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

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by

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Summary

Despite some progress in economic policy — essentially in the 1980s for macroeconomic stability and in the 1990s for structural reforms — MENA countries have failed to attract foreign direct investments (FDI). This can be due to several factors. In this paper we empirically verify from a panel of 72 countries — among which 8 MENA economies — that, during the 1990s, weak trade and foreign exchange liberalization played a determinant role in explaining the low level of total FDI. This results is confirmed for FDI in manufacturing. In fact, if trade and foreign exchange liberalization has started in a majority of MENA economies, level of reforms has lagged behind East Asia and Latin America. Our paper also highlights the role of other factors — such as physical infrastructure and political and macroeconomic stability — in explaining total FDI flows to the regions. These results bring new empirical evidence on the determinants of FDI. They should not be forgotten when implementing the reform agenda of the MENA economies.

JEL Classification:

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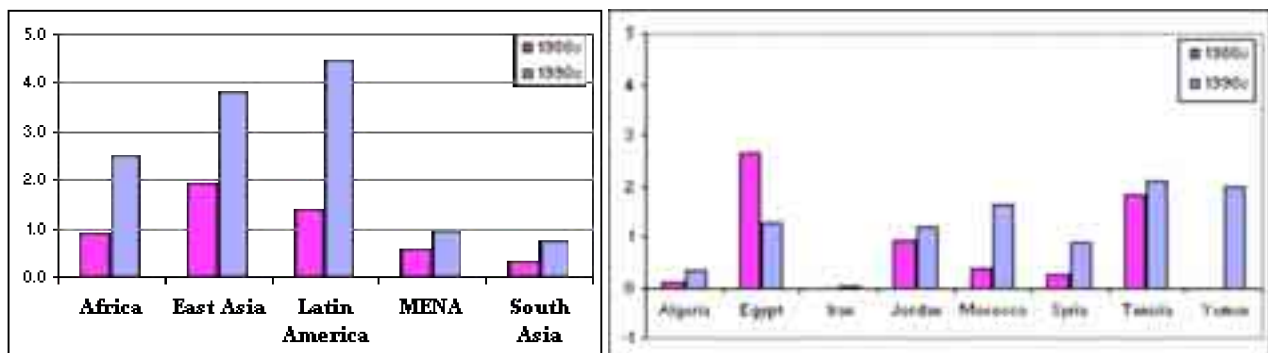
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I. Introduction

Many authors attribute the disappointing growth and employment records in the MENA countries to the low integration of the region in the world economy (e.g. Makdissi *et al*, 2000 and Dasgupta *et al*, 2002). Abstracting from oil, the region scores one of the lowest ratios of export to GDP among all region of the World but Sub-Saharan-Africa. In term of FDI, it shows a similar picture.

The ratio of net FDI flows to GDP only reached 0.9% in average in the 1990s, against 2.5% in Africa, 3.8% in East Asia and 4.5% in Latin America (see Figure 1). Moreover, contrary to the other regions where FDI flows increased during the 1990s, the progression was very small in MENA (6,3 % in average per year between the 1980s and the 1990s, against 17% in Africa, 10% in East Asia, 22% in Latin America and 13% in South Asia). Even if among MENA countries, Morocco, Tunisia and Yemen attracted more FDI than the regional average (between 1.6 and 2.1% of GDP, see Figure 2), these results remains very disappointing.

Figures 1 and 2: FDI (% GDP)



Source: Authors' calculations from WDI (117 countries).

The reason for the poor export and FDI performance in the region has been related to prolonged application of inward-looking strategies based on import-substitution (Nabli and De Kleine, 2000). This is why, during the 1980s, a number of developing countries engaged in a process of economic reform, involving a more outward orientation of their economies, the lowering of trade barriers, privatization of many industries and reform of the foreign-exchange market. The objective was to create a friendly climate favorable to trade and investment. MENA countries followed this process, but at different speeds (Nabli and Veganzones-Varoudakis, 2003a).

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

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 the host countries are important determinants of FDI flows. The relationship between FDI flows and exchange rate was examined by Cushman (1985) who found significant reductions in US 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.

