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Trade and Foreign Exchange Liberalization, Investment Climate, and FDI in the MENA Countries

by

Khalid Sekkat*
Free University of Brussels, Belgium

and

Marie-Ange Véganzonès-Varoudakis*
CERDI, CNRS, Université d'Auvergne, Clermont Ferrand, France

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Summary

Despite some progress in economic policy – in macroeconomic stability in the 1980s, and in structural reforms in the 1990s – the MENA countries have failed to attract foreign direct investments (FDI). This may be due to several factors. In this paper we empirically verify from a panel of 72 countries – among which are 8 MENA economies – that, during the 1990s, the low level of trade and foreign exchange liberalization compared to East Asia and Latin America played a determinant role in the low level of total FDI in the MENA economies, particularly in manufacturing. The paper also highlights the role of other factors, such as physical infrastructure, political environment and macroeconomic conditions, in explaining total FDI flows to the different regions. These results stress the importance of accelerating the pace of reform in the MENA economies.

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I. Introduction

Many authors attribute the disappointing growth and employment in the MENA countries to the region's low-level integration in the world economy (e.g., Makdissi *et al*, 2000; Dasgupta *et al*, 2003). Excepting oil exports, the region scores the second lowest export-to-GDP ratios in the world, after Sub-Saharan Africa. In term of FDI, the picture is similar.

The ratio of net FDI flows to GDP reached only 0.9 percent, on average, in the 1990s, as compared with 2.5 percent in Africa, 3.8 percent in East Asia, and 4.5 percent in Latin America (see Figure 1). Moreover, while FDI flows increased in other regions during the 1990s, the progression was very small in MENA (6.3 percent per year, on average, between the 1980s and the 1990s, as compared with 17 percent in Africa, 10 percent in East Asia, 22 percent in Latin America, and 13 percent in South Asia). Even though Morocco, Tunisia, and Yemen attracted, on average, more FDI than the other MENA countries (between 1.6 and 2.1 percent of GDP; see Figure 2), the overall results for MENA remain disappointing.

Figures 1 and 2. Net FDI Flows by Region
(percentage of GDP)
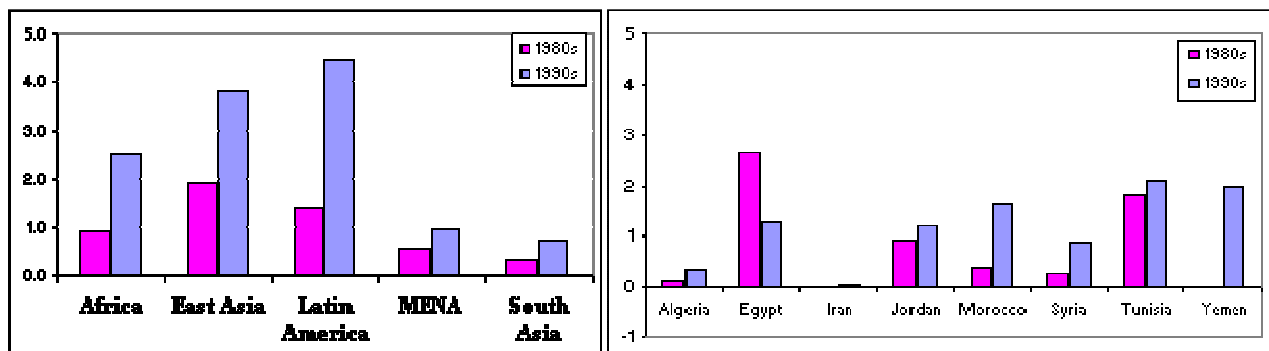
Source: Authors' calculations based on data from 117 countries, in *World Development Indicators* (*WDI*, 2002).

The region's poor export and FDI performance has been related to the prolonged application of inward-looking strategies based on import-substitution (Nabli and De Kleine, 2000) – strategies abandoned by a number of countries in other regions during the 1980s, as part of their process of economic reform. These countries achieved a greater outward orientation, and created a favorable climate for trade and investment, by lowering trade barriers, privatizing many industries, and reforming the foreign-exchange market. The MENA countries are also implementing some of the same reforms, but at a slower pace (Nabli and Véganzonès-Varoudakis, 2004).

Recent economic research has shown that open economies tend to adjust more rapidly from primary-intensive to manufactures-intensive exports (Sachs and Warner, 1995). One study (Sekkat and Varoudakis, 2002) focused specifically on MENA and investigated whether trade policy reforms can increase the share of manufactured exports in GDP. The results suggest that trade policy matters for the region's performance. Similar conclusion were reached by Achy and Sekkat (2003), and by Nabli and Véganzonès-Varoudakis (2003), regarding the impact of exchange rate policy in the MENA countries.

As far as FDI is concerned, Hufbauer *et al* (1994) have shown that trade liberalization plays a significant and consistent role in the investment stock locations of the United States and Japan, and that the size and openness of host countries are important determinants of FDI flows. The relationship between FDI flows and the exchange rate was examined by Cushman (1985), who found significant reductions in U.S. direct investment associated with increases in the current real value of foreign exchange, and very strong reductions associated with the expected appreciation of real foreign exchange. Goldberg and Kolstad (1995) showed that volatility contributes to the internationalization of production. In contrast to the relationship between exports and liberalization, no comparable studies (to our knowledge) were conducted for FDI inflows to the MENA countries.

Conducting such an investigation is important because the MENA region is losing the opportunity of attracting FDI and of benefiting from its effects on growth. In this regard, the literature suggests that FDI inflows represent additional resources that increase a country's output and productivity, encourage local investment, and stimulate the development and dispersion of technology. This is particularly the case in the manufacturing industry. The role of FDI as engine of growth in developing countries is supported by the findings of UNCTAD (1992), Blomstrom *et al* (1992), and De Gregorio (1992). The role of FDI as a catalyst for local investment was investigated by Agosin and Mayer (2000) who found a positive externality from FDI to domestic investment in Asia. Finally, Borensztein *et al* 1998 found a positive impact of FDI on the development and dispersion of technological skill, provided there is enough human capital in the host country.

Given the demonstrated importance of FDI as an engine of growth, the objective of this paper is to examine whether the reforms undertaken by some MENA countries can help improve their ability to attract FDI. For this purpose, we have designed an econometric model of the determinants of FDI – total as well as in manufacturing. To highlight the MENA specificity, the empirical analysis involves comparisons with Latin America, East and South Asia, and Sub-Saharan Africa. The model includes traditional determinants of FDI (such as GDP for the size of the

country, GDP per capita for wealth, and GDP growth rate for future market opportunities); as well as indicators of trade and foreign exchange liberalization. In a second step, the model is enlarged to consider other factors that also affect a country's investment climate (human capital, physical infrastructure, political environment and macroeconomic conditions).

The paper is organized as follows: Section 2 introduces the literature. Section 3 presents the econometric analysis. Section 4 analyses the state of reforms in the MENA economies and implications for attracting FDI flows to the region. Section 5 concludes.

II. Review of the Literature

II.1. Impact of FDI on the Host Country

In many developing countries, policymakers are very concerned with FDI inflows, which are viewed as necessary for improving economic performance. FDI inflows are expected to: (a) increase output and productivity; (b) encourage local investment; and (c) stimulate the development and dispersion of technology. While the impact on output and productivity seems to be non-controversial, the others are still debated among economists.

