Studying the Effect of Foreign Direct Investment on Economic Growth in Greater and Traditional Middle East Countries

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Studija efekta stranih direktnih investicija na ekonomski rast velikog i tradicionalnog Bliskog Istoka

ABSTRACT – *This article tries to study whether foreign investment in the Greater and Traditional Middle East leads to economic growth. We have selected 21 countries of this zone for the time period 1980-2008. Due to lack of endogenous relationship between variables, the two equations have been estimated separately. FDI affects economic growth directly and indirectly. Indirect effect means interaction term. Infrastructures and economic stability have a special significance in foreign investment attraction. Furthermore, oil extraction has a positive effect on foreign investment attraction and economic growth while technology gap has a negative effect on FDI and GDP variables.*

KEY WORDS: foreign direct investment, economic growth, greater and traditional Middle East; panel data

Introduction

After 1980's, developing countries practiced some policies for FDI attraction; policies such as giving subsides, decreasing tax, economic stabilization, etc... Neoclassical economics believes that increase of FDI leads to increase of GDP growth per capita. Therefore, due to importance of this criterion, most countries seek to attract FDI today. In the past, foreign investors were willing to give some advantages for establishing a site in host countries. But nowadays, everything has changed and it is the host countries which give advantages for FDI. However, while many studies indicate the positive effect of FDI on GDP, some other studies prove otherwise. Therefore, it seems necessary to conduct this test for the Greater and Traditional Middle East countries in order to find which hypothesis is true for the Middle East.

In this study, effect of FDI on economic growth of the Greater and Traditional Middle East countries has been studied. The difference of this study with other studies is in the statistical sample (Greater and Traditional Middle East) and study of oil extraction effect on GDP and FDI. Oil exporting countries have been considered as dummy variables. The other

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distinction of this study is its taking into consideration the indirect effect of human capital on GDP and FDI.

In a recent study of the literature, Hanson (2001) concludes that evidence that Foreign Direct Investment generates positive spillovers for host countries is weak. Aitken and Harrison's (1999) in Venezuela do not support the positive spillovers hypothesis. In a review of micro data on spillovers from foreign-owned to domestically owned firms, Gorg and Greenwood (2002) argued that the effects are mostly negative. Borensztein, De Gregorio, Lee (1998) and Xu., B., (2000) show that Foreign Direct Investment brings technology, which translates into higher growth only when the host country has a minimum threshold of stock of human capital. Lipsey (2002) takes a more favorable view from reviewing the micro literature and argues that there is evidence of positive effects.

Theoretical issues

Until commencement of the globalization process in 1980's, the developing countries did not have a positive belief on foreign investment and mostly believed that they had dropped out the imperialistic from the door but this policy (foreign investment) was trying to enter from the window. But from 1980's on, due to abundant advantages of foreign investment in economy, most of these countries not only changed their mind but also sought to attract foreign investment by offering attraction policies.

Economic growth is one of the indexes very important to all countries of the world and for growth of which the countries devise many special plans and policies since increase of economic growth indicates increase of social welfare and increase of the country's economic development in long term. In economics, many variables are effective on economic growth; for instance technology, physical capital, human capital, etc..

Meanwhile, foreign capital is one of the variables which bring the mentioned growth under its effect.

Foreign investment may affect economic growth in two direct and indirect ways. Its direct effect is that foreign investment increase the level of production, employment, added value and export. These factors directly increase GDP; for instance, employment increases the individual's income and this income increment is directly calculated in GDP. Likewise is for added value and export. On the other hand, foreign investment increases GDP indirectly as well; for instance, transition of technology, knowledge and know-how through license, imitation and job training. Besides, externalities, technology spillover, human capital formation, efficiency and productivity are the factors which indirectly increase GDP in economic growth.

