

Professor Ali SEN, PhD
Inonu University, Turkey
E-mail: ali.sen@inonu.edu.tr
Asst. Prof. Mehmet SENTURK, PhD
Kilis 7 Aralik University, Turkey
E-mail: msenturk@kilis.edu.tr
Asst. Prof. Gokcen OZKAN, PhD
Gaziantep University, Turkey
E-mail: gokcensayar@hotmail.com

THE IMPACT OF FOREIGN DIRECT INVESTMENT INFLOWS ON THE PERFORMANCE OF ECONOMIC GROWTH: EVIDENCE FROM SELECTED DEVELOPING COUNTRIES

***Abstract:** In this study, developing countries which are Argentina, Brazil, Thailand and Turkey were analyzed over the period of 1980-2011 in order to determine whether there is a cointegration relationship between those countries' Foreign Direct Investment (FDI) inflows and Gross Domestic Product (GDP) growth. In this context, at first panel unit root analysis (LLC and IPS) and then Pedroni panel cointegration analysis were applied. All of the series were I(1) at the end of the stationary tests. In addition, null hypothesis imply that cointegration was rejected and alternative hypothesis which was state cointegration is accepted. It is concluded that there is a significant relationship between FDI inflows and GDP growth of Argentina, Brazil, Thailand and Turkey over the period of 1980-2011.*

***Keywords:** Foreign Direct Investment, Gross Domestic Product, LLC, IPS, Pedroni Panel Cointegration.*

JEL Classification: F21, F32, F43

1. Introduction

In this study, the relationship between direct foreign capital movement and economic growth is analyzed. But, since short-run capital movements are not permanent and long-run, and even affects economy positively through indirect factors, -like decreasing borrowing costs- permanency and sustainability of this effect is controversial. Just for this reason, while analysing capital movements effecting GDP growth, short run capital movements are ignored and only direct foreign capital flows are included in the model.

With the fall of Bretton Woods at the beginning of 1970s, a financial liberalization process has started in all over the world. It is possible to evaluate this process for many ways. For example, first stage of economic liberalization occurs

with the globalisation of production. At this point, Among the economies included in the process, -except compelling reasons or compelling reasons for reserving domestic producer- quantity restrictions and bans for import are eliminated, Besides, export and import transactions are done freely. The main reasons of this situation are; lack of resources in the country, price differentiation in the international markets, meaning the possibility of importing goods or services with lower prices than country's own price.

On the other hand, one another component of economic liberalization process is international capital inflows. Free capital inflow is possible if and only if there are no any restrictions. This means, economies integrate financial liberalisation of economies exactly. Surely, free capital inflows are possible in two ways. First is, short run capital movement, called "hot money". In this kind of capital movement, capital flows from low interest rate economies to high rate economies. The reason of such capital movements, interest rate volatility in international markets. This kind of capital movements occurs as portfolio investments and focus on stock markets. Foreign Direct Investment inflows may motivate long term positive effects like economic growth and increase in employment rates. Doubtless, these effects are more permanent and positive than short-run capital inflows. Therefore, FDI was mentioned in our paper.

With globalisation, increase in capital movement between countries, elimination of barriers on trade and foreign investments, decrease in cost of transportation, communication enlarges the choices of firm's decisions about what, where and how to produce and whom to sell. So, while the number of industries and firms selling their products overseas increase rapidly, the competition in these markets escalate. The most importantly, by increase a country's foreign investments international production also increases rapidly, and these investments not only contributes expansion of national markets but also reveals larger scale regional and global markets. (UNCTAD, 1998:163).

Through the liberalisation process in global markets, trading goods and service beyond the borders also means internationalization of production. Liberalisation process seen in foreign direct investments and goods and service trade has important effects on competition on global markets. The competition effect of international goods and service liberalisation on these markets is very important especially when the restrictions are applied as quantity restrictions. Quantity restrictions may arise national monopolies and oligopolies. Elimination of quantity restrictions makes firms more competitive by increasing the number of firms. Tarification of quantity restrictions has similar effects. In many countries, it is seen that opening the sectors to foreign direct investments leads increase in number of firms, so sectors have more competitive structure. That's why; many firms' shows multinational attribute and high growth performance as a result of offering global competition conditions (Lyold, 1998:166).

The Impact of Foreign Direct Investment Inflows on the Performance of Economic Growth: Evidence from Selected Developing Countries

Foreign direct investment movements not only give firm to access beyond the borders oppurtunities but also internationalize competition. This situation obliges firms to have more institutional structure in order to survive and to act according to consumer choices by adapting innovation process. Liberalization of financial markets adds global identity to production and competition and also takes the consumers to beyond the borders. Hence, firms have to consider not only the consumers in origin countries but also have to consider the consumers all over the world. But culturel structure, level of development, consumption behaviours and economic structure of countries differ. That is why, when a firm considers consumer choices, its competitiveness will be high.

The activities of multinational firms are not only important for their own countries but also important for the countries that their activities exist. These firms compete with domestic producers and increase trade performance. This why, monopolistic power is declined and price mechanism becomes more elastic. As UNCTAD highlights, the competition potential of these companies arises global monopol threat because of scale advantage and branding. In fact, complaints to international competition organizations about multinational companies verify this concept.

