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THRESHOLD EFFECTS IN THE CAPITAL ACCOUNT
LIBERALIZATION AND FOREIGN DIRECT
INVESTMENT RELATIONSHIP

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Abstract

This paper examines the effects of capital account liberalization (CAL) on Foreign Direct Investment (FDI). We use the System Generalized-Method-of-Moments (GMM) estimator developed for the dynamic panel model for a sample of 14 Middle East countries from 1985 to 2009. We find new evidence that countries that are able to reap the benefits of the capital openness policy satisfy certain threshold conditions regarding the level of financial development and institutional quality. Our results are relevant for Middle East countries since many of them have engaged in a process of liberalization, have weak institutions and an inappropriate financial framework.

JEL Classification: C23.F21

Keywords: Capital Account Liberalization, Foreign Direct Investment, Institutional quality, System GMM estimator.

ملخص

تبحث هذه الورقة في آثار تحرير حساب رأس المال (CAL) على الاستثمار الأجنبي المباشر (FDI). نستخدم النظام المعمم (GMM) لنموذج ديناميكي لعينة من 14 بلدا في الشرق الأوسط من عام 1985 إلى عام 2009. ونجد أدلة جديدة على أن الدول التي تكون قادرة على جني ثمار سياسة الانفتاح في رأس المال تلبى شروط معينة فيما يتعلق بمستوى التنمية المالية وجودة المؤسسات. نتائجنا ذات الصلة لدول الشرق الأوسط والتي تشير إلى أن العديد منهم قد تشارك في عملية تحرير رأس المال، لديهم ضعف في المؤسسات وإطار مالي غير مناسب.

1. Introduction

Capital account liberalization has been one of the most important economic policies recommended to developing countries for economic growth. Since the early 1990s, many countries in the Middle East have established the measures of CAL to attract capital flows mainly FDI, which is understood to be a major antecedent to economic development. Although, all members of Middle East countries have witnessed a substantial increase in the FDI inflows from 1985 to 2009 (see Figure 1), it has been and continues to be poor in comparison with the world and other developing regions (World Development Indicators 2011). Furthermore, Figure (2) indicates a wide disparity in FDI inflows and a notable difference in the process of capital account liberalization among Middle East countries. The question that arises then is whether and under what conditions capital account policy promotes FDI. A few empirical studies have been conducted to investigate this issue, which to date is still an open question.

Studies have failed to establish a stable relation between capital account openness and FDI growth. Some of them have found a positive impact of capital openness on FDI, Gastanaga et al. (1998) support the notion that countries with relatively liberalized capital accounts attracted more FDI inflows than countries that are more closed. Butkiewicz and Yanikkaya (2008) reach the same result and conclude in their study that capital restrictions reduce the benefit of FDI on growth in developing countries. Others have doubted the robustness of this impact. Asiedu and Lien (2004) employ panel data for 96 countries over the period 1970-2000 and find that the impact of capital controls on FDI varies by region and has changed over time. They prove that capital controls have no effect on FDI to sub-Saharan Africa and the Middle East, but affects FDI to East Asia and Latin America adversely. This controversy has prompted research on the evaluation of the possible pre-conditions under which capital account liberalization may spur FDI. From a theoretical point of view, countries must reach a certain threshold in terms of institutional and economic development before they can expect to benefit from CAL (Chinn and Ito 2008; Noy and Vu 2007; Alfaro et al. 2005). Broadly speaking, the most important preconditions for moving to capital account liberalization are: financial market development, institutional quality, and macroeconomic stability. However, scholars to this argument have paid very little attention. Recently, some empirical studies conducted by Noy and Vu (2007), Cherif et al. (2011) and Okada (2013) examine the role of institutional quality as a key factor in explaining the mixed results in the effect of capital account liberalization on FDI inflows and have reached more positive conclusions.

This paper seeks to contribute to this emerging body of knowledge by investigating the possible existence of macroeconomic stability, financial development and institutional quality threshold effects in the relationship between financial openness and FDI. We focus on the two influential articles, the first pivotal article is given by Noy and Vu (2007) is entitled “Capital Account Liberalization and FDI” and the second article proposed by Okada (2013), has as a headline, “The Interaction Effects of Financial Openness and Institutions on International Capital Flows”. Noy and Vu (2007) construct an annual panel dataset for 62 developing and 21 developed countries from 1984 to 2000 and they conduct an empirical analysis for each group separately, given that the factors that affect FDI inflows are different across the two groups. They use a standard FDI determination model with fixed effect and they add the capital control variable. Furthermore, in order to examine whether the impact of capital controls on FDI inflows is sensitive to different institutional factors like corruption, financial risk and political stability they include interaction terms between capital openness and corruption, interaction between capital openness and institutional variables. They underline that the liberalization of the capital account is not sufficient to generate increases in inflows unless a lower level of corruption or a decrease in political risk accompanies it. These results are obtained by using fixed effects and least squares estimators and confirmed by GMM dynamic two step panel estimator. Okada

(2013) uses a dynamic panel model to examine how financial openness and institutional quality affect international capital inflows in the sample of 112 countries from 1985 to 2009. He finds that while financial openness and institutional quality do not individually have significant impacts on international capital inflows, their interaction effects are significant. He confirms the assumption that the partial effect of capital openness on FDI inflows is depends on the level of institutional quality. He concludes that capital account openness improves FDI inflow only in countries with good institutional quality compared to countries with poor institutional quality. Furthermore, among institutional factors, bureaucratic quality and law and order appear to play an important role in promoting FDI.

Our paper complements previous studies that test the effects of CAL on FDI (Asiedu and Lien, 2004; Alfaro et al. 2004; Okada 2013; Noy and Vu 2007) and differs from Noy and Vu (2007) and Okada (2013) on two respects. Firstly, while Noy and Vu (2007) examine only one aspect of institutional quality (corruption) and disregard the role of other institutional quality which may be important determinants of international capital inflows, our analysis is more comprehensive because our measures of institutional quality reflect several characteristics of a country's institutions, such as the bureaucratic quality, law and order, government stability and investment profile. The second difference is that although Okada, (2013) disentangles how detailed components of institutions such as bureaucratic quality and law and order can influence capital inflows, he disregards the main role of financial development and macroeconomic stability in promoting FDI. In our study we look on the interaction effects between capital openness and financial development on FDI inflows. The main contribution of our study is to investigate the possible existence of macroeconomic stability, financial development and institutional quality threshold effects in the relationship between financial openness and FDI.

