

THE CAUSALITY RELATIONSHIP BETWEEN ECONOMIC GROWTH AND FOREIGN DIRECT INVESTMENT IN TURKEY*

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ÖZET

Bu çalışmanın amacı, özellikle 1980 sonrasında sermaye akımlarına serbestlik getiren Türkiye ekonomisindeki doğrudan yabancı yatırım ve ekonomik büyüme arasındaki nedensellik ilişkisini ortaya koymaktır. Bu amaçla büyüme ve doğrudan yabancı yatırım arasındaki nedenselliğin varlığı ve yönü ile ilgili hipotezleri test etmek için Granger nedensellik analizi kullanılmıştır. 1992:1 ve 2006:3 dönemini kapsayan 3 aylık verilerin kullanıldığı bu çalışmada, Türkiye’de doğrudan yabancı yatırımlardan ekonomik büyümeye doğru bir nedensellik bulunmuştur. Yani doğrudan yabancı yatırımlar ile ekonomik büyüme arasında tek yönlü bir ilişki vardır ve bu ilişkinin yönü doğrudan yabancı yatırımlardan ekonomik büyümeye doğrudur.

Anahtar Kelimeler:Doğrudan Yabancı Yatırım, Ekonomik Büyüme, Granger Nedensellik Analizi

ABSTRACT

The aim of this study is to explore the causality relationship between Foreign Direct Investment and economic growth in Turkey, which has liberalized foreign capital inflows especially after 1980s. Granger causality analysis was used in order to test the hypotheses about the presence of causality between Foreign Direct Investment and Economic Growth. The study, which used the quarterly data covering the period between 1992:1 and 2006:3, showed causality relationship from Foreign Direct Investment to Economic Growth in Turkey. In other words, there is a one-way relationship between Foreign Direct Investment and Economic Growth and the direction of this relationship is from Foreign Direct Investment to Economic Growth.

Keywords: Foreign Direct Investment, Economic Growth, Granger Causality Analysis

I. INTRODUCTION

Neoliberal policies as the dominant policies in today’s world necessitate the presence of foreign capital more than ever. Today’s developing economies, which take economic growth and development as the ultimate goal but do not have sufficient domestic capital and savings, try to do their best to attract foreign capital. Among these efforts are some legal arrangements; especially deregulation.

As the focus of attention from almost all countries as a result of globalization trends all over the world, foreign capital investments are generally classified into two groups in the literature;

- i. Foreign Direct Investment (FDI): the investments made directly as technological support and the establishment of new factories
- ii. Foreign Portfolio Investment (FPI): investments (except for foreign direct investments) made through passive holdings of securities such as

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foreign stocks, bonds, or other financial assets in a foreign country with a purpose of gaining the highest earning.

Although Foreign Direct Investments and Foreign Portfolio Investments are similar in general, there are some important distinctions between them. Portfolio investments are made by capital owners on securities, stocks and shares in another country in order to gain interest income and profit. Therefore; it is logical that they tend to invest on the fields with high interest income and profit. In addition, portfolio investments are more complex compared to Foreign Direct Investments.

Foreign Direct Investment occurs as the transfer of investable resources to other countries by individuals and companies. Therefore; unlike portfolio investment, it includes the transfer of intangible assets such as trademark, technology and business management as well as the authorization given to the investor to control the investment (Blomstrom and Kokko, (1998, pp.1-31). Among the common applications of Foreign Direct Investment are the establishment of new companies in high-profit business areas or the purchase of an already existing company in this foreign country. In such investments, the management and the control of the investment are mostly carried out by the foreigners.

According to the proponents of Foreign Direct Investment, the higher amount of foreign investment a country can attract, the bigger portion it can take from global production and income, therefore; its national wealth can increase. (Gürak, s.2003).

A lot of empirical studies have been done so far on the effects of foreign investment on economic growth. Although these studies sometimes present conflicting results, most of them show that foreign capital mostly affects economic growth positively. Waheed (2004, pp.1-36).

