Jurnal
EKONOMI
PEMBANGUNAN
Kajian Ekonomi Negara Berkembang
Hal: 207 – 216

THE DETERMINANTS OF FDI FLOWS IN OIC COUNTRIES

Heri Sudarsono
Faculty of Economics, Universitas Islam Indonesia (UII)
E-mail: heri.sudarsono@gmail.com

Abstract

The objective of this study is to identify the determinants of foreign direct investment (FDI) in OIC countries. In order to undertake it, we perform an econometric model based on panel data analysis for OIC countries, consisting of 16 Asian OIC countries and 18 African OIC for the 1980-2000 periods. Some estimated coefficients have the expected signs and are statically significant, such as market size and openness. The estimated negative sign on the variables exchange rate capturers the effect alters the price for acquiring assets in the OIC countries. In this case of OIC countries exchange rate also depict that the exchange rate regime is by no mean neutral to FDI. Furthermore, the variables consumption prices index (CPI) positive by effect FDI for African and all OIC countries. The government consumption of OIC countries was not significant suggesting that such factor does not play a role in attracting foreign investment. Finally, the more open economies in OIC countries were more attractive to foreign capital flows, as expected.

Keyword: *FDI, OIC, openness, panel data*

INTRODUCTION

The definition of foreign direct investment (FDI) used by the United Nations Conference on Trade and Development (UNCTAD) is based on the definitions by the Organization for Economic Cooperation and Development (OECD) and the International Monetary Fund (IMF). FDI constitutes a long-term engagement of foreigners who make investment in fixed assets with the purpose of establishing a production capacity to make goods or produce services for sale at a profit. In this regard, FDI implies that the investor exerts a significant degree of influence on the management of the enterprise resident in the other economy. (UNCTAD, 2006).

The FDI is considered responsible for welfare increase in the host country due to advantages related to the introduction of innovation and new technologies, new managerial techniques, and development of additional skills (Caves, 1974; Perez, 1997), increased capital, job creation and improvement of working conditions, and the development of industrial sector in the host country (Haddad and Harrison, 1993; Markusen and Venables, 1999). Because of that, it can easily be understood why so many developing countries seek new ways to increase the FDI inflows. In order to design appropriate economic policies for the FDI attraction, one must first find the answer what motivates the investors to seek other markets or what the key determinants of the FDI are.

The importance of FDI for the development and growth of any economy is well documented in the economics literature. Addison and Heshmati (2003), Chan and Gemayel (2004), Razafimahefa and Hamori (2005) Nonnemberg and Mendonca (2006), and Nune and Oscategui (2006) studying the

role of FDI in developing countries, some of their studies use the individual OIC countries in Middle East, North Africa Region, Sub Sahara and Latin America. From these studies, FDI are the main source of funds to finance capital investment in developing countries, while the share of total GDP that is devoted to investment in fixed assets is an important indicator of future economic growth for an economy. However, the levels FDI in developing countries, including some of the OIC member countries, are not satisfactory.

These determinants of FDI are exchange rate, inflation, market size, government consumption and openness. The exchange rate volatility of the host country can be an important determinant of the extent of incoming FDI (Benassy-Quere et al, 2001). Instability of a currency has often been recognized as a significant impediment for the inflow of FDI (Chakrabarti, 2001). Froot and Stein (1991) and Lipsey (2000) claimed that a depreciation of the host currency should increase FDI into the host country, and conversely an appreciation of the host currency should decrease FDI. Furthermore, Razafimahefa and Hamori (2005) used panel cointegration test in Sub Sahara Africa and Developing Countries covering the period from1980 to 2001. The result with respect to the exchange rate implies that a depreciation of the local currency attracts in inflow of FDI.

Stabilization of inflation is associated with sound fiscal adjustment and an increase private sector's share of domestic credit. Karbasi et al. (2005) suggested that lowering domestic inflation rate could advance economic growth and so bring FDI flows to the country. In this regard, it is expected that inflation rate has negative relationship with FDI. A large and uncontainable increase in the price level or high inflation might reflect instability of the macroeconomic policy of the host country (Yih et al, 2000). Then, Razafimahefa and Hamori (2005) claimed that the level and volatility of inflation rates can both discourage inflows of FDI.

The market size hypothesis suggests that FDI will go primarily to markets large enough to support the scale economies needed for production. The reasoning has been pervasive, given that most investment has been market seeking, and it helps to explain why most FDI goes into developed countries rather than into emerging economies (Ajami and Barniv, 1984; Holand and other, 2000; Chakrabarti, 2003). Furthermore, Root and Ahmad (1979) and Tuman and Emmert (1999) used gross domestic product (GDP) as a proxy for market size and found it to be insignificant in explaining FDI in Latin American countries.

