THE IMPACT OF FDI, EXPORT, ECONOMIC GROWTH, TOTAL FIXED INVESTMENT ON UNEMPLOYMENT IN TURKEY

Ismail AKTAR
Latif OZTURK
Nedret DEMIRCI

Kırıkkale University, TURKEY

Abstract

The impact of Foreign Direct Investment, export, economic growth and total fixed investment on unemployment in Turkey for the period of 1987-2007 was examined. Johansen cointegration technique was applied to determine long run relationship. The empirical findings suggest that there are two cointegrating vectors during the concerned period of time in Turkey.

Introduction

As the globalization spreads out in the world, some countries try to benefit of this. No doubt that globalization makes cheaper obtaining capital via foreign direct investment (FDI) that globalization makes happen. Turkey has also been interested in having FDI in order to improve its economic development. FDI can contribute to Turkey's foreign trade, industrialization, and human resources. The literature argues in two ways that FDI can create significant impact on countries` capital formation, international trade, economic growth and employment. On the other hand, some literature emphasizes that FDI has no contribution to economic growth or employment of the country.

This paper follows the Cheng's article about Taiwan (2006). We basically applied the same model to Turkey with some changes. As Cheng discusses in the article et al. (2006) some studies done regarding Taiwan. Cheng and Ku (2000) found that FDI does support the domestic industries and trade yet has no positive impact on employment. Grinols (1991) emphasizes that in order to have welfare gains the wages in new capital sectors must be relatively higher than the wages in the other sectors. Fang, Zeng, Zhu (1999) studied the effect of FDI on urban employment, labor income and national welfare. They utilized the Harris-Todaro economic model. They showed the conditions that as the FDI inflows, its impact on economic factors mentioned above.

69

Zhao (1998) investigated the relationship between FDI and unemployment and wage rates. He found that FDI reduces the unionized labor wage rate. When union concerns more about the employment than wages, then FDI reduces the unionization rate in unionized sector.

Bailey and Driffield (2006) focuse on the impacts of FDI, trade, technological development on skilled and unskilled workers in UK. They utilize the panel data in small business and contrast the findings with British industrial policy. They found skilled workers enjoy the advantage of FDI and trade, unskilled workers, on the other hand, are worse off due to the FDI and trade. At the end they conclude that UK might consider her industrial policy.

Barros and Cabral (2000) search whether there is a competition among the countries for attracting FDI: Their results suggest that FDI prefers to go to a country where there is high unemployment.

Braconier and Ekholm (2000) argue that capital inflows have an ambiguous impact on unemployment rate. It is so because the activities could be complementary or substitutability between foreign and domestic productions.

Eckel (2003) analyzes FDI effects on employment from the high wage country's perspective. Findings indicate that employment effect depends upon the substitution of domestic labor by foreign labor and cost savings. Hence, the impact of FDI on domestic employment relies on internationality of production and the mobility of capital.

Brady and Wallace (200) investigated the effect of FDI on employment and labor income in US for the period 1978-1996 under the spatialization theory. Their findings are consistent with the theoretical work that suggests FDI adversely effect the employment and labor income in US for the concerned period.

1. FDI, Export, Economic Growth And Unemployment In Turkey

Political climate in Turkey has been ups and downs since 1980. One party rule lasted almost 10 years in which Turkey really experienced radical reforms in economy and politics. Unfortunately, 1990s was coalition years and reforms could not continue. After the 2001 when the worst crises ever happened in Turkey, the early election brought one party rule again and EU oriented reforms accelerated one more time. Most of the macroeconomic variables showed the recovery of the Turkish economy apart from unemployment. The following paragraphs give some brief details about macroeconomic variables according to the Table 1.

Table 1: FDI (Foreign Direct Investment), GNP (Gross National Product), EX (Exports), TFI (Total Fixed Investment) and UR (Unemployment Rate)