We employ a panel data of 14 Middle East countries¹ over the period 1985 to 2009. Several studies have found that lagged FDI is correlated with current FDI. We therefore use the system GMM methodology for dynamic panel data proposed by Blundell and Bond (1998) This dynamic panel approach enables us to consider the presence of unobserved country-specific effects as well as to deal with the problem of reverse causality or simultaneity².

The remainder of the paper is organized as follows. Section 2 presents the empirical methodology and data. Section 3 discusses estimation results and section 4 concludes the paper.

2. Empirical Methodology and Data

2.1 Empirical methodology

We use a panel of 14 countries from the Middle East region which covers the period from 1985 to 2009 and we consider the following benchmark regression as presented by (Okada 2013):

$$FDI_{it} = \beta_i + \beta_1 KAOPEN_{i,t} + \rho FDI_{i,t-1} + \beta' CV_{i,t} + \varepsilon_{i,t} \quad (1)$$

Where “*i*” refers to countries, “*t*” to time, “ β_i ” is the country-specific effect when necessary iid(0, $\sigma^2\theta$) and ε_{it} is the error term for each observation iid(0, $\sigma^2\varepsilon$). FDI is net FDI/GDP, $FDI_{i,t-1}$ is the lagged value, KAOPEN is the indicator of capital account liberalization developed by (Chinn and Ito 2008), CV is a vector of controlling variables drawn from the empirical literature of FDI determinants. According to (Moosa and Cardak 2006) market size (*GDPpc*), trade openness (*Open*) and infrastructure quality (*Tele*) are the most robust determinants of FDI, thus, these variables form part of our basic set of controlling variables, that appear in all model specifications. Economic literature suggests that countries, which are endowed with natural

¹ Cyprus, Egypt Arab Republic, Iran Islamic Republic, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Turkey, United Arab Emirates and Yemen.

² The system GMM estimation allows us to control for the potential endogeneity not only of FDI, but also of all other explanatory variables.

resources, would receive more FDI. We therefore include the share of fuel in total merchandise exports to capture the availability of natural resource endowments (*Nat*). This measure of natural resources has been employed in several studies, including Jeffrey and Andrew (1997) and Asiedu and Lien (2011) among others and was available from World Development Indicators.

Furthermore, in order to examine whether CAL promotes FDI only under certain conditions such as macroeconomic stability, financial depth and political stability, we introduce multiplicative terms (KAOPEN*k) where “k” represents respectively inflation consumer price (*INF*), financial development (*DC*) and institutional quality (*INST*). Therefore (KAOPEN**INF*) is the interaction between capital openness and inflation consumer price, (KAOPEN**DC*) is the interaction between capital openness and private credit to domestic sector, and (KAOPEN**INST*) is the interaction between capital openness and institutional quality.

$$FDI_{i,t} = \beta_i + \beta_1 KAOPEN_{i,t} + \rho FDI_{i,t-1} + \beta_2 k_{i,t} + \beta_3 (KAOPEN_{i,t} * k_{i,t}) + \beta' CV_{i,t} + \varepsilon_{i,t} \quad (2)$$

As previously mentioned, equations (1) and (2) make up a dynamic panel data model, where the dependent variable is partly explained by its past value. This model involves two econometric problems. The first one results from the dynamic nature of the data, which can introduce some correlation between the lagged depended variable and the error term $\varepsilon_{i,t}$ or between some of the variables of the CV vector and the specific term β_i . The second issue results from the potential endogeneity of the explanatory variables. So, the application of static panel data estimation methods would lead to biased estimates with dynamic panel data models. Considering these aspects, the appropriate methodology to use is the GMM estimator for dynamic panel data models suggested by (Arellano and Bond 1991), which provides consistent estimates for such models. This estimator often referred to as the “difference.” The GMM estimator takes the first difference of the data and then uses lagged values of the endogenous variables as instruments. This allows the elimination of country specific effects and eliminates any endogeneity that may be due to the correlation of these country specific effects and the explanatory variables.

We therefore lagged independent and control variables for one period, the first difference transforms the first equation (1):

$$\Delta FDI_{i,t} = \beta_1 \Delta KAOPEN_{i,t} + \rho \Delta FDI_{i,t-1} + \beta' \Delta CV_{i,t} + \Delta \varepsilon_{i,t} \quad (3)$$

$$FDI_{i,t} - FDI_{i,t-1} = \beta_1 (KAOPEN_{i,t} - KAOPEN_{i,t-1}) + \rho (FDI_{i,t-1} - FDI_{i,t-2}) + \beta' (CV_{i,t} - CV_{i,t-1}) + (\varepsilon_{i,t} - \varepsilon_{i,t-1}) \quad (4)$$

Consequently, the GMM “difference” has eliminated the country fixed effect. However, the first-differencing equation (1) induces a new bias by constructing the new error term, $\Delta \varepsilon_{i,t}$ **which** is correlated with the lagged dependent variable $\Delta FDI_{i,t-1}$. Therefore suggest the following moment conditions:

$$E[FDI_{i,t-s} \cdot (\varepsilon_{i,t} - \varepsilon_{i,t-1})] = 0 \text{ For } s \geq 2; t = 1, \dots, T$$

$$E[KAOPEN_{i,t-s} \cdot (\varepsilon_{i,t} - \varepsilon_{i,t-1})] = 0 \text{ For } s \geq 2; t = 1, \dots, T$$

$$E[CV_{i,t-s} \cdot (\varepsilon_{i,t} - \varepsilon_{i,t-1})] = 0 \text{ For } s \geq 2; t = 1, \dots, T$$