A high consumption rate may indicate a high taxation of the corporate sector, with expected negative effects on FDI. A high share of government consumption can also indicate stability in consumptions patterns. Part of government consumption is invested infrastructure, which promotes FDI. In the latter case we expected a positive impact of the government consumption on FDI (Addison and Heshmati, 2003). Moreover, Ancharaz (2003) expresses government consumption as per capita government consumption. He finds a significantly positive relationship between government consumption and FDI for the sample of non-Sub Sahara Africa (SSA) and SSA countries as well as non-SSA countries, but finds the insignificant relationship for the SSA sample.

Asiedu (2002) use the ratio of government consumption to GDP as a measure of the size of government, with the hypothesis that a smaller government promotes FDI, but nonetheless finds an insignificant result. Thus, Barro (1991); and Addison and Heshmati (2003) find an insignificant relationship between government consumption and FDI in developing countries, a high level of government consumption reflects

high taxation of capital, but at the same time, the presence of better infrastructure and investment in human capital.

The rate of openness of a country is very essential to attract FDI inflows. In this regard, the rate of openness could be expressed as imports plus export divided by GDP. Studies have found a positive relationship between openness and FDI flows (Gastanaga, et al. 1998; Morisset, 2000; Chakrabarti, 2001; Garibaldi et al, 2001;). This study expects the sign of the coefficient of openness to be indeterminate *a priori.* While a positive sign is the norm, a negative sign would suggest that FDI in a country is tariff-jumping, as foreign investors seek to locate in the host economy to avoid high tariffs.

The study will contribute to the existing literature by empirically examining the response of FDI to selective polices namely exchange rate, inflation, market size, degree of openess, and consumption policies in selected OIC countries. Then, this study will be able to evaluate which specific government of Muslim countries policy is attracting or disatracting FDI in Muslim countries. This study would be of interest to policy makers in many developing countries where structural reform are being implemented. Specifically, this study identifies the determinants of foreign direct investment in selected OIC countries and in turn empirically tests these by making use of panel econometric techniques.

METHODOLOGY

As discussed earlier, this study chooses five variables as factor influencing FDI flows in selected OIC countries. They are Exchange Rate (EXC) measured with the host country's currency per US Dollar. Inflation (INFL) measured with the Consumer Price Index (CPI). Market size (MARK) measured with gross domestic product (GDP), Consumption (CONS) measured with government consumption, with government consumption, and trade openness (OPEN) measured with the ratio of trade, calculated as the sum of exports and imports to GDP. All variables are taken in the logarithm. Other factors, such as resource endowment, political stability, and investment incentives are equally important but will not be examined in this study. This is mainly because of data limitations and difficulties in quantifying some of the variables.

The data is from the International Monetary Fund (IMF) annual publication, International Financial Statistics (IFS), over the period 1980-2006. The data set constitutes a panel of 34 out of 58 OIC countries, consisting of 3 groups OIC countries as follow. First, 16 Asia OIC countries; Bahrain, Bangladesh, Indonesia, Iran, Jordan, Kuwait, Malaysia, Maldives, Oman, Pakistan, Qatar, Saudi Arabia, Syrian, Turkey, United Emirate Arab and Yemen. Second, 18 African of OIC countries; Algeria, Benin, Burkina Faso, Cote d'Ivoire, Egypt, Gabon, Gambia, Libyan, Mali, Mauritania, Morocco, Mozambique, Niger, Nigeria, Senegal, Sierra Leone, Togo, and Tunisia. Finally, 34 OIC countries data consists 16 Asian and 18 African OIC countries.

In this paper we propose a panel data analysis, which has the advantage of using information concerning cross-section and time-series analyses. It also considers heterogeneity of cross-section data explicitly into account, by allowing for individual-specific effects and give more variability, less collinearity among variables, more degrees of freedom, and more efficiency. Furthermore, the repeated cross-section of observations over time is better suited to study the dynamic of change like FDI inflows. There is a range of advantage which support the use of panel data (Hsio, 2005). First, panel data gives a large number of data points that result in more information available, greater variability, less collinearity

amongst variables, more degrees of freedom and more efficiency. Second, panel data is better able to study the dynamic of adjustment compared to just cross sectional data. Third, panel data is better able to identity and measure effects that are simply not detectable in pure cross section or pure time series data. Four, panel data model allow the construction and testing of more complicated behavioral model than purely cross section or time series data. Finally, In the case of panel data models, adjustments can be more easily and naturally made when data is missing by utilizing more information. Thus, the use of panel data also decreases the effect of unobserved heterogeneity that is a major reason why simple cross country analysis are problematic in the identification of determinants of FDI in cross country studies.

