The Effect of Macroeconomic Policies on the Wave of FDI to the MENA Countries

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Abstract
This paper aims at providing a number of stylized factors about FDI and its basic determinants, and tests the effect of a number of policy and non-policy variables on its behavior during the period of 1980–2003, using a comprehensive sample of the MENA countries. My emphasis here is on the macroeconomic determinants of FDI. OLS and fixed-effects techniques are used to capture the fact that countries have individual specific effects, which do influence FDI in the short and medium terms. Also Wald test is used to assess the joint significance variables points to the significance of the explanatory variables.

The main results indicate that first: FDI is highly persistent, which implies that the long-term effect of various factors on FDI is much greater than their short term one. Second: internal factors have minimal quantitative effects on FDI in the short-term. Third: non-traditional variables, such as political right index level and human capital level do influence FDI in the expected directions. Finally, large changes in real effective exchange rate showed adverse effects on FDI flows in the MENA countries.

JEL Classification: C23, F21, F23
Keywords: FDI, MENA, Dynamic Panel Models

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1. Introduction
The trend of Foreign Direct Investment, especially in the last decade, evinces that our knowledge about FDI is not sufficient to explain its behavior. This study aims at providing a number of stylized facts about FDI and its basic determinants, and tests the effect of a number of policy and non-policy variables on its behavior after the 1980s using a comprehensive sample of the MENA countries. My emphasis in this study is on the macroeconomic determinants of FDI. In other words, I focus on the factors that drive FDI to the MENA countries abstracting from its sectoral division. This paper is empirical in nature. Both the sample selection and estimation technique are designed, in a way, to dodge the empirical problems that plagued the recent empirical literature on the determinants of FDI. By addressing problems such as sample selection bias, aggregation bias, endogeneity, and static representation of dynamic relations, a number of interesting results have been unearthed. First, FDI flows show a high degree of persistence. This implies that the long-term effects of FDI determinants are much higher than their short-term ones. Second, other determinants of FDI, besides its lagged value, have small short-term quantitative effects on FDI flows. These two last points imply that, the short-run, changes in internal factors have minimal effects on FDI flows; hence, it takes sometime for these changes to have quantitatively significant effects on FDI. Third, the level of political right and the level of human capital, both have significant effects on FDI; with the former being negatively, and the latter being positively related (according to FEM). Fourth, real effective exchange rate -the one of the usual suspects- that is envisaged by most theoretical and empirical studies on FDI as being one of the main forces behind driving flows to the MENA countries- is found to have smaller quantitative effects on FDI than other variables used on this study

This paper is organized as follows. Section two discusses the motivation of the study. Section three summarizes the vast literature on FDI, with special focus on the recent episode of capital flows. Section four focuses on the empirical exercises and discusses the obtained results and their significance. Lastly, section five concludes.
2. Motivation

The past decade or so has witnessed a substantial increase in the stock of FDI around the world. In DCs alone, the stock of FDI increased from about $1.3 billion in 1991 to $5.5 billion in 1996 to over $5.8 billion in 2001 (World Bank, 2003). However, compared to other regions of the world, the MENA region has attracted only a small proportion of the global stock of FDI. Although the FDI/GDP ratio in the MENA region increased to 1.27 percent in 1998, it has been declining ever since, and has remained below 1 percent. Notice from Table 1 that Sub-Saharan Africa (SSA), which is often regarded as one of the poorest regions in the world, attracted substantially more FDI than the MENA region during the past decade. Despite the MENA region being home to some of the richest oil-producing countries in the world and almost two decades of implementation of structural adjustment, it continues to attract abysmal flows of FDI compared to SSA that received about 10 times more FDI than MENA in 1999.

Table 1
Net FDI inflows as a Percentage of GDP in Developing Countries

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MENA</td>
<td>0.35</td>
<td>1.27</td>
<td>0.25</td>
<td>0.79</td>
<td>0.34</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>1.57</td>
<td>2.01</td>
<td>2.47</td>
<td>4.40</td>
<td>2.19</td>
</tr>
<tr>
<td>South Asia</td>
<td>0.68</td>
<td>0.64</td>
<td>0.53</td>
<td>0.66</td>
<td>0.76</td>
</tr>
<tr>
<td>East Asia &amp; Pacific</td>
<td>4.1</td>
<td>1.05</td>
<td>0.53</td>
<td>2.88</td>
<td>3.17</td>
</tr>
<tr>
<td>Latin America &amp; Caribbean</td>
<td>2.28</td>
<td>3.5</td>
<td>5.02</td>
<td>3.63</td>
<td>2.47</td>
</tr>
</tbody>
</table>

Source: Computed from World Development Indicators, various years.