After that all of these benefits, foreign direct investment (FDI) generates positive productivity effects for host countries. The main mechanisms for these effects are the adoption of foreign technology and know-how, and products by foreign firms; and the creation of linkages between foreign and domestic firms. These benefits, suggest that FDI can play an important role in modernizing a national economy and promoting economic development (Alfaro et al., 2006:1-2). Therefore, there is no consensus in literature for positive effect of FDI on economic growth. Some literature indicates that a country's capacity to take advantage of FDI externalities might be limited by local conditions, such as the development of the local financial markets or the educational level of the country. Borensztein et. al. (1998) and Xu (2000) show that FDI brings technology, which translates into higher growth only when the host country has a minimum threshold of stock of human capital. Some researchs finds uncertain results for the effect of FDI on firm's productivity. This literature comes in three waves. Starting with the pioneering work of Caves (1974), the first generation papers focus on country case studies and industry level cross sectional studies. These studies find a positive correlation between the productivity of a multinational enterprise and average value added per worker of the domestic firms within the same sector. The second generation researchs use firm level panel data. However, most of these studies find no effect of foreign presence or find negative productivity spillover effects from the multinational enterprises to the developing country firms. The positive spillover effects are found only for developed countries. Based on these negative results, a third generation studies argue that since multinationals would like to prevent

information leakage to potential local competitors, but would benefit from knowledge spillovers to their local suppliers, FDI spillovers ought to be between different industries.

The purpose of this paper determines if there is a long term relationship between FDI and economic growth. So, the main hypothesis of paper that FDI impact on economic growth in Argentina, Brazil, Thailand and Turkey between the years of 1980-2011. Thus, no cointegration is tested under the null hypothesis of panel cointegration test in the paper. The rest of the paper is organized as follows. Section 2 presents the literature review about FDI and economic growth. Section 3 describes the data and methodologies applied in paper. Section 4 analyzes the empirical results, and Section 5 provides conclusion.

2. Literature Review

In the literature, there are many studies analysing the effects of foreign direct investments on economic growth and usually the effect is positive. Noy and Vu (2007), analysed the investment movements for 83 developed and developing countries for the period 1984-2000 and determined that restrictions and promotions applied to foreign direct investments affects growth performance of GDP. Eichengreen et al. (2009) analysed liberalisation of capital account and controls of country's financial development, industrial growth and financial crisis in liberalisation process. As a result of their studies including industrialized and developing countries, they concluded that capital account deficits increase financial dependency of domestic industries and affect growth negatively. Gourinchas and Jeanne analysed capital flows to developing countries for the period 1980-2000 and they concluded that the inflowed capital increases the capital stock and also increases marginal productivity of capital. In addition, in the countries subject to study, affects financial integration and economic development positively.

According to Kottaridi and Stengos (2010) to determine the effects of FDI on economic growth among 25 OECD member countries and 20 Non-OECD countries covering the years of 1970-2004 by GMM method. It was found out that FDI had positive effects on economic growth on OECD countries whereas it had a non-linear effect on growing countries.

Eller et al. (2006), found a hump-shaped relationship between FDI and growth according to his research in the 11 Central and Eastern European countries (CEECs) during the period of 1996-2003 by applying static panel data model by fixed effects. Adams (2009) conducted a study for 42 Sub-Saharan African countries for the period of 1990-2003 to see how FDI and national investment affect growth. Using OLS and fixed effects method, the result indicated that FDI positively affects growth. Bengoa and Sanchez-Robles (2002) completed a research among 18 Latin American countries for the period of 1970-1999 to analyse the effects of economic freedom and FDI over economic growth. As a result of panel

The Impact of Foreign Direct Investment Inflows on the Performance of Economic Growth: Evidence from Selected Developing Countries

data analysis, it was noticed that host country's economic freedom is preferred for FDI and there was a positive correlation between FDI and growth. Li and Liu (2005) found a strong and positive relationship between FDI and growth based on their study that covered 84 developed and developing countries using the panel data analysis for the period of 1970-1999. Rodriguez and Bustillo (2011) completed a study among China and 36 other countries in order to see what affects outward FDI during the period of 1995-2009. Using the panel data model, he determined that there is a positive and statistically meaningful relationship between FDI and growth.

The multilateral money system formed after II. World war resulted by International Money Fund (IMF)'s endeavour (convertibility of money), support of large scale investment projects by institutions like World Bank and consortium banks, transition to floating exchange rate system after devaluation of dollar in 1973 and technological improvements initiated financial liberalisation which led international capital movements. Addition to all these, also growths in real sector and world trade, increase in multi-national company's investments, improvements of stock exchange markets, increase in diversity of financial instruments (future, option and swap), lightening of legislation, financial liberalisation and other politic, technical and institutional effects played role. (Durusoy, 2010).

According to Karluk, foreign direct investment is an investment which brings technology, business administration and control authorization of investor to a country from another, by buying a firm, providing initial capital to a current firm and increasing capital of a current firm. By definition, foreign direct investments eventuate as transferring capital from one country to another without any market operation (Karluk 2001:100).