By increasing capital stock, FDI is supposed to rise a country's output and productivity by promoting the more efficient use of existing resources, and by absorbing unemployed resources. A well-documented study by UNCTAD (1992) lends clear support to the role of FDI as an engine of growth in developing countries – a conclusion reached independently by Blomstrom *et al* (1992). The higher efficiency of FDI was also examined empirically by De Gregorio (1992), who used a panel of 12 Latin American countries to show that the higher efficiency came from the combination of foreign advanced management skills with domestic labor and inputs, and that FDI is about three times more efficient than domestic investment.

FDI is also expected to act as a catalyst for local investment by complementing local resources and providing a signal of confidence in investment opportunities. The relationship between FDI and domestic investment was examined empirically by Agosin and Mayer (2000), who investigated the extent to which FDI crowds in or crowds out domestic investment. In their model, the effects of FDI on investment are allowed to differ across countries, depending on domestic policy and the nature of FDI inflows (new activities or existing activities), and across sectors dependent on technology. FDI was expected to be complementary to domestic investment if it is oriented to high-technology sectors, and to substitute for domestic investment if it directly competes with local firms. A testable version of the theoretical model was estimated using a panel of 32 countries over the period 1970-96. The results suggested the presence of a crowding-out effect (negative externality) in Latin America and a crowding-in (positive externality) in Asia. In Africa, FDI was found to increase domestic investment one for one (neutral externality). These results are different from those obtained by Borensztein *et al* (1998), who found a positive but non-significant effect of FDI on domestic investment for a sample of 69 developing countries.

FDI can stimulate the development and dispersion of technological skills through transnational corporations' internal transfers, and through linkages and spillovers among domestic firms. The recent growth literature has highlighted the dependence of growth rates on domestic technology catching up to that of the rest of the world. Findlay (1978) suggested that foreign direct investment increases the rate of technological progress in the host country through a "contagion" effect from the more advanced technology, management practices, etc., used by the foreign firms. Wang (1990) incorporates this idea into a model in which the increase in knowledge applied to production is a function of FDI. On the empirical front, Borensztein *et al* (1998) examined the role of FDI in the process of technology diffusion and economic growth in developing countries. They tested positively the effect of FDI flows on economic growth in 69 developing countries through a process of catching up with the level of technology of the investing foreign firm. Their results reveal also a strong complementarity between FDI and human capital. FDI has an overall positive effect on growth, but its magnitude depends on the stock of human capital available in the host country. FDI can even have a negative effect on growth in countries with low levels of human capital. The results are robust to a set of alternative specifications. Borensztein *et al* (1998) finally indicate that there is a positive, though not highly significant, relationship between FDI and domestic investment.

II.2. Determinants of FDI Inflows

The literature puts forward various motivations for FDI. An early analysis by Hymer (1960) emphasized the competitive advantages that the foreign firm may obtain relative to host firms, through the use of its intangible assets in research and development, and through advertising in the foreign market (Caves, 1971). Another approach focused on the product life cycle hypothesis (Vernon, 1966). In the early stage of its life, the product is produced by the innovating company in its domestic market. In the second stage, the company exports to other industrialized countries and probably invests in these countries. In the third stage, the product is completely standardized, and the rise of price competition leads the company to invest in developing countries to get cheaper labor. These approaches were supported empirically by various authors (Caves, 1974; Kin and Lyn, 1986; Mansfield *et al*, 1979), all of whom found that the advantage of the U.S. multinationals in terms of research and development and advertising allowed them to possess monopolistic rents over domestic firms. These theories do not explain, however, why leading firms adopt FDI rather than trade or licensing, for example. Williamson (1975) provided the most convincing answer by showing that firms may prefer internationalization (FDI) because market transactions may encounter substantial costs.

While these analyses highlight the benefits of undertaking FDI, the issue of choosing a given host country is not completely clarified. The eclectic theory of FDI suggests, among other things, that the chosen foreign country must present location advantages that make it a more attractive site for FDI than other countries (Dunning, 1981 and 1988). Given the objective of the study, our literature review focuses on the determinants of host country attractiveness.

An early survey by Agarwal (1980) summarized the basic economic determinants of country attractiveness with respect to FDI. He suggested three main factors: (a) the difference in the rate of return on capital across countries; (b) the

portfolio diversification strategy of investors; and (c) the market size of the host country. The difference in the rate of return is dependent on incentives for foreign investors and the supply of cheap labor. Empirical evidence, however, shows that incentives provided by the host country have only a marginal effect on FDI. Agarwal explained this unexpected finding by the fact that incentives are generally accompanied by a set of restrictions and requirements. The supply of cheap labor appears to be a more convincing explanation of FDI. Overall, empirical evidence on the relationship between inter-country differences in the rates of return and FDI does not provide any conclusive results. This ambiguous finding is due, according to Agarwal, to statistical and conceptual problems. Theoretically, FDI is a function of expected profits, but available data are on reported profits. In addition, reported profits may not be similar to actual profits, since transactions between the parent company and its affiliates are subject to intra-company pricing rather than market pricing.

The portfolio diversification hypothesis stresses the fact that investors select their locations taking into account both expected profits and perceived risk. The assumption is that portfolio diversification helps reduce the total risk as long as returns are highly correlated within the country, and weakly correlated between the home and host countries. The empirical evidence in favor of this hypothesis remains weak. Some authors attempted to understand why multinational companies tend to contribute more to FDI than to portfolio investments, when portfolio investments are more likely to provide a better instrument for geographical diversification. They argued that this preference might be due either to the absence of organized security markets (the case of developing countries), or to the high inefficiencies of these markets when they exist.

Finally, FDI is considered to be a function of output or sales in the host market, which is usually approximated by GDP or GNP. Most empirical studies reviewed by Agarwal (1980) have lent support to the relationship between FDI and the market size of the host countries. This view is, however, challenged by Lucas (1993). Focusing on seven East Asian countries (Indonesia, Malaysia, Philippines, Singapore, South Korea, Thailand, and Taiwan) over the period 1960-87, he considered two measures of market size – the export market and the domestic market. The results revealed a weak relationship between the size of domestic market and the volume of FDI, and a high degree of responsiveness of FDI to incomes in major export markets. This may reflect the outward orientation of foreign firms located in this region. FDI inflows were also found to be more responsive to wages in the host country than to the cost of capital, including taxes. Allessandrini and Resmini (1999) investigated the determinants of FDI inflows in Central and Eastern Europe and in the Mediterranean region over the period 1990-97, and got different, and mixed, results. For Central and Eastern Europe, the results indicated a significant positive effect of market size and openness on FDI decisions, while human capital and the degree of industrialization seemed to be negatively related to FDI flows. For the Mediterranean region, the degree of industrialization and human capital positively affected FDI flows, whereas openness and risk factors had a negative effect, and market size seemed to play an insignificant role.

II.3. Trade Policy and FDI

Analyses of the role of economic policy in attracting FDI have historically been concerned with commercial, exchange rate, and investment incentive policies, the latter including grants, subsidies, tax abatement, loan guarantees, and interest subsidies. Grubert and Mutti (1991) found that incentive schemes designed to attract FDI flows were effective in altering foreign investment decisions. Brewer (1993) pointed out that these policies can either increase or decrease market imperfections, and therefore increase or decrease levels of FDI. He made a distinction between policies that affect FDI directly (capital controls, government transfer pricing policies, labor policies, intellectual property laws), and those with indirect effects (monetary policies, including exchange rate management). Loree and Guisinger (1995) suggested that the effect of policies on FDI may differ between developing and developed countries. They clearly stated, on the basis on their empirical analysis, that raising incentive levels is not an easy way to attract more FDI flows.

