to another party as long as their actions do not violate the identical rights of others”* (Gwartney et al., 1996).

For the purposes of this essay, the term ‘economic freedom’ will be taken to mean “individual autonomy, concerned chiefly with the freedom of choice enjoyed by individuals in acquiring and using economic goods and resources”. Economic freedom can be measured via an economic freedom index which has been calculated by the Heritage Foundation. This index includes economic and non-economic variables such as Open Markets, Regulatory Efficiency, Government Size and Rule of Law.

For this paper it is really important to reveal the relationship between the importance of investment for economic growth and the relationship between economic growth and economic freedom.

The paper is outlined as follows: first, the introduction offers brief informatin related to the subject. Next, the author presents a review of literature. The review includes theories, the empirical and theoretical context, importance and relationship between FDI, economic freedom and economic groth. Following these parts, the author presents the material and methods, as well as the results. Finally, summary, conclusion and recommendations are given.

2. Literature Review

In this part of the study, subject literature is divided into two parts, i.e. the theoretical part and empirical research. In another part, empirical research will be discussed with the different perspectives.

2.1. Theoretical Context

In the Theoretical Context, theories related to FDI and theoretical context regarding the importance of investment for economic growth and the relationship between economic growth and economic freedom will be given.

2.1.1. FDI Theories

According to product life cycle theories, there are some steps of the product on the market.

- 1 - Introduction of the product to the market and consumer
- 2 - Growth and maturity of the product
- 3 - Standardisation of the product.

In the first step, producers has their own production technology. The product is starting to be produced and launched to the market.

The product is not widely known by the consumer. Thus, the producer needs to do promotional activities to increase the awareness of the product on the market. The scale of production is small and the product is sold on domestic markets.

In the second step, the awareness of the product on the market increases. There is demand for the product from other countries and companies start to export. Now, there are some producers which have a similar production technology. This case creates competition on the market and costs begin to gain importance within this period. In turn, production starts in developing countries, such as China, India and Indonesia, where labour costs are lower than in home countries (Dunning, 1981).

In the third step, the product becomes standardised and most producers know the production technology. The importance of cost increases and a large part of production shifts to developing countries.

In the theory of the product’s life cycle, a reason for foreign direct investment is the desire of an innovative company to preserve its technological superiority and monopolistic advantage.

The internalisation theory says that a company must select one of the following two options. The first one is that a company can produce in the home country and export to other countries. The second choice is that instead of export, a company can make direct investments in the host country, and then produce and sell their goods in host countries (Buckley, 2000). There are a few reasons to make foreign direct investments:

- if there is a trade barrier, such as higher taxes
- if there is an asymmetric information between buyers and sellers
- if there is a higher cost of transportation

“Multinational companies internalise these foreign markets related to their production activities to get rid of an adverse influence on the market and existing production processes (Kurtaran, 2010)”.

The Eclectic theory is more comprehensive than the other FDI theories. There are three important matters in this theory, i.e. ownership, location and internalisation.

- Ownership; MNEs have some advantages, such as production technology, access to financial resources, buying raw materials cheaply due to the large scale of the company with respect to host countries’ companies. It also gives a competitive advantage, such as reputation for reliability.
- Location; one of the most important matters for investment. Taxes on import, industrial in-

infrastructure, factory costs such as labor cost of host countries are taken into consideration for investment.

– Internalisation; in this part of the theory, profitability becomes important. As it is known, the main purpose of companies is to make profit. If the MNEs make more profit while they run their own companies in host countries, which is internalisation rather than externalisation such as licensing or franchising activities, they will use this method (Boddewyn, 1983). Besides, while MNEs make investments, they also take into account the efficiency, productivity of natural resources and workforce in host countries.

The capital market theory is one of the oldest theories used to explain foreign direct investment. Aliber says that the reason for the emergence of foreign direct investments is the imperfections in the capital market (Aliber, 1971). Another study claims that exchange rate differences between countries also have effect on this issue (Nayak and Choudhury, 2014). According to Aliber's (1971) theory, countries with a weak currency are more advantageous in attracting foreign direct investments. The reason is the difference in capitalisation between currencies. It is also a great advantage for multinational companies to borrow at low interest rates in home countries and invest in host countries. This cheap resource will provide a competitive advantage to MNCs in the host country.

