Locational Drivers of FDI in MENA Countries: A Spatial Attempt

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by

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Abstract

This study aims to analyze the locational drivers of FDI, with an emphasis on the role of market potential in MENA countries. Considering that the market does not necessarily comprise of the host economy but also trade opportunities in the region and in the rest of the world, this study distinguishes the country-specific, regional and trade-related *market potential* of the host MENA country in attracting FDI. It also examines the neighboring effects in locational choice. Using a panel of 18 countries covering the 1980-2001 time period, , the model is estimated by Maximum Likelihood estimation method incorporating the possible spatial autocorrelation in the disturbances. The results imply that FDI in the MENA region is market oriented; as well as aiming at the domesic market in the host economy, it also utilises trade opportunities within the region.

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1. Introduction

There has been a decrease in world Foreign Direct Investment (FDI) flows from 2001 to 2003. However, FDI is still crucial for especially the developing economies. In fact, 2004 figures show a 2% increase in world FDI inflows after three years of decline. It is interesting to note that the share of developing countries has increased to its highest level since 1997 (UNCTAD, 2005). Unfortunately, despite its size (population of 430 million) and total GDP ($1,198 billion), Middle East and North African (MENA) region seems to have difficulties in drawing foreign investors. In fact, the UNCTAD Inward FDI Performance Index -for the period from 2001 to 2003- shows that the MENA region is far behind any other developing region except South Asia. Specifically, the West Asian part of the region performed much worse than the North African part. During this period, the best performer in the region was Sudan, coming 29th, followed by Morocco (32nd) and Bahrain (51st) (see UNCTAD, 2004).

The performance of a country with respect to attracting FDI depends on many characteristics. Market seeking FDI would choose a location, which has high purchasing power or good access to larger markets whereas resource-seeking FDI would prefer a host country with cheaper inputs (labour or natural resources) or again easier access to factor markets. Therefore, the characteristics of the MENA region play an important role in the inward FDI performance of the region. The countries in MENA region heavily rely on oil; have weak economic base, high population growth and unemployment rates; have low levels of integration with the world and have underdeveloped financial and capital markets with underdeveloped institutions. The dominance of the state in the economic sector is still high although some privatizations have been going on for some time. Last but not the least, of course, the rates of returns on human and physical capital are low (Hassan and Bashir, 2002; Makdisi et al., 2003).

Hence, in this paper, we join other economists in searching the drivers of FDI inflows to the MENA region but with a difference[1]. The locational drivers of FDI are analyzed with an emphasis on the role of market potential in MENA countries. Using a panel of 18 countries covering the 1980-2001 period, this study distinguishes the country specific, regional and trade-related *market potential* of the host MENA country in attracting FDI. We

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[1] The definition of MENA followed in this paper includes: Algeria, Bahrain, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Sudan, Syria, Tunisia, Turkey, United Arab Emirates, and Yemen.

estimate a spatial error autocorrelation model with both spatial and time effects. Our estimation results imply that FDI in MENA region is mainly market oriented and not resource-seeking.

The paper proceeds as follows: Section 2 gives an overview of the common characteristics of MENA countries and FDI flows to-and-from the region with reference to the literature on FDI in MENA, Section 3 briefly reviews the literature on economic potential and spatial models concluding the state-of-knowledge part of the paper. The empirical model and methodology are explained in Section 4. The paper concludes following the evaluation of the estimation results given in Section 5.

2. The MENA Region

MENA region has been struggling with insufficient development although several countries in the region have taken important steps to reach economic development and stability. As experienced in various developing countries during the eighties, many countries in the MENA region have shifted their import substitution policy to export led growth. This in turn created a more open and attractive environment for FDI. According to Soliman (2003) the rationale behind the policy change is twofold: The debt crisis experienced in the developing world, and the success of export led growth experience in the South East Asian economies.

With almost 6,5 percent of the world population (430 million) the region owns only approximately 2 percent of the global income ($1,198 billion). The trade volume in the MENA region is less than $800 billion (imports and exports amount to $410 billion and $365 billion, respectively, in 2004). Almost 8 percent of total exports come from inter-regional trade, which is claimed to be largely unexploited (World Bank, 2005).