As of 1950s, Turkey has officially opened its doors to foreign capital. Although Foreign Investment Encouragement Law No. 6224 enacted in 1954 was an important step, due to economic and political instability, complex bureaucratic procedures, lack of qualified personnel and necessary regulation in those years, it was not until 1980 that sufficient foreign capital presence was observed in Turkey. Until 1980, the total foreign investment allowed in Turkey was even less than 250 million \$

In Turkey, foreign capital was encouraged thanks to the measures taken for economic stability in 1980 and the regulations such as "Foreign Capital Framework Decree". There has been considerable increase in foreign capital investments from this date on. Especially, some amendments made in Foreign Capital Law within the framework of exogenous growth strategy and the simplification of bureaucratic procedures and the implementation of realistic exchange rates have been effective in this increase. As a result, the average amount of FDI in Turkey per year between 1992 and 1997 reached to 700 million \$. Afşar (2004, s.95).

There was a similar tendency in between 1998-2003 compared to the previous period. However, 2001 was a special year for foreign capital inflow

when Foreign Direct Investment reached the highest level of all times; namely 3.2 billion \$ with an increase of 225 % compared to the previous year. The reason for such an increase (700 million \$ in 1999, 900 million \$ in 2000 and 3.2 billion \$ in 2001) was the second installment payment made by an Italian company who bought GSM license in 2000 in Turkey. However, there was a considerable decrease in foreign direct investments in 2002 and 2003 (1 billion \$ in 2002 and about 500 million \$ in 2003). As of 2003, foreign capital can be said to have an enormous growth. According to the Balance of Payments statistics published by Central Bank of Republic of Turkey, 2.847 million \$ foreign investment in 2004 increased up to 9.650 million \$ in 2005 with an increase of 239%. For 2006, this number is predicted to be approximately 12.500 million \$ (not officially declared yet).

The aim of this study is to investigate the causality relationship between Foreign Direct Investment and economic growth in Turkey as a result of financial liberalization applications observed as of 1980s.

The study follows a certain pattern; the next section deals with the relationship between Foreign Direct Investment and economic growth. Next, the model is described and results of the analysis are presented.

II. THE RELATIONSHIP BETWEEN FDI AND ECONOMIC GROWTH

The considerable increase in Foreign Direct Investment, especially in developing countries as of 1990s has led to emergence of some ideas that focus on the growth dynamics that are measured by Gross Domestic Product. As a result, the complex relationship between Foreign Direct Investment and economic growth resulted in a large number of empirical studies in developed and developing countries. When the theoretical aspects related to the relationship between Foreign Direct Investment and growth is examined, it can be seen that there are different ideas regarding such causality.

According to neoclassical growth model, Foreign Direct Investments cause medium-term temporary increases in economic growth in the countries where investments are made through increasing the amount of investment and its efficiency. On the other hand, new endogenous growth theories focus on the long-term growth as a function of technological processes. Therefore; they claim that Foreign Direct Investments can continuously increase growth rate through technology transfer and spillover effects. Nair-Reichert and Weinhold, (200, pp.154).

In their study, Borenzstein et al. (1998) has made a regression analysis which includes 69 developing countries and the data covering 1970-1979 fiscal years. The study in which endogenous growth model is used shows that technological development is very important for the economic growth of developing countries and Foreign Direct Investment affects economic growth positively. Borenzstein , De Gregorio and Lee ,(1998, pp.115-135).

De Mello, in his study conducted in 1999 through time-series analysis and panel data analysis, predicted the effects of Foreign Direct Investment on

capital accumulation and the increase in the amount of GDP in taking countries. De Mello (1999, pp.142).

Ericsson and Irandoust calculated the cause and effect relationships between FDI and economic growth by using the data collected from four OECD countries (Denmark, Finland, Norway and Sweden) in 2001. The researchers failed to find a causality relationship for Denmark and Finland and they claimed that the reason for this was the unique dynamics and nature of FDI in these countries. Ericsson, J. and Irandoust,(2001, s.122-132).

Regarding the relationship between FDI and GDP, Chakraborty and Basu conducted a study in which they calculated the causality between FDI and the increase in production. The results of the study, which is based on annual data between 1974 and 1996 fiscal years, showed the presence of causality from FDI to GDP rather than from GDP to FDI. Chakraborty and Basu, (2002, pp.1065).