Years (1987-2007)	FDI		GNP at current price		Exports at current price		TFI	UR
	Value (US$ billion)	Growth rate(%)	Value (US$ billion)	Growth rate(%)	Value (US$ billion)	Growth rate(%)	(% of GNP)	(%)
1987	239	41,0	87,73	14,74	10190	36,7	24.6	8,5
1988	488	104,2	90,97	3,69	11662	14,4	26.1	8,4
1989	855	75,2	108,68	19,46	11625	-0,3	22.4	8,6
1990	1005	17,5	152,39	40,22	12959	11,5	22.6	8,0
1991	1041	3,6	152,35	-0,03	13594	4,9	23.6	8,2
1992	1242	19,3	160,75	5,51	14715	8,2	23.4	8,5
1993	1016	-18,2	181,99	13,22	15345	4,3	26.3	8,9
1994	830	-18,3	131,14	-27,94	18106	18,0	24.4	8,6
1995	1127	35,8	171,98	31,14	21637	19,5	23.9	7,6
1996	964	-14,5	184,72	7,41	23225	7,3	25.0	6,6
1997	1032	7,1	194,36	5,22	26261	13,1	26.2	6,8
1998	976	-5,4	205,98	5,98	26974	2,7	24.3	6,9
1999	817	-16,3	187,66	-8,89	26587	-1,4	22.1	7,7
2000	1707	108,9	201,48	7,36	27775	4,5	22.7	6,5
2001	3374	97,7	144,61	-28,23	31334	12,8	18.9	8,4
2002	622	-81,6	181,89	25,78	36059	15,1	17.3	10,3
2003	745	19,8	238,05	30,88	47253	31,0	17.6	10,5
2004	1291	73,3	299,48	25,80	63167	33,7	18.3	10,3
2005	8538	561,3	360,88	20,50	73476	16,3	20.0	10,3
2006	16789	106,7	399,67	10,75	85535	16,4	21.0	9,9
2007	18420	8,4	488,96	22,34	107154	25,3	21.7	10,1

Table 1 shows foreign direct investment (FDI) and its growth rate, gross national product (GNP) at current prices and its growth rate, total export at current prices and its growth rate, total fixed investment (TFI) as percentage share of GNP and finally the rate of unemployment (UR) in percentage.

Even though there were some attempts to boost the FDI in Turkey, the significant amount had not occurred since 2001. From the historical point of view, the Foreign Investment Encouragement Act was passed in 1954. This law was replaced by better one in 2003. The new act does not require foreigners to take permission for the investment in Turkey. Republic of Turkey also obeys the International Law against confiscation of foreign investment. As Acikalin (2007) discusses that FDI began to inflow to Turkey after 1980 due to export led growth model. However, 1990s were missing years regarding FDI in Turkey. For instance, in 1985, FDI was only 99 million US dollars. Five years later it reached at 684 million US dollars. When we came to the year 2001 the FDI in Turkey jumped into 3,266 million US dollars. After that, FDI grew steadily until now. This value was 18,420 million US dollars in 2007 according to Turkish Treasury Department.

Although there has been significant improvement in FDI, Turkey has still very low portion of the total FDI in the world. During 1992-1997 Turkey's share was only 0.24

percent at average. When we compare Turkey with other developing countries, she could only receive around 1 percent share among them.

The composition of FDI in Turkey also reflects her foreign trade composition. Turkey's biggest trade partner is EU. This is also the case of FDI. 55 percent of foreign companies belong to the members of EU.

Turkey's export became an important subject after 1980. Before that time Turkey's policy was import-substitute economy. 1980s brought export-led growth model. For instance while Turkey's total export was only 2 billion US dollars in 1980, it reached at almost 13 billion US dollars in 1990, it became around 28 billion US dollars and finally it was more than 107 billion US dollars. No doubt export growth has been tremendous since 1980.

Total fixed investment (TFI) as of GNP's percentage share show that it was around 25 percent of GNP before the 2001 cries and it was less than 20 percent right after the crises and after that it started going up again above 20 percent during the concerned years. It has not reached at around 25 percent due to the tight monetary and fiscal policies. However, the composition of the total investment indicates that the share of private investment increases while the public investment decreases. This might imply that Turkish economy transforms herself from public sector to private sector oriented economy. For instance, public sector's share was 9.97 of GNP in 1987 and it went down to 5 percent of GNP in 2007. Conversely, private sector's share rose from 14.6 percent in 1987 to 16.7 percent in 2007.

The unemployment rate (UR) was always high for Turkey during the concerned period of time. It was around 8 percent till 2001 and after that it jumped to around 10 percent and persisted since then. Even though there has been steady economic growth in recent years, unemployment rate has not fallen at all. Unemployment is a great concern of the public and government.