According to MENA Development Report[2] (World Bank, 2003) the region, having a low income, is in the bottom half of world income distribution, and hence should realize three structural changes in order to foster its growth; shifting from oil to non-oil sectors; from state-dominated to private; and from import-substitution to export-oriented strategies. It turns out that the region caught a boom trend in 2003 and 2004 and seen an unusual growth (more

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[2] The World Bank geographic classification includes Djibouti and Malta in the MENA region but excludes Turkey.

than 5.6 per cent annually), caused largely by increasing oil prices. Eventually, unemployment rate has fallen from 14,9 to 13,4 (World Bank 2005).

Starting from mid-sixties and mainly in the nineties, MENA countries have liberalized investment environment regulation in favour of FDI. Almost all MENA countries have a special FDI regime that refers to a legislation dealing specifically with FDI.[3] Reforms include tax and custom duty breaks, relaxed foreign ownership restrictions, and implemented privatization and capital market reform programs (Eid and Paua, 2003; UNCTAD, 2004). These facts make the MENA region an attractive subject to investigate in terms of FDI flows.

During the period between 1980 and 2003 the inward FDI stock of the MENA countries has varied between 1.5% and 4.5% of world inward FDI stock and between 3.6% and 11% of developing counties' FDI stock. The region receives only one-third of the FDI expected relative to other comparable countries (IMF, 2001). Among many reasons, lack of democracy, transparency and good governance; macroeconomic instability; the need for economic management; low development in physical infrastructure; deficiencies in the political environment and economic conditions can be counted for the low levels of inward FDI in MENA countries (World Bank, 1997; IMF, 2001; Sekkat and Veganzones-Varoudakis, 2004). While FDI inflows to the MENA region varies from year to year, there is an increasing trend particularly after 1990's parallel to the trend of increasing FDI flows to developing countries in the world (see Diagram 1).

Egypt, Saudi Arabia, Tunisia, Turkey[4] and Israel have drawn most of the inward FDI to the MENA region. The most rapid increase rates of inward FDI, however, have been seen in Bahrain, Saudi Arabia and Morocco. Kuwait and Libya were able to attract less FDI relative to other countries of the region[5]. Main inflow recipient sectors of MENA region are petroleum-related sectors and other primary activities (UNCTAD, 2003). FDI in other sectors such as tourism, banking, telecommunications, manufacturing, and construction has particularly concentrated in Bahrain, Egypt, Morocco and Tunisia (Eid and Paua, 2003:111).

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[3] Algeria 1993, Bahrain 1984, Egypt 1997, Jordan 1995, Kuwait 1965, Libyan Arab Jamahiriya 1996, Morocco 1983-1995, Saudi Arabia 1979, Tunisia 1993, Turkey 1954-1995, Israel 1990 (UNCTAD WIR, 1998). Turkey has realised a further liberalization in 2003 and removed permission requirement from the foreign firms.
[4] FDI inflows to Turkey have reached to its highest level, US$9,5 billion, in 2005.
[5] The authors' calculations using UNCTAD databases.