Except one country's own resources, indirect capital inflows from another country, doubtless, have positive effects on economic growth performance. Here, the important thing is how to attract indirect capital inflow and how long to keep the capital in the country. Doubtless, utility-cost analysis is needed in order to determine where to deploy global capital through long-run programs. Hence many macro economic parameters must be considered such as government's incentive policies, closeness to the market –geographical and strategical position- cost advantage, easiness in achieving qualified labor force, tax advantages, and politic stability in order to provide high earning for long-term investments, transparency of economic policies, course of inflation and interest rates, stability of exchange rates and many others.

Another important dynamic to be interrogated for determining direction of international capital is risk factors. At this point, the existence of compelling such as war, natural disaster economic and politic instability, weakness of

institutional capacity, dependency of market and high level of volatility raises risk perception and causes escape of investment.

Karluk (2001), describes direct capital investments as: direct foreign investment is not only capital transfer but also provides enterprise, technology, risk carriage and organisation transfer and for this reason it is evaluated as finance of institution and equipment of businesses. Because of this characteristic of direct investment, it brings business administration art and know-how with it, also introduce competition factor to the country. Generally, direct investments are industry sector oriented and formed as more from one country's any branch of industry to another country's same branch of industry, than capital transfer from one country to another. Especially, direct investments have the property of capital flow between two industry sectors. This capital flow consists of vertical and horizontal investments (Karluk, 2001:101).

Horizontal investments arise if a firm produce same thing in its own country and in another country. Vertical investments arise when a firm's investment is related about process and sale of production which is produced in its original country. At last, it is possible to separate foreign direct investment from other international investment movements. At this point it is necessary to explain that; other international capital movements are;

- To issue bond and stock in international markets,
- To sell and buy bond in international capital markets,
- To benefit from short term credit instruments.

Foreign Direct Investments, have some economic effects on host country's economy. These effects are related to production, employment, income, price level, balance of payments, economic development and welfare. Some of these effects are positive for the economy when the others are negative. Moreover, some effects arise with the investment, and some effects may be observed after a very long time. The main effect of the foreign direct investment is contribution to host country's national income. Also the effect of foreign direct investment on balance of payment is very important. Does foreign direct investment contribute to host country's national income? The answer is yes. Because, foreign direct investment has production in host country. Of course, this amount of production is included in country's national income. Here, the point is whether foreign investment produces all input used in production process itself or not. If some part of input is imported, it is necessary to reduce imported input from country's GDP (Karluk, 2001:101). Only in this way, foreign direct investment has net effect on GDP growth.

On the other hand, while foreign direct investment has a net effect on GDP growth, there are some negative effects. These are: governments will be coerced to implement policies since foreign share in economy advances, foreign firms will have competitive advantage against domestic firms because of economies of scale,

and this competitive advantage may lead unfair competition and monopolization by the time, technological dependency and weakening the authority of state in the market.

3. Data and Methodology

In this study, the effect of foreign direct investment on GDP growth is analysed for Brazil, Argentina, Thailand and Turkey. GDP growth is taken as dependent variable while foreign direct investment is taken as independent variable. Real GDP is used for proxy of economic growth and net foreign direct investment inflow as a proxy for foreign direct investment.

In this study, data for all countries are taken from World Bank. The data includes 32 year from 1980 to 2011. Panel Unit Root and Panel Co-Integration tests are applied. Panel data are obtained by using cross section data and time series data together. Using cross section data and time series data together, provide us to explain economic relationships both time dimension and unit dimension in the same model. Moreover, since number of observations increase, level of freedom also increases. If a series' mean, variance and covariance do not change by the time the series is called to be stationary. Time series' stationarity is tested by unit root test. But Dickey-Fuller, Augmented Dickey Fuller and Phillips Perron tests which test only unique time series stationarity are not sufficient to test stationarity of panel data set.

In recent years, many panel unit root test improved to analyse stationarity in panel data sets. First improved panel unit root tests are Levin and Lin (1992, 1993), Wu (1996), Im, Pesaran and Shin (1997), Maddala and Wu (1999), Harris and Tzavalis (1999), Hadri (1999), Breitung (2000) and Choi (2001) tests. Besides, the most important panel unit root tests improved in near past are; Levin, Lin and Chu (2002), Im, Pesaran and Shin (2003), Moon and Perron (2003), Pesaran (2003), Breitung and Das (2003), Phillips and Sul (2003) and Bai and NG. (2004) tests. The characteristic of these tests are, they consider each series own characteristic.

$$y_{it} = \rho_i y_{it-1} + x_{it} \delta_i \varepsilon_{it} \quad (1)$$

All the mentioned tests except Hadri's panel unit root test, test H_0 which concludes that series is stationarity against alternative hypothesis which concludes series is nonstationary. Hadri (1999) used H_0 hypothesis to test stationarity of series (Harris and Sollis, 2003). In the equation given above, while $i=1, \dots, N$ shows cross section series, $t=1, \dots, T$ shows time series observations. X_{it} shows exogenous variables. ρ_i values show autoregressive coefficients, ε_{it} values show error terms. If $|\rho_i| < 1$, values are trend stationary. On the other hand, if $|\rho_i|=1$, then y_i series has unit root. There are two assumptions in panel unit root tests. First assumption is parameters for all cross section variables are same ($\rho_i=\rho$). Levin, Lin and Chu

(LLC), Breitung and Hadri use this assumption in their tests. The second assumption is ρ_i changeable for all cross section data. Im, Pesaran ve Shin (IPS) and Fisher-ADF and Fisher-PP tests consider this assumption.