In general, there are three distinctive features about FDI flows to the MENA region. First, much of the flows are concentrated in a few countries such as Saudi Arabia, Egypt, Tunisia, Bahrain, and Morocco. The least recipients include Libya, Kuwait, and Yemen. Second, a preponderance of FDI in the region has gone into petroleum-related (particularly hydrocarbons) and other primary activities. Non petroleum FDI (especially to countries such as Bahrain, Egypt, Morocco, Tunisia, and Lebanon) has gone into tourism, banking, telecommunications, manufacturing, and construction (Eid and Paua,
Third, the meager flow of FDI to MENA countries reflects a historical trend. Of developing countries' 65.7 percent share of the global stock of FDI in 1938, MENA's share was 2.6 percent, compared to Africa's 7.4 percent. In 1960, developing countries' share was 32.3 percent, while MENA received 2.8 percent and Africa 5.5 percent. Lastly, FDI in the region has not been proportional to the size of MENA economies. In 1999, the MENA region's GDP totaled $591.6 billion, almost twice Sub Saharan Africa (SSA) at $320 billion. Per capita Gross National Investment (GNI) in the region was $2000 in 1999, which amounted to over four times that of SSA at $490. Paradoxically, SSA received five times more FDI than the MENA region in 1999 (World Bank, 2002). In addition, six of the bottom 10 countries in UNCTAD's Inward FDI Performance Index in 2003 are MENA countries. While there is a consensus that the flow of FDI to the MENA region is unimpressive, the reasons for this disappointing flow are less clear. In the following section, I briefly review the literature on FDI in the MENA region. Despite the recent plethora of studies looking at capital flows, very few studies focused on FDI and its determinants (details in the next section). Even those studies, which primarily focus on FDI, use ill-suited proxies such as short-term interest rates; others simply disregard this important variable altogether, under the assumption that FDI is not driven by such cyclical variable. However, as shown later, FDI, like any other type of investment, is a function of the opportunity cost of making such an investment. The trick though is to capture the adequate proxy for the opportunity cost of FDI. Another critical feature of FDI, which is often ignored, is the element of dynamics. FDI, as most other macroeconomic variables is a dynamic process. Any model relying on a static representation of FDI usually suffers from omitted variable bias, which affects the robustness of the obtained results, and could lead to wrongfully drawing conclusions about the importance of various factors affecting FDI. A basic benign representation of

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1. This historical trend suggests that endemic institutional constraints may also be responsible for the abysmal flow of FDI to the MENA region.
2. The Inward FDI Performance Index ranks countries by the FDI they receive relative to their economic size, computed as the ratio of a country's share in global FDI inflows to its share in global GDP. The six MENA countries are Oman (129), Iran (131), Kuwait (132), Libya (134), Saudi Arabia (135), and United Arab Emirates (136), UNCTAD (2003).
3. Dynamic representation of FDI by itself is far from being a panacea because common estimation methods such as Simple OLS could produce biased and inconsistent estimation, as shown in section four.
the FDI process should start by assuming that FDI follows a dynamic process. This representation would enable us to determine the degree of inertia of FDI and to distinguish between the short-term and long-term effects of other explanatory variables. Indeed, the empirical results show that FDI has a weighty level of inertia, which cannot be ignored. Recently the works of Pesaran and Smith (1995), and Brock and Durlauf (2001) reveal the importance of slope heterogeneity in cross-country studies. Cross-country studies, including the ones on FDI and capital flows, assume parameter homogeneity across countries. If slope heterogeneity were ignored, it would make the obtained results under the assumption of slope homogeneity inaccurate. This problem is aggravated in dynamic panel models as Pesaran and Smith (1995) show. For that reason; this study explicitly considers the possibility of the existence of slope heterogeneity across countries.

The choice of explanatory variables is considered yet another problem which requires prudence. Any list of explanatory variables one can think of is not necessarily exhaustive; as theory provides little guidance regarding the choice of explanatory variables, since no theory exists that can fully explain FDI. This explains the ample number of explanatory variables that were tossed into FDI regressions to gauge their effects in different empirical studies. That is why; the empirical literature on FDI suffers from the problem of "open-endedness theories." This term is referred to by Brock and Durlauf (2001) in explaining the problem associated with deciding upon the variables to include in growth regressions, i.e. "The validity of one causal theory of growth does not imply the falsity of another." This problem is highly strict in the case of FDI literature. In fact, it is more so than in the case of growth literature, since theoretical growth literature is much more developed than its FDI counterpart. This empirical exercise does not attempt to provide an exhaustive list of all the factors influencing FDI. Rather, it focuses on a handful of variables, which other studies deem important in driving FDI flows. In addition to those usual "suspects," like output growth and openness, I consider less traditional variables such as the real effective exchange rate, political right index. FDI, like other types of investment, is initially driven by risk-return schedule. The majority of studies take into account the return element by including variables such as output growth, export growth and openness, which supposedly capture the expected return on long-term investment in a
given host country. Whereas, other number of studies on FDI totally ignore this risk element and others include only political risk without taking into consideration other risks originating from the sphere of the macroeconomy. This paper attempts to deal with the problem by suggesting and testing explicitly some measures of macroeconomic risk.