There are two types of panel data analytic models employed in this study. There are fixed effects models and random effects models. The fixed effect model is type of panel model that would have constant slopes but intercepts that differ according to the cross-sectional unit. Although there are no significant temporal effects, there are significant differences among countries in this type of model. While the intercept is cross-section specific and in this case differs from country to country, it may or may not differ over time. These models are called fixed effects models.

However, one way to handle the ignorance or error is to assume that the intercept is a random outcome variable. The random outcome is a function of a mean value plus a random error. Nevertheless, this cross-sectional specific error term, which indicates the deviation from the constant of the cross-sectional unit must be uncorrelated with the errors of the variables if this is to be modeled. The time series cross-sectional regression model is one with an intercept that is a random effect.

As Nonnemberf and Mendoca (2008) was to formally develop the panel data methodology in order to address the direct investment issue. In general, a panel data regression appears as follows:

$$y_{it} = \quad ' x_{it} + v_{it} ,$$

$i = 1,\ldots,N;\ t = 1,\ldots,T$ ..... (1)

with $v_{it} = \alpha_i + u_{it}$

where y_{it} is the FDI in country i in year t, x_{it} is a vector of other explanatory variable such as exchange rate, inflation, market size, consumption and trade openness, v_{it} is an error term that includes the unobservable country-specific attribute $_i$. The individual effect $_i$ may or may not be correlated with the explicative variable vector x_{it}. The existence of a correlation between the individual effect and the regressors may be detected by applying the Hausman test, whose null hypothesis is the non-correlation between $_i$ and x_{it} .

Therefore, following Hsiao (2003) the model of equation (1) was rewritten as follows:

$$y_{it} = \quad ' x_{it} + \quad ' z_t + \quad _i + \quad _t + u_{it}$$

$i = 1,\ldots,N;\ t = 1,\ldots T$ ..... (2)

where, z_t is the variable vector that only varies in t . We now note the presence of the term $_t$ is specifically related to variation in time. We assume that z_t is not correlated with any other disturbance.

Hence, to find an accurate estimate for the parameter vector (β,δ), the study apply the two-stage procedure is proposed by Hsiao (2003). The solution was found by estimating by fixed effect restricted only to the variables x_{it} , then estimating by applying the OLS estimator as follows:

$$\overline{y_t} - b_w{}' \overline{x_t} = u^* + \quad ' z_t + \quad _t + \overline{u_t},$$

$t = 1,\ldots, T$ ..... (3)

where

$\overline{y}_t = \frac{1}{N}\sum_{i=1}^{N} y_{it}$, $= \frac{1}{N}\sum_{i=1}^{N} x_{it}$ and

b_w is the estimated coefficient for obtained by fixed effect.

The generally accepted way of choosing between fixed and random effects is running a Hausman test. Statistically, fixed effects are always a reasonable model to use with panel data. Fixed effect always gives consistent results but they may not be the most efficient model to run. On the other hand, Random effects produces better P-values as they are more efficient estimator. We will run random effects if it is statistically justifiable to do so.

The Hausman test tests the null hypothesis that the coefficients estimated by the efficient random effects estimator are the same as the ones estimated by the consistent fixed effects estimator. If they are (insignificant P-value, Prob chi square larger than .05) then it is safe to use random effects. If we get a significant P-value, however, we should use fixed effects.

RESULT AND DISCUSSION

Empirical results shown in Tables 2, 3 and 4 are for 16 Asian OIC countries, 18 African OIC countries and 34 OIC countries over a 27 year period 1980-2006. Table 2 shows fixed effect, Table 3 reports random effects, and Table 4 depicts Hausman test obtained for 3 group OIC countries; Asian OIC countries, African OIC countries and OIC countries. The discussion includes result presented in 3 group OIC countries in Tables 2 and 3, each table consisting of 5 determinant of FDI namely; exchange rate, inflation, market size, government consumption and degree of openness.