Diagram 1. FDI flows to and from MENA Region
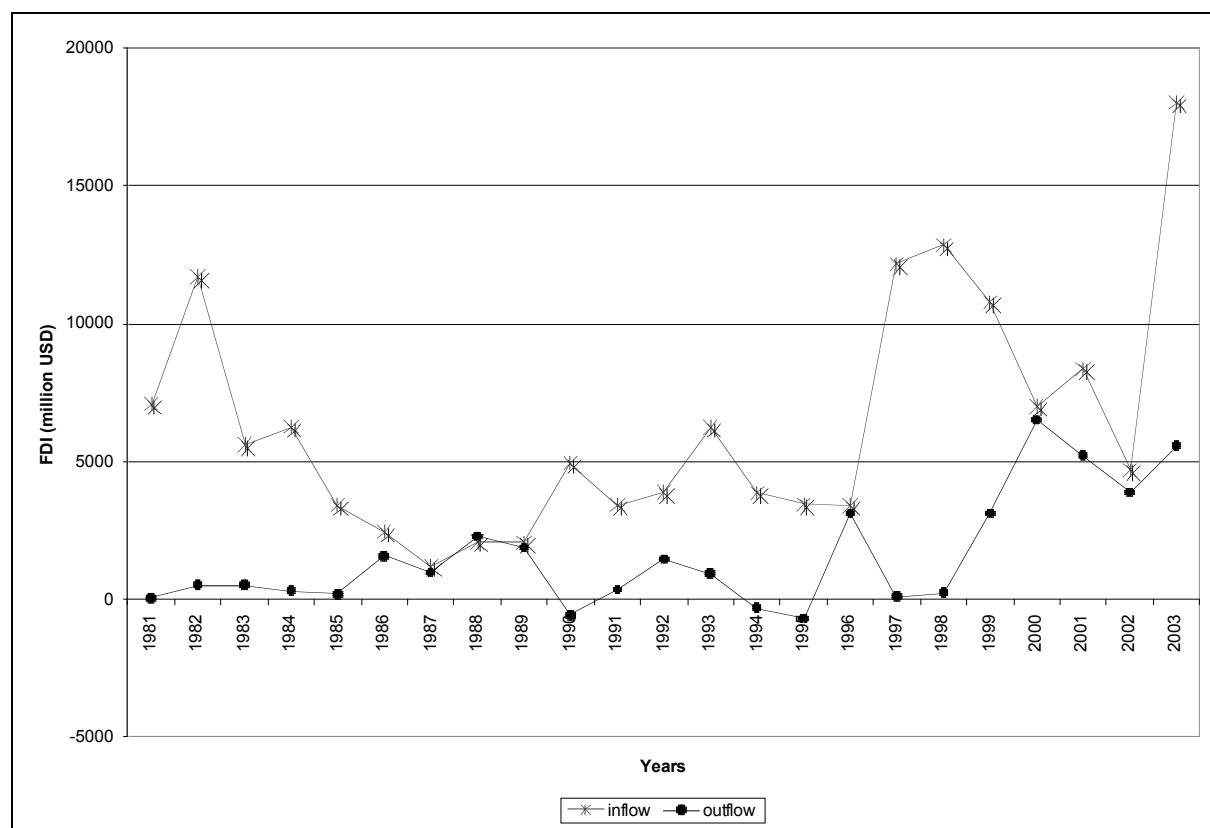
Data source: UNCTAD Handbook of Statistics On-line database.

Although the outflow FDI level varies during the period from 1980 to 2003, the outward FDI remains below the inward FDI level (see Diagram 1). Outward FDI level from the MENA region is below 1% of world outward stock and below 5% of developing countries' outward FDI stock during the same period[6]. Among the MENA countries Bahrain, Saudi Arabia, Turkey and United Arab Emirates are the most important countries as the source of outward FDI. Especially Saudi Arabia is one of the emerging investors abroad (UNCTAD, 2003).

Examining the determinants of FDI inflows to the MENA region, Kamaly (2002) argues that the 'fundamentals' have been more effective than cyclical variables and the other policy or non-policy variables, which are expected to take over after the country has accumulated some FDI stock and once the profitability of FDI depends on those other variables. This argument justifies his findings –among all explanatory variables such as

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[6] The authors' calculations using UNCTAD databases.

openness, weighted average bond yield in the G7 countries– his dynamic panel model estimations show a significant relationship between FDI and the lagged real GDP growth, only.

On the contrary, Onyeiwu (2003) emphasizes restrictive role of the 'endemic institutional constraints' in determining FDI flows to MENA. Using fixed effect panel estimation to control for country and time specific factors, he compares MENA countries with other developing economies for a period of 25 years (1975-99). An interesting finding is that variables such as the rate of return on investment, infrastructure, economic growth, and inflation seem to be insignificant for flows to the region whereas openness and some other institutional factors dominated the scene. These results support Batra et al. (2000), who argues that "the two leading constraints that foreign firms encounter in MENA countries are policy instability and corruption", and Rivlin (2001) who also finds institutional factors as important.

