Effects of Foreign Direct Investment on Growth in Turkey

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Abstract

This study aims at analyzing the relationship between Foreign Direct Investment and Growth in Turkey by using Threshold Cointegration. As the studies about the impact of Foreign Direct Investment on growth are surveyed, it is seen that all of them uses liner methods except two. Starting point of these studies that use liner methods are the positive relationship between Growth and Foreign Direct Investment. As such, Yılmaz and Barbaros (2006) find positive relationship between Foreign Direct Investment and market size in Turkey between 1980 and 2001. Erdal and Tatoğlu (2002) reach the same conclusion for the period of 1980-1998 by using real Gross Domestic Product as a proxy for market size. Deichmann, Karidis and Sayek (2003) find positive linkage between Foreign Direct Investment and Gross Domestic Product in Turkey by using Conditional Logit Model. Bildirici and Bozoklu (2008) find positive relationship between growth and Foreign Direct Investment by using Markov Switching Vector Auto Regression method. Katırcıoğlu (2009) analyses the connection between Foreign Direct Investment and economic development by using Auto Regressive Distributed Lag and indicates that economic development causes net Foreign Direct Investment. Darrat and Sarkar (2009) state the affirmative effects of the Foreign Direct Investment on growth as expected theoretically. Bildirici, Bozoklu (2008) find positive relationship between growth and Foreign Direct Investment in Turkey. Bildirici, Alp and Kayıkçı (2010) state the existence of threshold effect for these variables. This study intends to research this effect in historical perspective, using Threshold Cointegration Analysis.

JEL codes: C32, F21, F43

1   Introduction

While foreign direct investments (FDI) take place in two ways as a complete new investment (Greenfield) by corporate combinations and corporate take over (Merger and Acquisition), each definition carries different implications in itself. The conflict between the preference of foreign companies and the social benefit of host country sets a stage for intervention. Host country prefers new investments rather than corporate combinations.

According to researches which study the effects of foreign capital on the economy, effect of foreign capital on the economy is positive. Studies, which approach to the relationships between FDI and economic growth from the positive perspective, analyze the subject in the context of positive externalities. According to these studies, FDI flow provides direct and indirect profits to the incoming country because it has important positive externalities. This theory can be evaluated in two perspectives. It will be seen that for the relationship between economic growth and FDI, the traditional approach is depended on *market imperfection approach* (MIA) or *industrial organization approach* (IOA). In the base of MIA approach there are market imperfections. According to IOA, transferring of technology, marketing skills, management and other sources beyond capital, are essential in the perspective of FDI effect. According to Kindleberber (1969) returns of others are also important and deterministic as well as capital.

When positive externalities are to be evaluated, which are the adoption of foreign technology and know-how, which can happen via licensing agreements, imitation, employee training, the introduction of new processes, and products by foreign firms; and the creation of linkages

between foreign and domestic firms, these are to enable country's national economy as modern by this way and to encourage economic growth, management and organization level, taxes, balance of payments, the encouragement of justice in income distribution. Blomstrom and Kokko (1998), Gorg and Greenway (2004), Lipsey (2002), Barba Navaretti and Venables (2004), and Alfaro and Rodriguez-Clare (2004) studies have focused on spillover channel of FDI.