Blomstrom and Kokko (1997) examined the effects of liberalization on FDI. They showed that trade liberalization and a reduction in investment restrictions have different effects on FDI, depending on the host country's motives for wanting to engage in FDI. There is the tariff-jumping argument, in which trade and factor mobility are viewed as substitutes. The other view is that the major motive for FDI is the exploitation of intangible assets in the host country. Trade liberalization is likely to decrease intra-regional FDI flows if the tariff-jumping argument is valid, because exporting from the home country becomes more attractive than FDI as a way of serving the regional market. But if the motivation behind FDI is the exploitation of intangible assets, then a reduction in trade barriers can enable multinationals to operate more efficiently across international borders. This is especially the case for vertical FDI. The net impact of liberalization is therefore determined by the structure and motives for pre-existing investment.

On the empirical side, Hufbauer *et al* (1994) showed that trade liberalization of the host countries plays a significant and consistent role in the investment stock decisions of the United States and Japan. The size and openness of the host countries are important determinants of FDI flows; but host country policies still play a less role than historical patterns, market size, or per capita income. Belderbos (1997) analyzed data on Japanese firms in the electronic sector in order to reveal the link between FDI and protectionists measures, and in particular to determine whether such measures taken by the European Union and the United States have led to Japanese tariff-jumping FDI. He uses a logit model that tries to explain a Japanese firm's decision to build a production unit in a given region. The results show that anti-dumping actions in the European Union are highly threatening for Japanese exports, and are likely to induce tariff-jumping FDI. Just the beginning of an anti-dumping action is enough to induce a Japanese firm to start investing without waiting for the outcome. Thus, tariff barriers appear to increase FDI. Belderbos also found asymmetric effects of anti-dumping actions on big and small foreign producers.

Girma *et al* (1999) looked at the role of trade policy and anti-dumping actions in determining the distribution of Japanese FDI inflows across sectors in the United Kingdom. They used a Tobit model in which the dependent variable was either employment or fixed assets in Japanese subsidiaries based in the UK. That study

found that trade barriers acted as an incentive to Japanese FDI in the UK, mainly due to the anti-dumping cases brought against Japan. Anti-dumping cases against other countries reduced the level of Japanese FDI – one explanation being that these cases helped Japanese exports by penalizing competitors. Girma *et al* also found evidence that Japanese firms are attracted to highly integrated sectors across Europe; and that protection appears to be an important factor in determining the increase in Japanese FDI.

II.4. Exchange Rate and FDI

An early study by Cushman (1985) analyzed the theoretical effects of real exchange rate risk and expectations on direct investment, and then used econometric models to test for risk and expected effects on U.S. outflows. The theoretical part of the paper considered four types of models with a two-period time frame, where the firm implements capital investment in the first period in order to realize profits in a future period in which price levels, the nominal exchange rate, and the real exchange rate are uncertain. The difference among the four models is that: (a) in the first case, the firm sells the output abroad using foreign inputs, and can finance its capital at home or abroad; (b) in the second case, the firm produces and sells abroad, exports a domestically produced intermediate good to the foreign subsidiary, and finances its capital domestically; (c) in the third model, the firm produces and sells domestically, imports an intermediate good from its foreign subsidiary, and finances its capital at home; and (d) in the fourth model, the firm chooses between capital purchased and financed at home, with output for sale in the foreign market, and capital purchased abroad but financed at home, with output sold in the foreign country.

The theoretical results showed that the direct effect of risk (expected real foreign currency appreciation) is to decrease the foreign cost of capital, which in turn stimulates direct investment. When the costs of the other inputs are affected, induced changes in productivity or in output prices may offset the direct effect. If this happens, then direct investment is reduced.

In the empirical part of the models the dependent variable was the FDI outflows. The explanatory variables were the stock of direct investment at the beginning of the period; corporate cash flows in the U.S., lagged by one year; real domestic GDP; real foreign GDP; the capital cost at the national level; the capital cost at the foreign level; the real exchange rate; a variable anticipating the movements in the real exchange rate; and two alternative measures for exchange rate risk. The results showed significant decreases in U.S. FDI, linked with increases in the current value of foreign exchange. There was also evidence that increases in risk consistently raise direct investment.

The relationship between FDI flows and exchange rate was also examined by Froot and Stein (1991), using a model in which relative wealth, and therefore, the exchange rate, has a systematic effect on FDI. As the domestic currency depreciates, the wealth of foreign entrepreneurs rises relative to that of domestic entrepreneurs, so that (all else equal) more foreign entrepreneurs undertake foreign investment. The empirical implementation of the model showed that FDI inflows are negatively correlated with the value of the dollar. The paper thus supports the claim that a

depreciated currency can stimulate in buying control of productive corporate assets abroad.

Goldberg and Kolstad (1995) examined the implications for FDI when both foreign demand and the exchange rate are subject to random real shocks. They assumed risk aversion with a two-period model in which a horizontally integrated multinational produces only for the foreign market, using a combination of domestic and foreign capacity. During the first period, the firm decides and commits to its production capacity in the domestic and foreign plant locations. During the second period, uncertainty in exchange rates and demand are resolved, with domestic and foreign affiliates producing at capacity and taking prices that clear the market. Investors repatriate their profits and payments for investment capacity are made.

Empirically in this model, the dependent variable is the FDI outflows with respect to domestic investment. The explanatory variables are the lagged real exchange rate volatility; the lagged variability in the real demand of the host country; the correlation between the real exchange rate and the lagged real GDP; and the real GDP of the host country. There is evidence that exchange rate volatility tends to stimulate the share of investment activity located abroad. Real depreciation of the host country currency was associated with reduced investment shares to foreign markets. Finally, the study shows that exchange rate volatility can contribute to the internationalization of production activity without reducing economic activity in the home country.

Finally, Castanaga *et al* (1998) investigated the impact of economic policy on FDI in developing countries using two data sets – the first concerning aggregate FDI inflows over the period 1970-95; and the second concerning FDI from the United States, by sector of destination, over the period 1983-84. The study had three main findings: (a) that exchange rate distortions (as measured by the black market premium) in the host country do not appear to have a negative effect on FDI flows; (b) that growth expectations exert a strong effect on FDI; and (c) that the corruption index seems to be negatively related FDI flows.

III. The Empirical Analysis

III.1. Trade and Foreign Exchange Liberalization

As shown above, previous empirical studies differ with respect to FDI specifications. The differences concern both the variables to be included in the specification and their definition (nominal versus real measures, and levels versus growth rates). A common specification relates nominal FDI to GDP, per capita GDP, and the growth rate of GDP (see UNCTAD, 1998). Here, we adopt this basic specification, to which we first add indicators of trade and foreign exchange liberalization:

$$\text{Log}(FDI) = \alpha_0 + \alpha_1 \log(GDP) + \alpha_2 \log(GDPpc) + \alpha_3 RGDP + \alpha_4 Lib + \mu \qquad (1)$$

With   *FDI*:   nominal FDI
        GDP: nominal GDP of the host country

GDPpc:	real per capita GDP
RGDP:	real GDP growth rate of the host country
Lib:	trade and foreign exchange liberalization indicator
μ:	error term.