Chan and Gemayel (2003) examine the relationship between FDI and macroeconomic instability for the MENA region, measuring instability with the standard deviation of the economic, financial and political risk indexes from the International Country Risk Guide. The results indicate that the instability has a much stronger impact on FDI than risk itself. He suggests that reasons of instability should be examined thoroughly.

3. Literature

Recently, the geographical distribution of FDI within a country or a region has entered among the determinants of FDI. Although, gravity models -inspired from Newton's gravitational pull- have been widely used in trade literature, compared to the economic potential models, they fair worse because of lower explanatory power[7]. Therefore, we concentrate on the literature that incorporates interdependence between host destinations using two distinct models, i.e. economic potential and spatial models.

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[7] For examples of gravity models see Brenton, Di Mauro and Lucke (1999); Buch, Kokta and Piazolo (2003); tensen and Toubal (2004), Koike (2004). For economic potential models see Altomonte (2002); Head and Mayer (2004); Carstensen and Toubal (2004); Crozet, Mayer and Mucchielli (2004). Ciéslik and Ryan (2004) compares these two approaches.

Economic or as it was initially called "market" potential models are singled out with the presence of the neighboring economies in relation to the economy in consideration. Harris (1954) defines "market" potential as the purchasing powers of the neighboring economies. Krugman (1992) rests his modal, which develops the micro-foundations of agglomeration economies, on the hypothesis that "firms prefer to locate where the markets are". Following Harris (1954), he defines accessibility of a market with an index of "market" potential, 'which is a weighted sum of the purchasing power of all regions, with the weights depending inversely on distance' (Krugman, 1992: 6). Since its first introduction as a factor effecting agglomeration economies, the economic potential index has been used widely in analysing trade opportunities and in investigating the determinants of FDI[8] (Head and Mayer, 2004; Cieslik and Ryan, 2004).

Head and Mayer (2004) set forward to derive the firm's location choice as a function of production costs and demand for Japanese-owned affiliates. The potential measure they use "aggregates demand from multiple locations while discounting for distance using a parameter obtained from a first-step estimation using bilateral trade flows". Cieslik and Ryan (2004) compare the explanatory power of gravity and economic potential models for Japanese FDI in Europe. Similarly, Carstensen and Toubal (2004) incorporate the interregional distances within the host country in examining FDI in the Central and Eastern European (CEE) economies. They measure market potential as "the average of the output of all countries in the sample weighted by an inverse distance measure which is derived on a region-to-region basis using transportation costs". The robust and positive impact of the market potential on FDI found is still met with caution by the authors. Carstensen and Toubal warn that market access can only account for part of the motivation and other factors, especially low cost production opportunities, should be taken into consideration.

Altomonte (2002), analyzing location choice of FDI firms in CEE Countries, suggests that the power of a country to attract FDI comes from the surrounding countries. He uses three different measures of market potential, one being the 'traditional definition' made by Harris (1954). The second measure is based on the theoretical model Altomonte (2002) develops and reflects the interaction of the size of neighbouring countries with 'degree of trade integration' between host and other countries. The last one "assumes local markets are segmented at the country level".

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[8] Head and Mayer (2004) looks at determinants of agglomeration for foreign firms whereas Cieslik and Ryan (2004) at the choice of host country for FDI.

Various methods have been used in estimating these models. Using a panel of 7 countries and 9 years, Altomonte (2002) estimates a probit model to analyze the interaction between location choice of multinational enterprises and the establishment of a Regional Integration Agreement. Head and Mayer (2004) estimate a location choice model for 452 affiliates of Japanese firms established in 9 countries in 57 regions during the period 1984–1995[9]. They first estimate a non-nested conditional logit model then a nested logit model where region choices are nested within nation choices. Whereas, using panel data and allowing for fixed and random country effects, Cieslik and Ryan (2004) first estimate gravity and potential models separately. The authors later use tobit estimation method to check for the robustness of the results, followed by a specification sensitivity analysis to eliminate agglomeration effects of the "self-potential" of a location. Carstensen and Toubal (2004) apply dynamic panel methodology to the analysis of FDI inflow to the CEE region stating that the residuals of the static panel estimation suggest "sluggish adjustment" process.