3. Relevant Literature
With the resurgence of capital flows to DCs in the beginning of the 1990s, a number of studies attempted to analyze the forces behind such phenomenon such as of Edwards (1992), Hernandez and Rudolph (1995), Bohn and Tesar (1996), Fernandez-Arias (1996), Bathattachaary, Montiel and Sharma (1997), Diamonte, Liew and Stevens (1998), among others. Generally, these are macro-based studies aiming at identifying the principal variables shaping the movements of capital flows to DCs. In the beginning of the 1990s, although, most of the studies were aimed at explaining the forces behind this notable change in capital flows directed to DCs, there have been a relatively limited number of studies which look closely into the forces directing FDI and shaping its distribution among DCs as well as the MENA countries. Some of these studies examine the effect of some particular policies on FDI. Singh and Jun (1995) gauge the effect of socioeconomic instability on FDI for the 1970-1993 period. Gastanaga et al., (1998) assess the relative importance of host country reforms in driving FDI flows, whereas, Chakrabarti (2001) investigates the robust/ fragile of the determinants of FDI, and that Noorbakhsh and Youssef (2001) study human capital to find out that it forms an important determinant of FDI in the DCs. As for the MENA countries, empirical research on FDI in MENA countries is limited. This is mainly due to the non availability of time-series data for most MENA countries. Literature on FDI in the region falls into two categories. The first category is made up of descriptive studies that analyze the magnitude, trend, and distribution of FDI in the MENA region. These studies conclude that FDI flows to MENA countries have been meager and unevenly distributed (Fujita, 2001) (Eid and Paua, 2002). The second group consists of empirical studies that explore the determinants of FDI flows to the region. One of these studies is that of Onyeiwu (2000), which explores the outflow of FDI from the Arab world, the study concludes that foreign exchange rate, interest rates and inflation are significant factors for FDI outflows from

A common problem to the literature on the determinants of capital flows is related to sample choice. Almost all studies focused on a particular group of countries like Latin American or Asian countries, in general, the vast majority of studies considered only those countries which secured high levels of capital flows. Consequently, not all the DCs were represented in these studies; thus, creating sample selection bias particularly if one uses these studies’ results as a mean to draw inference about FDI behavior in DCs as a group. Beside that almost all empirical studies on FDI during the 1990s suffer from estimation problems. During the past decade, there has been a lot of progress in panel analysis, especially in the area of dynamic panel models (for an exposition of such development see Arellano and Honoré, 2000). However, empirical studies on FDI have, to a large extent, shied away from this leading literature, despite the applicability on, and the foreseen gain from incorporating its new techniques and methods in studying FDI behavior. A number of these studies did not take into account both time series and cross section dimensions of the data and ignored the element of dynamics that should characterize FDI behavior. Edwards (1992) and Fernández-Arias and Hausmann (2000) take the data as averages of the period covered. Claessens et al., (1998) on the other hand, use panel analysis; nonetheless they formulate their model in the form of a static panel model with no dynamics, thus, leading to biased and inconsistent results.

4. Data, Statistical Analysis, and Results

4.1 Sample and Model

The Ŧraw data set for this study includes the whole population of Middle East and North Africa Countries; which amounts to 19 countries4. However, actual estimation of the model has removed two countries of Iraq and Palestine since the ware on the first and the occupation on the second cause unavailability of data. With this restriction and missing

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4 World Bank definition: Algeria, Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Sudan, Syria, Tunisia, United Arab Emirates, Palestine, and Yemen (World Bank Group, 2001)
country observations, the sample abates to 17 countries. Data sources are the World Bank Indicators and IMF and the Freedom House. The time series dimension is 23 years, for the period of 1980-2003; however, not all countries have data covering the whole period. This renders our panel an unbalanced one. In fact, this choice of sample makes it free from sample selection bias, which is associated with some earlier studies.

The adopted empirical approach goes hand in hand with the main objectives of the study, being the identification of the basic factors affecting FDI flows, and the assessment of how FDI flows react to a number of policy and non-policy variables. A reduced-form approach seems to be the logical choice in order to incorporate these potential explanatory variables. Having a structural model derived from first principles would result in narrowing, to a large extent, the amount of explanatory variables that could enter into the regression. This in turn would make it difficult to identify the stylized facts of the determinants of FDI flows. In addition, as argues by Edwards (1992), since there is no exists of a unified accepted theory of FDI, any empirical study on FDI should embrace a pragmatic approach in selecting the explanatory variables to be included in the regressions. For these reasons, I have adopted a general reduced-form approach. Almost all the empirical literature on the determinants of FDI and private capital flows employ reduced-form equations that are neither backed up nor derived from micro-founded theoretical model (Bathattachaary et al., 1997) and (Claessens, et al., 1998) are examples of such studies). On the other hand, studies by Singh and Jun (1995), and Hernandez and Rudolph (1995) are not that different from previously mentioned ones, which use a reduced-form approach, since both studies assume a partial adjustment model for FDI flows without providing a theoretical background or justification for why they opt for such specification.