In the Institutional FDI Fitness Theory, it is emphasised that the policies of countries and the quality of institutions are important while attracting foreign direct investment. If the quality of a country's institutions is high, the chances of attracting FDI are higher than in countries with low institutional quality. What is meant by institutional quality is that institutions are reliable, transparent, efficient and fair (Makoni, 2015). Besides, it is also important to what extent the policies implemented by the institutions are sensitive to external shocks or dangers, or the way they follow to take advantage of the opportunities that arise on the market.

2.1.2. Importance Of Investment For Economic Growth

Taking everything into consideration, theoretically this paper will discuss the main factors that are associated with neoclassical growth models, as endogenous growth models offer the basis with observational work on the positive relationship between FDI and GDP, although in different perspectives. In other words, the basic conceptual structure of production provides data on the external

factors. In terms of the Solow framework (Solow, 1956), an overwhelming majority proposes that production is a specific contribution of a bodily part of the capital stock and if we go deeper to the root of this issue, in general, the model of endogenous growth assumes that FDI in the GDP growth are more productive than internal investments, as they encourage incorporation of new technologies in the production function of the host country. Interestingly, the general trend for some countries is that they can develop technology, but others may benefit from the spread of technology that is produced elsewhere. Despite the considerable points, as Blomstrom et al. (2000) emphasize, the figure of FDI is the channel of this process. A further example is that endogenous growth models are pro long-term growth of the economy. According to them, these explanations complement each other and help to illuminate the fact that the phenomenon of FDI contributes to economic growth not only through capital formation and technology transfer (Blomstrom et al., 1996; Borensztein et al., 1998), but also through an increase in the knowledge level, training of workers and know-how purchasing (de Mello, 1997). It is important to emphasise that several explanations have been offered about the benefits and costs of FDI. Moreover, empirical evidence shows that an increase in foreign direct investments is a contributor to positive and negative externalities. As an empirical phenomenon, where developing countries are positioned regarding the emphasised issues, it has been observed repeatedly (Cobb and Douglas, 1928) that FDI has a positive relation with the economic growth. Given this evidence for such a model that the SEE countries, an examination of factors that impact upon all beneficiaries of FDI but with a different macroeconomic history, seems warranted, from this perspective political regimes and patterns of growth would be quite significant. (univ-danubius tan aldim) bel ki buradan cobb douglas ta eklenebilir.

According to Harrod, in short term, savings is the only changeable variable while others are constant. Thus, if economic growth wants to be achieved, capital accumulation has to be increased (Harrod, 1939). In countries which have a low savings rate, FDI can contribute the economic development process. Neo-classical growth theories assert that FDI flows have an effect on economic growth by increasing capital accumulation (Nair-Reichert and Weinhold, 2001).

According to the neo-classical theory, foreign direct investments contribute positively to economic growth by increasing the amount and efficiency of total investments. The reason

is that direct investments can lead to capital formation and an increase in employment, an increase in the export of capital goods. Additionally, they may bring resources such as capital, knowledge and experienced managers, and contribute to the development and diffusion of technology. In this way, both productivity will be increased and economic growth will be supported.

2.1.3. *The Relationship Between Economic Growth And Economic Freedom*

It was believed that some countries became rich and some countries became poor by cultural norms and institutions (Landes, 1998). It is understandable that the role of economic freedom is very important. What is the connection between economic development and economic freedom? Liberals say it will lead to faster development with the countries that liberated the economy after the collapse of socialism and the old system of government. According to the claims, if applied correctly under state control, it can stimulate development.

According to economic theory, economic freedom has an effect on the productiveness of resources, government subsidies. Indeed, from Adam Smith's time to the present day, though not before, economists and economic historians have argued that the idea of choosing and acquiring wealth, competition for work, trade with people, and personal rights are essential to economic development (North and Thomas, 1973). New development theories have increased interest in this field. Recent empirical research suggests that economic freedom may be crucial in revealing economic differences between countries (De Vanssay and Spindler, 1994).

It is widely accepted among economists that political freedom and liberty is crucial for the institutional structure, so institutions can be counted as an explanatory factor of living conditions among the countries. For instance, by considering economic growth in Africa, Easterly and (Easterly and Levine, 1997) said that it needs to be focused on the institutional factor instead of conventional economic factors, because conventional factors alone are not enough to explain the growth. As a result, to achieve economic improvement, it is crucial to understand the importance of an institution and economic progress.