A number of papers, which concentrate on the determinants of FDI, have used spatial econometric models in order to explain the main factors that direct investors consider in choosing the location for new investments in a region. Some of these studies focus on the regions in a country while others examine an economic region such as the EU or a geographic region such as the Middle East and North Africa (MENA).

Emphasizing that FDI into a particular host country is not independent of FDI into alternative host countries, Blonigen et al. (2004) estimate a spatial autoregression model, which differentiates between types of US based FDI (horizontal, export-platform, vertical or vertical-specialization) to OECD countries. They find a significant spatial relationship between the FDI a host country receives and the FDI inflows to its neighbours. Stressing that omitting controls for market potential will tend to bias the estimated coefficient on the spatial relationship upwards, the authors also control for the third country market characteristics. The negative spatial correlation estimated for Europe with the inclusion of market potential is evaluated as an evidence to export platform FDI.

Similarly, Baltagi et al. (2005) examine different types of FDI focusing on "bilateral versus third-country determinants, e.g. country size and factor endowments of FDI" and

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[9] These 9 countries in their model are: Belgium, France, Germany, Ireland, Italy, the Netherlands, Spain, Portugal and the United Kingdom.

compare two models estimated first with only bilateral variables and later including both bilateral and spatial effects. Following the trend of using distance between countries to weight the explanatory variables, Baltagi et al. (2005) allow the third-country effects to decay at faster and slower rates with alternative weighting matrices. They estimate a spatial autocorrelation model using GMM estimator while investigating the presence of spatial effects.

Coughlin and Segev (1999), who look at the geographic distribution of FDI within China use average productivity adjusted nominal wage and overall labour productivity in each province to test for the effects of labour cost on FDI inflows. They estimate a spatial autocorrelation model using Maximum Likelihood method to find that a shock to FDI in one province has a positive effect on FDI in a nearby province. In addition to the size of a province's economy and the infrastructure variables such as total length of paved roads per area and total number of staff and workers in airway transportation in each province, illiteracy rate is used as a proxy of labour supply characteristics.

Therefore, in our quest to examine the locational drivers of FDI, with an emphasis on the role of market potential, we also incorporate infrastructure in our model. Although, market seeking is known to be one of the most important motivations for transnational corporations, the market does not necessarily comprise of the host economy but also trade opportunities in the region and in the rest of the world. The main contribution of this study is to distinguish between the country-specific, regional and trade-related economic potential of the host MENA country in attracting FDI. Unlike some of the previous work mentioned above we choose not to use the "market potential" index instead prefer to take domestic market, exports (imports) to (from) different parts of the world separately.

4. Empirical Model

This study investigates the factors driving FDI into the MENA region. It particularly focuses on the market potential, which we define as the domestic market and trade potential, where trade potential covers both export and imports. Exports and imports are further grouped as regional, trade to European Union Countries and rest of the world. The following model is estimated:

$$FDI_{it} = f(GDP_{it}, POP_{it}, X_{ikt}, M_{ikt}, TEL_{it})$$

In the above expression, FDI_{it} is the logarithm of FDI inward stock of the host country i at time t. GDP_{it} and POP_{it} denote, respectively, logarithms of gross domestic product and population of the host country. Gross domestic product is measured in million dollars and is converted into constant prices using the US GDP deflator. Holding everything else constant, a higher GDP signals a higher purchasing power, and thus a higher market demand. Population, on the other hand, is an indicator for the size of the market (i.e. potential number of buyers). It also proxies the labour supply in the host economy.