2. Recent Literature

Since we fallow Cheng's article et al. (2006), it gives great detail of discussion. The author basically divides the literature into five categories. First one talks about the explanation of FDI could be economic growth and external trade. The second deals with the positive or negative relationship between FDI and export. The fourth one gives even more contradictory results that FDI and export have positive impact on economic growth in some research and have negative impact in other research. The fifth one basically analyzes the Okun's law. It concludes that there is a negative correlation between unemployment and economic growth in imperfect competition. Further discussion can be obtained from Cheng's article et al.(2006)

Taban and Aktar (2005) investigated the export-led growth hypothesis covering the data from 1923 to 2003. They investigate whether there exists any cointegration between export and economic growth using Johansen test technique. Even though the results did

not support the idea that export growth Granger causes the GDP growth in the closed economy (i.e. between 1923-1980) period they found a bidirectional causal relationship between the export growth and the GDP growth for only open economy period (i.e. after 1980) in the short-run.

Although the literature provides some useful relationship between economic growth and export or unemployment, it does not give the causal links between FDI, exports, economic growth, unemployment and total fixed investment based on a multivariate framework. This paper is also another attempt to see the link between FDI exports, economic growth, unemployment and total fixed investment in Turkey based on a multivariate framework. We utilize an impulse response function and variance decomposition to analyze the short-run dynamic response of the macroeconomic variable series mentioned above, and cointegrating test to determine whether there exists a long-run equilibrium relationship among variables.

3. Data And Methodology

We have five variables; foreign direct investment (FDI), gross national product (GNP) Export (EX) total fixed investment as of GNP share (TFI) and unemployment rate (UR). The data runs through 1987 to 2007. We chose this range due to the fact that FDI and export became an important subject for Turkey around that time. Particularly, FDI did not even play a considerable role in Turkish economy before 2000. Unlike Cheng (2006), we did not employ quarterly data due to the data restriction. The data come from the Department of Treasury, Central Bank, The State Planning Organization and Statistical Institute of Turkey. Since UR and TSS are in percentage term and others in level, we take the natural log of FDI, GNP and EX. This enables us to interpret the results more accurately.

In the VAR model all variables are explained by their lagged values and other variables lagged values.

The VAR of order *p* model can be expressed in matrix representation as follows:

$\ln Y_t = \Psi + \Theta_1 \ln Y_{t-1} + \ldots \Theta_p \ln Y_{t-p} + v_t; = 1, \ldots, N$ (1)

Using impulse response function and variance decomposition provides us short run dynamic relationship between FDI and other macroeconomic variables in the VAR equation. Each variable's response over time and other variables effects can be seen via impulse response function. Thus, we should plot the impulse response functions. The forecast error of variance decomposition analysis allows us to draw conclusion about the movement in sequence due to its own shocks versus shocks to other variables.

Before we apply to cointegrating test we should check whether each series is stationary or not. Thus, we utilize the unit root test of augmented Dickey-Fuller (ADF) test statistics. Dickey and Fuller (1979) explained that if the series is non-stationary the null hypothesis

representing a unit root cannot be rejected. Thus, we should take first or higher differencing to eliminate the unit root. Akaike's Information Criterion gives us the optimum lag-length.

In this study, Engle-Granger (1987) approach was used to determine the cointegration relation among the variables. Besides this approach, Johansen test results also are given in this study. The Johansen's approach uses maximum likelihood procedures to determine the number of cointegrating vectors among a vector of time series (Johansen, 1988; Johansen and Juselius, 1990).

4. Empirical Results

We start with checking whether our macro series are stationary by applying ADF test. The ADF test results for unit root with the levels and first differences of the variables are given in Table 2.

Table 2 Augmented Dickey-Fuller tests

	lnFDI	lnGNP	lnEX	TFI	UR
Levels of the variables					
t_T	-1.60	-1.64	-0.002735	-1.83	-1.57
First differences of the variables					
t_T	-3.75**	-4.50**	-3.29	-4.40**	-3.62*

Notes: Notation **, * denote significance at 5 percent and 10 percent respectively

Table 2 shows the ADF results. As it can be seen that we fail to reject the null hypothesis that all series contain unit root. Yet, when we take the first differences, all the series become stationary. Therefore, all the series are integrated of order one *I(1)*.

Since the variables are stationary and integrated order of one, we employ cointegration technique of Johansen et al. (1988) and Johansen and Juselius et al. (1990) to test whether there exist a long-run relationship among variables. Johansen's maximum likelihood method tests the null hypothesis that states there is no cointegration. The cointegrating ranks of the variables are tested using λmax statistic. The test result for cointegrating rank is reported in Table 3.