Multinational companies have an important role in foreign direct investments. Thanks to their developed capital structures, they aim to operate in many countries by investing in countries where they see an opportunity. Multinational companies are advanced in many aspects, not just in terms of capital (Dunning

and Lundan, 1993). For example, their R&D expenses are high, so they are technologically advanced companies. They have qualified personnel to operate this advanced structure. In addition, they will bring new import-export strategies, market strategies and management strategies to their country of origin (Borensztein et al., 1998). This structure will contribute to the development of other businesses in that country by providing externality. Therefore, countries can follow policies to attract foreign direct investment. Although these policies differ from country to country, they are generally policies to facilitate investment, such as tax reductions and grants (Markusen, 1995).

Another benefit of foreign direct investments is the macroeconomic contribution, which includes closing deficits in the balance of payments, positive contribution to employment and capital supply. The fact that the companies to be established in case of investments will realise a part of the goods or service procurement of the factories in that country will enable the development of other small businesses in that country. The competitive structure of multinational companies will push other businesses in the same country to work more efficiently and use resources more effectively.

2.2. *Empirical Research*

In his study, (Barro, 1999) investigated the relationship between economic growth, income distribution and investments for 100 countries in the 1960-1990 period, using panel data analyses, and he stated that the rule of law, human capital, improvement in terms of trade and investments had a positive effect on growth, public expenditures and investments. The increase in the average inflation rate, which he considers as an indicator of macroeconomic stability, has an adverse effect on growth; the increase in the ratio of public expenditures to GDP and the increase in the inflation rate have a negative relationship with investments; the rule of law and investments have a positive relationship; terms of foreign trade, education level and he found that the relationship of democracy with investment is insignificant (Barro, 1990).

An analysis (Gwartney et al., 1996) by considering countries which have a higher degree of economic freedom than other countries between 1993-1995, resulted in an average annual growth rate of per capita real GDP of 2.4% in the period 1980-1994. In the same years, it was seen that an average annual growth of GDP per capita was -1.3%, when the data of 27 countries with a low economic freedom index was checked. The countries catching a steadily

high economic freedom rate have had high income during last twenty years, so they concluded that economic freedom causes growth.

Wallis analysed the effect of FDI on the economic growth. According to him, there is a positive relationship between FDI and economic growth (Wallis, 1968).

In general, it was asserted that FDI is one of the explanatory variables of GDP. Nevertheless, there are many papers contrary to this opinion. Ferrer and Zermeño (2019) studied this idea by considering such countries as China, the Republic of Korea, Mexico and Brazil, and they found that FDI has not directly affect GDP, because FDI is relatively small in total direct investment.

Makki and Somwaru also found that there is a positive relationship between FDI and the GDP growth. They said that if trade was increased by FDI, it would increase economic growth. However, if the shock come up in the market, it would cause lack of demand. It means that the growth rate would be lower than before (Makki and Somwaru, 2004).

Dogan examined the effect of FDI on the GDP growth by using the time series analysis. The paper covered the period between 1979-2011. The study reveals that FDI has a positive effect on the GDP growth. According to the Granger causality test results there is bi-directional relation between FDI and the GDP growth. In this study, it is also recommended that FDI may be the solution for sustainable economic growth (Dogan, 2013).

Blomstrom, Lipsey and Zejan conducted studies on 78 developing countries. The paper adopted a panel data analysis to find out whether a positive or negative relationship between FDI and growth rates. The finding of the study is that there is a positive relationship between FDI and economic growth for countries which have a higher income, but there is a negative relationship between FDI and economic growth for countries which have lower income (Lipsey, 2001).

Karagöz also assessed the relationship between the FDI inflow and employment in Turkey. He found that there is co-integration between the FDI inflow and employment. The test result of the empirical analysis also says that there is a relationship in the long run (Karagöz, 2007).

Axarloglou and Pournarakis analysed that whether FDI has an effect or not on employment in the US manufacturing sector. The time period covers the years from 1974 to 1994. According to their paper, FDI has a positive effect on employment in some sectors such as transport equipment, and a negative effect on em-

ployment in such sectors as leather and glass industries (Axarloglou and Pournarakis, 2007).