I assume that the FDI to GDP ratio follows the following data generating process:

\[ y_{it} = \alpha + \mu_{it} + \delta_{yt-1} + \chi_{it}'\beta + u_{it} \]  

\[ u_{i} \approx iid \left(0, \sigma_u^2\right) \quad i = 1.2,\ldots,N, t = 1980,\ldots,T \]  

Where

- \( y_{it} \) : FDI to GDP ratio
- \( \chi_{it}' \) : The matrix of explanatory variables besides the lag dependent variable
- \( N \) : Total number of countries
$T$ : End of the period (2003)
$\mu_i$ : Country individual effect.
$u_{it}$ : Error term
$\alpha, \delta, \text{ and } \beta$ are unknown parameters

Here, I assume that the error term $u_{it}$ follows a one-way error component model with constant variance $\hat{\sigma}_u^2$. This is a fixed-effects formulation with a lagged dependent variable. The fixed effects representation captures the fact that countries have individual specific effects such as institutional settings, geographical characteristics, and cultural norms, which do influence FDI but are fixed in the short and medium terms. Another implicit assumption in this representation is slope homogeneity; however this assumption will be relaxed later on. The inclusion of the lagged dependent variable (lagged FDI to GDP ratio) despite it can help to control for omitted variable bias, its inclusion in a panel data model with small time series (total time period is equal to 23 at most) and large cross-section observations (more than 90) results in a problem; notice that both $y_{it}$ and $y_{it-1}$ are correlated with the error term. This implies that $\text{cov}(y_{it-1}, u_{it}) \neq 0$, and then the OLS estimator is biased and inconsistent even if $u_{it}$ are not serially correlated. So the use of the Fixed Effect will manage to solve this problem by producing more reliable estimators.

4.2 Statistical Analysis and Results

The starting point in the empirical exercise is defining a base regression. This base regression follows the structure given by (1) where the ratio of FDI to GDP is regressed on its lag, the lagged real GDP growth, a proxy for openness (sum of export and import to GDP), and the number of telephone lines per 1000 people as a proxy for the infrastructure and fuel exports as percentage of merchandise exports as a proxy for natural resources. There are mainly two reasons for taking the ratio of FDI to GDP as the dependent variable instead of simply using FDI: (i) to avoid the possibility of having a nonstationary endogenous variable in the regression; as in most countries one should expect that FDI carries much memory making it a nonstationary or explosive series; (ii) to control for the size of the country, which naturally affects the level of FDI absorbed by each country. It is quite misleading to compare countries in terms of FDI flows without referring to their respective economic sizes. It should not come as a surprise that Egypt attracts much more FDI than Jordan. However if one is indeed interested in meaningful comparison between these two countries, or any other country for that matter, then one
should control for the size of the economy by comparing the amount of FDI per a dollar of GDP; hence, mitigating the effect of the size of the economy. Indeed, the coefficients of variation of the two series appearing in Table 2 show that the ratio of FDI to GDP is much less volatile than FDI.

<table>
<thead>
<tr>
<th>Table 2</th>
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<tbody>
<tr>
<td>Basic Statistics of FDI Inflows</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FDI, net inflows (US$ billions)</th>
<th>FDI inflows %GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>17.75</td>
</tr>
<tr>
<td>Sum</td>
<td>6391.65</td>
</tr>
<tr>
<td>Median</td>
<td>0.17</td>
</tr>
<tr>
<td>Maximum</td>
<td>1926.13</td>
</tr>
<tr>
<td>Minimum</td>
<td>-1392.75</td>
</tr>
<tr>
<td>Sum Sq. Dev.</td>
<td>15786188</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>208.94</td>
</tr>
<tr>
<td>Coefficient of Variation</td>
<td>11.77</td>
</tr>
</tbody>
</table>

As for the list of explanatory variables besides the lagged endogenous, there is nothing sacred about them, as it could be changed by adding or dropping a few variables. Still, the choice is not arbitrary. Real GDP growth is the “common denominator” variable in almost all empirical studies on FDI. It is often argued that real GDP growth is the best variable that captures a country’s fundamentals and expected return on long-term investment. Openness is another key domestic variable cited by the literature to have a positive and significant effect on FDI, such result has been supported by many empirical studies such as (Edwards, 1992), (Singh and Jun, 1995), (Bathattachaary et al., 1997), (Balasubramanyam et al., 1996), (Morisset, 2000), (Fujita, 2001), (Asiedu, 2002), and (Onyeiwu, 2003) among others. As for the infrastructure; the better the infrastructure of the host economy the more attractive it is to foreign investors; since foreign investors