However, Arellano and Bover (1995) point out that when the explanatory variables are persistent over time, lagged levels are often poor instruments for first differences. Blundell and Bond (1998) proposed a more efficient estimator, the system GMM estimator, which mitigates the poor instruments problem by using additional moment conditions. The system GMM estimator is less biased than the difference GMM estimator (Asiedu 2013). In the Blundell and Bond GMM estimator, the instruments for the regression in levels are the lagged differences of

the corresponding variables, and the instruments for the regression in differences are the lagged levels. Thus Blundell and Bond, (1998) and Arellano and Bover, (1995) set the following additional moment conditions:

$$E[(FDI_{i,t-s} - FDI_{i,t-s}). (\beta_i + \varepsilon_{i,t})] = 0 \text{ For } s=1$$

$$E[(KAOPEN_{i,t-s} - KAOPEN_{i,t-s}). (\beta_i + \varepsilon_{i,t})] = 0 \text{ For } s=1$$

$$E[(CV_{i,t-s} - CV_{i,t-s}). (\beta_i + \varepsilon_{i,t})] = 0 \text{ For } s=1$$

In our study, we use the two-step estimator, which is asymptotically efficient and robust for all kinds of heteroskedasticity. Given that, the consistency of the GMM estimator depends on the validity of the assumption that the error terms do not exhibit serial correlation and on the validity of the instruments. We, therefore, apply two tests³; the Arellano-Bond test of second order autocorrelation⁴ and the Hansen J test of over identifying restrictions, which tests the overall validity of the instruments.

2.2 Data

Data on dependent variables (FDI/GDP) and control variables, including trade openness (% GDP), GDP per capita (current U.S. dollars); the number of telephone lines per 1,000 inhabitants; inflation consumer price (annual %); domestic credit to the private sector (% GDP); and natural resource availability (share of fuel in total merchandise exports) were collected from World Development Indicators published by the World Bank (2011). Data on institutional quality were from the International Country Risk Guide (ICRG) published by the Political Risk Services (PRS Group). ICRG ranges from zero to one hundred, the highest overall rating (theoretically, 100) indicates the lowest risk, and the lowest score (theoretically, 0) indicates the highest risk. Furthermore, we examine five unbundling institutional qualities among the subcomponents of political risk rating: government stability, investment profile, corruption, law and order, and bureaucracy quality. To ensure an easier interpretation of the results, all indicators have been re-scaled to 0-1. The capital control measure (KAOPEN) was taken from Chinn and Ito (2008). It is scaled in the range between -2.5 and 2.5, with higher values standing for larger degrees of financial openness. One of the merits of the KAOPEN index is that it refers to the intensity of capital controls because it incorporates other types of restrictions such as current account restrictions, not just capital account controls. The data were available for 181 developed and developing countries for 1970–2008. Noting that the number of observations among countries is not steady, that leads to an unbalanced panel data. Details on the variable definitions and data sources are available in Table [A1] (Appendix).

2.3 Threshold condition

The threshold effects are computed by using the partial differentiation of FDI on KAOPEN:

$$\frac{\partial FDI_t}{\partial KAOPEN_t} = \beta_1 + \beta_3 k_t$$

The positive effect of capital openness on FDI inflows is observed when:

$$\beta_1 + \beta_3 k_t > 0$$

Thus, the threshold effects in Middle Eastern countries can be computed as:

$$k_t > -\frac{\beta_1}{\beta_3}$$

³ The two null hypotheses tests are: H01: The over-identifying restrictions are valid and H02: There is no serial correlation in the first-differenced disturbances, respectively. Failure to reject the null hypotheses of both tests gives support to our model.

⁴ by construction, the differenced error term is probably first-order serially correlated even if the original error term is not.

The presence of the lagged depended variable in the model means that all the estimated beta coefficients represent short period effects. The long period effects can be derived by dividing each of the betas by $1-\rho$, the coefficient of the lagged depended variable.

3. Estimation Results

3.1 Descriptive statistics

Table 1 in Appendix summarizes the descriptive statistics from our sample. For all variables, the cross-country variation is very large, except openness to trade. The average of net inflows of FDI is 2.17 percent of the GDP, with a standard deviation of 3.66. The minimum value of net inflows of FDI concerns Yemen (-5.11 in 1995), whereas the maximum value is for Jordan (23.53 in 2006). Concerning financial development, we observe that average of domestic credit to the private sector is 45.66, with a standard deviation of 42.94. The minimum reaches 1.8 (Iraq in 2004) and the maximum 269.66 (Cyprus in 2009). Macroeconomic instability seems critical since the average of the annual percentage change of consumer prices equals to 12.75, with a standard deviation of 20.5. The minimum value goes to Oman (-4 in 1987) and the maximum to Lebanon (99.8 in 1992). Cyprus exhibits the highest value of institutional quality (highest scoring: 0.82), whereas the lowest index value is observed in the Lebanon (lowest scoring: 0.1).

In the following section, we report results of our estimation using the system GMM estimator. Before discussing the estimation results, we must confirm the validity of the instruments. Indeed, the GMM system regressions satisfy both the Hansen test of over-identifying restrictions and the second serial correlation test. In all specifications of the Hansen test we do not reject the null hypothesis that our instruments are valid. Moreover, the AR (2) test fails to reject the null hypothesis that there is no second order correlation in the first-differenced residuals. The model then seems correctly specified.

In Table 2, we present results in which we take into consideration macroeconomic instability (as measured by inflation consumer price) and financial depth (as measured by domestic credit to private sector). Table 3 provides results when we take into account the institutional quality index. Table 4 summarizes the results from the regressions run with five of the sub-components of the institutional quality index: law and order, bureaucratic quality, corruption, government stability and investment profile both individually and interactively.