Sandalcilar conducted a study on the relationship between the FDI inflow and employment in Turkey in 1980-2011. An ADF test was executed and first difference of variables was found stationary. The Johansen co-integration test was also applied to the equation and the result showed that there was no co-integration or long run-relationship between the variables. As a result, he could not find a statistically significant relationship. In other words, the FDI inflow does not have a statistically significant effect on employment in Turkey (Sandalcilar, 2012).

Aizenman analysed the FDI and exchange rate volatility; he used both fixed and flexible exchange rate regimes. For a given volatility shock, he found that the fixed exchange rate regime leads to higher domestic investment, while the flexible exchange rate leads to higher foreign direct investment. He also found that nominal shocks cause a negative relationship between FDI and the exchange rate volatility, while real shocks cause a positive relationship (Aizenman, 1992).

Shinji Takagi and Zongying Shi analysed the exchange rate and FDI relationship in Japan for the period 1980-2011. They said if there is depreciation in the currency of host countries, it will increase FDI inflows to Japan. They also concluded that if it is hard to know the future exchange rate, FDI will take the place of exports (Takagi and Shi, 2011)

According to Agn'es B'énassy-Qu'ér'e, the exchange rate volatility has an effect on FDI, and hence, for a stable financing of growth in emerging countries, especially for those countries which are close to the main investing country. They also found that exchange-rate regimes in developing countries should be defined in a global framework, given the externalities they encompass. More precisely, in the paper, it is also observed that monetary regionalism can be a way of increasing FDI in developing countries as a whole, although it would likely increase competition within each zone of the country. As a result, building on currency blocks can be beneficial as far as inward FDI and the related benefits of it for emerging countries (stability, technological progress) are concerned (Bénassy-Quééré et al., 2001).

Patrick Crowley and Jim Lee investigated whether the exchange rate affected FDI or not by using Panel Data Analysis Model with 18 OECD countries for 19 years, covering the period between 1980-1998. The results show that the exchange rate effect varies from country to country. They observed that as stability

on foreign exchange markets may be caused by capital flows and investment, some degree of exchange rate flexibility, which may generate risks and uncertainty, does not seem to be such a crucial determinant of foreign investment as income growth and economic stability. "In other words, there may be a threshold effect in the sense that the exchange rate volatility – investment relationship is weak or absent if movements in the exchange rate are relatively small, but strong if movements in the exchange rate become excessively volatile" (Crowley and Lee, 2003).

Tsai examined the relationship between the FDI and trade balance. His results showed that the FDI inflows increase trade surplus, which – in other words – means that the FDI inflows decrease trade deficit. He also said that FDI is a very important determinant of trade balance (Tsai, 1994).

Economou (2019) conducted research on FDI and EF (economic freedom) for 4 countries – Spain, Greece, Portugal and Italy, for the time period between 1996-2017, and he found a positive relationship between FDI and EF.

Sayari et al. (2018), by considering the period between 1997-2014, analysed the relationship between EF and FDI for the long run by using panel data techniques for European countries. The outcome of the analysis showed that there is a positive relationship between FDI and EF.

Xu (2019) used gravity model to understand if there is a correlation among the bilateral trade, FDI and EF. The findings were not only for host countries but also for home countries. The results showed that there is a positive correlation among those 3 variables. As a result, the paper asserts that if economic freedom increases in a country, more FDI will be attracted from other countries.

Moussa et al. (2016) also investigated the relationship between EF and FDI by separating 156 countries into 9 regions. While the highest correlation was found in European countries, the lowest correlation was found in Oceania countries.

In another paper studied on multinational companies it was concluded that EF affect FDI positively. (Ghazalian and Amponsem, 2019)

Barro (1989), in his study, in which he examined 98 countries in the period between 1960-1985, stated that in the countries where the ratio of public consumption expenditures to GDP is high, the ratio of GDP per capita and private investments to GDP is low, there is a weak relationship between the quality of public investments and growth; he also found that there is a negative relationship between political instability and growth. Barro (1989), in

his study, by using panel data analysis for 100 countries in the period between 1960-1990 determined a positive relationship between an increase in the rule of law, free markets, less public expenditures and high human capital, which are components of economic freedom, with economic growth.