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5 It is always pointed out that, countries such as Egypt, Tunisia, and Morocco attract the majority of FDI flows, and for a number of studies this indicates an uneven distribution of FDI flows among the MENA countries. However, this fact is quite prevalent, as big countries with large economies should attract large amounts of FDI, matching the size of their economies.
prefer economies with a well-developed network of roads, airports, water supply, uninterrupted power supply, telephones and off course internet access. Many empirical studies such as (Wheeler and Mody, 1992), (Borensztein et al., 1998) and (Deichmanns et al., 2003) among others conclude that their infrastructure proxy (proxies), for example, expenditure on road transport (Hill and Munday, 1992), per capita usage of energy (Mudambi, 1995), transportation (Coughlin et al., 1991) has/ have a positive and significant effect on FDI. At this study I use the telephone lines per 1000 people as a proxy for a proper infrastructure. Turning to the natural resources, we can see that over 30% of FDI to DCs are directed to the handful of countries that are oil and gas exports, another 12% represent FDI to countries rich in other mineral resources. That means that natural resources availability is very significant for the flow of FDI to DCs (Morisset 2000) (Addison and Heshmati, 2002). In other words; resources seeking investors will locate subsidiaries abroad to secure a more stable or cheap supply of inputs, generally, raw materials and energy sources and factors of production (Jenkins and Thomas, 2002).

The first exercise is to estimate this base regression using two of the statistical techniques; those estimation techniques include simple OLS, and Fixed Effects. These estimates are reported in Table 3. Since the simple pooled OLS ignores the existence of country-specific effects and the endogeneity problem, it bounds to produce biased and inconsistent results. For example, the coefficient of real GDP growth turned out to be positive but insignificant under OLS, The robust fixed-effects estimation generates improved results. All coefficients appeared to be at least significant at the 10% level, and carry the expected sign. In addition, the Wald test which assesses the joint significance variables points to the significance of the explanatory variables. Still, as mentioned before, since the fixed-effects estimation ignores the problems generated by including a lagged endogenous variable, these resulting coefficient estimates are still biased and inconsistent. The noticeable differences between the OLS and FEM are, first, the improvement in the joint significance of the explanatory variables as measured by Wald test; it reached 28.2 in the OLS and rose to reach 286.8 in the FEM. Second, the change magnitudes of both the lagged real output growth from 0.021 statistically not significant

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6 The positive significant effect of growth rate on FDI flows attests that some of the endogenous growth empirical literature which takes FDI as one of the explanatory variables for growth, suffers from an endogeneity problem.
As for the lagged FDI as GDP in the FEM techniques which is a little stronger than in the OLS (both are statistically significant at 10%); reveals several important features of FDI flows as a ratio of GDP. First, the large magnitude of the lagged dependent variable coefficient (0.47) indicates that FDI exhibits a high degree of inertia, and ignoring such important sluggishness would bias to a great extent the empirical results. This high level of inertia also implies that the long-term effects of explanatory variables are almost a quadruple of their point estimates (short-term effects). Second, the small magnitudes of

\[ \beta_1 (1- \delta)^{-1}. \]
the estimated coefficients of the lagged output growth (0.005), telephone lines (0.0004), and the fuel exports as % of the merchandise exports (-0.0047) relative to the one of the lagged endogenous variable (0.47) suggests that changes in internal factors have minimal quantitative short-term effects on FDI flows as a ratio of GDP. It is the past value of FDI that determines, to a large extent, the current level of FDI received by a typical MENA country. This by all means does not imply that FDI is not affected by internal factors; but, rather it takes time for changes in these factors to have some noticeable effects on FDI. This could account for the apparent stability of FDI and its smooth path observed after the 1980s. As mentioned earlier, the regressors appearing in the base regression are not by all means representing all the forces affecting FDI. In the second exercise, I consider the effect of a number of other policy and non-policy variables on FDI. The list of these variables appears in Table 4 together with their expected signs. This list is by no means exhaustive. It includes a number of less traditional variables that were included in earlier studies, which are in lagged form: M2 to GDP ratio, inflation rate, political right index, real, School enrollment tertiary (% gross), and logarithm real effective exchange rate.

### Table 4
List of Potential Explanatory Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Expected Sign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial Deepening (M2/GDP)</td>
<td>Positive</td>
</tr>
<tr>
<td>Political Right Index</td>
<td>Positive</td>
</tr>
<tr>
<td>Real Effective Exchange Rate</td>
<td>Ambiguous</td>
</tr>
<tr>
<td>Inflation Rate</td>
<td>Negative</td>
</tr>
<tr>
<td>School Enrolment</td>
<td>Positive</td>
</tr>
</tbody>
</table>

Before adding the effects of these additional regressors on our dependent variable, the reasons behind why it is lucrative to investigate the effects of these variables on FDI are delineated. Our focus will be on the less traditional variables, because earlier studies such as (Bathattachaary et al., 1997) and (Lensink and White, 1998) have already justified the inclusion of those traditional variables.