3.2 Capital account policy, macroeconomic stability, financial development, and FDI

Column 1 in Table 2 shows the results of the benchmark equation where KAOPEN is the only explanatory variable, we control for lagged FDI, market size, trade openness, natural resource and infrastructure quality. We note that $\partial \text{FDI} / \partial \text{KAOPEN} = \beta_1$ and therefore the parameter of interest is the estimated coefficient of KAOPEN, β_1 , which is negative and significant at the 10% level suggesting that all else being equal, CAL has an adverse effect on FDI. A one standard deviation increase in KAOPEN ($\text{sd} = 1.71$, see Table 1) is expected to decrease FDI by about 1.52 percentage points [$\partial \text{FDI} / \partial \text{KAOPEN} = -0.892 * 1.71 = -1.52$]. We use an example to provide the reader with a better sense of the negative effect of KAOPEN on FDI in the region. Specifically, we consider two countries in the Middle East that have extremely different levels of capital openness. Syria, has the least capital openness country in the Middle East region and Qatar has the highest capital openness in the region. The average value of KAOPEN from 1985-2009 is about -1.83 in Syria and 2.5 for in Qatar. Then, the estimation result of the regression (Column 1) shows that all else being equal, an increase in KAOPEN from the level of Syria to the level of Qatar will increase FDI by about 3.86 percentage points in the short run and by about 17.78 percentage points in the long-run. This follows from the fact that the short-run effect of a Δ change in KAOPEN on FDI is given by $(\widehat{\beta}_1 * \Delta)$ and the long-run effect is $\frac{(\widehat{\beta}_1 * \Delta)}{1-\widehat{\rho}}$

Where $\widehat{\beta}_1$ is the estimated coefficient of KAOPEN and $\widehat{\rho}$ is the estimated coefficient of $FDI_{i,t-1}$. Here, $\Delta=[2.5-(-1.83)]$ and from Table [2] $\widehat{\beta}_1 = -0.892$ and $\widehat{\rho} = 0.783$. Then $\partial FDI / \partial KAOPEN = [-0.892 * (2.5 - (-1.83)) = -3.86]$ in the short period and $92.4 [-0.892 * (2.5 - (-1.83)) / (1 - 0.783) = 17.78]$ in the long period.

In column 2 KAOPEN is interacting with a MENA dummy to test whether the effects of KAOPEN variable on FDI are the same for both MENA and non-MENA countries. We find that the coefficient of the interaction terms is negative and insignificant, that is which means that there is no difference between MENA and non-MENA countries in how capital account openness affects FDI inflows.

We now discuss the direct effect of macroeconomic instability and the level of financial development in the host country on FDI. In columns (3) and (5) we include separately the consumer price index (INF) and the domestic credit to the private sector (DC) as explanatory variables. As can be seen that, while the inflation coefficient is negative and significant at the 10% level, the estimated coefficient of financial development is positive and significant at the 1% level, indicating a partial support for the standard proposition that if a higher domestic credit increases the FDI inflows, then financial development promotes FDI in Middle East region.

On the one hand, column 3 shows that all else being equal, a one standard deviation increase in INF (sd = 20.5 Table 1) will decrease FDI by about 0.43 percentage points [$\partial FDI / \partial INF = -0.021 * 20.5 = -0.43$]. On the other hand, column 5 shows that all else being equal, a one standard deviation increase in DC (sd = 42.94 Table 1) will increase FDI by about 0.6 percentage points [$\partial FDI / \partial DC = 0.014 * 42.94 = 0.6$]. Here, we provide an example to illustrate the catalyzing and direct effect of financial development on FDI. Consider two countries in the Middle East that differ significantly in terms of financial development; Iraq, a country with very poor financial development and Cyprus, a country with the best financial development in Middle East. The average values of the measures of financial (domestic credit to the private sector) from 1985-2009 for the two countries are 3.66 in Iraq and 156.56 in Cyprus; (see Table A2 in appendix). Then all else being equal, an improvement in the financial development of the level of Iraq to the level of Cyprus will increase FDI by about 2.14 percentage points [$0.014 (156.56 - 3.66) = 2.14$]. Ali et al., (2010) claims that macroeconomic stability reduces the level of uncertainty encountered by investors and increases the level of confidence in the economy, which encourages FDI.

Our results so far have shown that CAL and macroeconomic instability undermine FDI and that financial development has had a direct and positive effect on FDI. We now test whether an improvement in financial development will result in a significant reduction in $\partial FDI / \partial KAOPEN$. Here, we estimate equation (2) and we report the results also in column 5 in Table 2.

Note that [$\partial FDI / \partial KAOPEN = \beta_1 + \beta_3 * DC$] and therefore the parameters of interest are the estimated coefficient of KAOPEN, β_1 , and the estimated coefficient of the interaction term, β_3 . Estimations show, β_1 is negative and significant at the 5% level and β_3 is positive and significant at the 5% level, suggesting that financial development significantly reduces the adverse effect of capital account openness on FDI.

The marginal impact of KAOPEN is:

$$\frac{\partial FDI_t}{\partial KAOPEN_t} = -0.981 + 0.02 * DC$$

Here again, we use the sample of Iraq and Cyprus. Note that the average value of financial development is equal to 3.66 for Iraq and 156.65 for Cyprus. Then, the increase in KAOPEN by one standard deviation will decrease FDI in Iraq by about 1.55 percentage points [$\partial \text{FDI} / \partial \text{KAOPEN} = (-0.981 + 0.02 * 3.66) * 1.71 = -0.76$] (column 6). Now suppose that Iraq implements policies that lead to an improvement in its financial development, such that the value of financial development increases to the level of Cyprus. Thus, a one standard deviation increase in KAOPEN will increase FDI by 3.67 percentage points [$\partial \text{FDI} / \partial \text{KAOPEN} = (-0.981 + 0.02 * 156.65) * 1.71 = 2.11$]. It's important to note that the estimated coefficient of financial development remains significant, suggesting that financial development have a direct and indirect impact on FDI.

The total effect of one unit increase in KAOPEN for the Middle East region is calculated to be -0.067 percentage points using the average value of financial development in the Middle East region [$\partial \text{FDI} / \partial \text{KAOPEN} = -0.981 + (0.02 * 45.66) = -0.067$]. The threshold level of financial development, separating negative and positive partial impacts of KAOPEN on FDI inflows, is 49.05 [$-(\beta_1 / \beta_3) = -(-0.981 / 0.02) = 49.05$]. Then, we can conclude that FDI inflows in countries with a sound domestic financial system benefit more from CAL than those in countries with a fragile financial system. It appears that countries should first reform their domestic financial system before liberalizing the capital account to allow for enlarged FDI inflows.