Using data from 1976-1985, Torstensson (1994) analysed the relationship between the growth rates of economic development and economic freedom in 1994, covering 68 countries. This study considers two aspects of property rights. The first variable attempts to capture the degree to which property is state-owned and the other variable seeks to determine whether individuals are safe from arbitrary confiscation of their property. Torstensson believes that in 1994, the rate of state ownership did not affect the growth rate. However, an arbitrary seizure of property has a negative impact on growth. A serious shortcoming of this study is the limited concept of economic freedom used and a lack of sensitive analysis.

3. Material and Methods

The main goal of this study is to understand the relationship between the Foreign Direct Investment growth rate and economic freedom in Turkey. The time period covers the years between 1996-2018 and while the FDI data were obtained from the World Bank database, economic freedom data was obtained from the Heritage Foundation database. As analysis, such techniques as time series analysis, which includes a stationarity (augmented Dickey-Fuller) test and the Johansen Test for co-integration were used.

3.1. Stationarity (Augmented Dickey Fuller) Test

The main goal of executing a unit root test is to understand whether the model is stationary or not. If there is a unit root in the model, it shows that it is not stationary. A non-stationary model causes statistically significant R2 (goodness of fit) even though there are no causalities among the variables. Thus, there would be a spurious result of the model (Gujarati, 2003). Therefore, all the variables in the model have to be checked whether they are stationary or not to get reliable results. In this study, the Augmented Dickey-Fuller method was used to see stationary variables (Dickey and Fuller, 1979). There are three different ADF equations as seen below. The first one is a random walk process which has no trend and no intercept, whereas the second one is a random walk with drift which has only intercept, and finally the third one is a random walk with drift around a stochastic trend which has both trend and in-

tercept (Gujarati, 2003).

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

$$\Delta Y_t = \beta_1 + \delta Y_{t-1} + \sum_{i=1}^m \alpha_i \Delta Y_{t-1} + \varepsilon t \quad (2)$$

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

Δ is a first difference operator, α , β , θ is constant, ε is a pure white noise error term, where $\Delta Y_{t-1} = (Y_{t-1} - Y_{t-2})$, $\Delta Y_{t-2} = \Delta(Y_{t-2} - Y_{t-3})$, etc. The number of lagged difference terms to include is often determined empirically, the idea being to include enough terms so that the error term is serially uncorrelated (Gujarati, 2003). Those three equations must give the same decision that variables are stationary or not. There are two hypotheses. H_0 = variable has a unit root or a variable is not stationary, H_1 = variable does not have a unit root, variable is stationary. If H_0 hypothesis is accepted, the first difference of variable is needed to make variable stationary. When the absolute value of test statistics is more than the critical value, H_0 hypothesis will be rejected and H_1 hypothesis will be accepted; on the other hand, when the absolute value of test statistics is less than the critical value, H_0 hypothesis will be accepted and H_1 hypothesis will be rejected.

3.2. Johansen Test for Co-integration

For running the Johansen Test, variables must be stationary at level, but when they are converted into the first difference, they must be stationary (Sandalcilar, 2012). According to the Augmented Dickey-Fuller test results, variables are stationary and the Johansen Co-Integration test can be run for the model.

The Co-Integration test shows that if there is a long run relationship among the variables or not (Engle and Granger, 1987). In other words, the Johansen test can be applied in the long run, so as to avoid spurious regression.

The Johansen multivariate co-integration test can be mathematically shown as below (Johansen, 1988).

$$\Delta Y_t = \mu + \prod Y_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \Delta Y_{t-1} + \varepsilon_t \quad (4)$$

In the equation, Y_t shows $n \times 1$ vector of variables which are integrated of order one, Π and

Parameter show that $n \times n$ matrix of coefficients must be tested. Then, rank must be checked. If the rank is zero, it means that there is no co-integration among variables. If the rank is one there is one co-integrating relationship, if it is two there are two co-integrating relationships and so on. Then, two hypothesis can be created. H_0 = There is no co-integrating among the variables. H_1 = There is co-integration among the variables. If trace statistic is more than 5% critical values, H_0 will be rejected and H_1 will be accepted. It means that there is co-integration among the variables. If trace statistic is less than 5% critical values, H_0 will be accepted and H_1 will be rejected. If two time series are co-integrated, there is a long run relationship between them. So they cannot move separately and they move together (Dogan, 2013).