GDP captures the size of the host country's internal market. A higher GDP is assumed to imply better market opportunity and more attractiveness for FDI $(\alpha_1 > 0)$. *GDPpc* is related to the wealth of the resident of the host country and then to demand effectiveness. A higher real GDP per capita is also assumed to increase the attractiveness for FDI $(\alpha_2 > 0)$. The *RGDP* reflects the dynamism of the host country and its future market size. An increase in the growth rate of real GDP characterizes a dynamic economy, which may be more attractive for investors $(\alpha_3 > 0)$.

Finally, we expect trade and foreign exchange liberalization to contribute to a friendly climate for business and investment, and to lead to more FDI inflows $(\alpha_4 > 0)$. A synthetic indicator of trade and foreign exchange liberalization is provided by Sachs and Warner (1995). This is a dummy variable (*S-W*) that takes the value one for the years during which a country was classified as liberalized, and the value zero otherwise. A country is classified as liberalized according to the following criteria: (a) non-tariff barriers covering less than 40 percent of traded goods; (b) average tariff rates below 40 percent; (c) a black market premium (BPM) of less than 20 percent; (d) no extreme controls in the form of taxes, quotas, or state monopolies on exports; and (e) the country is not considered a socialist country.

Equation (1) was first estimated using the dummy variable (*S-W*). We then split this indicator into two components, one concerning openness to trade, and the other concerning the exchange market.

Trade openness measured as the ratio of trade to GDP has been used extensively in the literature. This ratio is simply not appropriate for the case of MENA countries, since several MENA countries have unusually high trade ratios, reflecting in part the nature of their factor endowment (oil in particular). We therefore use an indicator that corrects for this bias. This indicator is calculated as the ratio of imports plus exports to GDP. From this, we have deducted the "natural trade openness" of the economies (Frankel and Romer,(1999),[1] as well as the exports of oil and mining products. Thus, the indicator reflects more the trade policy (*TPol*) of a country than the simple trade openness ratio.

Regarding the exchange market, we use the dollar real exchange (*RER*), its volatility (*RERVol*), and *BMP*. The latter – which is a widely used measure of distortion in foreign exchange market – as well as RER volatility and appreciation, are expected to affect negatively FDI flows.

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[1] The natural openness of an economy takes into account the size and the distance of the markets of the countries concerned.

$$Log(FDI) = \alpha_0 + \alpha_1 \log(GDP) + \alpha_2 \log(GDPpc) + \alpha_3(RGDP) + \alpha_4 \log(TPol) +$$
$$\alpha_5 \log(RER) + \alpha_6(RERVol) + \alpha_7 \log(BMP) + \mu \qquad (1')$$

Equations (1) and (1') were estimated using a sample of cross-section and time series data. The sample includes annual data from 1990 to 1999 and covers from 48 to 72 countries (excluding OECD and East European countries; see *Annex* 1 for the list of countries). We used the panel data econometric methodology. Tests of fixed and random effects were conducted to select the most adequate models. The estimates are heteroskedastic consistent.

Table 1. Trade and Foreign Exchange Liberalization
(dependent variable: logarithm of net FDI)

Specifications	Specification 1		Specification 2		Specification 3		Specification 4		Specification 5	
Variables	Coef.	t-stat.	Coef.	t-stat.	Coef.	t-stat.	Coef.	t-stat.	Coef.	t-stat.
GDP	1.57	(6.95)	2.35	(7.35)	1.90	(4.76)	2.06	(6.23)	1.57	(3.99)
GDP per capita	1.37	(2.72)	0.06**	(0.08)	0.41**	(0.50)	0.05**	(0.06)	0.79**	(0.90)
GDP growth	0.01**	(1.33)	0.01**	(1.35)	0.02**	(1.24)	0.01**	(1.19)	0.02**	(1.13)
Indicator S-W	0.49	(2.01)								
Real exchange rate			-0.50**	(-1.64)	-0.28**	(-0.47)	-0.41**	(-1.39)	-0.21**	(-0.36)
Trade policy			1.00	(2.57)	1.00	(2.18)	0.99	(2.47)	0.99	(2.12)
Black market prem.					-0.18	(-2.80)			-0.18	(-2.57)
RER volatility							-0.30	(-2.94)	-0.26	(-2.25)
Number countries	72		49		48		49		48	
Number obs.	646		434		298		428		295	
AR^2	0.84		0.84		0.83		0.85		0.83	
Fixed effects	F(71,570) = 12.7		F(48,380) = 13.2		F(47,244) = 7.5		F(48,373) = 13.6		F(47,240) = 7.4	
Random effects	CHISQ(3) = 39.1		CHISQ(5) = 45.7		CHISQ(6) = 148.5		CHISQ(5) = 23.4		CHISQ(6) = 16.9	

Note: Data have been compiled from *World Development Indicators* (*WDI*, 2002).
      **: not significant (probability > 90 percent).
Source: Authors' estimations.

Table 1 reports the estimation results. There are four specifications: the first incorporates the Sachs-Warner indicator; and the remaining three include trade policy and various combinations of exchange market indicators. The fixed effects and the random effects tests support the focus on the fixed effects model.

In specification 1, all the coefficients are significant (except for GDP growth, *RGDP*), with the expected sign. This is the case of the coefficient of the Sachs-Warner indicator of trade and foreign exchange liberalization (*S-W*), and it indicates that trade and foreign exchange reforms increase total FDI inflows. In the other specifications, the coefficients of per capita GDP (*GDPpc*), GDP growth (*RGDP*), and real exchange rate (*RER*) are never significant, while also having the expected

sign. In contrast, the coefficients of trade policy (*TPol*), *BMP* and exchange rate volatility (*RERVol*), are consistently significant across specifications.

In other words, a high degree of host country trade openness clearly increases total FDI inflows. In addition, exchange rate volatility and distortions in the foreign exchange market have a negative impact on total FDI inflows. These results are consistent with Lucas (1993), who found a high degree of responsiveness of FDI to incomes in major export markets for Asian countries, and related it to the outward orientation of foreign firms located in that region. Note also that Hufbauer *et al* (1994) found that the size and trade openness of the host country is an important determinant of FDI flows.

III.2. Investment Climate

The results outlined above lend clear support to the hypothesis of positive impact of trade and foreign exchange liberalization on total FDI inflows. However, international evidence (see Dasgupta *et al*, 2003) suggest that companion policies aimed at strengthening the investment climate would be needed to further increase the attractiveness of a country for foreign investment.

First, the availability of adequate human capital can be seen as a necessary condition for FDI because of its complementarily with FDI (Borensztein *et al*, 1998). The availability of infrastructure also appears to be an important determinant of FDI inflows to developing countries (Wheeler and Mody, 1992). Finally, sound political environment and economic policies are encouraging factors for foreign investors, due to the role they play in lowering profit uncertainty (Agarwal, 1980; Schneider and Frey, 1985).

One can, therefore, wonder whether trade and foreign exchange liberalization still play a prominent role in attracting FDI once other determinants are taken into account. To disentangle the role of these various determinants, we augmented and re-estimated equation 1, using separate indicator for each determinant. The indicators were then introduced simultaneously (see Equation (2)).

We used the aggregate Sachs and Warner (1995) index of trade and foreign exchange liberalization (*S-W*), and did not introduce a similar split as in Table 1. Otherwise – given the missing observation for exchange rate variables (*RER* and *RERVol*) and *BMP* on the one hand, and for the additional variables on the other hand – we would have ended up with a very limited number of observations.