The fixed effects regression models allows the unobserved explanatory variables- either cross-section fixed or time fixed- to be correlated with the observed explanatory variables. If the unobserved explanatory variables are strictly uncorrelated with the observed explanatory variables, then it might be appropriate to treat the regression model as a random effect model, where cross-section specific constant terms (a different constant term for each cross-section unit) are randomly distributed across cross sectional units (Greene, 2000). In modern econometrics Random effect is considered synonymous with zero correlation between the observed explanatory variables and unobserved explanatory variables (Wooldridge, 2002). And, result of fixed effect as follows:

FDI_Asia= - 4.024-1.134* EXC + 0.014 INFL
+ 1.174**MARK + 0.176 CONS
+ 1.583** OPEN

FDI_Africa=-2.946-1.205*EXC + 0.445*INFL
+ 1.621*MARK – 0.522 CONS
+ 1.046**OPEN

FDI_OIC= -3.234 - 1.187*EXC + 0.423*INFL
+ 1.399*MARK - 0.303 CONS
+ 1.237* OPEN

Then, result of random effect as follows:

FDI_Asia= -1.447 - 0.404**EXC + 0.414***FL
+ 1.365*MARK - 0.905**ONS
+ 1.062**OPEN

FDI_Africa=-0.110-0.437*EXC+0.617*INFL
+ 1.341*MARK–1.186*CONS
+ 0.673***OPEN

FDI_OIC= -0.922 - 0.443*EXC + 0.494*INFL
+ 1.341*MARK - 0.982*CONS
+ 0.898*OPEN

Figure in parentheses denote t-statistic value of the regression coefficient and *, **, *** indicate that the coefficient is statistically at 1 %, 5%, and 10% levels.

In order to decide whether fixed effects or random effects model is appropriate in the regression models, fixed effects tests and Hausman random effects tests are performed using Eviews 5.1.

	ASIA	AFRICA	OIC
Test Summary	Chi-Sq Statistic	Chi–Sq Statistic	Chi-Sq Statistic
Cross-section Random	23.0141	34.4912	41.6720
Probability	(0.0003)	(0.0000)	(0.0000)

The Hausman test tests the null hypothesis that the coefficients estimated by the efficient random effects estimator are the same as the ones estimated by the consistent fixed effects estimator. All of equations, Asia OIC countries, Africa OIC countries and all OIC countries are significant in 5 % by chi-square statistic of cross section random. This can also be interpreted as a sign that there are country specific factor not captured by the set of explanatory variables but correlated with them. Therefore, in what fallow, we only report the result for fixed effect estimator.

In all equations of OIC countries, the exchange rate levels entered with the negative sign in all regressions. Exchange rate depreciations to a decrease in investment flow shares to foreign markets. According to Froot and Stein (1991) and Lipsey's (2000) interpretation of the potential effect of exchange rate changes on investment: a depreciation of the domestic currency does make foreign facilities more expensive, and probably leads to a reduction in demand for physical investment abroad. Thus, depreciation also reduces the cost of production in OIC countries relative to the cost in the other locations. The incentive from exchange rate depreciation are particularly important for firm which use OIC countries as a production base and export the product to the market at home or in third countries. In fact, depreciation of exchange rate in 3 groups of OIC countries decrease FDI flow in OIC countries. This implies that reducing foreign exchange volatility may increase FDI. As Benassy-Quere et al. (2001) state that the exchange rate regime is by no mean neutral to FDI due to there is a trade-off between maintaining external competitiveness. We need some flexibility in nominal exchange rate and reducing foreign exchange volatility in order to attract FDI.

A large and uncontainable increase in the price level, or high inflation, might reflect instability of the macroeconomic policy of the OIC countries. This type of instability creates uncertainty in the investment environment. Inflation appears as an indicator of macroeconomic stability, presenting an insignificant sign in Asia OIC countries. However, it is positive for Africa OIC countries and all OIC countries equations, due to compare with Asia OIC countries, Africa OIC countries and All OIC countries economies can perform reasonably well under high inflation. The high level of inflation in Asian OIC countries was due to economic crisis during 1998-2000 in South East region and increasing of oil price in Middle East region over period 1980-2006. A positive sign of the inflation rate is obviously surprising. It is widely accepted that disinflation in the initial stage is key factor to rapid transition and sustained growth. As African OIC countries, countries with relative low average inflation rate are expected to attract more capital flows, as macroeconomic risks are lower in these countries. This implies that an improvement stability of internal economy in OIC countries in order to maintain an expedient monetary policy, and also improved stabilization of sound fiscal adjustment and an increase private sector's share of domestic credIThis relationship exists as the receiving OIC country's market size may indicate a country's economic condition as well as potential demand for produced goods. Investor may also prefer larger countries in order to benefit from a more efficient utilization of

resource and the exploitation economic of scale. As Chakrabarti (2003) interestingly point out that an increase in one region's FDI levels may be beneficial to other regions provided these regions trade the goods produced by the foreign firm. The level degree of signification African OIC countries and OIC countries is higher than Asia OIC countries. These indicate that the magnitude of the positive coefficient in African OIC countries and OIC countries should be larger than Asia OIC countries, if the foreign investors target local market instead of exporting the produced goods. This implies that an improvement in market demand may result in an increase in FDI in OIC countries. Market size countries attraction of FDI since a large market is likely to have higher demand. This is likely to result in greater long term profitability to the business investing. Thus, market demand has a direct effect on the investment expected future revenue.