This study differentiates between trade with MENA countries and trade with the rest of the world making use of bilateral trade volume with each country j within the region. The trade variables, exports and imports, X_{ikt} and M_{ikt} respectively, reflect the trade potential of the host country i to different regions of the world k, and are included in the model separately for MENA countries, EU countries and the rest of the world. Exports and imports are divided by the GDP of the host country to control for the country size. A significant positive parameter estimate for the exports to MENA will suggest that the foreign firm not only considers the domestic market potential but is also searching for locations where it can also export from to the region economies. A significant positive parameter estimate for the imports from MENA, on the other hand, will signal that the firms tend to choose locations where they can easily import raw material or other supplies. Telephone mainlines (TEL_{it}), is used to proxy the infrastructure.

Using a panel of 18 countries covering the 1980-2001 period, the model given above is estimated by applying fixed effects modeling[10]. The 18 countries included in the data set are: Algeria, Bahrain, Egypt, Iran, Israel, Jordan, Kuwait, Lebanon, Morocco, Oman, Qatar, Saudi Arabia, Sudan, Syria, Tunisia, Turkey, United Arab Emirates, and Yemen[11].

Blonigen et al. (2004) suggest "If the researcher believes that 'groups' are not so much defined by specifically observable characteristics but, rather, by 'likeness' in a way that is best captured by geographic proximity, a spatial error model would correct for such

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[10] Our motivation of utilising fixed effects modeling instead of including country- or time-specific effects as random is twofold: (1) Random effects modeling in panel data is more appropriate when the sample used is a small random selection of a big population while fixed effects modeling is preferred when the sample covers most of the units in population, (2) Random effects modeling assumes no correlation between the unobserved effects and the explanatory variables in the model, which is unlikely in our case.

[11] Iraq and Libya have been left out due to data problems.

relationships." Following that advise, we consider the spatially correlated error terms in the estimation of our model. Spatial autocorrelation might arise if investment decision in one country in the region influences the amount of investment not only in this country but also in other possible host economies. A firm deciding to invest in the MENA region might consider many alternative locations but will invest only in one, meaning a foreign investment in the host country is a lost one for the others. One might, on the other hand, argue that because of the agglomeration effects, foreign investment in one country is an advantage for the others, attracting other foreign investments in the region. Therefore, a spatial error model (SEM) is estimated by applying Maximum Likelihood (ML) estimation technique:

$$Y_N(t) = \beta X_N(t) + u_N(t) \tag{1}$$

$$u_N(t) = \rho W_N u_N(t) \tag{2}$$

In the expression above, N stands for the number of cross sectional units in the data. $X_N(t)$ is an Nxk matrix for the explanatory variables, β is the parameter vector to be estimated. ρ Denotes the spatial autocorrelation parameter and W_N is an NxN distance-based weighting matrix where its non-diagonal elements take value equal to the inverse of the distance between the two countries and its diagonal elements are set to be zero[12]. This weighting matrix is then row normalized so that the cells in each row sums to 1.

In addition to the characteristics of the host country, features of the region countries also play an important role in the location choice. A multinational firm evaluating the alternative locations for its investment will consider and compare the characteristics of all potential hosts. Including only the characteristics in the host country in the model, therefore, is not sufficient enough to explain the FDI flows. Hence, this study incorporates the third country characteristics in the estimation by multiplying the explanatory variable matrix with the weighting matrix, which is also used in the SEM estimation:

$$Y_N(t) = \beta X_N(t) + W_N X_N(t)\delta + u_N(t) \tag{3}$$

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[12] The distance between two countries is measured as the distance between the capitals of these two countries in kilometers. The values are obtained from http://www.indo.com/distance.

In the expression above, characteristics of the host country is included as the main determinant of changes in FDI (first term). Influence of characteristics of the neighbouring countries decline with their distance to the host economy (second term). Existence of these third country effects is tested by applying Likelihood Ratio (LR) test.

Applying Maximum Likelihood estimation, four different spatial error autocorrelation models are estimated: A pooled model without considering any spatial or time effects, model with spatial fixed effects, model with time specific fixed effects and a model with both spatial and time fixed effects[13,14]. Likelihood Ratio (LR) tests are then performed to choose among these four alternative models.

