

# FDI determinants and oil effects on foreign direct investment: evidence from Islamic countries

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## Abstract

This paper investigates studying FDI determinants in Islamic countries. We have chosen a sample with 8 Islamic countries in the period 1985-2009. We have applied a balanced panel data model. Hausman (1978) test shows that we should use random effects model. The results indicate that economic growth has the most effect on FDI attracting. But, inflation rate, oil extraction and openness have a negative effect on attraction of FDI. For attraction of FDI, Islamic countries should control economic risk and should pay attention to economic growth.

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## 1 Introduction

The Western countries have propagated foreign direct investment for use of

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natural and human resources from World's countries. Therefore, before of globalization process developing countries have believed that foreign direct investment is a symbol of domination of developed countries. These countries believed that we fired out imperialism from door but, it come back from window. In these years, developing countries applied barriers to prevent foreign direct investment, but after years 1980s these countries recognized advantages of FDI and searched the solutions for FDI attraction even if, they granted points to multinational firms for this investment. After these years FDI has begun to rapid growth so that the growth of FDI has been more than the growth of export, import and GDP in the World. Economic theories indicate that investment is engine of economic growth but, developing countries have the problems for preparing of investment funds. One solution is borrowing from abroad but, there is a crisis from loan repayment. Therefore, nowadays FDI is the most option for capital preparing in these countries.

In 1990s, multinational firms' outputs from abroad have been 16% from World's total industrial output (Kravis and Lipsey (1998)). In this connection, countries members of Organization Islamic Conference (OIC) in the period 1983-1992 and year of 1996 have respectively economic growth with the rate of 3.7 and 5.5 percent; and in the period 1982-1987 to years of 1996 the FDI inflow share in these countries has consistently augmented as compared with all of the World. So that, this rate in the period 1982-1987 has been 4.6 and 1996 has been 5.5 (UNCTAD 2000). Therefore, we can find a positive relationship between economic growth and FDI.

UNCTAD (2004) indicate that over the period 1982-2002 OIC countries on the average have attracted 12 percent FDI inflow to developing countries. In this connection, the countries such as Malaysia, Turkey and Morocco have had the better situation. Nowadays, with due attention to FDI advantages developing countries have the competition for attraction of FDI. Thus recognition of FDI attraction factors helps these countries to foreign direct investment attraction. Purpose of this paper is studying of the FDI determinants in Islamic countries. Because oil extraction in oil exporting Islamic countries is an important variable, in the separated model we have studied oil extraction effect on FDI.

Chakrabarti (2001) has studied the relationship between FDI and the variables such as tax, wage, openness, exchange rate and economic growth and has shown that these variables influence foreign direct investment. Schneider and Frey (1985) have observed that FDI attraction in different regions has related to economic and political factors. The economic and political tranquility attract foreign direct investment. Anvarshah and Slemrod (1991) have studied tax important on FDI attraction in Mexico. They observed that FDI in Mexico is dependent of tax different between home and host countries. Ngowi (2000) have studied tax intensive effects on FDI in Tanzania and shown that tax intensive attracts foreign direct investment but, it decreases total revenue of government. Carlson and Hernandez (2002) Fontage (1999) and Russ (2007) have reviewed exchange rate fluctuation and stock market uncertainty effects on attraction of

foreign direct investment. Teseng and Zeberege (2002) have studied the impacts of factors such as openness and market size on FDI and observed that these variables attract foreign direct investment.

## **2 Determinants of FDI**

Classical and new theories of foreign direct investment are divided into two categories: Microeconomic theories which are based on the industrial economics and macroeconomic theories based on the capital cost. According to the microeconomic theories, multinational enterprises consider the firm direct development less expensive than the domestic trade in a foreign country. The following determinants are effective on foreign direct investment.

### **2.1 Trade**

Trade flow is also one of the factors affecting foreign direct investment. The export coefficient is negative if FDI and trade are substitute, and it is positive, if these two are in complementary. Considering the fact that the foreign direct investment in developing countries is often vertical investment type, and in this situation there is a complementary relationship between two variables, it is expected that the singe of these two variables be positive.

### **2.2 Market access and market size**

The term "market access" has attracted the attention of foreign direct investment researchers for many years. This factor is one of the most important determinants of foreign direct investment. Most of the countries possessing a fast growth in foreign direct investment benefit from an access to market and high GDP. When the host country market size reaches a special threshold, the foreign direct investment is increased. In deed, other variables such as trade openness, economic stability, tariff, tax, wage, etc... influence the foreign direct investment; however, the effect of these variables as compared with market size is trivial. The countries GDP is considered as a proxy for the market size and it is expected that a direct relationship is established between FDI and GDP.