We also check whether the impact of capital control on FDI inflows is sensitive to macroeconomic instability, results show that the coefficient of the interaction term between these two variables is not statistically significant, thus, macroeconomic instability does not seem to further the CAL –FDI relationship. We now turn our attention to the other control variables. The estimated coefficient of lagged FDI is positive and significant in all regressions, an indication that FDI is persistent. We then conclude that dynamic GMM is an appropriate estimator (Baltagi et al. 2009). Per capita GDP have perverse signs, showing significantly negative effects on FDI inflows. Trade openness, as measured by the trade-GDP ratio, has a positive and significant impact on FDI inflows supporting the evidence that countries that are more open can attract more FDI inflows (Buchanan et al. 2012). Results show also that the infrastructure quality as measured by the number of telephone lines per thousand people plays a significant role in absorbing FDI. Moosa and Cardak (2006) and Ali et al. (2010) confirm this result.

3.3 Capital account policy, Institutions and FDI

Table 3 reports the results of the regression analyzing the direct effect of institutional quality on FDI inflows (column 1) and their influence on the role of capital account policy in promoting FDI inflows (column 2). As shown in column 1 institutional quality plays a significant role in determining FDI inflows, as showed by a positive and significant coefficient on the institutional quality variable at the 10% level ($k = \text{INST}$). This implies that the countries where institutions are solid attract FDI. Our result is in line with (Ali et al. 2010) who have stressed the importance of institutional quality in determining FDI inflows.

A one standard deviation increase in institutional quality ($sd = 1.14$ Table 1) will increase FDI by about 2.77 percentage points [$\partial \text{FDI} / \partial \text{INST} = 2.43 * 1.14 = 2.77$]. As a sample, we use again the sample of Cyprus and Iraq, which differ significantly in term of institutional quality. The average values of the measures of institutional quality from 1985-2009 of the two countries are INST: 0.71 for Cyprus and 0.33 in Iraq; (see Table A2). Then all else equal, an improvement in institutional quality of the level of Iraq to the level of Cyprus will increase FDI by about 0.92 percentage points in the short period [$2.43 * (0.71 - 0.33) = 0.92$] and by about 1.12 percentage points in the long period [$2.43 * (0.71 - 0.33) / 1 - 0.816 = 1.12$].

Then, we use KAOPEN index and its interaction with the institutional quality variable to look for whether institutional quality matters for the FDI and CAL relationship. Regression in column 2 indicates that the coefficient of KAOPEN, β_1 , is negative and significant at the 5% level and the estimated coefficient of the interaction term, β_3 , is positive, suggesting that institutional quality as financial development significantly reduces the adverse effect of capital account openness on FDI. Thus, the marginal effect of financial openness on FDI increases with institutions, and the threshold level of institutions between the negative and positive partial effect is 0.62 ($13.989/22.44=0.62$) which is 65th percentile in this sample. That is to mean that in our sample at most 35 percent (at least 65 percent) of the observations are greater (smaller) than 0.62. The negative effect of capital openness on FDI in the Middle East countries is significant because of the low level of institutional quality in the region (the average value of institutional quality in Middle East countries is 0.59 (see table 3) which is lower than the threshold levels (0.62).

Figure 2 presents a visual picture of the marginal effect of KAOPEN on FDI, based on each country's value of the political risk index for the Middle East countries. It indicates that countries, such as Cyprus, Oman and U.A.E that show positive effects of financial opening, have attained a threshold level of political stability, whereas countries with underdeveloped institutional infrastructure may hamper the FDI inflows. So, we categorize our sample countries into two: category A refers to countries where capital openness policy may promote FDI, and category B refers to countries where an increase in capital openness may not result in an increase in FDI, and may possibly reduce FDI. Results reveal that 35 percent of countries in our sample lie above the threshold of political risk index (0.62) and, thus fall in category A; these are Kuwait, Oman, Qatar, U.A.E and Cyprus, while sixty five percent in our sample lie below the threshold level, which are Egypt, Iran, Iraq, Jordan, Lebanon, Syria, Saudi, Arabia, Turkey and Yemen. These countries fall in category B.

Until now institutional quality is discussed as a composite index of political risks comprising 12 subcomponents, (Okada 2013) asserts that this index is enabled to capture the appropriate effects on international capital inflows thus, in the following we investigate the impact of the interaction between the five main subcomponents of political risk and capital account openness on FDI inflows. Specifically, we consider: bureaucratic quality, law and order, corruption, government stability, and investment profile, which may be important determinants of international capital inflows. To ensure easier interpretation, we standardize all sub-indicators of our institutional index to range between 0 and 1 where a higher value indicates a higher institutional quality; results are reported in Table 4. As we can see in all specifications the coefficient of the interaction term between financial openness and each sub-indicators of institutional quality are significantly positive. This seems to confirm our finding and implies that our result is robust, that its institutional quality matters for the CAL and FDI inflows relationship, a result which is in the line with previous studies (Noy and Vu 2007) and (Okada 2013). However, in all cases, except in the specification where investment profile is used as a proxy of institutional quality, the Middle East region seems far from the threshold (mean <threshold level). In panel 3 for example, the one unit increase in KAOPEN for the Middle East region is expected to decrease FDI by 0.42 percentage points, using the average value of corruption in the Middle East. [$\partial\text{FDI}/\partial\text{KAOPEN} = -4.53 + (9.78*0.42) = -1.9$]. This is due to the high levels of corruption in the region. Thereby, we can suggest that CAL is only efficient in generating more inflows of FDI in an environment of low political risk (Noy and Vu 2007).

4. Conclusion

By employing the data of 14 Middle East countries over the period from 1995 to 2008, we investigate the effect of CAL on FDI inflows, taking into account the role of macroeconomic stability, financial development level and institutional quality in each country. We find that,

while CAL has a negative effect on FDI, good institutions and domestic financial developments (in particular, domestic credit to the private sector) mitigate this adverse effect. We conclude that there are threshold levels of institutional quality and financial development that are important determinants of the relationship between CAL and FDI. Our results reveal that capital openness facilitates FDI in Kuwait, Oman, Qatar, U.A.E and Cyprus, where political risk is above the threshold level (0.62), but has a negative effect on FDI in Egypt, Iran, Iraq, Jordan, Lebanon, Syria, Saudi, Arabia, Turkey and Yemen, where political risk is high and FDI is below the threshold level. We find also, that although macroeconomic instability has a negative impact on FDI inflows, it does not seem to further the CAL –FDI relationship.