In regard to the relationship between FDI and economic growth, it is believed in neoclassical economics that FDI only have effects on the level of GDP per capita Y_t/POP_t and not on the rate of economic growth $Y_t - Y_{t-1} / Y_{t-1}$. It means that FDI is not the economic growth engine in long term. In contrast, in the modern theory of economic growth it is believed that FDI affect the level of production per capita and economic growth (Nuzhai Falki, 2008).

Although many of the theories indicate that FDI results in economic growth through some factors such as transition of technology, technology spillover and increase of

productivity, there are other theories which take opposite position. The later theories forecast that FDI is harmful to resource allocation at presence of preexisting trade, price and other financial disorders and it decreases economic growth (Boyd and Smith, 1992). This case is mostly observed in developing countries. But the main problem of such countries may be in their weak economic structure; for instance, improper infrastructures, weak human capital, traditional and old technology, etc., which does not provide the capability required for attracting advanced technology and knowledge.

Methodology

Heterogeneous unit root test

To conduct co-integration test for the panel data like time series data it is necessary to perform stationarity test. Of course, it should be taken into consideration that panel unit root test has higher power than time series unit root test.

In order to consider unit root in panel data, the following autoregressive model can be used:

$$Y_{it} = \rho_i Y_{it\text{-}1} + \delta_i X_{it} + \varepsilon_{it} \tag{1}$$

where i = 1, 2, …, N indicates the countries and t = 1, 2, …, T stands for time. X_{it} indicate the exogenous variables, ρ_i indicates autoregressive coefficient, and ε_i is the error term. If $P_i \leq 1$, $\forall_i$, the considered series is stationary , and if $P_i = 1$, y_i has unit root. LLC, BRT and Hardi unit root tests suppose that $\rho_i = \rho$, $\forall_i$. In this scenario, $Y_{it\text{-}1}$ coefficient is used for all homogeneous cross -section. But IPS and Fisher tests are conducted with supposition of heterogeneous coefficient meaning ρ_i (Costantini, Martini, 2010).

Since the economic structures of the Greater Middle East countries are independent from each other, we use IPS test.

Im, Pesaran test for every sample of cross- section data is as follow:

$$\Delta y_{it} = \alpha_i + \beta_i y_{it-1} + \sum_{j=1}^{p_i} \rho_{ij} \Delta y_{it-j} + \varepsilon_{it} \tag{2}$$

where ρ_i is the number of lags in ADF regression.

The zero and alternative hypotheses are as follow:

$$H_0 : \beta_i = 0, \ \forall_i \tag{3}$$

$$H_1 : \begin{cases} \beta_i = 0 \ \ for \ \ some \ i's \\ \beta_i \prec 0 \ \ for \ \ at \ least \ one \ i \end{cases}$$

Model

The model selected for studying the effect of FDI on economic growth is the model developed by Alfaro et al., (2004), Durham, (2007), which is

$$Y_{it} = \beta_0 + \beta_1 Y_{it-1} + \beta_2 FDI_{it} + \beta_3 HUM_{it} + \beta_4 X_{it} + \varepsilon_{it} \text{ (1)}$$ (4)

where i is the country's index, t is the time index, Y in the logarithm of real GDP per capita, FDI is foreign direct investment, HUM is human capital and X is the vector of other variables which have effect on economic growth including inflation, infrastructure (telephone line), capital formation, population growth, technology gap, dummy variables or interactions.

Technology gap is $GAP_{it} = Y_i^{max} - Y_{it} / Y_{it}$ where GDP per capita of Iran country has been considered as the maximum GDP. Inflation can be a proxy for economic stability (Barro and Sala-i-Marin, 2004, P.520). Number of telephone lines has been used as infrastructure proxy. The coefficients of human capital, infrastructure, and fixed capital formation are expected to be positive since these variables attract foreign investment.

Since we consider the model to be endogenous, the following equation indicates the effect of growth on FDI:

$$FDI_{it} = \alpha_0 + \alpha_1 Y_{it-1} + \alpha_2 FDI_{it} + \alpha_3 HUM_{it} + \alpha_4 X_{it} + \mu_{it}$$ (5)

Results and data

Data

The data set includes 21 countries of Greater and Traditional Middle East throughout the period 1980-2008.