In this study, Levin, Lin and Chu (LLC) ile Im-Pesaran-Shin (IPS) panel unit root tests are used, because they they give beter results in small samples. LLC test assumes general unit root process in determining stationary of series. Different from LLC test, IPS test considers unit root process concerning each cross section.

3.1. Levin-Lin-Chu (LLC) Panel Unit Root Test

Levin and Lin (1992) are the first tests used to seek panel unit root problem. Harris and Tzavalis (1999) analyzed the properties of LLC test by Monte Carlo simulation method in case of time dimension panel data set is small. The result is LLC test gives beter results when the sample is small. This result is quite important for the panel data model used applications. Moreover, this studies when the tiemn dimension of series is short, if number of cross sectionvobservations is increased, then LLC test gives more accurate results.

$$\Delta y_{i,t} = \alpha_i + \delta_i t + \rho y_{i,t-1} + \sum_{L=1}^{P_i} \theta_{i,L} \Delta y_{i,t-L} + \varepsilon_{i,t} \quad (2)$$

Here, ρ is common, P_i which shows maximum lag number, allows different lags for different cross sections. Zero hypotheses implying series includes unit root and alternative hypothesis implying there is no unit root in series can be shown as follows.

After determining appropriate lag length for $\Delta y_{i,t}$ and $y_{i,t}$ the models which the lagged values of these variables and deterministic variables take place as dependent variables are estimated. Later, $\hat{\varepsilon}_{i,t}$ ve $\hat{v}_{i,t-1}$ error terms are obtained from mentioned these two models (Altunkaynak, 2007).

$$\hat{\varepsilon}_{i,t} = \Delta y_{i,t} - \sum_{L=1}^P \hat{\theta}_{i,L} \Delta y_{i,t-L} - \hat{\alpha}_i - \hat{\delta}_i t \quad (3)$$

$$\hat{v}_{i,t-1} = y_{i,t-1} - \sum_{L=1}^P \hat{\theta}_{i,L} \Delta y_{i,t-L} - \hat{\alpha}_i - \hat{\delta}_i t \quad (4)$$

In order to control heterogenity in all cross section, $\hat{\varepsilon}_{i,t}$ and $\hat{v}_{i,t-1}$ variables are divided to standart deviation of model which is used from equation (2), (3) and (4).

3.2. Im-Pesaran-Shin (IPS) Panel Unit Root Test

While LLC test assumes usual unit root process through determining stationary of series, IPS test different from LLC test's Ho hypothesis ($\rho_1 = \rho_2 = \dots = \rho_N = \rho$), also considers unit root process related to each cross section. In another words, in IPS test, stationarity of not p but pi's is tested by Ho hypothesis. IPS unit root test is more effective test for small samples since it has a structure combined

The Impact of Foreign Direct Investment Inflows on the Performance of Economic Growth: Evidence from Selected Developing Countries

of data obtained from time series data of N number cross section and stationary results of related series (Harris and Sollis, 2003).

Im, Pesaran and Shin (2003) panel unit root test is a test used when powerful tests are needed for fewer time observations and seek unit root in cross section and panel data. IPS test begin with estimation of ADF regression for each cross section data.

$$\Delta y_{i,t} = \alpha_i + \delta_i t + \rho_i y_{i,t-1} + \sum_{L=1}^{p_i} \theta_{i,L} \Delta y_{i,t-L} + \varepsilon_{i,t} \quad (5)$$

In equation given above, while $i = 1, \dots, N$ shows cross section series, $t = 1, \dots, T$ shows time section observation values:

For IPS test hypothesis are;

$$\begin{aligned} H_0 : \rho_i & \\ H_1 : \rho_i & < 0 \end{aligned}$$

3.3. Panel Cointegration Test

After progress in panel unit root tests, panel cointegration tests aiming investigate long term relationship between panel series are improved. In normal time series anlyses linear combination of non-stationary series may be stationary, equally, in panel data series linear combination of nonstationary series may be stationary. In econometry literature The most important cointegration tests are: Pedroni (1995, 1999, 2004), McCoskey and Kao (1998) and Kao (1999), Larsson, Lyhagen and Löthgren (2001), Mark and Sul (2003), Gutierrez (2005), Westerlund and Edgerton (2005).