Liu, BurrIDGE, and Sinclair, in 2002, predicted a longitudinal relationship between FDI, trade and the economic growth in China. By using the data for 1981-1997 fiscal years, they found a two-way relationship between FDI, economic growth and import. Liu, BurrIDGE and Sinclair, (2002, pp.1431-1440)

Similarly, Wang tried to explore which types of FDI's contribute economic growth considerably. Within the context of the study, he used the data between 1987-1997 fiscal years from 12 Asian countries and suggested that manufacturing FDI's have positive effect on economic growth and this positive effect is due to spillover effect of FDI's. Wang (2002).

Makki and Somwaru in their study, used the data from 66 countries classified in three decades (1971-80, 1981-90, 1991-2000). This study was an extended replication of Borenzstein's (1998) analysis in a way to include 1990s as well. The results showed no significant differences between these two empirical studies. It has been found that FDI's affect economic growth to a large extent together with foreign trade, human capital and domestic capital and, finally, FDI has direct or indirect positive effects on economic growth. Makki and Somwaru, (2004, pp.795-801).

Frenkel, Funke ve Stadtmann examined the mutual effects of pushing and pulling factors in developed countries with FDI outflows and developing countries with FDI inflows. 22 countries and 1990-2002 fiscal year data was used in this study and it was found that as the GDP increase rate is getting higher in developing countries with FDI inflows, FDI volume is also increasing. Frenkel, Funke and Stadtmann,(2004, pp.281-300).

The empirical evidence showing the causality between FDI and economic growth does not seem to be invalid for some countries. One of the studies on this issue was conducted by Joseph Magnus Frimpong and Eric Fosu Oteng-Abayie in 2006, who examined the causality between FDI and economic growth in Ghana based on the data covering 1970-2002 fiscal years. Causality test done for two different periods (1970-1983 and 1984-2002) produced conflicting results for the periods mentioned. Frimpong and Oteng-Abayie (2006).

III. METHOD

While conducting an econometric study, the direction of the causal relationship among variables is determined according to the information obtained from the theory. Classical regression analysis is based on the assumption that the method used is correct and the direction of the causality is determined in the model. Therefore; in this study Granger causality test will be used in order to test the hypotheses regarding the presence and the direction of causality between FDI and economic growth. The direction of causality determines the direction of the relationship among variables and Granger causality test has three different directions for these purposes:

a) One way causality: In a single equation model, Y is the dependent variable and X independent. Here, there is a causality relationship from X towards Y ($X \rightarrow Y$) Independent variable is the cause and causes a one-way effect on dependent variable, which shows the presence of one-way causality and the relationship is determined as ($Y \rightarrow X$)

b) Two-way causality: There can be a reciprocal effect between variables.

c) Lack of Causality: There is no relationship among variables, therefore no causality.

In order to apply Granger causality test, the series that belong to variables should be stationary. Therefore; it is necessary to make test for unit roots to examine whether the series for these two variables are stationary or not.

Macroeconomic time series are usually not stationary. Such series are made stationary by calculating logarithms or taking first or second differences. There are many tests used to determine stationary. In this study, the stationary of the variables will be tested by using Augmented Dickey-Fuller unit root test. Here, Akaike and Schwarz criteria are used while determining the appropriate lag length for delayed variable. The models suggested for this test are as follows:

$$\Delta Y_t = \gamma Y_{t-1} + \sum_{i=2}^m \beta_i \Delta Y_{t-i+1} + \varepsilon_t \quad (1)$$

$$\Delta Y_t = \alpha_0 + \gamma Y_{t-1} + \sum_{i=2}^m \beta_i \Delta Y_{t-i+1} + \varepsilon_t \quad (2)$$

$$\Delta Y_t = \alpha_0 + \gamma Y_{t-1} + \beta_t + \sum_{i=2}^m \beta_i \Delta Y_{t-i+1} + \varepsilon_t \quad (3)$$

Here, H_0 hypothesis are tested by comparing the τ value obtained in this test with the values calculated by Dickey-Fuller. Enders (1995, pp. 225). Null Hypothesis shows that series is not stationary and has a unit root ($H_0: \gamma=0$), and alternative hypothesis shows that series is stationary.

If the absolute value of calculated τ statistics is higher than the absolute value of critical values, we cannot reject the hypothesis which shows that series

is stationary. However, if this value is lower than critical value, time series is not stationary. Gujarati (1995, pp.719).