The studies which question positive effect; Magnus Blomstom, Robert Lipsey and Mario Zejan (1994) emphasized that positive effect of FDI upon economic growth only appear in higher-income developing countries. Referring market growth, Bondera and White (1968), Schmitz and Bieri (1975), Swedenborg (1979), Lunn (1980), Dunning (1980), Root and Ahmed (1979), Kravis and Lipsey (1982), Nigh (1985), Schneider and Frey (1985), Culem (1988), Wheeler and Mody (1992), Sader (1993), Tsai (1994), Billington (1999), Pistoresi (2000) and Shamsuddin (1994) emphasized the existence of positive effects. Researches which study the effect on labor cost; while Caves (1974), Swedenborg (1979), Nankani (1979), Wheeler and Mody(1992) emphasize positive effect, Goldsrough(1979), Saunders(1982), Flam (1984), Schneider and Frey (1985), Culem (1988), Shamsuddin (1994), Pistoresi (2000) emphasized negative effects. Owen (1982), Gupta (1983), Lukas (1990), Rofle and White (1991), Sader (1993), Tsai (1994) found the effects as unimportant. Krevis and Lipsey (1982), Culem (1988), Edwards (1990), Pistoresi (2000) while emphasizing positive effects in openness matter, Schmitz and Bieri (1972) and Wheeler and Mody (1992) has specified the unimportance of the effect. When the effects have been researched upon exchange rate, while Edwards (1994) emphasizing positive, Caves (1988), Contractor (1990), Froot and Stein (1991), Bionigen (1995) and Bionigen and Freenstra (1996) emphasizig negative effetcs, Calderon and Rossel (1985), Sader (1991), Bloningen (1997) and Tuman and Emmert (1999) decleared the unimportance of effects. For the matters of taxes while Hartman (1984), Grubert and Muti (1991), Hines and Rice (1994), Loree and Guisinger (1995), Guisinger (1995), Cassou (1997), Kemsley (1998), Barrel and Paint (1998), Billington (1999) emphasize negative effects, Swenson (1994) found that the effects are positive. Luiz De Mello (1997), emphasized technological gap between the host and foreign country, and found that with the increase of technological gap the effect will be smaller (Spatz, Nunnenkamp;2004). When Abdul Khaliq and Ilan Noy (2007) studied the effect of FDI upon economic growth as sectoral, has found this effect to be positive on some parts of sectors and negative in most of sectors.

Some studies however, started to question the provision of the effects appearance. According to them; foreign companies may not always contribute to the appearance of effects to the country they come. As it does not provide technology transfer, effort may tend to turn to labor intensive manufacturing. The another important point, as Caves (1971, 1974), Saunders (1982), Gupta (1983), and Kumar (1987) emphasize in their studies, the arising rivalry in the case of specific production effect and the existence of imperfect competition market, is the loss of their advantages and the absence of countries' comparative advantages.

Some part of their studies emphasized the capacities of countries in benefiting from FDI externalities. These studies started to focus on the conditions of local circumstances. Within these local circumstances, development structure of financial markets, education level of country, the level of human capital investment has come to the forefront. Borensztein, De Gregorio, and Lee (1998) and Xu (2000) have axplained the effect of high technology of FDI upon economic growth with human capital investment. Alfaro et.all (2006), Durham (2004), and Hermes and Lensink (2003) tied the benefit of FDI which will provide to the country, to the developed financial markets. Balasubramanyam, Mohammed Salisu and David Sapsford (1996) has indicated that the openness to trade is the base in taking benefit from FDI. There is one important problem in the studies which emphasizes positive externalities between economic growth and FDI, that is the structural differences of foreign countries and calculation errors which are the usage of FDI stocks and flows interchangeably (Spatz, Nunnenkamp;2004).

In the this study, foreign capital in Turkish economy will be studied in historical perspective; the third part is consists of from the econometric theory while the last part includes the discussions of the results.

2   Foreign Investments in Turkish Economy

Foreign investments coming after the establishment of Turkish Republic, took place as corporation and these corporations were generally in food, cement and textile sectors. There are 94 companies that can be considered as foreign capital in 1924. 23 of them are in banking, 11 in electricity, 12 in manufacturing industry, 35 in trading and 6 in marine fields. In the year of 1929, the number of foreign investment companies increased to 114 and 30 billion dollars capital has entered country. For the reasons of the lack of foreign capital, it is important to indicate there are important effects of I. World War, 1929 depression and nationalization. Since 1928, Turkish Government nationalized 24 foreign investment companies. In 1933-45 21 companies were nationalized.