3.3.1. Pedroni Panel Cointegration Test

Pedroni cointegration test offers tests with zero hypothesis testing there is no common integration in panel data models. While Pedroni (1995, 1998) use a two variable model for cointegration anlysis, multivariable regression models are used in Pedroni (1999). This test allows heterogeneity in cointegration vector. Besides not only allows variety of dynamic and constant effects between panel sections but also allows variety of cointegrated vector between sections under alternative hypothesis. All tests offered by Pedroni are set on residuals obtained from following equation (Pedroni, 1999).

$$y_{i,t} = \alpha_i + \delta_i t + \beta_{1i} x_{1i,t} + \beta_{2i} x_{2i,t} + \dots + \beta_{Mi} x_{Mi,t} + \varepsilon_{i,t} \quad (6)$$

In equation 6, T is number of observations, N is total number of cross section and M is number of variables in the regression. Because there are N different sections, there is N different equation each includes M variables. $\beta_{1i}, \beta_{2i}, \dots, \beta_{Mi}$ slope coefficients may vary among cross sections in the panel. α_i parameter is a constant effect parameter peculiar to section in panel or may be

different among individual sections. Although usually ignored, deterministic time trend term δ_{it} peculiar to sections in panel can be added to the equation.

Addition to Pedroni's panel cointegration tests developed in 1995 and 1999, panel cointegration test developed in 2004, offers a test process which based on heterogeneous dynamics for cointegration. During analysis, it is focused on residual based statistics described as between dimension and within dimension.

Between dimension statistics is formed by addition of both numerator and denominator along each N unit. The other three statistics are called within dimension. Within dimension statistics is obtained by division of numerator to addition of denominators along N units.

Table 1. Panel Cointegration Statistics

<i>Panel v–statistics (non-parametric)</i>	$T^2 N^{3/2} Z_{V_{N,T}} = T^2 N^{3/2} \left(\sum_{i=1}^N \sum_{t=1}^T \tilde{L}_{11i}^{-2} \hat{\varepsilon}_{i,t-1}^2 \right)^{-1}$
<i>Panel ρ–statistics (non-parametric)</i>	$T\sqrt{N} Z_{\hat{\rho}_{N,Y(1)}} = T\sqrt{N} \left(\sum_{i=1}^N \sum_{t=1}^T \tilde{L}_{11i}^{-2} \hat{\varepsilon}_{i,t-1}^2 \right)^{-1} \sum_{i=1}^N \sum_{t=1}^T \tilde{L}_{11i}^{-2} (\hat{\varepsilon}_{i,t-1} \Delta \hat{\varepsilon}_{i,t} - \hat{\lambda}_i)$
<i>Panel t– statistics (non-parametric)</i>	$Z_{t_{N,T}} = \left(\tilde{\sigma}_{N,T}^2 \sum_{i=1}^N \sum_{t=1}^T \tilde{L}_{11i}^{-2} \varepsilon_{i,t-1}^2 \right)^{-1/2} \sum_{i=1}^N \sum_{t=1}^T \tilde{L}_{11i}^{-2} (\hat{\varepsilon}_{i,t-1} \Delta \hat{\varepsilon}_{i,t} - \hat{\lambda}_i)$
<i>Panel t– statistics (parametric)</i>	$Z_{t_{N,T}}^* = \left(\tilde{S}_{N,T}^{*2} \sum_{i=1}^N \sum_{t=1}^T \tilde{L}_{11i}^{-2} \varepsilon_{i,t-1}^2 \right)^{-1/2} \sum_{i=1}^N \sum_{t=1}^T \tilde{L}_{11i}^{-2} \hat{\varepsilon}_{i,t-1} \Delta \hat{\varepsilon}_{i,t}^*$
<i>Grup ρ– statistics (non-parametric)</i>	$TN^{-1/2} Z_{\rho_{N,Y^{-1}}} = TN^{-1/2} \sum_{i=1}^N \left(\sum_{t=1}^T \hat{\varepsilon}_{i,t-1}^2 \right)^{-1} \sum_{t=1}^T (\hat{\varepsilon}_{i,t-1} \Delta \hat{\varepsilon}_{i,t} - \hat{\lambda}_i)$
<i>Grup t– statistics (non-parametric)</i>	$N^{-1/2} \tilde{Z}_{t_{N,T}} = N^{-1/2} \sum_{i=1}^N \left(\hat{\sigma}_i^2 \sum_{t=1}^T \hat{\varepsilon}_{i,t-1}^2 \right)^{-1/2} \sum_{t=1}^T (\hat{\varepsilon}_{i,t-1} \Delta \hat{\varepsilon}_{i,t} - \hat{\lambda}_i)$
<i>Grup t– statistics (parametric)</i>	$N^{-1/2} \tilde{Z}_{t_{N,T}}^* = N^{-1/2} \sum_{i=1}^N \left(\hat{S}_i^{*2} \sum_{t=1}^T \hat{\varepsilon}_{i,t-1}^2 \right)^{-1/2} \sum_{t=1}^T \hat{\varepsilon}_{i,t-1} \Delta \hat{\varepsilon}_{i,t}^*$

Pedroni introduced which test to use among statistics described above. According to the results of Monte Carlo studies, in case of number of cross section unit greater than 100, all the statistics, consequently means of statistics give adequate powerful results. But when the sample is small, non-parametric t statistics becomes to have best results, consecutively between dimension v statistics and within dimension p statistics comes (Sunal and Aykac, 2005).