Table 3 Result of the cointegration tests (VAR lag=1)

Eigenvalue	H_0	H_1	l_{max} test	Critical value 1%(l_{max})
0.913	$r = 0$	$r \geq 1$	105.58*	76.07
0.779	$r \leq 1$	$r \geq 2$	58.98*	54.46
0.619	$r \leq 2$	$r \geq 3$	30.23	35.65
0.448	$r \leq 3$	$r \geq 4$	11.87	20.04
0.029	$r \leq 4$	$r \geq 5$	0.56	6.65

Estimated cointegrating vectors	UR	LNFDI	LNGNP	LNEX	TFI
	1	0	-19.56	12.09	2.06
			(15.66)	(9.50)	(1.99)
	0	1	-18.18	9.94	2.27
			(15.84)	(9.60)	(2.01)

* denotes significance at %1 level r indicates the number of cointegrating vectors
The optimal lag in the cointegrating test was selected by minimizing the Akaike information criterion
Numbers in parentheses are the standard error value

Table 3 shows the cointegrating test results. Since λmax (=105.58) is above the critical values (76.07) at 1 percent, we can clearly reject the null hypothesis stating there is no cointegration. Moreover, since the calculated λmax (=58.98) is above the critical values (54.46) at 1 percent, there are two cointegrating vectors in the system. However, we fail to reject the null hypothesis stating at least three cointegrating vectors. Therefore, we conclude that there are exactly two cointegration in the system. Furthermore, Eviews-3 also reports the normalized vector. The results indicate that all variables have significant impact on UR and LNFDI. However, export and total fixed investment have a sign not matching with the theoretical expectations and should have had negative sign. When we look at the relationship between LNFDI and LNGNP again we get a negative sign which is inconsistent with our theoretical expectation. Because it says as GNP rises, FDI goes down which should have been the opposite.

Since there are more than one cointegrating vector, we cannot utilize the Granger causality test in this study.

5. Conclusıon

This study investigates the various interrelationships between unemployment, foreign direct investment, economic growth, export, and total fixed investment for the period 1987 and 2007. We apply Johansen cointegration test to analyze the interrelationships. We find that there are two cointegrating vectors in the system, which indicates the long run relationship. Although all the variables affect the unemployment rate significantly,

export and total fixed investment had an inconsistent sign with theoretical expectation. However, GNP has a negative impact on unemployment rate.

References

Acikalin Suleyman (2007) "Time Series Analysis of Relationship between FDI in Turkey and Selected Macroeconomic Indicators" Unpublished Doctoral Dissertation March 2007 Anadolu University, Turkey

Bailey D., N. Driffield. (2006) "Industrial Policy, FDI and Employment: Still Missing a Strategy" Published online: 26 December 2006 Springer Science + Business Media, LLC 2007

Braconier H., and K. Ekholm (2000) "Swedish Multinationals and Competition from High and Low-Wage Locations" *Review of International Economics* 8, 448-61

Brady D., M. Wallace (2000) "Spatialization, Foreign Direct Investment, and Labor Outcomes in the American States, 1978-1996" *Social Forces*, Vol. 79(1) 67-105.

Carsten Eckel (2003) "Fragmentation, Efficiency-Seeking FDI, and Employment" *Review of International Economics* 11(2) 317-331

Chen TJ, Ku YH (2000) "The effect of foreign direct investment on firm growth: the case of Taiwan's manufactures." *Japan World Econ* 12:153–172

Dickey, D.A. and W.A. Fuller (1979), "Distribution of the Estimators for Autoregressive Time Series with a Unit Root," *Journal of the American Statistical Association*, Vol. 74, pp.427-431.

Engle RF, Granger CWJ (1987) "Cointegration and error correction: representation, estimation, testing". *Econometrica* 55:410–421

Johansen S (1988) "Statistical analysis of cointegrating vectors." *Journal of Economics Dynamics and Control* 12:231–254

Johansen S, Juselius K (1990) "Maximum likelihood estimation and inferences on cointegration with applications to the demand for money." *Oxford Bulletin Economics Statistics* 52:169–210

Michael Ka-yiu Fung, Jinli Zeng, and Lijin Zhu (1999) "Foreign Capital, Urban Unemployment, and Economic Growth" *Review of International Economics*, 7(4) 651-664, 1999

Zhao L. (1998) "The impact of foreign direct investment on wages and employment"

Oxford University Press 1998 *Oxford Economic Papers* 50 (1998), 284-301