As argued earlier, FDI, as any other type of investment, is a function of risk return schedule. Previous studies have paid little attention to the element of risk affecting FDI. Gastanaga et al., (1998) have included the black market premium (BMP) to proxy for exchange rate distortions; they found that BMP has little effect on FDI. Instead of this
restricting version of exchange rate variability, I adopt more general measures, namely real effective exchange rate. According to the results of Wei (2001) the exchange volatility is believed to have a significant negative effect on FDI as a ratio of total flows. My assumption is that high exchange rate variability depresses FDI, as in the case of trade, so a flexible and a stable exchange rate system are needed to reduce uncertainty and to successfully attract FDI (Kiyota, and Urata 2004). If this assumption turns out to be correct, then this would represent one of other justifications for why the MENA countries choose to fix their nominal exchange rate. Although political variables are prevalent in FDI empirical studies, the democracy index is a nontraditional variable in FDI regressions. Recent studies by Edwards (1992), and Singh and Jun (1995) examine the effect of political instability on FDI flows to DCs and found that indeed political instability affects negatively FDI. Nevertheless, there is no study that delved into assessing how democracy affects FDI. It is widely argued that democratic nations are more capable than others of putting in place institutions that abet transparent business transactions, and curtail corruption\(^8\) and deleterious political conflict. Under the premises that FDI is drawn more to countries with better institutional setup, less corruption and safe political environment, and then we should expect that FDI is affected by the level of democracy; that is why I used the political right index\(^9\) as a proxy for it. Table 5 reports the results obtained from tossing a number of these potential explanatory variables into the base regression\(^10\). In each of these different regressions, all the variables appearing in the base regression are retained and only one additional regressor is added, with its name appearing on the top of the column as shown in Table 5, the Wald test points to the joint significance of explanatory variables in all the estimated regressions. In general, the explanatory variables included in the base regression, in most cases, retained their significance and magnitudes in face of the inclusion of additional ones.

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8 Hines (1995) and Wei (2000) found evidence that there exists a negative relationship between corruption and FDI. Furthermore, Wei (2001) found that corruption changes the composition of capital flows against FDI, and toward other types of flows.

9 Political right index is an index produced by the Freedom House, countries whose combined average ratings for political right index fell between 1.0 and 2.5 were designed "free", between 3.0 and 5.5 "partly free", and between 5.5 and 7.0 "not free".

10 Not all the results correspond to the list of potential explanatory variables were presented. Real Effective exchange rate, inflation rate, all took the right expected signs, but the former found to be insignificant, whereas, the latter found to be significant in the one technique (FEM).
Table 5
Additional Explanatory Variables
Dependent Variable: FDI/GDP

<table>
<thead>
<tr>
<th>Explanatory Variables</th>
<th>Lag (M2/GDP)</th>
<th>Lag (Political Right Index)</th>
<th>Log (Real Effective Exchange Rate)</th>
<th>Lag(Inflation Rate)</th>
<th>Lag(School Enrolment)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OLS</td>
<td>FEM</td>
<td>OLS</td>
<td>FEM</td>
<td>OLS</td>
</tr>
<tr>
<td>Lagged FDI/GDP</td>
<td>0.342</td>
<td>0.468</td>
<td>0.334</td>
<td>0.467</td>
<td>0.357</td>
</tr>
<tr>
<td></td>
<td>(7.43)*</td>
<td>(4.5)*</td>
<td>(7.2)*</td>
<td>(4.5)*</td>
<td>(7.9)*</td>
</tr>
<tr>
<td>Lagged real GDP growth</td>
<td>0.029</td>
<td>0.005</td>
<td>0.024</td>
<td>0.005</td>
<td>0.034</td>
</tr>
<tr>
<td></td>
<td>(1.58)</td>
<td>(11.6)*</td>
<td>(1.3)</td>
<td>(9)*</td>
<td>(1.86)***</td>
</tr>
<tr>
<td>Openness</td>
<td>4.033</td>
<td>-1.892</td>
<td>2.379</td>
<td>-1.660</td>
<td>5.0</td>
</tr>
<tr>
<td></td>
<td>(0.83)</td>
<td>(-1.5)*</td>
<td>(0.48)</td>
<td>(-1.49)</td>
<td>(1.04)</td>
</tr>
<tr>
<td>Telephone Lines per 1000 people</td>
<td>0.002</td>
<td>0.0004</td>
<td>0.002</td>
<td>0.0003</td>
<td>0.003</td>
</tr>
<tr>
<td></td>
<td>(1.34)</td>
<td>(5.2)*</td>
<td>(1.05)</td>
<td>(2.8)*</td>
<td>(2.3)***</td>
</tr>
<tr>
<td>Fuel Exports as % of Merchandise exports</td>
<td>0.001</td>
<td>-0.001</td>
<td>-0.001</td>
<td>-0.001</td>
<td>0.003</td>
</tr>
<tr>
<td></td>
<td>(0.48)</td>
<td>(-8.4)*</td>
<td>(-.28)</td>
<td>(-10)*</td>
<td>(1.15)</td>
</tr>
<tr>
<td>Additional Regressor</td>
<td>0.005</td>
<td>0.001</td>
<td>0.085</td>
<td>0.056</td>
<td>-0.0006</td>
</tr>
<tr>
<td></td>
<td>(1.57)</td>
<td>(2.7)*</td>
<td>(2.01)**</td>
<td>(3.3)*</td>
<td>(-0.37)</td>
</tr>
<tr>
<td>Number of Observations</td>
<td>391</td>
<td>391</td>
<td>391</td>
<td>391</td>
<td>391</td>
</tr>
<tr>
<td>Number of Countries</td>
<td>17</td>
<td>17</td>
<td>17</td>
<td>15</td>
<td>17</td>
</tr>
<tr>
<td>Wald $\chi^2$</td>
<td>(62)*</td>
<td>(374)*</td>
<td>(70.8)*</td>
<td>(330)*</td>
<td>(77.3)*</td>
</tr>
</tbody>
</table>