The Impact of Foreign Direct Investment Inflows on the Performance of Economic Growth: Evidence from Selected Developing Countries

4. Results and Discussion

Firstly, the stationary of FDI and GDP were analyzed. The results of analysis are below:

Table 2. Panel Unit Root Test Results for Selected Countries

Variables		LLC		IPS	
		Level	First Difference	Level	First Difference
		p-value	p-value	p-value	p-value
GDP	Intercept	0.560	0.0000***	0.7890	0.0000***
	Trend and Intercept	0.670	0.0003	0.8900	0.0000
FDI	Intercept	0.447	0.0010***	0.7690	0.002***
	Trend and Intercept	0.190	0.0900	0.4586	0.0586

***, ** and * indicate significanc level at 1%, 5% and 10% respectively.

With unit root test, it is tested whether both variables (GDP, Foreign Direct Investment inflows) includes unit root or not in level. As a result, when the probability values analysed, according to result of both LLC and IPS tests for the model with constant, it is seen that both FDI and GDP are stationary at %1 significance level. Therefore, economic estimation cannot be done by policymakers for level values of GDP and FDI.

After the order of stationary of variables are determined as I(1), panel cointegration test like Pedroni (1998) can be applied for analysis.

Table 3a. Pedroni Panel Cointegration Test Results for Selected Countries

GDP=f(FDI)	Test Statistics Values		Weighted Values		
	Test Statistics	p-value*	Test Statistics	p-value*	
Between Dimension Based	Panel v -statistic (variance ratio statistic)	1.253929	0.1049	-0.525096	0.7002
	Panel ρ -statistic ((non-parametric) Phillips and Perron ρ -statistic)	-5.898385	0.0000	-5.546534	0.0000
	Panel t -statistic ((non-parametric) Phillips and Perron t -test statistic)	-5.231856	0.0000	-4.934445	0.0000
	Panel t -statistic ((Parametric) Dickey-Fuller t -statistic)	-3.705959	0.0001	-4.082554	0.0000

* AIC information criteria and taking into account the length of the delay is automatically selected.

Table 3b. Pedroni Panel Cointegration Test Results for Selected Countries

Within Dimension Based	Group ρ -statistic (non-parametric) Phillips and Perron ρ -statistic)	-4.908236	0.0000	-	-
	Group t -statistic (non-parametric) Phillips and Perron t -test statistic)	-5.629332	0.0000	-	-
	Group t -statistic (parametric) Dickey-Fuller t - statistic)	-3.231225	0.0006	-	-

* AIC information criteria and taking into account the length of the delay is automatically selected.

The results of cointegration analysis of GDP and foreign direct investment variables are given in the Table 3. As it is seen Pedroni cointegration test gives 7 results, four of them related to between dimension and three of them related to within dimension. It is mentioned before that since dimension of time section series of countries is small, group t statistic (parametric) gives more accurate results than the other tests. According to table it is seen that Ho hypothesis asserting there is no cointegration between variables is rejected. When the Pedroni cointegration test is considered generally, in 9 of 11 statistics with weighted test statistics results Ho hypothesis asserting there is no cointegration between two variables is rejected. This case implies that there is a long term relationship between foreign direct investment and GDP for the countries Argentina, Brazil, Thailand and Turkey. Furthermore, it is understood that there is an long term impact of FDI on GDP in Argentina, Brazil, Thailand and Turkey between the years of 1980-2011.

5. Conclusion

In this study, it is analyzed whether FDI impact on GDP in Argentina, Brazil, and Thailand and Turkey covering the 1980-2011. Therefore, it is mentioned that there is a cointegration between FDI and GDP as a main hypothesis of paper. It is used panel cointegration test for analyzing the relationship between FDI and GDP in four countries form the panel. As a result of panel cointegration test, it is stated that there is a long term relationship between foreign direct investment and GDP growth in chosen four countries. So, the hypothesis imply the FDI has an impact on GDP is accepted.

The Impact of Foreign Direct Investment Inflows on the Performance of Economic Growth: Evidence from Selected Developing Countries

Only four countries are analyzed in this study. These countries are emerging market have a same economic structure. But, the analysis can be expanded by a lot of countries have same characteristic and a few variables can be attached to analysis of model. So, the researchers who will make a study on FDI and GDP should use more countries and comprehensive methods. Furthermore, they should a few variables such as financial development and portfolio investments.

The findings obtained from empirical analysis underlines the importance for government to emphasize on diffusion aspect in formulating FDI policies as knowledge diffusion is not sustained on welfare ground. Therefore, policies directed towards attracting FDI should go hand in hand with, not precede, policies that aims at promoting financial market developments.

Moreover, developing countries including Turkey have to increase multiplier effect of foreign direct investment in order to maintain economic stability and to reach developed country position. It is possible to increase this effect by these ways: to strengthen and expand export capacity, elimination of economic fragility, increasing competitive power in international arena by accelerating innovation actions, providing reliance by preventing unfair competition and monopolization. At this point, the government decisions about FDI come into prominence. It is important to note that for a country to reach developed country position not only economic position is important but also development in socio-cultural, education, health, environment, energy and etc. are necessary. But efficient execution of these policies depends on mentioned stable economic growth.