### **2.3 Inflation**

The steady increase of prices level leads to the decrease in the value of domestic assets. Therefore, in order to maintain the real value of their assets,

investors and citizens prefer to change their optimum combination in favor of foreign assets (capital outflow). On the other hand, the increase of prices level leads to the decrease in net investment profit, and assets values and decreases capital inflow to the country. Inflation results in the increase of investment risk, decrease of the average expiry of commercial loans and the disturbance in information transferred through prices. The inflation is a sign of instability and lack of macro policies control and has negative relation with FDI flow.

## 2.4 Methodology and data

For surveying of FDI determinants in Islamic countries we have applied a panel data model. Since for certain Islamic countries there aren't required data, we decline our sample to 8 countries (Turkey, Yemen, Oman, Malaysia, Egypt, Pakistan, Algeria and Iran). We have also considered the period of research from 1985 to 2009, as a result of the same reason.

Dependent variable is foreign direct investment divided on population. FDI is foreign direct investment net inflows (U.S dollars at current prices and current exchange rates in millions. The source of data is UNCTAD's database for FDI. For normalization of FDI, following Kolstal and Villanger (2004) we can divide FDI on GDP of the considered country. But Harms (2002) believe that since it is expected independent variables affect GDP it is better that we apply the population for normalization of FDI. Therefore, our dependent variable is FDI/POP.

Independent variables are market size, openness, population growth, economic risk, economic infrastructures, extraction of oil (for a separated model) and dummy variable for financial crisis in Asia in the years 1997, 1998 and 1999. This crisis has begun from Thailand. Since this crisis covers more of these countries, we consider the effect of this variable for exporting oil countries.

The proxy for market size is GDP. This variable shows the largeness of host country. GDP reflects the country's demand for foreign goods. In all of the FDI models, this variable is almost applied and its effect mostly is positive and significant. BorensZtein et al (1998), Behname (2008, 2011a, 2011b), Ang (2008) and Akinlo (2004) have used this variable in their models.

For studying of trade effect on FDI we consider trade openness. It is import plus export divide on GDP( $X+M/DGP$ ). If trade and FDI be substitute, the sign of openness is negative and for the inverse case, it is positive. Asiedu (2002), Behname (2011a, 2011b) and Charkrabarti (2001) have studied this variable in their research. Inflation reveals economic risk, the countries that a high level inflation show a high level in economic risk then investors show a negative reflex to investment in the country of inflation possessor. Yamori (1998), Ang (2008) Biswas (2002) and Harms (2002) have surveyed inflation in their models.

Following Wheeler and Mody (1992) Kumar (1994), Yol and Teng (2009), Loree and Guisinger (1995) we have applied the number of fixed telephone lines

per 1000 persons as a proxy for economic infrastructure. Favorite infrastructure attracts foreign direct investment because investors are expected that inputs and outputs transfer easily. Of course, in certain research expenditures on transport were applied for proxy of infrastructure. Population growth is other variable that was applied in our paper. Imad et al (2006) and Lefilleur and Maurel (2010) have used this variable in their researches.

The source of variables above is World Development Indicators, and the variable of oil extraction come from Energy Information Administration. Likewise, we said our model is a balanced panel data as following:

$$FDI_{it} = \beta_0 + \beta_1 GDP_{it} + \beta_2 POP_{it} + \beta_3 INF_{it} + \beta_4 TEL_{it} + \beta_5 OPE_{it} + \varepsilon_{it}$$

where  $i$  applies for country and  $t$  for time. FDI is foreign direct investment divided on population, GDP is economic growth, POP applies for population, INF uses for inflation, TEL is telephone lines per 1000 persons and OPE is openness.

### 3 Results

Hausman test (1978) shows that we should apply the random effects model. The results have shown in Table 1.

The first, in the column 1.1 we have regressed GDP, INF, and POP on FDI. The results show that economic growth has a positive and significant effect on FDI, this coefficient is significant at 5% level. In this model, inflation has a negative and significant on attraction of FDI. The third variable is population that is insignificant.

In the column 1.2 we added the variable of OPE in the model. Here the variables of GDP, INF and POP are the same that the first column, but OPE has a negative and significant on FDI attraction, although this impact is poor but it shows that trade and FDI in Islamic countries is substitute. Since POP has not been significant in the third column we have deleted it and the results haven't shown very changes. But in this model substitute effect FDI and trade was strengthened. In the column 1.4 we have estimated all of the variables together. In the forth model the coefficients of GDP and INF are not significant then we can not interpret them.