Important developments emerged after 1950 in order to encourage foreign capital which was in low levels because of the effects of II. World War, nationalization and etatism policies. In the eventuation of international monetary fund (IMF) and the participation of Turkey to the World Bank (IBRD), its taking benefit from Marshall Plan, monetary and military help from the USA, Turkish Republic tended to make legislative amendments to make easier for foreign capitals to invest in Turkey (Karluk; 2001). It has been observed that these amendments resulted in forming a restrictive frame for foreign investors especially in 1960s and 1970s (Şenses ve Taymaz; 2003). After 1980 many changes have been made in codes of practice of incentive policies with the aim of encouragement of FDI. By these changes foreign companies were enabled to enter all sectors and access the whole property rights (Öniş (1994) Erdilek (1982). Namely, for the purpose of encouragement of direct investment, foreign investment legislation has been rescheduled after 1980. In the years of 1986, 1992 and 1995, changes made in foreign investment framework decision, the legislation became more liberal and customs unions negotiated with the EU in 1996 and the international arbitration in 1999 inured (TCMB, 2000, 52). Nevertheless, expected increase could not be observed in the movements of foreign capital especially the increase awaited from direct investment. By the consideration of encouragement validated for foreign investment as well, native and foreign companies started to take benefit from encouragement practices equally. Namely, amendments and globalization in 1984 and 1990 periods have been essential in short term and portfolio investments. As a matter of fact, short term and portfolio investments produced important effects after 1990s. Such that, Turkish economy grown in the years when short term and portfolio investments were positive. As a result of inversion of the entrance of short term and portfolio investments by depression in 1994, economy has decreased in 6.1% (Uygur, 1999). Portfolio and short term investment, inversion of foreign capital can be seen as a cause of depression in 1999 and 2000-01 crises. When the effects of 2001 crises started to be partly overcome, foreign capital began to enter. FDI investment entered these years was very limited.

With the laws concerning international arbitration made in years 2000 and 2001, an ambiance was created where all obstacles for foreign investments were defeated. While in 2002 1,1 billion $ foreign capital entered the country, this amount was 2,8 billion $ in 2004 and this development turned to a remarkable leap and direct investments increased to 20 billion $ in 2006 and 21,9 billion $ in 2007.

Although a leap has been seen in direct investments between the years 2004–2008, these are the results of privatization rather than new investments. However, these rates were insufficient. As a matter of fact, when FDI dispersion is studied for the years 2005 and 2006, Turkey can be seen in 23rd and 16.th row in turn.

As it can be seen from the Table 1, without considering China and Hong Kong, we can see that industrialized countries took a share from FDI. Although with 9.80 billion $ capital Turkey

took place in 23rd row in 2005, and tough rose to 16th row in 2006 by 2010 billion $ capital, when privatizations are considered, it can bee seen that foreign capital investments as a form of new investments were lower and sufficient foreign capital could not be obtained.

When the features of direct foreign capital investments are studied;

The incoming direct investment is as predominantly owner's equity investment. Owner's equity investment which was 3352 billion $ in 2001, has increased to 21864 billion $ in 2007. When the periods 2009 October-May and 2010 October-May are studied, it can be seen that the values are 3861 and 2562 respectively.

When the numbers of firms are studied, an increase is seen after 2000. When there were total 4141 companies between the years 1954-1999 cumulatively, 3352 companies came in 2000, the increase of foreign investment 2004 also was seen here, 2095 companies which came in 2004 reached to 3530 in 2007. With the effects of crises of 2008 decrease continued also in 2009 and 2010 and 3337, 2987 and 1252 companies were established respectively. In two last years, the number of companies founded was decreased 10% and 55% when compared to previous year (Treasury, Turkish Republic:2010).

As per 2010 June, 20386 international investment companies branches were established, 4669 local investment companies participation to international investment took place. In total 24924 international investment companies are operated in our country. The inadequacy of the number is clear (Treasury, Turkish Republic:2010).

Most of the foreign direct capital has come to services sectors as 90.2% in 2005, 90.6% in 2006, 69.9% in January-October 2007. Share of production sector as 60.1% in 2003 persistently decreasing to 8% until 2006, increased to 23.6% in January-October 2007. The leading sector in capital outflow is manufacturing industry (89.7% in 2005, 76.7% in 2006). It decreased to 24% in January-October 2007 (DPT, 2008). Namely, when sectoral dispersion of foreign capital is studied, finance sector and manufacturing industry stand out.