As an indicator of human capital, we used the secondary school enrollment ratio (*Enrol2*). The number of fixed telephones phones per capita proxied the availability of infrastructure (*Phone*). The indicators of macroeconomic conditions and political environment were drawn from the *International Country Risk Guide* (2000), which assigns a numerical value to a predetermined range of risk components. The scale awards the highest value to the lowest risk, and the lowest value to the highest risk. The economic risk rating (*Eco*) provides an assessment of a country's current economic strengths and weaknesses,[2] while the aim of the political risk rating

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[2] The economic risk rating consists of 5 indicators: GDP per capita, real GDP growth, annual inflation rate, budget, and current account balance as a percentage of GDP.

(*Pol*) is to provide a means of assessing the political stability and the good governance of a country[3] (see *International Country Risk Guide,* 2000).

$$Log(FDI) = \alpha_0 + \alpha_1 \log(GDP) + \alpha_2 \log(GDPpc) + \alpha_3(RGDP) + \alpha_4(S-W) +$$
$$\alpha_5 \log(Enrol2) + \alpha_6 \log(Phone) + \alpha_7(Eco) + \alpha_8(Pol) + \mu \qquad (2)$$

The estimation results are presented in Table 2. A first interesting result concerns the liberalization index (*S-W*). This variable is always significant (except in the third specification),[4] and its coefficient level is broadly similar across specifications (between 0.44 and 0.64; see Tables 1 and 2).

When additional determinants of FDI are introduced separately (human capital (*Enrol2*), fixed phones (*Phone*), political environment (*Pol*) and macroeconomic conditions (*Eco*)), their coefficients are always significant, with the expected positive sign. When they are introduced simultaneously, the coefficient of human capital (*Enrol2*) become insignificant – possibly due to co-linearity.

Table 2. Trade and Foreign Exchange Liberalization and Business Environment
(dependent variable: logarithm of net FDI)

Specifications	Specification 1		Specification 2		Specification 3		Specification 4		Specification 5	
Variables	Coef.	t-stat.	Coef.	t-stat.	Coef.	t-stat.	Coef.	t-stat.	Coef.	t-stat.
GDP	1.39	(5.77)	1.04	(3.58)	1.22	(5.00)	1.53	(6.26)	0.75	(2.44)
GDP per capita	1.12	(2.14)	0.12**	(0.19)	1.10	(2.22)	1.37	(2.66)	0.35**	(0.52)
GDP growth	0.01**	(1.19)	0.01**	(1.73)	0.00**	(1.03)	0.01**	(1.52)	0.01	(2.23)
Indicator S-W	0.64	(2.49)	0.50	(1.99)	0.44**	(1.43)	0.51	(1.71)	0.59	(1.74)
Education	1.19	(2.24)							0.85**	(1.42)
Fixed phones			0.79	(3.59)					0.45	(1.90)
Political Environment					0.03	(4.61)			0.02	(2.24)
Macroeconomic Conditions							0.03	(1.88)	0.03	(2.31)
Number countries	70		71		64		63		62	
Number obs.	624		548		572		554		469	
AR^2	0.85		0.87		0.85		0.85		0.87	
Fixed effects	F(69,549) = 13.3		F(70,472) = 12.9		F(63,503) = 13		F(62,486) = 14		F(61,399) = 13.6	
Random effects	CHISQ(4) = 39.0		CHISQ(4) = 20.1		CHISQ(4) = 16.7		CHISQ(4) = 35.7		CHISQ(7) = 22.7	

Notes: Data have been compiled from *World Development Indicators* (WDI, 2002), and from *International Country Risk Guide* (*ICRG*, 2000) for political environment and macroeconomic conditions.
**: not significant (probability > 90 percent).

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[3] The political risk index consists of 12 indicators: government stability, socioeconomic conditions, investment profile, internal and external conflicts, corruption, military in politics, religion in politics, law and order, ethnic tensions, democratic accountability, bureaucratic quality.
[4] In this case – although positive – the significance level of the coefficient is slightly below 10 percent.

Source: Authors' estimations.

In fact – as a first step of our empirical analysis – we can conclude that the impact of trade and foreign exchange liberalization is robust and consistent across specifications. This impact is rather strong: one standard deviation of the *S-W* indicator leads to an increase of 0.2 point of the log of FDI. Our results also confirm that a friendly business climate complements trade and foreign exchange reforms in further attracting FDI. This is the case for physical infrastructure (proxied by the number of fixed phones per capita), the improvement of which shows a significant impact on FDI (one standard deviation leading to an increase of 0.11 point of the log of FDI), as well as for the political environment and the macroeconomic conditions of the countries[5] .

III.3. FDI in Manufacturing

In the previous section, we have empirically validated the positive role of trade and foreign exchange liberalization, as well as of the climate investment, on total FDI flows to the developing world. Since FDI in manufacturing is more productive than total FDI, it is interesting to ask the question of its determinants.

In this section, we have investigated whether trade and foreign exchange liberalization, as well as the investment climate, constitute pertinent explanatory factors of a country's attractiveness in terms of FDI flows to the manufacturing industry. Equation (2) has been tested by replacing total FDI by FDI in manufacturing.

$$Log(FDI - manuf) = \alpha_0 + \alpha_1 \log(GDP) + \alpha_2 \log(GDPpc) + \alpha_3 (RGDP) + \alpha_4 (S - W) +$$
$$\alpha_5 \log(Enrol2) + \alpha_6 \log(Phone) + \alpha_7 (Eco) + \alpha_8 (Pol) + \mu \quad (2')$$

Equation (2') has been estimated using a sample of 20 to 26 countries from 1990 to 1999 (see *Annex 1* for the list of countries). Due to the lack of information on FDI in manufacturing, our sample has been substantially reduced. As before, we used panel data econometric techniques.[6]

The estimation results are presented in Table 3. As before, the liberalization index (*S-W*) is positive and significant in all specifications. The impact of trade and foreign exchange liberalization on FDI inflows (total and in manufacturing) is therefore robust and consistent.

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[5] In addition, our estimations show that the coefficients of the control variables (*GDP*, *GDPpc,* and *RGDP*) are comparable to those in the first specification in Table 1. Like the latter, only the GDP coefficient is consistently significant across specification, but unlike it, the two other coefficients became significant in many instances.

[6] Half of the tests for fixed or random-effect models concluded in favor of fixed-effect models (specifications 1, 2, and 6). However, we always present the results of the fixed-effect model. This is justified by the fact that random-effect models are difficult to interpret, and that there is no reason to choose such models in our case. Our estimates are heteroskedastic consistent.