With regard to policy, our results suggest that capital account policy in Middle East countries must be embedded within a sound institutional and financial framework. Thus, governments in this region should develop a set of policies that are not only focused on capital account openness but also on the improvement of financial institution's efficiency and political framework, which constitutes a necessary precondition for the successful liberalization of the capital account and attracting foreign investors. Egypt, Iran, Iraq, Jordan, Lebanon, Syria, Saudi, Arabia, Turkey and Yemen must undertake measures that can help to fight corruption, enhance the protection of property rights, increase the respect for law and the impartiality of the legal system and improve other aspect of the institutional environment. Our results are in line with Okada (2013) and Noy and Vu (2007) who have stressed the importance of institutional quality in the CAL-FDI nexus. These results has important implications for countries in the Middle East given that most of the countries in the region that are in dire need of FDI have weak institutions.

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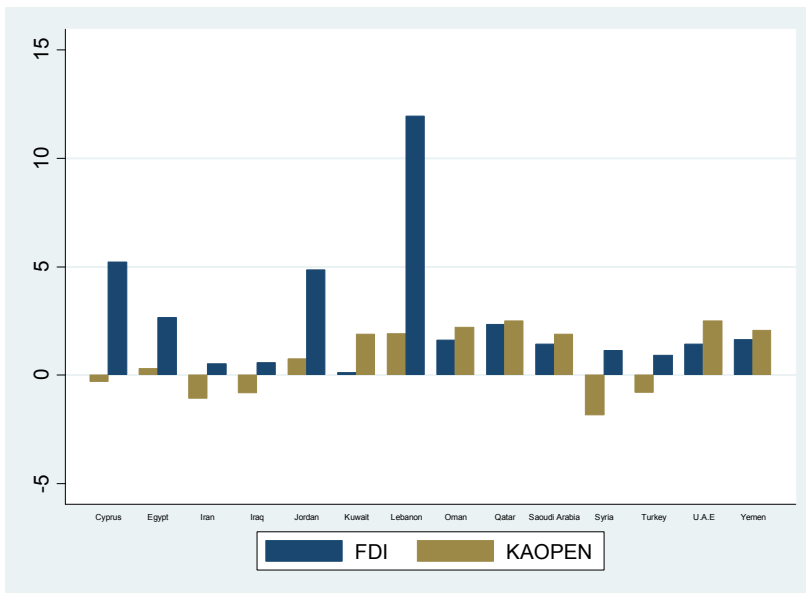
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Figure 1: FDI Net Inflows (%GDP) and Capital Openness Index*, 1985-2009



Note: *KAOPEN index measure given by Chinn and Ito (2008).
Source: World Development Indicators and author's calculations

Figure 2: FDI Net Inflows (%GDP) and Capital Openness Index* in Middle East Countries, 1985-2009 (Average)



Notes: * KAOPEN index measure given by Chinn and Ito (2008)), The data on FDI/GDP and KAOPEN are averaged from 1985 to 2009. Source: World Development Indicators and author's calculations

Figure 3: Threshold Level of Political Risk in MENA Region

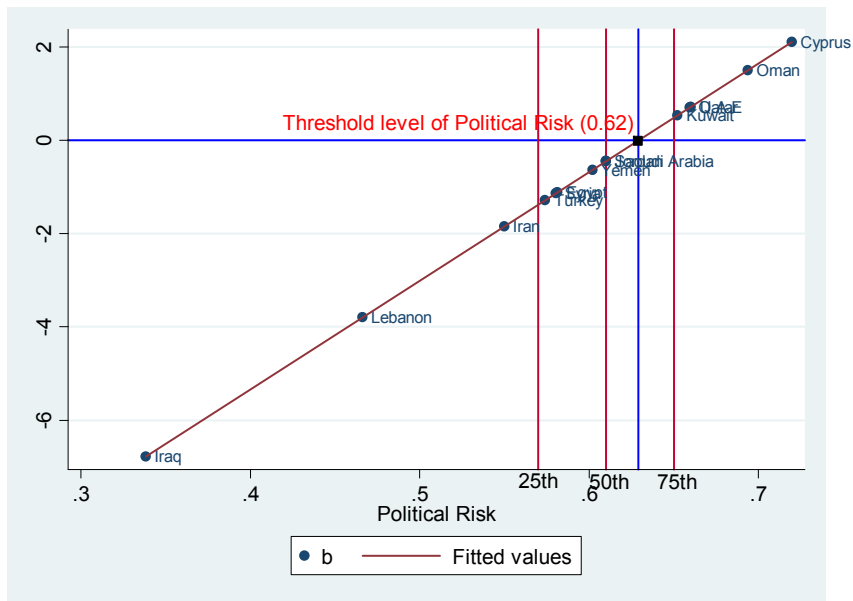


Table 1: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
FDI	318	2.17	3.66	-5.11	23.53
KAOPEN	320	0.78	1.71	-1.83	2.5
Open	271	78.65	32.10	5.39	170.64
INF	270	12.75	20.50	-4	99.80
DC	323	45.66	42.94	1.8	269.66
LGDPpc	264	8.19	1.14	6.09	10.30
LTele	347	2.49	0.79	0.52	3.86
Nat	266	50.64	39.72	0.0003	99.73
INST	345	0.595	0.142	0.10	0.82
GS	332	0.67	0.19	0	0.95
IP	334	0.58	0.21	0	1
COR	331	0.42	0.14	0.16	0.83
LO	331	0.61	0.21	0.16	1
BQ	331	0.48	0.20	0	1

Notes: Open (trade openness) infrastructure quality (Tele). INF (consumer price index), DC (domestic credit to the private sector, Nat (natural resource), INST (Political risk), GS (government stability), IP(investment profile), COR (corruption), LO (law and order) and BQ, (Bureaucracy Quality).