The data required for FDI has been collected from UNCTAD, IMF and World Investment Report. The national accounts data such as growth per capita and inflation has been collected from Growth Data Resources. Number of telephone lines, human capital, population, etc., have been collected from UNDATA, WDI, UNdata and the World Bank Group.

The reason why we have selected the Middle East countries as samples is that the economic structure of such countries is almost similar and they are among developing countries. The mentioned time period has been selected because of accessibility to data. To study the effect of oil extraction on attraction of foreign investment and economic growth, we consider two groups of dummy variables: first, oil exporting countries member of the Middle East and the non oil exporter countries. If a country is included in the oil exporting group, the dummy variable is equal to one for this country and equal to zero for other countries.

Empirical results

Having conducted Durbin-WU-Hausman endogenous test (augmented regression test which is referred to as DWH), we came to the conclusion that the data related to the time period 1980-2008 had not been endogenous; but FDI and GDP variables were endogenous for the time period 1983-2008; it is why we have selected the first period as the time period, but with the single equation.

Unit root

Before estimating panel data model, unit root test is to be performed for variables' stationarity and avoiding spurious regression. In this study, we use Im, Pesaran, Shin test for unit root, the results of which have been presented in table (1).

Table 1. Unit root test of panel data(1980-2008)

GDP growth	FDI inflow	POP growth	Inflation rate	Telephone line	HUM capital	CAP growth	GAP technology
-2.99*	-8.13*	-4.32*	-3.81*	-2.39*	-4.32*	3.13*	5.13*

* The variables are stationary at the 5% confidence level

The results indicate that all variables are stationary at the 5% confidence level and we are not led to spurious regression. Hausman test is used for selecting fixed effects and random effects model and indicates that random effects model is acceptable.

The results related to equation (1) have been presented in table (2). Column 1 has considered all variables except FDI. All variables' sign accord with the theory. Increase of physical and human capital leads to increase of economic growth. Technology gap causes decrease of national production. Coefficients of inflation and telephone variables are not significant. Negative coefficient of population indicates that GDP per capita is decreased by population increase.

In the second column, we also add FDI to the model. Results indicate that FDI has positive effects on economic growth. In column 3, we enter dummy variables which indicate the effects of oil on GDP. Oil export increases economic growth. In column 4, we have entered the interaction of FDI ×human capital which indicates the positive effect of this variable on economic growth.

Table 2. GDP growth is dependent variable (1980-2008)

	(1)	(2)	(3)	(4)
Constant	4.2	3.13	5.13	11.21
	(1.3 1)	(1.12)	(0.37)	(2.01)**
Population growth	-0.29	-0.36	-0.38	-0.42
	(-2.32)**	(-1.12)	(-2.11)**	(-2.13)**
Capital growth	0.31	0.21	0.51	0.72
	(8.21)***	(4.21)***	(4.44)***	(5.32)***
Human capital	1.21	0.29	0.49	0.33
	(2.32)***	(6.31)***	(5.49)***	(3.92)***
Telephone line	0.53	0.36	0.42	0.51
	(0 .32)	(0.71)	(2.04)**	(0.72)
Inflation	0.32	0.41	0.37	0.21
	(0.18)	(0.19)	(2.09)**	(0.13)
Technology gap	-0.19	-0.34	-0.37	-0.12
	(2.14)**	(-3.71)***	(-3.90)***	(-0.12)
FDI		0.071	0.18	0.03

	(4 .37)***	(5.31)***	(2.01)**
Oil exporting dummy		0.35	0.32
		(2.29)**	(0.71)
Non oil exporting dummy		0.41	0.51
		(0.35)	(0.32)
FDI x human capital			0.51
			(2.01)**

** Significant at the 5% level;
*** Significant at the 5% level
Values in parentheses are t-statistics

Table 3 presents the results of the second equation. GDP growth has a positive and significant effect on FDI since foreign investors seek a high purchase power for selling their products. Inflation rate and technology gap have negative effects on FDI flow. Availability of human capital is considered to be a positive factor for foreign investors. Likewise it is for the interaction of GDP and human capital. Equation estimation indicates that availability of oil is a proper motivation for doing investment.