REFERENCES

- [1] **Adams, Samuel, (2009), *Foreign Direct Investment, Domestic Investment, and Economic Growth in Sub-Saharan Africa*, *Journal of Policy Modeling*, Vol: 31, pp. 939–949;**
- [2] **Alfaro, Laura, Chanda, Areendam, Ozcan, Sebnem Kalemli and Selin Sayek, (2006), *How Does Foreign Direct Investment Promote Economic Growth? Exploring the Effects of Financial Markets on Linkages*, *NBER Working Paper Series*, No: 12522;**
- [3] **Altunkaynak, Bulent, (2007), *Sektörel Panel Veri Analizi Yaklaşımıyla Türkiye'nin AB Ülkelerine İmalata Sanayi Bakımından İhracatının Belirlenmesi*, *Unpublished Doctorate Thesis*, Ankara;**
- [4] **Bai, Jushan and Serena, N.G. (2004), *A Panic Attack on Unit Roots and Cointegration*, *Econometrica*, Vol. 72 (4), pp.1127-1277;**

- [5] **Bengoa, Marta and Blanca, Sanchez-Robles, (2003), *Foreign Direct Investment, Economic Freedom and Growth: New Evidence from Latin America*, *European Journal of Political Economy*, Vol: 19, pp. 529-545;**
- [6] **Breitung, Jörg, (2000), *The Local Power of Some Unit Root Tests for Panel Data*, *Advances in Econometrics*, Vol.15, Nonstationary Panels, Panel Cointegration, and Dynamic Panels, ed. B. H. Baltagi, 161–178. Amsterdam: JAY Press;**
- [7] **Breitung, Jörg and Samarjit, Das, (2003), *Panel Unit Root Tests Under Cross Sectional Dependence*, *University of Bonn*;**
- [8] **Borensztein, E., J. De Gregorio, and J. W. Lee, (1998), *How Does Foreign Direct Investment Affect Economic Growth?*, *Journal of International Economics*, Vol: 45, pp. 115-135;**
- [9] **Caves, R. (1974), *Multinational Firms, Competition and Productivity in the Host Country*, *Economica*, Vol: 41, pp. 176-193;**
- [10] **Choi, In, (2001), *Unit Roots Tests for Panel Data*, *Journal of International Money and Finance*, Vol. 20, pp. 249–272;**
- [11] **Durusoy, Serap, (2010), *Finansal Liberalleşmenin Sorgulanmasının Nedenleri*,
www.dtm.gov.tr/dtadmin/upload/EAD/TanitimKoordinasyonDb/finans.doc,
(Access Date: 10.08.2010);**
- [12] **Eichengreen, Barry, Rachita, Gullapalli and Ugo, Panizza, (2009), *Capital Account Liberalization, Development and Industry Growth: A Synthetic View*,
<http://polis.unipmn.it/pubbl/RePEc/uca/ucapdv/panizza144.pdf>,
(Access Date: 05.05.2011);**
- [13] **Eller, Markus, Peter, Haiss and Katharina, Steiner, (2006), *Foreign Direct Investment in the Financial Sector and Economic Growth in Central and Eastern Europe: The Crucial Role of the Efficiency Channel*, *Emerging Markets Review*, Vol: 7, pp. 300 – 319;**
- [14] **Gourinchas, Pierre Olivier and Jeanne, Olivier, (2007), *Capital Flows to Developing Countries: The Allocation Puzzle*, *NBER Working Paper Series*, No. 13602;**
- [15] **Gutierrez, Luciano, (2005), *Tests for Cointegration in Panels with Regime Shifts*, *Econometrics*, 0505007;**
- [16] **Hadri, Kaddour, (1999), *Estimation of a Doubly Heteroscedastic Stochastic Frontier Cost Function*, *Journal of Business and Economic Statistics*, Vol. 17, pp. 359-363;**
- [17] **Harris, Richard D. F. and Ellias, Tzavali, (1999), *Inference for Unit Roots in Dynamic Panels Where the Time Dimension is Fixed*, *Journal of Econometrics*, Vol. 91, pp. 201–226;**
- [18] **Harris, Richard and Robert, Sollis, (2003), *Applied Time Series Modelling and Forecasting*, *Wiley Publication*;**