Table 3. Trade and Foreign Exchange Liberalization and Business Environment
(dependent variable: logarithm of net FDI in the manufacturing industry)

Specifications Variables	Specification 1 Coef.	t-stat.	Specification 2 Coef.	t-stat.	Specification 3 Coef.	t-stat.	Specification 4 Coef.	t-stat.	Specification 5 Coef.	t-stat.	Specification 6 Coef.	t-stat.
GDP	1.22	(3.05)	1.33	(3.05)	0.77**	(1.55)	0.24**	(0.55)	1.15	(2.66)	0.48**	(0.74)
GDP per capita	1.08**	(1.13)	1.40**	(1.35)	0.47**	(0.36)	1.11**	(1.33)	1.12**	(1.17)	1.41**	(1.07)
GDP growth	-0.01**	(0.74)	-0.01**	(1.04)	-0.01**	(0.41)	-0.02**	(1.68)	-0.01**	(0.61)	-0.02**	(1.51)
Indicator S-W	1.04	(2.31)	0.93	(1.98)	1.1	(2.41)	1.09	(2.59)	1.06	(2.27)	0.87	(2.1)
Education			0.77**	(0.88)							-1.36**	(1.56)
Fixed phones					0.79	(2.2)					0.21**	(0.55)
Political Environment							0.05	(4.25)			0.05	(3.7)
Macroeconomic conditions									0.01**	(0.4)	-0.03**	(1.3)
Number countries	21		21		21		20		20		20	
Number obs.	148		148		139		144		144		135	
AR^2	0.9		0.9		0.91		0.91		0.89		0.92	
Fixed effects	$F(20,123)=18.3$		$F(20,122)=18.2$		$F(20,113) = 19.4$		$F(19,119) = 18.2$		$F(19,119) = 18.2$		$F(19,107)= 19.2$	
Random effects	CHISQ(3)= 6.27**		CHISQ(4)= 17.2**		CHISQ(4) = 0.65		CHISQ(4) = 4.7		CHISQ(4) = 6.0		CHISQ(4) = 8.3**	

Notes: Data have been compiled from *World Development Indicators* (*WDI*, 2002); from *United Nation Conference on Trade and Development* (*UNCTAD*, various issues) for FDI in the manufacturing industry; and from *International Country Risk Guide* (*ICRG*, 2000) for political environment and macroeconomic conditions.
**: not significant (probability > 90 percent).
Source: Authors' estimations

Another important findings consists in the magnitude of the coefficient of the liberalization index. This coefficient is almost double than of the case of total FDI (0.9 to 1.1, compared to 0.44 to 0.64). This means that one standard deviation of this variable leads to an increase of 0.5 to 0.7 point of the log of FDI. This makes trade and foreign exchange liberalization an even more important factor for the attractiveness of a country, as far as more productive FDI is concerned. This can be justified by the fact that trade and foreign exchange liberalization introduces more competition, provides more market opportunities, and allows for more technology transfers. These conditions can be considered good incentives for the manufacturing sector to invest – especially when investment is export oriented.

When additional determinants of FDI are introduced separately in the equation (human capital (*Enrol2*), fixed phones (*Phone*), political environment (*Pol*), and macroeconomic conditions (*Eco*)), their coefficients have the expected positive sign but are not always significant. This is the case for education (*Enrol2*) and for macroeconomic conditions (*Eco*). When these indicators are introduced

simultaneously, only the coefficient of political environment (*Pol*) remains significant.[7]

In summary, the estimation of the determinants of FDI in the manufacturing industry has been shown to be more difficult than the estimation of total FDI. Some results, however, seem robust. This is the case for the size of the market (which gives foreign investors a positive signal to invest in a country); for trade and foreign exchange liberalization (which always has a significant impact on FDI flows); and for the political environment. These are interesting findings that should not be neglected if a country wants to attract more productive FDI.

Other factors – such as education, core infrastructure, or macroeconomic condition – could also have played a significant role in attracting more productive FDI. The small size of our sample, however, and the focus on FDI in the manufacturing industry, must explain the difficulties in estimating Equation (2'). These other factors should, nevertheless, be considered carefully when implementing the reform agenda of the MENA countries.

IV. Trade and Foreign Exchange Liberalization and the Investment Climate in the MENA Countries

In this section, we use the econometric framework developed above to explain the low attractiveness of the MENA countries as far as FDI is concerned. We work with a sample of 72 countries (see *Annex* 1 for the list of countries). We first present the FDI flows toward the different regions of this sample (see Figure 3). We then discuss the state of reforms in the MENA countries. This allows us to quantify the deficit in FDI due to the lack of reform of these economies.

Actually, it can be noticed – when comparing Figure 1 in the introduction with Figure 3 below – that using our sample of 72 countries underestimates the FDI flows to Africa (especially during the 1990s), as well as to Latin America. However, due to missing values for some explanatory variables, the rest of the paper is based on this reduced sample of 72 countries.

Figures 3 and 4. Net FDI Flows in Our Sample of Countries (percent of GDP)
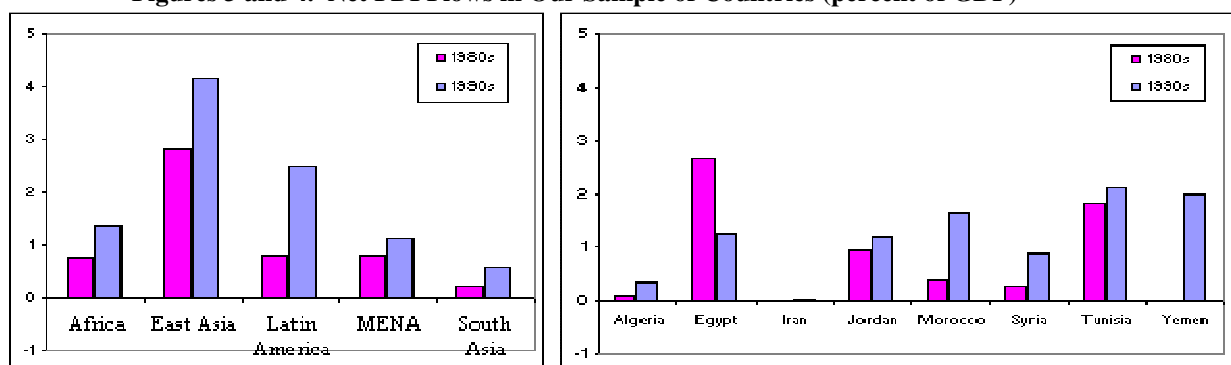

Source: Authors' calculations, based on *World Development Indicators* (*WDI*, 2002) for 72 countries.

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[7] In addition, the coefficients of *GDP* have the expected sign, but are only significant in half of the cases (specifications 1, 2, and 5). GDP per capita (*GDPpc*) and GDP growth rate (*RGDP*) are never significant.

Makdissi *et al* (2000), Dasgupta *et al* (2003), and Nabli and Véganzonès-Varoudakis (2004) have shown that – although some reforms have been undertaken by the majority of MENA countries – these reforms have generally been insufficient. This is the case for trade and foreign exchange liberalization, which can be assessed through the *S-W* index. While trade and foreign exchange liberalization in MENA has been more effective than in Africa, it has most of the time lagged behind Latin America and East Asia (see Figure 5). *Tunisia*, *Morocco*, *Jordan,* and *Yemen* are the exception. In fact, these countries have made a real effort since the beginning of the 1980s, which led in the 1990s to a very satisfactory level of liberalization compared to other MENA economies (see Figure 6).