Table 2: First Differences GMM Estimates: Capital Account Liberalization, Macroeconomic Stability and FDI, 1985-2009

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Lagged FDI	0.783 (0.078)*	0.864 (0.000)***	0.688 (0.004)***	0.932 (0.000)***	0.952 (0.000)***	0.750 (0.000)***
LGDPpc	0.519 (0.313)	-0.347 (0.514)	-0.341 (0.019)**	-0.521 (0.005)	-0.321 (0.007)***	-0.981 (0.015)**
Open	0.019 (0.033)**	0.016 (0.031)**	0.005 (0.99)	0.004 (0.521)	0.007 (0.249)	0.007 (0.190)
LTele	-0.253 (0.663)	0.258 (0.378)	0.35 (0.021)**	0.579 (0.003)***	0.071 (0.753)	-0.05 (0.889)
KAOPEN	-0.892 (0.062)*			0.20 (0.126)		-0.981 (0.015)**
INF			-0.021 (0.062)*	-0.003 (0.827)		
Nat	0.0014 (0.873)	-0.001 (0.755)	-0.014 (0.154)	-0.006 (0.268)	0.001 (0.661)	0.011 (0.058)*
INF* KAOPEN				0.008 (0.589)		
DC					0.014 (0.002)***	0.032 (0.030)**
DC*KAOPEN						0.020 (0.030)**
MENA*KAOPEN		-0.001 (0.998)				
Serial correlation test (p-value) ^a	P=0.48	P= 0.5	P= 0.66	P= 0.61	P= 0.67	P= 0.49
Hansen J test (p-value) ^b	P=0.5	P= 0.5	P= 0.87	P= 0.61	P=0.86	P= 0.78
Number of instruments	9	10	9	11	9	12
Countries	12	12	12	12	12	12
Observations	186	1	171	169	188	186
Mean			12.75		45.66	
Threshold Level						49

Note: p-values in parenthesis. The dependent variable: FDI/GDP The data on the political risk Note index is normalized to lie between zero and one. A higher number implies more stability. The model is estimated with the two-step Arellano-Bond GMM dynamic panel methodology that is asymptotically efficient and robust for all kinds of heteroskedasticity.

***, **, * refer to the 1, 5 and 10% levels of significance respectively.

^a The null hypothesis is that the errors in the first difference regression exhibit no second order correlation.

^b The null hypothesis is that the instruments are not correlated with the residuals.

Table 3: First Differences GMM Estimates: Capital Account Liberalization, Political Stability and FDI, 1985-2009

Dependent variable: FDI/GDP	(1)	(2)
Lagged FDI	0.816 (0.000)***	0.767 (0.029)**
LGDPPc	-0.378 (0.007)***	0.215 (0.628)
Open	0.014 (0.007)***	-0.015 (0.412)
LTel	0.237 (0.192)	0.713 (0.533)
Nat	-0.005 (0.330)	-0.016 (0.176)
KAOPEN		-13.989 (0.007)***
INST	2.43 (0.060)*	0.867 (0.901)
INST*KAOPEN		22.44 (0.007)***
Serial correlation test (p-value) ^a	P=0.6	P=0.58
Hansen J test (p-value) ^b	P=0.34	P=0.39
Number of instruments	9	12
Countries	12	12
Observations	188	186
Mean		0.59
Threshold Level		0.62

Note: p-values in parenthesis. The dependent variable: FDI/GDP The data on the political risk index are normalized to lie between zero and one. A higher number implies more stability. The model is estimated with the two-step Arellano-Bond GMM dynamic panel methodology that is asymptotically efficient and robust for all kinds of heteroskedasticity.

***, **, * refer to the 1, 5 and 10% levels of significance respectively.

^a The null hypothesis is that the errors in the first difference regression exhibit no second order correlation.

^b The null hypothesis is that the instruments are not correlated with the residuals.

Table 4: First Differences GMM Estimates: Capital Account Liberalization, Institutional Quality and FDI, 1985-2009

Dependent variable: FDI/GDP	Law and order	Bureaucracy Quality	Corruption	Government Stability	Investment Profile
Lagged FDI	0.603 (0.000)***	0.970 (0.001)**	0.922 (0.002)***	0.562 (0.095)*	0.430 (0.021)**
LGDPPc	-1.50 (0.006)***	-0.163 (0.798)	-0.187 (0.771)	0.672 (0.517)	-1.012 (0.149)
Open	0.024 (0.074)*	0.013 (0.427)	0.006 (0.553)	-0.00 (0.958)	-0.002 (0.820)
LTel	1.637 (0.047)**	0.307 (0.800)	0.108 (0.225)	0.478 (0.471)	0.16 (0.001)***
KAOPEN	-5.25 (0.033)**	-7.94 (0.012)**	-4.53 (0.02)**	-7.88 (0.067)*	-2.90 (0.044)**
Nat	-0.008 (0.392)	-0.016 (0.383)	0.012 (0.532)	-0.005 (0.747)	-0.014 (0.235)
INST	0.561 (0.856)	4.07 (0.576)	1.59 (0.750)	-3.01 (0.552)	-1.03 (0.676)
INST*KAOPEN	8.20 (0.029)**	15.23 (0.009)***	9.78 (0.009)***	10.47 (0.05)**	5.44 (0.024)**
Serial correlation test (p-value) ^a	P=0.27	P=0.18	P=0.71	P=0.3	P=0.86
Hansen J test (p-value) ^b	P=0.86	P=0.84	P=0.74	P=0.22	P=0.53
Number of instruments	12	12	11	6	12
Countries	12	12	12	11	12
Observations	186	186	186	186	186
Mean	0.61	0.48	0.42	0.67	0.58
Threshold Level	0.64	0.52	0.46	0.75	0.53

Note: p-values in parenthesis. The dependent variable: FDI/GDP The data on the political risk index are normalized to lie between zero and one. A higher number implies more stability. The model is estimated with the two-step Arellano-Bond GMM dynamic panel methodology that is asymptotically efficient and robust for all kinds of heteroskedasticity.

***, **, * refer to the 1, 5 and 10% levels of significance respectively.

^a The null hypothesis is that the errors in the first difference regression exhibit no second order correlation.

^b The null hypothesis is that the instruments are not correlated with the residuals.