5. Results:

In determining the locational drivers of FDI flows to the MENA region, we have opted for market potential approach with a difference. The models estimated have treated domestic and foreign markets separately. As mentioned earlier those foreign markets have been differentiated as MENA, EU and the rest of the world. Allowing for third-countries in the MENA region to influence the FDI inflows to a host country in the region was possible with spatial error correction estimations.

After estimation of four different specifications of the spatial error autocorrelation model, Likelihood Ratio tests are applied to test for the existence of spatial and time effects. The results suggest that both spatial and time specific effects have to be included in the estimation.

The estimation results are reported in Table 1, where the first column shows the results for spatial error autocorrelation model with spatial fixed effects and the second column gives the results with both the spatial and time specific fixed effects. These results support the importance of market potential on driving FDI into the region. GDP of the host economy, which is an indicator of purchasing power and a proxy for the domestic demand, is found to have a very high, significant impact on the amount of FDI stock in the economy.

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[13] The model is estimated by using MATLAB. The code used in estimations is written by J. Paul Elhorst and can be downloaded at www.spatial-econometrics.com.
[14] These models are also estimated by using Spatial Autoregression (SAR) specification but none of the coeffcients for spatial dependence was significant.

Table 1. Fixed effects spatial error autocorrelation model estimation results

Variables	Model with spatial effects	Model with spatial and time effects
Host country characteristics		
Telephone mainlines	-0.1144	-0.4899
	(-0.3144)	(-1.3357)
Population	0.1556	0.5902*
	(0.4716)	(1.7760)
GDP	3.6277	9.3451**
	(0.9622)	(2.4317)
Exports to MENA	0.00004***	0.00005***
	(16.0834)	(15.8248)
Exports to EU	-1.0635***	-0.9581***
	(-3.3604)	(-3.1296)
Exports to RoW	-5.2439***	-5.0036***
	(-3.7648)	(-3.8273)
Imports from MENA	-0.0657	-0.0142
	(-0.4791)	(-0.1045)
Imports from EU	1.1347***	0.5517
	(3.2884)	(1.4957)
Imports from RoW	-2.5109**	-2.4837**
	(-2.2330)	(-2.3275)
Third country characteristics		
Telephone mainlines	-0.8970	-3.2782**
	(-0.8192)	(-2.4990)
Population	0.2543	2.1640**
	(0.2757)	(2.0137)
GDP	-6.9321	-14.5936
	(-0.6530)	(-1.3190)
Exports to MENA	-0.000001	-0.00002
	(-0.0788)	(-1.3131)
Exports to EU	-2.8120**	-3.3519**
	(-2.1532)	(-2.3699)
Exports to RoW	-8.9855***	-0.3684
	(-2.8425)	(-0.0945)
Imports from MENA	1.3755***	1.0622**
	(3.7332)	(2.1588)
Imports from EU	0.3796	-3.0429**
	(0.4006)	(-2.1198)
Imports from RoW	7.1469**	14.8136***
	(2.2491)	(4.2039)
Spatial autocorrelation	0.0670	-0.6270***
	(0.6912)	(-5.3002)
R-squared	0.9548	0.9630

Note: t-ratios are reported in paranthesis
***   Significant at 1% significance level
**   Significant at 5% significance level
*   Significant at 10% significance level

Population, which is another variable included to control for the domestic market size also has a significant positive effect. An increase in the populations of the host and region countries increases the amount of foreign investments into the host country. Population of a country might also be considered as a proxy for the size of labour force. An increase in population creates an increase in labour supply, which results in cheaper labour for the foreign investment. This would, again, increase FDI.

Share of exports to the MENA region is found to have an increasing impact while increases in the shares of exports to the EU and RoW decrease the amount of FDI in the host country. These results imply that FDI in the MENA region choose locations where they can export to region markets. These firms do not have a motivation to export to the European Countries or to the RoW. Holding everything else constant, higher shares of exports of the host economy to EU and RoW are discouraging the foreign investment to invest in that host country. Signs for exports of third countries from the EU and imports of these countries from the MENA region support these findings. Imports of neighboring countries from MENA region have an increasing effect on the amount of FDI stock in the host economy. All these findings suggest that foreign investments in the MENA region are not vertical, but market oriented.