Table 3. FDI inflow is dependent variable (1980-2008)

	(1)	(2)	(3)
Constant	-3.27	-6.39	-9.25
	(-3.21)***	(-4.21)***	(-4.37)***
GDP growth	0.012	0.09	0.71
	(4.37)***	(4.55)**	(3.35)***
Human capital	0.04	0.15	0.21
	(2.01)**	(2.22)**	(3.35)***
Inflation	-0.12	-0.17	-0.35
	(-2.12)**	(-1.2)	(-2.01)**
Telephone line	0.32	0.53	0.81
	(2.01)	(2.90)***	(3.39)***
Technology gap	-0.39	-0.55	-0.77
	(-0.25)	(-2.08)**	(-0.35)
Oil exporting dummy		0.71	0.82
		(5.31)***	(4.51)***
Non oil exporting dummy		0.02	0.02
		(0.21)	(0.22)
FDI x human capital		0.35	
		(2.55)**	

** Significant at the 5% level
*** Significant at the 1% level
Values in parentheses are t-statistics

Conclusion

In this research we studied the effects of FDI on economic growth for the Greater and Traditional Middle East countries during the period 1980-2008. The test results indicate that the two variables GDP and FDI are endogenous only for the period from 1993 to 2008. Therefore, we have used two equations separately for the entire sample. This study indicates that there is a strong complementary relationship between GDP and its interaction with human capital and FDI. Likewise is for interaction of FDI with human capital and GDP. Effects of technology gap and inflation on FDI attraction are negative, meaning the investors select those countries for investment which have higher technologies and more stable economy. Oil exploitation has positive effects on GDP and foreign investment attraction since investors can easily reach an important raw material.

Policymakers should make clear policies with regard to the variables important for investors. Policymakers have to pay special attention to economic stability due to the fact that economic instability is a negative criterion for an investor. Due to the positive relationship between GDP and FDI as well as the relationship between FDI and technology and infrastructures, the increase of the later variables' level should be taken into account in host countries because promotion of technology and improvement of infrastructures attract foreign investment, and the FDI itself leads to increase of GDP and social welfare, a criterion sought by all economists.

* The **Greater Middle East** is a political term coined by the Bush administration to englobe together various countries, pertaining to the Muslim world. The countries are Turkey, Bahrain, Kuwait, Oman, Qatar, Saudi, United Arab Emirates, Iraq, Jordan, Lebanon, Syria, Iran, Egypt, Pakistan, Algeria, Mauritania, Libya, Morocco, Tunisia, Sudan, Somalia.

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APSTRAKT - *Ovaj rad pokušava da pruči da li strane direktne investicije u velikom i tradicionalnom Bliskom Istoku dovode do ekonomskog rasta. U radu su analizirane 21 zemlje u ovoj zoni u periodu od 1980-2008. godine. Zbog nedostatka endogenih veza između varijabli, dve jednačine su procenjivane odvojeno. Uticaj SDI na ekonomski rast direktno i indirektno. Indirektni efekat podrazumeva interakciju uslova. Infrastuktura i ekonomski stabilnost imaju poseban značaj za privlačenje stranih investicija. Osim toga, ekstrakcija ulja i ekonomski rast imaju takođe pozitivan efekat na privlačenje stranih investicija dok tehnološki nedostatak ima negativne efekte na SDI i GDP varijable.*

KLJUČNE REČI: strane direktne investicije, ekonomski rast, Velika Britanija i tradicionalni Bliski Istok, panel podataka