- [19] **Im, Kyung So, M. Hashem, Peseran and Yongcheol, Shin, (1997),** *Testing for Unit Roots in Heterogenous Panels*, University of Cambridge, Department of Applied Economics;
- [20] **Im, Kyung So, M. Hashem, Peseran and Yongcheol, Shin, (2003),** *Testing for Unit Roots in Heterogeneous Panels*, *Journal of Econometrics*, Vol. 115, pp. 53–74;
- [21] **Kao, Chihwa, (1999),** *Spurious Regression and Residual-Based Tests for Cointegration in Panel Data*, *Journal of Econometrics*, Vol. 90, pp. 1–44;
- [22] **Karluk, Rıdvan, (2001),** *Türkiye’de Yabancı Sermaye Yatırımlarının Ekonomik Büyümeye Katkısı*, TCMB. ss. 97-115;
- [23] **Kottaridi, Constantina and Thanasis, Stengos, (2010),** *Foreign Direct Investment, Human Capital and Non-Linearities in Economic Growth*, *Journal of Macroeconomics*, Vol: 32, pp. 858–871;
- [24] **Larsson, Rolf, Johan, Lyhagen and Mickael, Lothgren, (2001),** *Likelihood-Based Cointegration Tests in Heterogeneous Panels*, *Econometrics Journal*, Vol. 4, pp. 109–142;
- [25] **Levin, Andrew and Chien Fu, Lin, (1992),** *Unit Root Tests in Panel Data: Asymptotic and Finite Sample Properties*, Discussion Paper 92-23, University of California, San Diego;
- [26] **Levin, Andrew and Chien Fu, Lin, (1993),** *Unit Root Tests in Panel Data: New Results*, Discussion Paper 93-56, University of California, San Diego.
- [27] **Levin, Andrew, Chien Fu, Lin and Chia Shang James, Chu, (2002),** *Unit Root in Panel Data: Asymptotic and Finite-Sample Properties*, *Journal of Econometrics*, Vol. 108, pp. 1-24;
- [28] **Li, Xiaoying and Xiaming, Liu, (2005),** *Foreign Direct Investment and Economic Growth: An Increasingly Endogenous Relationship*, *World Development*, Vol: 33, Issue: 3, pp. 393-407;
- [29] **Lyold, Peter John, (1998),** *Globalization and Competition Policies*, *Weltwirtschaftliches Archive*, Vol. (134) 2, 1998, pp.161-185.
- [30] **Madalla, G.S. and Shaowen, Wu, (1999),** *A Comparative Study of Unit Root Tests with Panel Data and a New Simple Test*, *Oxford Bulletin of Economics and Statistics*, Vol. 61, pp. 631-652;
- [31] **Mark, Nelson C. and Donggyu, Sul, (2003),** *Cointegration Vector Estimation by Panel DOLS and Long-Run Money Demand*, <http://www.nber.org/papers/t0287.pdf>, (Access Date: 01.05.2011);
- [32] **McCoskey, Suzanne K. and Chihwa, Kao, (1998),** *A Residual-Based Test of the Null of Cointegration in Panel Data*, *Econometric Reviews*, Vol. 17 (1);
- [33] **Moon, Roger Hyungsik and Benoit, Perron, (2003),** *Omitted Proofs of Testing for a Unit Root in Panels with Dynamic Factors*, USC Center for Law Economics and Organization Research Paper, No. C03-10;

- [34] **Noy, Ian. and Tam, B. Vu, (2007), *Capital Account Liberalization and Foreign Direct Investment*, *The North American Journal of Economics and Finance*, Vol. 18, pp.175-194;**
- [35] **Pedroni, Peter, (1995), *Panel Cointegration; Asymptotic and Finite Sample Properties of Pooled Time Series Tests, with an Application to the PPP Hypothesis*, *Working Paper Series in Economics*, Vol. 95 (013), Indiana University;**
- [36] **Pedroni, Peter, (1998), *On the Role of Cross Sectional Dependency in Panel Unit Root and Panel Cointegration Exchange Rate Studies*, *Working Paper Series in Economics*, Indiana University.**
- [37] **Pedroni, Peter, (1999), *Critical Values for Cointegration Tests in Heterogeneous Panels with Multiple Regressors*, *Oxford Bulletin of Economics and Statistics*, Vol. 61, pp. 653–670;**
- [38] **Pedroni, Peter, (2004), *Panel Cointegration; Asymptotic and Finite Sample Properties of Pooled Time Series Tests, with an Application to the PPP Hypothesis*, *Econometric Theory*, Vol. 20, pp. 575–625;**
- [39] **Pesaran, M. Hashem, (2003), *A Simple Panel Unit Root Test in the Presence of Cross Section Dependence*, *CWPE 0346*, pp. 1-24;**
- [40] **Philips, Peter C.B. and Donggyu, Sul, (2003), *Dynamic Panel Estimation and Homogeneity Testing Under Cross Section Dependence*, *Econometric Journal*, Vol. 6, pp. 217-259;**
- [41] **Rodriguez, Carlos and Ricardo, Bustillo, (2011), *A Critical Revision of the Empirical Literature on Chinese Outward Investment: A New Proposal*, *Panaeconomicus*, Vol: 58, Issue: 5, pp. 715-733;**
- [42] **Sunal, Seckin and Elcin, Aykac, (2005), *Türk İmalat Sanayiinde İstihdam, İhracat ve Kapasite Kullanım Oranı İlişkisi: Panel Koentegrasyon*, *7. Ekonometri ve İstatistik Sempozyumu*, İstanbul;**
- [43] **UNCTAD, (1998), *World Investment Report 1997, Transnational Corporations Market Structure and Competition Policy*, United Nations, New York;**
- [44] **Xu, B. (2000), *Multinational Enterprises, Technology Diffusion, and Host Country Productivity Growth*, *Journal of Development Economics*, Vol: 62, pp. 477-493;**
- [45] **Westerlund, Joakim - David, Edgerton, (2005), *Panel Cointegration Tests with Deterministic Trends and Structural Breaks*, No.42, Department of Economics, Lund University;**
- [46] **World Databank, databank.worldbank.org, (Access Date: 01.05.2011).**
- [47] **Wu, Yangru, (1996), *Are Real Exchange Rates Stationary? Evidence from a Panel Data Test*, *Journal of Money Credit and Banking*, Vol. 28, pp. 54-63.**