Notes: t-statistics are in brackets; * significant at 1% level or more, ** significant at 5% level or more, and *** significant at 10% level or more.
The variable with the largest magnitude in all the inclusions was, again, the lagged endogenous variable. In addition, results show that this variable is always significant at the 10% level both under OLS and FEM. This high statistical and quantitative significance combined with its relative point estimate stability, point to the robustness of this variable, and the importance of inertia in driving FDI flows to the MENA countries. Similar to the results of the base regression, estimates of all other explanatory variables, besides the lagged endogenous appear to be somewhat small in magnitudes. This again reaffirms that internal factors have minor effects on FDI in the short-term as opposed to their long-term impact. In all of these regressions, the variable with the highest level of significance is openness, this support the results of Balasubramanyam et al., (1996), Chakrabarti (2001), Morrisset (2000), Fujita (2001), Asiedu (2002), and Onyeiwu (2003). The second highest level of significant is the number of the telephone lines (per 1000 people), which supports the results of Mudambi (1995), Wheeler and Mody (1992), Borensztein et al., (1998) and Deichmanns et al., (2003). This demonstrates to the close positive association between FDI flows and a good infrastructure. As for the lagged real output growth, results indicate that this variable is as robust as other variables in the base regression. As in all of these regressions, this variable has maintained its positive coefficient, and in the majority of them, it is significant at the 10% level. As for the logarithm real effective exchange rate it was found to be consistently negative in both OLS and FEM but significant only in the FEM, a 1% change in nominal exchange rate results in a nearly 0.47% drop in the dependent variable. These results confirm earlier predictions about the effects of exchange rate on FDI, in addition, the detrimental effects of exchange rate justify why the MENA countries uphold a relatively fixed nominal exchange rate, since strong changes and fluctuations in the nominal exchange rate could terminate countries accessibility to the international capital market. Under the OLS and the FEM, the lagged M2 to GDP has almost the same small quantitative positive effect on the dependent variable, however, under the FEM, this effect is more significant. According to the point estimate corresponding to FEM, a 1% change in the M2 to GDP results in a 0.005% elevate in the dependent variable. In view of that, it is quite common for countries to experience such a tiny raise especially in the MENA countries where they suffer from weak and inefficient financial markets, also one possible explanation behind
the this fragile relation, is that in the line of with Fernandez-Aris and Hausmann (2000), who observe the relationship between private credit and the share of FDI in total flows; is that a high level of M2 to GDP often times corresponds to a high level of private credit, which is an indication of the abundance of domestic capital. As such, foreign capital in the form of FDI would not be needed as much. Another possible explanation is that such weak relation is another manifestation of the noted negative relationship that exists between FDI and other types of flows, mainly bank loans; since a higher level of bank loans often translated into a higher level of M2 to GDP. As for the lagged inflation rate, which takes the expected signs, this result confirms earlier studies such as of Addison and Heshmati (2003) among others, and predictions that high inflation rates caused by the instability of consumer prices negatively effect FDI and keep away in most cases foreign investors. Turning to the results corresponding to the lagged political right index, one can descry a clear picture, since this index shows a positive effect on FDI and significant according to both OLS and FEM. An explanation for this can be took from the point of view of Shama (2000) and Garibaldi et al., (2002) when they argue that a stable political environment gives confidence that the laws and regulations governing their investment and the markets, in which they operate, will remain basically the same over the long term. In other words, the lower the risk level in the host country the earlier FDI occurs in it. Lastly, the school enrolment coefficient, result in the OLS shows that it doesn’t have a significant effect on FDI inflows, whereas, it has that significance according to the FEM. This shows the importance of the skilled labor in attracting FDI in the MENA countries, that is why the Arabic governments are spending a huge efforts to enhance their human level skills as a strategy to attract the suitable foreign investment that satisfy their countries’ needs. As mentioned before, this study tests explicitly for the possibility of slope heterogeneity across countries. In the previous analysis, parameter homogeneity was assumed. As an alternative for this parameter homogeneity assumption, I experiment with a specification involving parameter heterogeneity. I adopt a specification similar to the one introduced by Haque, Pesaran and Sharma (1999) where the slope coefficients in each country are fixed over time, but vary across countries, depending on the sample means of their average FDI-GDP ratio.  