4. Results

In this section, the stationarity (Augmented Dickey-Fuller) test and the Johansen Co-integration test results are presented and evaluated.

4.1. Unit Root Test

When the absolute value of test statistics is more than the critical value, H_0 hypothesis will be rejected and H_1 hypothesis will be accepted. On the other hand, when the absolute value of test statistics is less than the critical value, H_0 hypothesis will be accepted and H_1 hypothesis will be rejected. Test results can be seen in Table 1 one below.

According to the ADF test results, all the variables, except GDPGR, are not stationary at level and they have unit root. It means that H_0 hypothesis, which says that a variable has unit root or a variable is not stationary, will be rejected. Thus, the first difference of the variable must be taken. The ADF test results for the first difference of variables can be seen in Table 2 below.

According to the ADF test results, all first difference of the variables are stationary at level and they do not have unit root. It means that H_0 hypothesis, which says that a variable has unit root or a variable is not stationary, will be rejected and H_1 hypothesis, which says that variables do not have unit root, variables are stationary, will be accepted. The presentation of three models shows that the first difference of FDI does not have unit root, which means the models are stationary at least 5%.

Table 1: Augmented Dickey-Fuller Test Results at Level

Order of integration	Variables	Intercept	Trend and intercept	None
Level	L FDI	-2.113360*	-2.169003*	-0.784733*
Level	L EF	-1.370156*	-1.748287*	0.554525*

Notes: values with * indicate an insignificant variable at 5%

Source: own calculation based on available data.

Table 2: Augmented Dickey-Fuller Test Results at First Difference

Order of integration	Variables	Intercept	Trend and intercept	None
First Difference	D FDI	-4.151371***	-4.070945**	-4.232965***
First Difference	D EF	-4.514527***	-4.514786***	-4.614441***

Notes: values with ** indicate a significant variable at 5%. Values with *** indicate a significant variable at 1%

Source: own calculation based on available data.

4.2. Johansen Co-Integration Test

As seen in Table 3 below, for rank zero, H₀ hypothesis will be rejected because trace statistics is more than 5% critical value. It means that there is no co-integration. When rank zero

is rejected, rank one must be checked. For rank one, trace statistics 0.1485 is less than 5% critical value 47.21. It means that the variables are co-integrated, there is one co-integration, and they move together in the long run.

Table 3: The Johansen Tests Results for Co-integration Trace Statistics

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	Critical Value	0.05 Prob.**
None *	0.435774	15.78615	15.49471	0.0452
At most 1	0.164246	3.767850	3.841466	0.0522

Source: own calculation based on available data.

5. Conclusions and recommendation

This paper attempts to explain that FDI and EF were related in Turkey for the period between 1996-2018. The relationship between these variables has been tested by using time series analysis. First, an Augmented Dickey-Fuller test was executed to see whether or not there is unit root among the variables. According to the test results, the variables have a unit root, which means that they are not stationary at level. But when the first difference of variables was checked, it was seen that all the variables were stationary. It means that the findings will not give spurious results. The test result also showed that the variables were co-integrated, so they move together in the long run. In recent years, the importance of FDI began to rise with increasing globalisation around the world. Developing countries such as Turkey face an inadequate amount of the savings rate, which leads inability to investment. Meanwhile, the foreign trade deficit, which causes a shortage of foreign cash is also one of the biggest problems in these countries. Foreign direct investment inflows play an important role in

solving investment problems arising from the domestic savings shortage. In the economy, increasing investment makes a significant contribution to economic development and growth. MNEs want to sell their products not only on the markets of the countries in which they invest, but they also want to export to other countries. Export made by foreign investors enables currency inflow to countries and it provides an improvement in the trade balance. Thus, it prevents the crisis arising from the foreign currency shortage. Fiscal policies have a kind of objectives such as ensuring economic stability, economic growth and equitable distribution of income. The quality of fiscal policy will make Turkey more attractive from the point of domestic investors as well as foreign investors. In sum, there are many benefits of FDI, such as the fact that it ensures economic growth, helps to reduce the trade deficit and unemployment rate and increases welfare for host countries. FDI, which has an important contribution to the economic growth and development, needs to be implemented in both economic and non-economic policies.