IV. FINDINGS

In this study, Granger causality test was applied in order to determine the presence of the relationship between two variables and its direction in Turkish economy between 1992 and 2006 fiscal years. When the results of the test displayed in the table below are examined, it can be seen that the series belonging to GDP is not stationary in level value and it becomes stationary only when first differences are taken.

Null Hypothesis: DGDP has a unit root		
Exogenous: Constant		
Lag Length: 4 (Automatic based on SIC, MAXLAG=10)		
	t-Statistic	Probability*
Augmented Dickey-Fuller test statistic	-2.655101	0.0880
Test critical values:	1% level	-3.546099
	5% level	-2.911730
	10% level	-2.593551

*MacKinnon (1996) one-sided p-values

When the same test is applied for FDI, it was found that this series was stationary when the first differences were taken (See the table below).

Null Hypothesis: DFDI has a unit root		
Exogenous: Constant, Linear Trend		
Lag Length: 0 (Automatic based on SIC, MAXLAG=10)		
	t-Statistic	Probability*
Augmented Dickey-Fuller test statistic	-9.988430	0.0000
Test critical values:	1% level	-4.124265
	5% level	-3.489228
	10% level	-3.173114

*MacKinnon (1996) one-sided p-values

Here, ADF unit root test was applied for fixed term options since the two series available here do not have a trend effect. Kadilar, (2000, s.33).

Following this procedure, Granger causality test was applied in order to determine the presence of the relationship among variables and its direction. Granger (1969, pp.424-438). Granger's causality test is carried out by using the following equations:

$$Y_t = \sum_{i=1}^m \alpha_i Y_{t-i} + \sum_{j=1}^m \beta_j X_{t-j} + u_{1t} \quad (4)$$

The Causality Relationship Between Economic Growth And Foreign Direct Investment In Turkey

$$X_t = \sum_{i=1}^m \lambda_i X_{t-i} + \sum_{j=1}^m \delta_j Y_{t-j} + u_{2t} \quad (5)$$

According to these equations, if the addition of the information about the variable X to the model contributes to the estimate of the variable Y, the variable X is the cause of the variable Y. *Tari, (2005, s.421)*. Here the equation 4 shows a causality relationship from X to Y (X → Y), and the equation 5 from Y to X (Y → X).

For the model presented above, Granger causality test is carried out as $H_0:\beta = 0$ and $H_1:\beta \neq 0$. When H_0 hypothesis is accepted, X is not the cause of Y. If H_1 hypothesis is accepted X is the cause of Y. If both hypotheses are rejected, this means there is a two-way causality between X and Y. If “F” value calculated during the testing of the hypothesis is lower than “F” table value, H_0 hypothesis is accepted as “there is no causality from X to Y. If “F” value is higher than the table value, H_0 hypothesis is rejected and it is said that there is causality from X to Y (X → Y). All these calculations are applied in the same way in order to test whether there is causality from Y to X.

The results of Granger test done for 2 Time lags between the two variables for which unit roots test is carried out are displayed in the table below.

Pairwise Granger Causality Tests			
Sample: 1992Q1 2006Q3			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Probability
DGDP does not Granger Cause DFDI	57	0.22236	0.80138
DFDI does not Granger Cause DGDP		3.34350	0.04305

According to Granger causality test done by using quarterly data between 1992 and 2006 in Turkey, economic growth (GDP) is not the cause of FDIs. In other words, there is no causality relationship from economic growth to FDIs. However, the results of the test show that FDIs in Turkey is the cause of economic growth. In other words, there is a one-way relationship between FDI and GDP and the direction of this relationship is from FDI to GDP.

V.CONCLUSION

This study examines the direction of the relationship between economic growth rate and FDIs by using Granger causality test.

According to the results of the study, there is no reciprocal causality relationship between economic growth and FDIs in Turkey. The direction of causality relationship is only from FDIs to growth rate and there is no causality relationship from growth rate to FDIs.

In other words, FDIs in Turkey is one of the factors affecting economic growth; however, the high or low economic growth rate does not have an effect on the presence of FDIs in Turkey.

This result clearly shows that large amount of FDI inflows in Turkey play a role in high growth rate observed in Turkey recently. As a result, it is necessary to continue to encourage FDI inflows so as to ensure constant economic growth in Turkey.

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The Causality Relationship Between Economic Growth And Foreign Direct Investment In Turkey

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