The government consumption in all equation of OIC countries is insignificant in attracting FDI. This is an indication that the government consumption in OIC countries is not play a leading role in the development process. Indeed, part of the government spending in the countries was not used to build infrastructure and institutions to attract foreign investment. Furthermore, a high level of government consumption in Muslim countries reflects high taxation of capital but, at the same time, the presence of better infrastructure and investment in human capital. Our findings are consistent with Barro's (1991); and Addison and Heshmati's (2003) interpretation of the potential effect of government consumption changes on investment. An increase in government consumption can lead to an increased number of transactions and increased output production. But since government consumption does not have direct impact on private productivity and it can lower saving and growth via distorting affect taxation or government-expenditure programs. This implies that an improvement in regulatory framework of taxation and proved infrastructure in form of roads, port facilities, etc may result in an increase in FDI in OIC countries.

The coefficient of an economy's degree of openness was included as a proxy to reflect the willingness of a country to accept foreign investment, and proved to be important in attracting capital, considering that the said variable present the expected sign, and was highly significant. The openness variable is positive for all equations of OIC countries and this is in line with the findings from other studies like Asiedu (2002), Gastanaga, el al (1998), and Chakrabarti (2001). In table 2 show that according to this measure of openness for African OIC countries and OIC countries are less open than Asia OIC countries. Asia OIC countries is compared by African OIC countries and OIC countries, would gain most from further opening their economies to international trade and expanding their markets. This implies that an improvement in degree of openness with increasing quality of export oriented FDI and improved tariff policy in OIC countries may result an increase in FDI.

Finally, the pooled model consistently show the result, lowest adjusted R^2, higher in F statistics and significant t-values in same variables, like exchange rate, market size and openness in three equation of OIC countries. The exchange rate, market size and degree of openness significantly help explain the amount of FDI in Asia OIC countries, African OIC countries and also all OIC countries. Thus, both market size and openness are highly significant positive; however, exchange rate is highly significant and negative in 3 group equations. The other variables, inflation of Asia OIC countries insignificantly help explain the amount of FDI, and government consumption can not explain the amount of FDI in 3 group equations. This implies that an improvement in

stabilization macro economic in order to reducing foreign exchange volatility, control of price rate, increasing quality of export oriented FDI and improved tariff policy in OIC countries may effect an attract in FDI.

CONCLUSION

In this paper we studied the determinants of FDI in selected OIC countries. Based on several panel data regression estimates we were able to infer about their importance. In the preferred model specification, some estimated coefficients have the expected signs and are statistically significant, such as exchange rate, market size and openness. The estimated negative sign of the variables exchange rate capturers the effect and alters the price for acquiring assets in the OIC countries and it may lead to a substitution of export for foreign production. In this regard, the variables consumption prices index (CPI) may have positive effect that it intended to capture the quality of macroeconomic policy. The larger is a country's market size, as measured by the GDP, the higher is the level of foreign capital that the country receives. Since for OIC countries considered the level of export, as a share of their GDP, is not high, the variable market may also point out that the OIC country's capacity to absorb foreign capital because not any amount of capital can be digested by any given economy. The government consumption of OIC countries was not significant suggesting that such factor does not play a role in attracting foreign investment. The variables openness captures the degree of openness of an economy of OIC countries. The estimated sign is positive, indicating the more open the OIC countries the more foreign capital flows, are attracted. Overall, the result reveals a number of factors under the control of a country's government, such as macroeconomic stability and openness of the economy, which can be used to attract foreign investment. It is plausible that other variable are also important, such as political stability or judiciary impartiality. We have not included these variables due to these effects are difficult to measure and data unavailability.

In a critical analysis, evaluating OIC countries according to criteria of determinants for attracting higher volume of FDI, OIC countries does not perform very well. OIC countries economies perform relatively poorly when compared to develop countries. Policy changes and improvements are needed in OIC countries, spurring the improvement in economic stability, improved infrastructure, promotion of openness to international trade, and improved regional policies to increase FDI in OIC countries.

Finally, the study only examined will 34 out of 58 of OIC countries during the period 1980-2006 due to the availability of data. Thus, the policy reunification may be only listed to the respected government of the selected OIC countries. Further study should be carried out in this area of study by examining all 58 OIC countries for different period of time.

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