It is seen that (Table 2) 25055 international firms operate in heading wholesale and retail trade, manufacturing industry, real estate renting and business operation sectors. While chemical materials and products are leading in international investment companies which operate in manufacturing industry, food products, beverages and tobacco manufacturing with textile products follows. However, number of firms operate in the manufacturing sector can still be considered as insufficient when compared to the service sectors.

Approximately 55% of foreign capitals are centered in Istanbul. Antalya takes second place by 12%, Ankara takes 3rd place by 6% and Izmir takes fourth place by 5%. It is not possible to mention about a broad based investment in Turkey.

When we look at dispersion of foreign capital according to the countries (Table 3), it is seen that particularly Netherlands, Germany, EU countries and USA take most shares. Asian countries fallow these countries.

As it can be seen when FDI is studied in Turkish economy; it is observed that the incoming investments are insufficient, that they are focused in Istanbul and display an increasing structure in services sector. Total of foreign direct investment in 2001-2007 period is 50.8 billion $. Total profit transfers are 10% of direct investments. While this rate is 58% when profit transfer was in its highest rate in 2004, it is seen that the same rate were decreased to 6-9% levels between the years 2005 and 2006, and increased to 10% in 2007.

3   Econometric Methodology

This study based on the usage of TAR cointegration method. The reason of the preference of this method is especially the thought of short term capital flows' openness to threshold effect. Two regimes threshold model can be written as γ threshold parameter,

$$\Delta x_t = \begin{cases} A_1 \bar{x}_{t-1}(\beta) + u_t, & w_{t-1}(\beta) \leq \gamma \\ A_2 \bar{x}_{t-1}(\beta) + u_t, & w_{t-1}(\beta) > \gamma \end{cases} \tag{1}$$

it can also be written as below.

$$\Delta x_t = A_1 \bar{x}_{t-1}(\beta) d_{1t}(\beta, \gamma) + A_2 \bar{x}_{t-1}(\beta) d_{2t}(\beta, \gamma) + u_t .$$

I(.) as an indicator function,

$$d_{1t}(\beta, \gamma) = I(w_{t-1}(\beta) \leq \gamma), \quad d_{2t}(\beta, \gamma) = I(w_{t-1}(\beta) > \gamma) \tag{2}$$

There are two regimes defined according to second equation's error term level. A1 and A2 coefficients' matrix are sheltered in these two regime dynamics. 2. model provides all parameters to be changed among these two regimes. In the case of only $0 < P(w_{t-1} \leq \gamma) < 1$ threshold effect exists, it will turn to linear coentegration in other cases. By being $\pi_0 > 0$ trimming parameter, it is constructed as it is defined in 3. equation.

$$\pi_0 \leq P(w_{t-1} \leq \gamma) \leq 1 - \pi_0, \tag{3}$$

4   Data and Econometric Results

The data used in the study has been taken from Turkish Statistical Institute (TUİK), Central Bank of Turkey (TCMB) electronic data delivery service. Growth data has been calculated as proportional increase in industrial production index. The scope of data is monthly between 1992:01 and 2008:12.

As a measurement of economic growth in this work, industrial production index was taken in terms of GDP growth. Although it is a common application to use GDP as a measurement concerning the works of relating FDI with economic growth, we will take action from industrial production index as the works of Bildirici, Alp and Kayıkçı(2010). There are two reasons for the usage of IPI in economic growth. The first one is that IPI representation can be the measurement of economic growth, because the correlation between IPI and GDP is found as 0.80. The second is that it is aimed at seeing the FDI effect on industrial production.

The works apply GDP variable, and also use linear models usually. The works conducted for Turkish economy, the works of Bildirici and Bozoklu (2008) and Bildirici, Alp and Kayıkçı (2010) are the works which use nonlinear methods. In this study, as in the study of Bildirici, Alp and Kayıkçı (2010) Threshold structure was attached to the main body of the empirical work and TAR Cointegration analysis was applied. By the application of TAR analysis, cointegration analysis will be analyzed by the values under and above threshold level.