There is another explicit way of introducing parameter heterogeneity, namely by estimating a separate
Without loss of generality, rewrite (1) as:

\[ y_{it} = \alpha + \mu_i + \chi'_{it} \beta_0 + u_{it} \]  

(2)

Then slope heterogeneity could be modeled as:

\[ B = \beta_0 + \beta_1 \hat{y}_i \]  

(3) \[ \text{where } \hat{y}_i = T^{-1} x y_{it} \]

Using (3) in (2), one can get

\[ y_{it} = \alpha + \mu y_{it-1} + \chi'_{it} \beta + \chi'_{it} \hat{y}_i \beta_1 + u_{it} \]  

(4)

Note that (1) is a special case of (4) where the restriction \( \beta_1 = 0 \) is imposed. Hence, (4) can include both heterogeneous as well as homogeneous parameters, depending on the structure of \( \beta_1 \) matrix. The estimation of (4) using FEM for the base regression indicated that the coefficients corresponding to slope heterogeneity suffered from a low level of significance. Similar results were obtained when additional regressors were added to the base regression. To reconcile these results, one can argue that since our sample is defined only over MENA countries, assuming slope homogeneity is after all not a totally unrealistic assumption, on the grounds that these countries are more or less the same in terms of their development levels.

5. Conclusion

The preeminence of FDI over different types of flows during the recent episode of capital flows and its notable resilience, even in gloomy times, shows that FDI should be studied more carefully. The existing body of literature on capital flows and FDI ignores many of the occult features surrounding the nature, as well as the main determinants of FDI flows to MENA countries. This paper has empirically studied the relationship between FDI and a number of internal factors. This study accounts for a number of problems associated with the existing literature on capital flows in general, and FDI in particular, by focusing solely on FDI flows and adopting a comprehensive sample, which encompasses almost all MENA countries. At the same time, it extends the recent development in dynamic panel models to the study of FDI, mainly in order to deal effectively with problems such as endogeneity, static representation of dynamic relations, and neglected parameter

regression for each group, then taking the average of the coefficients over groups. This is what is referred to in the literature as the mean group estimator (Pesaran and Smith, 1995). However, this procedure requires that the time dimension is large enough to obtain reliable estimates.
heterogeneity. In addition, this paper suggests some proxies for macroeconomic risk on FDI, and tests their effects on it. The empirical exercises performed in this paper vindicate a number of results. *First, inertia* is a very important feature of FDI. According to the point estimate of the lagged FDI to GDP ratio, the long-term effect of explanatory variables outweighs the short-term effect by approximately fourfold. This high level of inertia, combined with the relatively small quantitative effects of other explanatory variables, could explain the observed stability as well as resilience of FDI in the face of changes in internal variables. *Second*, in line with the basic economic theory on investment, and contrary to “conventional wisdom” on the determinants of FDI flows, FDI was found to be somehow sensitive to the inflation rate with higher levels of inflation rates corresponding to less FDI to the MENA countries, this has been supported by Apergis and Katrakilidis, (1998) when they argue that inflation and inflation uncertainty are found to affect FDI negatively. *Third*, beside its statistical significance, the political right index has a more quantitative effect on FDI than the economic indicators. This can explain why the last two decades have shown that strong and stable macroeconomic policies aren’t sufficient conditions for attracting FDI and importing growth; because among the many other important factors that attract FDI are the political stability and the absence internal/external conflicts (Chan and Gemayel, 2003) (Mellahi et al., 2003). *Fourth*, there exists some evidence that the variability and the change in nominal exchange rate have a negative effect on FDI. This confirms earlier studies such as (Urata and Kawai, 2000) and (Kyrkilis and Pantelidis, 2003) among others, that found a link between exchange rate variability on the one hand, and uncertainty and limited accessibility to capital market on the other. These results, however, are not caveat-free. Mainly due to data limitations, a number of critical variables were neither considered nor accounted for. FDI is believed to be related to the quality of government bureaucracy as well as judiciary system. Notwithstanding, the data for such factors is not readily available; and if exists, does not span over the scope nor the period of analysis. Another possible caveat is analyzing FDI as one entity, without breaking it down to its two main components. Ideally, one should study each component separately. However, the available data does not support this split; mainly, because of the way FDI and mergers and acquisitions are reported.
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