Figures 5 and 6. Trade and Foreign Exchange Liberalization (*S-W* indicator)
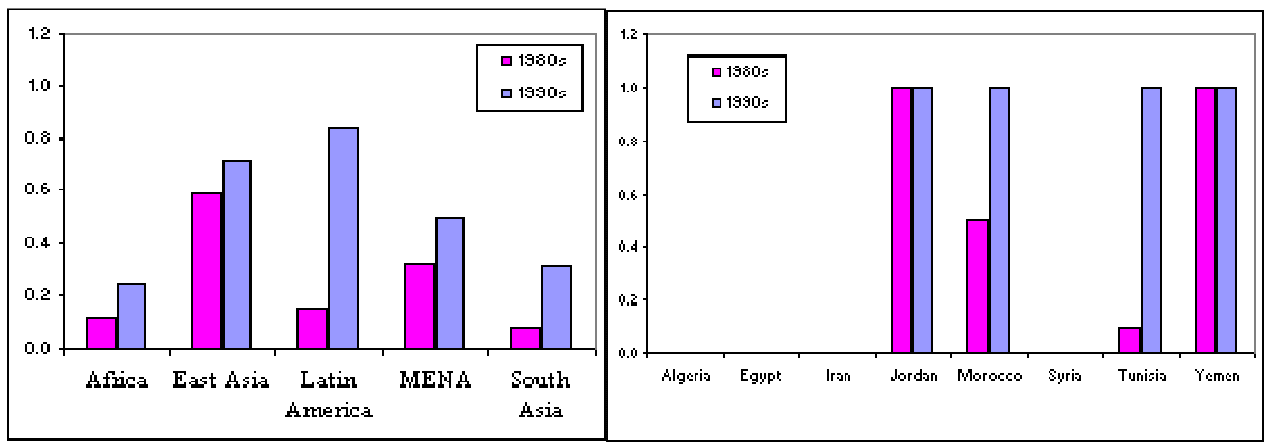
Note: The Sachs and Warner indicator (*S-W*) is a dummy variable, the value of which is 1 in the case of a certain level of trade and foreign exchange liberalization, and 0 if this level is not reached. (see Section 3.1 for the exact definition). In *Algeria*, *Egypt*, *Iran,* and *Syria*, the level has not been reached; thus, the *S-W* indicator has the value of 0 during the entire period.

Source: Authors' calculations, based on Sachs and Warner (1995).

Nevertheless, the overall deficit in trade and foreign exchange reforms has contributed to the low attractiveness of MENA in terms of FDI. It can be calculated from Equation (2) (specification 5) that FDI flows to the region could have been 13 percent higher during the 1990s, if MENA had undertaken a level of liberalization equivalent to that of East Asia. In *Algeria*, *Egypt*, *Iran,* and *Syria*, due to a low level of reforms, this increase could have been higher (42 percent; see Table 4). These figures highlight the contribution of the deficit in trade and foreign exchange liberalization to the low attractiveness of the MENA economies.

The impact of trade and foreign exchange liberalization is even stronger in the case of FDI in the manufacturing sector (see Table 3, Section 3.3). These flows have been substantial in East Asia, where trade and foreign exchange reforms have been significant (see Figure 7). In fact, if MENA had undertaken the same level of reforms, FDI in manufacturing could have been increased by almost 20 percent.

The same conclusions can be drawn for physical infrastructure (proxied by the number of fixed phones). Here, the gap with East Asia explains significantly the deficit in FDI flows to the region. In the 1990s, if MENA had increased its infrastructure to the level of East Asia, FDI flows to the region would have improved

by 26 percent. This percentage could have been even higher in the case of *Yemen* (54 percent), *Morocco* (34 percent), *Algeria* (32 percent), and *Egypt* (30 percent), these countries having been charaterized by a low development in physical infrastructure (see Table 4 and Figures 8 and 9).

Figure 7. Net FDI Flows to GDP (percent)
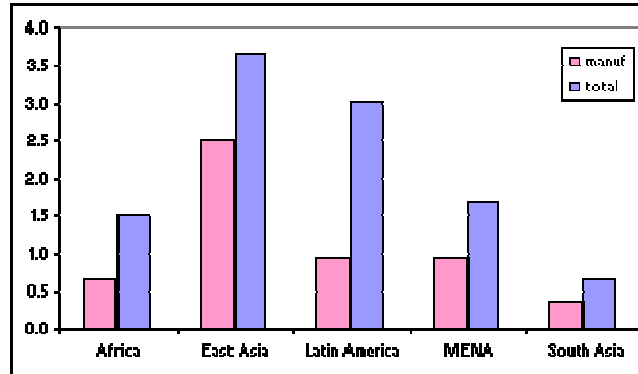
Note: *Morocco* and *Tunisia* are the only two MENA countries for which data were available. Their average of total FDI and of FDI in manufacturing is higher than the MENA average

Source: Authors' calculations, based on *United Nation Conference on Trade and Development* (*UNCTAD*, various issues), for 26 countries (see *Annex 1*).

Figures 8 and 9. Number of Fixed Phones per Capita
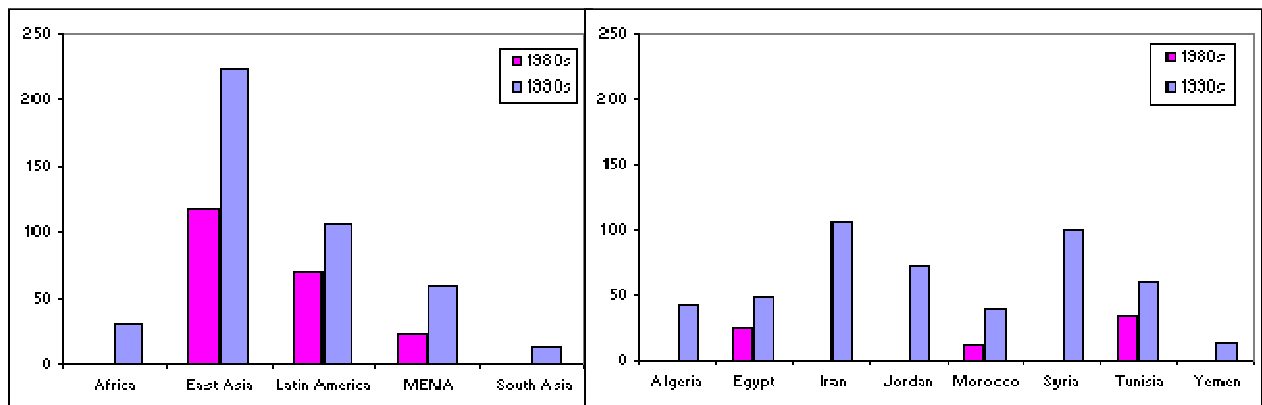
Source: Authors' calculations from *World Development Indicators* (*WDI*, 2002) for 72 countries.

Finally, the deficiencies in the political environment and the economic conditions of the MENA countries have also participated in the low attractiveness of the region. This has been the case for *Yemen*, *Algeria,* and to a lesser extent, *Iran* and *Syria*. These countries could have benefited from higher FDI flows, which would have resulted in a 60 percent increase in FDI in *Algeria*, 50 percent in *Yemen*, 32 percent in *Iran,* and 25 percent in *Syria* (see Table 4).

Globally, if all these factors were improved at the same time, the region's attractiveness could have been raised by 65 percent. In this case, FDI flows could have reached 2 percent of GDP instead of 1.2 percent. As seen previously, some countries that have lagged behind in terms of reforms would have benefited even more from a higher level of reforms. Attractiveness to FDI could have increased by 138 percent in *Algeria*, about 100 percent in *Yemen* and *Egypt*, 89 percent in *Iran,* and 71 percent in *Syria* (see Table 4).

It can, however, be noticed that efforts to reform the economy have globally paid off less in MENA than in some other regions – East Asia, in particular. In fact, MENA is characterized by unexplained factors (such as characteristics of the production function or resource endowments) that are embodied in the fixed effects of the regression, and that participate in lowering the FDI flows to the region. This negative impact has been strong in *Iran*, which has, in addition, been characterized by insufficient reforms. But this factor also explains that FDI flows to *Jordan* and *Morocco* have been disappointing, despite good policies compared to the MENA average (see Table 4).