	Test Statistic	1%	5%	10%
-D(FDI)-	-12.43681	-3.465977	-2.877099	-2.575143
-D(Growth)-	-5.389460	-3.467205	-2.877636	-2.575430

Table 4: Traditional Unit Root Test Results for FDI and Growth (ADF Test)

As it can be seen from the table, both foreign capital and growth series are integrated of order one. Lag lengths are determined according to AIC information criterion. (Information was previously given that the power of unit root tests might be low in the case of nonlinear structure, and it should be tested with Caner- Hansen (2001) TAR unit root tests which was developed for these cases).

The numbers in brackets in the estimated Threshold VAR models are Eicker – White standard errors. When the models are studied, parameter estimations are statically significant. For parameters γ, β scan size has been chosen as 300x300 and estimated co integration relationship as a result of likelihood function has been found as $v_t = G_{t-1} + 0,35 FDI_t$ and

estimated threshold value has been found as $\hat{\gamma} = -0,69$. Therefore, the first regime arises in the case when foreign capital shown 96% more decline rather than growth. In the estimated period, first regime comprises 20% of the observations and is called as extreme regime. Second regime comprises 80% part which above normal and called as typical regime. Second regime arises in the cases when the difference between foreign capital and growth decreases less than 69%, or becomes stable or decrease.

First regime "extreme regime" $G_t \leq -0,35 FDI_t - 0,69$

Second regime "typical regime" $G_t > -0,35 FDI_t - 0,69$

Estimated VAR model,

$$\Delta G_t = \begin{cases} \begin{aligned} -0.196 - 0.398 v_{t-1} + 0.1298 \Delta G_{t-1} + 0.083 \Delta G_{t-2} + 0.343 \Delta G_{t-3} - 0.039 \Delta FDI_{t-1} + 0.846 \Delta FDI_{t-2} + 0.043 \Delta FDI_{t-3} + u_{1t}, \quad v_{t-1} \leq -0,69 \\ {\scriptstyle (0,453) \quad (0,187) \quad\quad (0,202) \quad\quad (0,058) \quad\quad (0,0193) \quad\quad (0,052) \quad\quad (0,216) \quad\quad (0,048)} \\ 0.458 - 0.315 v_{t-1} - 0.358 \Delta G_{t-1} + 0.0008 \Delta G_{t-2} + 0.103 \Delta G_{t-3} - 0.016 \Delta FDI_{t-1} + 0.1888 \Delta FDI_{t-2} - 0.021 \Delta FDI_{t-3} + u_{2t}, \quad v_{t-1} > -0.69 \\ {\scriptstyle (0,148) \quad (0,074) \quad\quad (0,088) \quad\quad (0,023) \quad\quad (0,0975) \quad\quad (0,0206) \quad\quad (0,068) \quad\quad (0,015)} \end{aligned} \end{cases}$$

$$\Delta FDI_t = \begin{cases} \begin{aligned} -1.273 - 3.66 v_{t-1} - 0.617 \Delta G_{t-1} - 0.698 \Delta G_{t-2} + 0.282 \Delta G_{t-3} - 0.348 \Delta FDI_{t-1} + 0.879 \Delta FDI_{t-2} - 0.221 \Delta FDI_{t-3} + u_{1t}, \quad v_{t-1} \leq -0,69 \\ {\scriptstyle (1,448) \quad (0,431) \quad\quad (0,707) \quad\quad (0,159) \quad\quad (0,544) \quad\quad (0,173) \quad\quad (0,765) \quad\quad (0,133)} \\ 0.933 - 0.661 v_{t-1} + 1.117 \Delta G_{t-1} - 0.531 \Delta G_{t-2} + 1.413 \Delta G_{t-3} - 0.487 \Delta FDI_{t-1} + 0.253 \Delta FDI_{t-2} - 0.299 \Delta FDI_{t-3} + u_{2t}, \quad v_{t-1} > -0.69 \\ {\scriptstyle (0,654) \quad (0,293) \quad\quad (0,331) \quad\quad (0,119) \quad\quad (0,440) \quad\quad (0,133) \quad\quad (0,286) \quad\quad (0,112)} \end{aligned} \end{cases}$$

When the equations are analyzed, it can be seen that in the first regime which observation values comprise 20% and called as extreme regime, error correction mechanism operates in the first equation and it was insignificant in the second equation. In second regime, it can operate in both equations. Thus, it is concluded that obtained co integration relationship is valid for both regimes.