Appendix

Table A1: Variables, Definitions and Sources

Variable	Definition	Source
FDI	Foreign direct investment, net inflows (% of GDP): Foreign direct investment are the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments.	WDI(2011)
GDPpc	GDP per capita is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current U.S. dollars	WDI(2011)
Open	Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product.	WDI(2011)
Tel	Telephone lines are fixed telephone lines that connect a subscriber's terminal equipment to the public switched telephone network and that have a port on a telephone exchange. Integrated services digital network channels and fixed wireless subscribers are included.	WDI(2011)
INF	Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The Laspeyres formula is generally used.	WDI(2011)
DC	Domestic credit to private sector (% of GDP) refers to financial resources provided to the private sector, such as through loans, purchases of no equity securities, and trade credits and other accounts receivable that establish a claim for repayment. For some countries these claims include credit to public enterprises	WDI(2011)
Nat	Share of fuel in total merchandise exports	WDI(2011)
KAOPEN	Capital openness index measuring the extent of openness in capital account transactions	Chinn-Ito (2008)
INST	Political risk rating consists of the following 12 subcomponents: (A) Government Stability (12points), (B) Socioeconomic Conditions (12points), (C) Investment Profile (12 points), (D) Internal Conflict (12 points), (E) External Conflict (12 points), (F) Corruption (6 points), (G) Military in Politics (6 points), (H) Religious Tensions (6 points), (I) Law and Order (6 points), (J) Ethnic Tensions (6 points), (K) Democratic Accountability (6 points), (L) Bureaucracy Quality (4points). Institutions which are defined as the sum of each component are ranged from 0 to 100 and a larger value means lower political risk	PRS-ICRG(2008)
Government Stability	This is an assessment both of the government's ability to carry out its declared programs, and its ability to stay in office. The risk rating assigned is the sum of three factors (Government Unity, Legislative Strength Popular Support) each of them with a maximum score of four points and a minimum score of 0 points. Thus the government stability scores from 0 to 12 and a higher values corresponding to "low risk levels".	PRS-ICRG(2008)
Investment Profile:	This is an assessment of factors affecting the risk to investment that are not covered by other political, economic and financial risk components. It is the sum of three subcomponents (contract viability/ expropriation, profit repatriation and payment delays). Each of them has a maximum score of four points and a minimum score of 0 points, so, investment profile is measured on a scale of 0 to 12, with 0 represent the highest risk levels similarly 12 represent the lowest risk levels.	PRS-ICRG(2008)
Corruption	This index aims at evaluating the degree of corruption within the political system. It indicates the opinion of analysts on each country regarding the extent to which high government officials are likely to demand special payments, and illegal payments generally expected throughout lower levels of government in the form of bribes connected with import and export licenses, exchange controls, tax assessment, policy protection, or loans. It ranks nations on a scale from 0 to 6. A score of 0 represents a maximum corruption level, while 6 indicates a minimum corruption level.	PRS-ICRG(2008)
Law and Order	It ranges from 0 to 6, where a higher number indicates a better system of law and order. This variable "reflects the degree to which the citizens of a country are willing to accept the established institutions authority to make and implement laws and adjudicate disputes." Higher scores indicate: "sound political institutions, a strong court system, and provisions for an orderly succession of power." Lower scores indicate: "a tradition of depending on physical force or illegal means to settle claims." Upon changes in government new leaders "may be less likely to accept the obligations of the previous regime.	PRS-ICRG(2008)
Bureaucracy Quality	It ranges from 0 to 4. High scores indicate "an established mechanism for recruitment and training," "autonomy from political pressure," and "strength and expertise to govern without drastic changes in policy or interruptions in government services" when governments change.	PRS-ICRG(2008)

Table A2: Countries Included in the Regressions

Countries	FDI	KAOPEN	Open	LGDPpc	Ltl	Nat	DC	INF	INST	GS	IP	COR	LO	BQ
Cyprus	5,2	-0,31	100,14	9,32	3,62	2,57	156,56	3,42	0,71	0,68	0,80	0,67	0,73	0,90
Egypt	2,64	0,31	50,98	7,20	1,93	42,61	38,85	10,76	0,58	0,71	0,51	0,37	0,57	0,50
Iran	0,53	-1,09	39,24	7,33	2,45	81,96	24,54	20,24	0,54	0,63	0,44	0,50	0,60	0,46
Iraq	0,58	-0,80	na	6,79	1,51	89,37	3,66	na	0,33	0,53	0,39	0,25	0,27	0,10
Jordan	4,86	0,76	112,53	7,51	2,31	0,17	70,03	4,77	0,61	0,72	0,58	0,55	0,59	0,53
Kuwait	0,13	1,89	94,17	9,71	3,03	75,8	54,41	2,54	0,65	0,66	0,67	0,45	0,71	0,48
Lebanon	11,94	1,90	71,59	8,25	2,75	0,27	68,25	26,46	0,46	0,56	0,48	0,29	0,51	0,35
Oman	1,61	2,19	85,60	8,97	2,15	83,88	30,91	1,20	0,69	0,75	0,71	0,47	0,75	0,56
Qatar	2,34	2,50	89,02	na	3,17	86,23	38,47	3,52	0,65	0,73	0,66	0,35	0,77	0,43
Saoudi Arabia	1,44	1,89	72,35	9,13	2,49	89,91	26,19	0,35	0,61	0,70	0,68	0,35	0,78	0,57
Syria	1,13	-1,83	62,11	7,01	2,22	59,78	10,36	12,37	0,58	0,76	0,45	0,44	0,66	0,31
Turkey	0,92	-0,78	46,41	7,96	2,99	2,38	20,20	53,70	0,57	0,63	0,55	0,45	0,62	0,56
U.A.E	1,44	2,50	132,81	10,06	3,29	49,51	52,03	3,78	0,66	0,69	0,69	0,38	0,62	0,62
Yemen	1,63	2,06	78,48	6,22	1,05	88,57	5,88	27,96	0,60	0,73	0,58	0,43	0,42	0,35

Notes: na: indicates missing data, Open (trade openness) infrastructure quality (Tele). INF (consumer price index), DC (domestic credit to the private sector, Nat (natural resource), INST (Political risk), GS (government stability), IP(investment profile), COR (corruption), LO (law and order) and BQ(Bureaucracy QualityLtl=Log (1+ number of telephone lines per 1,000 inhabitants), LGDPpc= Log(current U.S. dollars).