Actually, if MENA had, in addition to reforms, benefited from the same fixed effects as East Asia, then FDI flows to the two regions would have been rather similar. These flows would have even been stronger in the case *Jordan*, *Morocco,* and *Tunisia*. This result should not hide, as shown previously, the significance and the payback of reforms in attracting foreign investors. This is an important message to policymakers, which should not be forgotten when implementing the reform agenda of the MENA economies

Table 4. Net FDI Flows to GDP in the 1990s (percent)

	Actual	Increase (%) with improvement in				Tot	Potential	F.Effects	Potential with
		T & FE Reform	Infrast.	Eco. Stab.	Pol. Stab.				F. Effects
Algeria	**0.3**	42	32	23	40	138	**0.8**		
Egypt	**1.3**	42	30	9	16	97	**2.5**	-4.0	**3.1**
Iran	**0.03**	42	15	19	13	89	**0.1**	-8.6	**0.2**
Jordan	**1.2**	0	22	5	8	35	**1.6**	-6.4	**5.1**
Morocco	**1.6**	13	34	8	7	61	**2.6**	-5.4	**5.7**
Syria	**0.9**	42	16	15	10	83	**1.6**	-4.6	**2.6**
Tunisia	**2.1**	36	26	7	2	71	**3.6**	-4.6	**5.8**
Yemen	**2.0**	0	54	28	19	101	**4.0**	-2.3	**1.5**
MENA	**1.2**	13	26	12	14	65	**2.0**	**-5.1**	**3.9**
E-Asia	**4.2**							**-3.5**	

Source: Authors' calculations, based on econometric results

V. Conclusion

In this paper, we have shown, for a panel of 26 to 72 countries studied during the 1990s, that trade and foreign exchange liberalization constitutes a key factor for the attractiveness of a country in terms of FDI. This result is robust regardless the type of FDI (total or in manufacturing); the indicator of trade and foreign exchange liberalization; and the specification used. The addition of variables of the investment climate – such as human capital, physical infrastructure, political environment and macroeconomic conditions – reinforces our findings.

Our results extend the conclusions of various authors on the determinants of FDI. In particular, they confirm and enlarge the role of trade and foreign exchange liberalization – see Hufbauer *et al*. (1994) in the case of trade openness; and Cushman (1986) and Goldberg and Kolstad (1995) for the real exchange rate. Our findings also validate the role of non-traditional determinants of FDI – such as investment climate – which have not been systematically taken into consideration up to now.

As far as MENA is concerned, the weak FDI record of the region can be explained by the lack of economic reforms. This is the case for trade and foreign exchange liberalization, which – despite some progress in the 1990s – has been insufficient compared to the more successful economies of East Asia and Latin America. Actually, the deficit in reforms has constituted a real obstacle for foreign investors in countries such as *Algeria*, *Egypt*, *Iran,* and *Syria*. This obstacle has been even higher for foreign investment in manufacturing. Even if some economies, such as *Tunisia*, *Morocco*, *Jordan,* and *Yemen* can be considered leaders in the field of trade and foreign exchange reforms, progress needs to be made by other MENA countries if they want to attract more FDI.

The same conclusions can be drawn for physical infrastructure, for which the gap compared to East Asia has contributed to the deficit in FDI flows to the region. All MENA countries need to make a substantial effort to improve their infrastructure endowment. *Algeria*, *Egypt*, *Yemen,* and *Morocco*, however, have to pay special attention to their deficit in infrastructure, if these countries want to catch up with more advanced economies. Similarly, progress in the political environment and the macroeconomic conditions would have substantially increased FDI flows to *Algeria*, *Yemen*, *Iran,* and *Syria*. Actually, FDI flows to MENA could have significantly increased, and reached 2 percent of GDP (compared to 1.2 percent), if all of these factors – trade and foreign exchange liberalization, development of infrastructure, political environment and macroeconomic conditions – had improved at the same time. However, this still would have been inferior to what was achieved in East Asia (4.2 percent of GDP).

All of this being said, it is the unexplained factors (embodied in the fixed effects of the regression) that cause the payoff of reforms to be lower in MENA than in East Asia. This has been particularly the case of *Jordan* and *Morocco*, where reforms did not materialize into high FDI flows. In *Algeria* and *Iran,* reforms would have suffered from even more negative unexplained factors. These negative fixed effects constitute a serious handicap for the region. They imply that efforts to reform the economy need to be stronger in MENA compared to other regions, particularly East Asia, if MENA wants to attract more FDI. This should not be forgotten when implementing the reform agenda of the MENA countries.

Finally, even if education does not seem to have played a clear role in attracting FDI flows, this factor should be considered carefully because of its importance in explaining the growth performances of the region (see Nabli and Véganzonès-Varoudakis, 2004).

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Appendix 1

List of Countries in Our Various Samples

Country	Sample 72	Sample 49	Sample 48	Sample 26
Angola	Y			
Argentina	Y	Y	Y	Y
Bangladesh	Y	Y	Y	Y
Benin	Y			
Bolivia	Y	Y	Y	Y
Botswana	Y	Y	Y	
Brazil	Y	Y	Y	Y
Burkina Faso	Y	Y	Y	
Cameroon	Y	Y	Y	
Central African Republic	Y			
Chad	Y			
Chile	Y	Y	Y	Y
China	Y	Y	Y	Y
Colombia	Y	Y	Y	Y
Congo, Rep.	Y			
Costa Rica	Y	Y	Y	Y
Cote d'Ivoire	Y	Y	Y	
Cyprus	Y			
Dominican Republic	Y			
Ecuador	Y	Y	Y	Y
Egypt	Y	Y	Y	
El Salvador	Y	Y	Y	
Ethiopia	Y			Y
Gabon	Y			
Gambia	Y	Y	Y	
Ghana	Y	Y	Y	
Guatemala	Y	Y	Y	
Guinea	Y			
Guinea-Bissau	Y			
Haiti	Y			
Honduras	Y			
India	Y	Y	Y	Y
Indonesia	Y	Y	Y	Y
Iran.	Y	Y	Y	
Israel	Y	Y	Y	
Jamaica	Y			
Jordan	Y	Y	Y	
Kenya	Y	Y	Y	Y
Kuwait		Y	Y	

Madagascar	Y	Y	Y	
Malawi	Y	Y	Y	
Malaysia	Y	Y	Y	Y
Mali	Y			
Mauritania	Y			
Mauritius	Y	Y	Y	
Morocco	Y	Y	Y	Y
Mozambique	Y	Y	Y	
Nepal	Y			
Nicaragua	Y			
Niger	Y	Y	Y	
Nigeria	Y	Y	Y	
Pakistan	Y	Y	Y	Y
Papua New Guinea	Y			
Paraguay	Y	Y	Y	Y
Peru	Y	Y	Y	Y
Philippines	Y	Y	Y	Y
Rwanda	Y			
Senegal	Y	Y	Y	
Sierra Leone	Y			
Singapore	Y	Y		Y
South Africa	Y	Y	Y	
Sri Lanka	Y	Y	Y	Y
Syria	Y	Y	Y	
Tanzania	Y	Y	Y	
Thailand	Y	Y	Y	Y
Togo	Y	Y	Y	
Tunisia	Y	Y	Y	Y
Turkey	Y			
Uruguay	Y	Y	Y	
Venezuela	Y	Y	Y	Y
Yemen, Rep.	Y			
Zambia	Y	Y	Y	Y
Zimbabwe	Y			Y