5   Conclusion

In this study, it was   analysed the relationship between Foreign Direct Investment and Growth in Turkey by using Threshold Cointegration The relationship shows as a result of analyzing the period of 1992:01-2008:12 that, in the cases in which foreign capital decrease above 70%, there will be 35% decrease in growth and this is a quite remarkable decline.

Annex

Country	2005	Country	2006
1-England	193,7	1-England	175,4
2-U.S.A.	101	2-U.S.A.	139,5
3-France	81,1	3-France	81,1
4-China	72,4	4-China	72
5-Netherlands	41,6	5-Netherlands	69,5
6-Germany	35,9	6-Germany	69
7-Belgium	35,9	7-Belgium	42,9
8-Hong Kong	33,6	8-Hong Kong	42,9
9-Canada	28,9	9-Canada	39,2
10-Spain	25	10-Spain	29,3
23-Turkey	9,8	16-Turkey	20,1

Table 1. FDI Shares in the World (Billion $). *Source: Under secretariat of Treasury, Turkish Republic*

	1954-2004	2005	2006	2007	2008	2009	1954-2010 June
	Cumulative						Total
Agriculture, hunting, fishing and forestry	131	34	42	49	53	60	387
Mining and quarrying	138	50	48	82	91	71	510
Manufacturing	1937	400	441	497	471	384	4311
Manufacture of food products and beverages	233	39	43	38	38	49	481
Manufacture of textiles	242	66	50	49	21	18	452
Manufacture of chemicals and chemical products	232	37	39	58	48	39	483
Manufacture of machinery and equipment	145	27	54	46	46	24	353
Manufacture of motor vehicles, trailers and semi-trailers	141	21	17	23	21	18	242
Other Manufacturing	944	210	238	283	297	236	2298
Electricity, gas and water supply	89	9	42	75	117	132	514
Construction	338	312	404	477	372	302	2331
Wholesale and retail trade	3048	708	752	808	791	933	7491
Hotels and restaurants	710	162	194	207	220	174	1746
Transport, storage and communications	691	222	266	284	292	268	2172
Real estate, renting and business activities	658	487	660	828	675	476	4002
Other community, social and personal service activities	331	167	226	223	255	187	1294
TOTAL	8192	2551	3075	3530	3337	2987	25055

Table 2. FDI dispersion According to the Sectors. Source: Under secretariat of Treasury, Turkish Republic

	1954-2004	2005	2006	2007	2008	2009	1954-2010 June
	Cumulative						Total
European Union (27)	4182	1513	1926	2027	1770	1423	13417
Germany	1405	462	540	557	584	513	4256
The Netherlands	652	189	257	249	277	146	1842
United Kingdom	536	297	453	436	251	205	2256
Other European Countries	1589	565	676	785	658	559	5063
Other European Countries (Exclude EU)	981	311	356	471	528	431	3305
Africa	146	52	42	48	50	66	448
North America	496	104	132	160	142	148	1241
U.S.A.	453	90	111	127	124	116	1071
Canada	43	14	21	33	18	32	170
Central-South America And	54	14	11	20	12	17	134

Caribbean						
Near and Middle Eastern Countries	1657	375	396	492	564	639	4464
Azerbaijan	177	54	82	118	131	168	792
Iraq	249	56	70	107	86	106	719
Iran	540	118	104	103	140	173	1308
Other	691	147	140	164	207	192	1645
Other Asian Countries	574	159	163	271	229	239	1753
China	191	30	24	41	44	43	392
South Korea	74	16	13	23	13	21	167
Other	309	113	126	207	172	175	1194
Other Countries	102	23	49	41	42	24	293
TOTAL	8192	2551	3075	3530	3337	2987	25055

Table 3. FDI dispersion According to the Countries. Source: Under secretariat of Treasury, Turkish Republic

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