References

- Aizenman, J. (1992). *Exchange Rate Flexibility Volatility, and Domestic and Foreign Direct Investment*. Massachusetts Avenue: Cambridge University Press.
- Bartels, F., Buckley, P. and Mariano, G. (2009). *Multinational Enterprises Foreign Direct Investment Location Decisions within The Global Factory*. Vienna: United Nations Industrial Development Organization.
- Blomstrom, M., Lipsey, R. and Zejan, M. (1992). What Explains Developing Country Growth? *NBER Working Paper Series*, 1-36.
- Buckley, A. (2000). *Multinational Finance* (wyd. 4). New Jersey: Prentice Hall.
- Crowley, P. i Lee, J. (2010). Exchange Rate Volatility And Foreign Investment: International Evidence. *The International Trade Journal*, 17 (3), 227-252.
- De Mello, L. (1997). Foreign direct investment in developing countries and growth: A selective survey. *Journal of Development Studies*. *The Journal of Development Studies* (34), 1-34.
- Dickey, D. A. and Fuller, W. A. (1979). Distrubution of the Estimator for Autoregressive Time Series With a Unit Root. *Journal of the American Statistical Association*, 74 (366), 427-431.
- Doğan, E. (2013). Foreign Direct Investment and Economic Growth: A Time Series Analysis of Turkey, 1979-2011. *Çankırı Karatekin University Journal of the Faculty of Economics and Administrative Science*, 3 (2), 239-252.
- Dulupçu, M. A. and Demirel, O. (2005). Küreselleşme & Uluslararasılaşma. *Süleyman Demirel Üniversitesi Sosyal Bilimler Dergisi*, 1-43.
- Dunning, J. H. (1981). Explaining the International Direct Investment Position of Countries: Towards a Dynamic or Developmental Approach. *Weltwirtschaftliches Archiv* (117), 30-64.
- Granger, C. W. and Engle, R. F. (1987). Co-Integration and Error Correction: Representation, Estimation, and Testing. *Econometrica*, 55 (2), 251-276.
- Gujarati, D. (2003). *Basic Econometrics* (issue 4). New York: R. R. Donnelley & Sons Company.
- Harrod, R. F. (1939). An Essay in Dynamic Theory. *The Economic Journal*, 14-33.
- Johansen, S. (1988). Statistical Analysis of Cointegration Vectors. *Journal of Economic Dynamics*, 12 (2-3), 231-254.
- Karagöz, K. (2007). Determining Factors Of The Foreign Direct Investments In Turkey: 1970 – 2005. *Journal of Yasar University*, 2 (8), 927-948.
- Kostas, A. and Pournarakis, M. (2007). Do All Foreign Direct Investment Inflows Benefit the Local Economy? *The World Economy*, 3 (30), 424-445.
- Kurtaran, A. (2007). Doğrudan Yabancı Yatırım Kararları ve Belirleyicileri. *Sosyal Bilimler Enstitüsü Dergisi*, 10 (2), 367-382.
- Makki, S. and Somwaru, A. (2004). Impact of Foreign Direct Investment and Trade on Economic Growth: Evidence from Developing Countries. *American Journal of Agricultural Economics*, 86 (3), 795-801.
- Qu'er'e, A. B., Fontagn'e, L. and R'evil, A. L. (2001). Exchange-Rate Strategies in the Competition for Attracting Foreign Direct Investment. *Journal of the Japanese and International Economies* (15), 178-198.
- Reichert, U. N. and Weinhold, D. (2001). Causality tests for cross-country panels: A new look at FDI and economic growth in developing countries. *Oxford Bulletin of Economics and Statistics* (63), 153-171.
- Sandalcılar, A. R. (2012). Türkiye'de Yabancı Doğrudan Yatırımların İstihdama Etkisi: Zaman Serisi Analizi. *Atatürk Üniversitesi İktisadi ve İdari Bilimler Dergisi*, 26 (3-4), 273-285.
- Takagi, S. and Zongying, S. (2011). Exchange rate movements and foreign direct investment (FDI): Japanese investment in Asia, 1987–2008. *Japan and the World Economy* (23), 265-272.
- Tsai, P. L. (1994). Determinant of Foreign Direct Investment and Its Impact on Economic Growth. *Journal of Economic Development*, 1 (19), 137-163.
- Wallis, K. F. (1968). The E.E.C. and United States Foreign Investment: Some Empirical Evidence Re-Examined. *The Economic Journal*, 78 (311), 717-719.