Imports of host country from other MENA countries or exports of MENA countries to the others in the region are found to have no significant impact on the amount of FDI. These variables are included in the model to capture the effects of accessible or cheap resources from nearby countries, however, insignificant parameter estimates signal that access to factors of production is not the main motivation for these firms when choosing location.

Imports from the rest of the world have a significant negative effect on FDI flows to the host economy. Foreign investors in the region choose locations that do not import much from the rest of the world. This suggests that inflows are not in the form of tariff-jumping FDI or have any other similar motivation.

A highly significant positive parameter estimate for imports of region economies from the RoW indicates that the foreign firms consider higher imports as an expansion in the market potential of the region. Hence they decide to invest in the region instead of bearing the transportation costs.

Telephone mainlines of the host economy, which is included in the model to proxy for the infrastructure is not found to have a significant effect on the inward FDI stock. However, a negative significant parameter estimate for the third country effect suggests that better infrastructure in the region countries weaken the attractiveness of the host country for FDI.

The spatial autocorrelation parameter is significant confirming the existence of spatial autocorrelation in the error terms. This parameter is estimated to be -0.627, suggesting a high negative spatial correlation between the error terms for the countries considered. Mentioned before, there might be two different types of spatial correlation. A foreign investment in one country might attract some other foreign investors to the region however estimation results imply that FDI in the region does not create any agglomeration effects. Investment decision to one country leads to less inward FDI stock in the other countries of the region.

6. Conclusion

This study has examined the locational drivers of FDI in the MENA region with an emphasis on the market potential. We defined market potential as the size of the demand in the domestic market as well as the trade opportunities differentiated as trade to (from) MENA countries, EU countries, and the rest of the world. Using data on selected MENA countries covering the time span of 1980-2001, fixed effects modeling is applied to examine the relationship between the inward FDI stock of a country and various market potential variables. The model estimated in this study includes two types of spatial dependence: (1) Spatial autocorrelation in the error terms, (2) Impact of characteristics of nearby countries on FDI inward stock of the host country.

Our estimation results suggest that firms investing in the MENA region mainly focus on the domestic market size. FDI in MENA region aims to export to the other MENA countries, and do not consider exporting to the EU or to the RoW. Foreign firms are only interested in the trade opportunirties within the MENA region. These results imply that foreign investment in the MENA region is market oriented, aiming the host country market and the region economies; hence FDI to the region is not vertical.

In contrast to the literature, esp. Kamaly (2002) Onyeiwu (2003), who emphasize institutional constraints, our findings show that fundamentals are, in fact, effective in

determining the inward FDI stock a country has accumulated. Unlike Kamaly (2002), we have found significant estimates for trade variables. Controlling for third-country effects in estimating the locational drivers of FDI in the MENA region has helped in obtaining justifiable and meaningful results. As mentioned above the MENA region is amongst the poorest regions of the world. This in accordance with the findings of our paper explains why the inward FDI stock has been so low in the past. Smallness of the market in MENA countries together with its closeness to EU would lead multinationals with market orientation either to ignore the opportunities or to be deterred from investing much easily because of other factors.

Results in spatial models are known to be very sensitive to the weighting matrix specified. Therefore, the results should be interpreted with this in mind. Further research could be addressed to these issues. In this study, we have only considered spatial correlation across countries in our sample, but spatial correlation through time might also exist. It, therefore, might be interesting for future studies to consider time-wise spatial correlation.

Data: Data belonging to 20 countries and covering the time span of 1980-2001 is used in the model estimations. *Electric power consumption (kwh per capita), Telephone mainlines (per 1000 people) Literacy rate (percentage of literate people in the population aged 15 and over)* and *Population* are obtained from World Bank's World Development Indicators database. The rest of the data are obtained from the sources given in parenthesis: *GDP* (UNCTAD Handbook of Statistics Online)**,** *Distance* (www.indo.com/distance)**,** *Exports* and *Imports* (IMF- Direction of Trade Statistics).

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