Generally, in these specifications GDP has a positive a significant effect on FDI attraction; it means that a high market size is important for investors because they think can sell their outputs very easily, and because a high GDP shows a high purchasing power. Choi (2007), Billington (1999), Behname (2011a, 2011b), Wang and Swain (1995) and Wheeler and Mody (1992) have achieved the same results. These estimations reveal also a negative effect for economic risk or inflation. Inflation in host country shows that the economy is unstable and this instability decreases the motivation of investors for investing. Wheeler and Mody (1992), Holland and Pain (1998), Resmini, (2000) and Garibaldi et al (1999) in

our papers have obtained the same results.

Table 1: FDI determinants (random effects)  
Independent variable is FDI

	1.1	1.2	1.3	1.4
Const	0.901 (1.46)	1.694** (2.40)	2.48*** (4.45)	2.40** (2.11)
GDP	0.158** (2.01)	0.171** (2.20)	0.171** (2.20)	0.074 (0.08)
INF	-0.019** (-2.05)	-0.020** (-2.13)	-0.021** (-2.25)	-0.024** (2.40)
POP	0.241 (1.10)	0.174 (0.80)		0.083 (0.30)
OPE		-0.009** (-2.22)	-0.011*** (-2.49)	-0.01** (-1.97)
TEL				-0.001** (-0.45)
R <sup>2</sup>	0.09	0.22	0.19	0.17

Note: t-statistics are provided in parentheses.

\*, \*\* and\*\*\* represent significance at the 10%, 5% and 1% respectively.

The variable of population growth haven't any effect on FDI but also it result is just for Islamic countries. For example sen and Wheeler (1989) and Chidlow et al (2009) have shown that population growth rate has a positive and significant effect on FDI attraction.

The sign of trade in our specification is negative and significant. It means that FDI and trade in Islamic countries are substitute. But Mottaleb and Kalirjan (2010) and Bevan and Estrin (2000) have revealed that these variables are complementary. In Islamic countries economic infrastructure isn't important for FDI attraction.

For the second phase we have estimated the below model. In this model we survey the oil extraction effect on FDI attraction. In this model we have considered four exporting oil countries (Iran, Qatar, Saudi Arabia and Kuwait).

The model is based on fixed effect model. In the years 1997, 1998 and 1999 there was a crisis in Asian countries that have begun from Thailand, since we think this crisis affect Asian economies we added a dummy variable for this problem (for the years of crisis 1 and other 0).

$$FDI_{it} = 1.24 + 0.161GDP_{it} - 0.022INF_{it} + 0.013TEL_{it} - 0.02OPE_{it} - 0.02OIL_{it} - 0.001D_{97-99}$$

(2.16) (3.11) (-2.14) (0.98) (-2.01) (-2.14) (-3.11)

In the new model the oil extraction has a negative and significant impact on FDI. Because investors estimate that in the host countries there is a dependent between government income and oil sale. This dependency shows that with a sudden change in oil price, economic risk in these countries will increase. Economic crisis in the years 1997, 1998 and 1999 in Asian countries has a negative effect on FDI in our sample, because of increasing in economic risk.

## 4 Conclusion

The aim of article is studying of foreign direct investment determinants in Islamic countries. For this reason we have applied a panel data model for 8 Islamic countries over the period 1985-2009. Hausman test has revealed that we should use a random effects model. In the other hand, for surveying of oil extraction effect on foreign direct investment we have estimated separated model for 4 exporting oil countries.

The results reveal that economic growth rate have higher effect on foreign direct investment attraction, because after security for an investor the demand for the outputs is more important. Economic growth such as symbol of market size shows this issue, and then economic growth is very important for attracting of FDI for Islamic countries. On the other hand, economic risk (here inflation) has a negative influence on FDI, therefore this countries should control economic risk in their countries such as inflation, unemployment, exchange rate,... In our sample, economic infrastructure and population growth rate have not any impact on foreign direct investment. But the trade level decreases foreign direct investment because these variables are substitute, therefore Islamic countries could attract more foreign direct investment with decreasing of important.

With a separated study for Islamic and exporting oil countries we have conclude that oil extraction effect on foreign direct investment is negative, because these countries are dependent on oil sale and this dependency shows a high risk in these economies. With a high changing in World oil price, the economic volatilities will increase in these countries.

This research can be a motivation for more studies about FDI attraction in other region such as OPEC countries.

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