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 fact, 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 of the FDI in the manufacturing industry. The role of FDI as engine of growth in developing countries was 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, the positive impact of FDI on the development and dispersion of technological skill takes place if there is enough human capital in the host country (Borensztein *et al.* (1998)).

Given the potential important role 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 improving their record in term of FDI attractiveness. For this purpose, an econometric model of the determinants of FDI — total as well as in manufacturing — has been set up and estimated. To highlight the MENA specificity, the empirical analysis has been conducted in a comparative way with Latin America, Asia, and 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 has been enlarged in order to take into consideration other factors which also participate in the investment climate of a country/region (human capital, physical infrastructures, political and macroeconomic stability).

The paper is organized as follows. Section 2 introduces the literature. Section 3 presents the econometric analysis. Section 4 analyses the state of reforms of the MENA economies and its 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, policy makers are highly concerned with FDI inflows. Such inflows are thought to represent additional resources they need to improve their economic performance. FDI inflows are expected to increase a country's output and productivity, to encourage local investment and to stimulate the development and dispersion of technology. While the first impact seems to be non-controversial the others are still debated among economists.

By increasing capital stock, FDI is supposed to increase a country's output and productivity through a 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 engine of growth in developing countries; a conclusion reached independently by Blomstrom *et al* (1992). The higher efficiency of FDI was also examined empirically. It is assumed to come from the combination of foreign advanced management skills with domestic labor and inputs. De Gregorio (1992) shows, in a panel of 12 Latin American countries, 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). They investigated the extent to which FDI crowds in or crowds out domestic investment. The effects of FDI on investment is allowed to differ across countries, depending on domestic policy and the nature of FDI inflows (new activities or existing activities) and across sectors depending on technology. FDI is expected to be complementary to domestic investment if it is oriented to high technology sectors and to be substitute to domestic investment if it directly competes with local firms. A testable version of the theoretical model is estimated using a panel of 32 countries over the period 1970-96. The results suggest the presence of a crowding-out effect (negative externality) in Latin America and a crowding-in (positive externality) in Asia. In Africa, FDI increases 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 firms. The recent growth literature has highlighted the dependence of growth rates on a "catch-up" of the domestic technology relative 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 where 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 for 69 developing countries the effect of FDI flows on economic growth through a "catch-up" process in the level of technology. Their results reveal a strong complementarity between FDI and human capital. FDI has an overall positive effect 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. This paper also indicates that there is a positive, though not highly significant, relationship between FDI and domestic investment.

II.2. Determinants of FDI Inflows

Various motivations of FDI were put forward in the literature. An early analysis by Hymer (1960) emphasized the competitive advantages that the foreign firm may obtain relative to host firms. This may be achieved through the adequate use by the foreign firm of its intangible assets in research and development and advertising in foreign market (Caves, 1971). Another approach focussed 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, the rise of price competition leads the company to invest into LDCs looking for cheaper labor. These approaches were supported empirically by various authors (Caves, 1974, Kin and Lyn, 1986 and Mansfield *et al.*, 1979) who found that the advantage of the US 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 the above analyses highlight the benefits of undertaking FDI, the issue of choosing a given host country is still not clarified. The eclectic theory of FDI suggests three factors which explain FDI (Dunning, 1981 and 1988). First, the firm must possess some form of sustainable ownership-specific advantage that allows it to compete with the other firms in the markets it serves regardless of the disadvantages of being foreign.

Second, the internalized transactions through FDI must be more efficient than the transactions associated with trade and licensing. This is related to the issue on whether trade and FDI are complements or substitutes. A theory dating back to

Mundell supports a substitute relationship between FDI and trade. The basic model is of a two-good, two-factor of production and two-country Heckscher-Ohlin type in which there are distortions coming from tariffs. The relatively low-priced factor in each country is abundant. Mundell shows that factor mobility created by international price differentials substitutes goods trade, leading to the elimination of international price differentials on the goods and on the factor markets as well as to relative prices identical to those of a free trade equilibrium with immobile factors.

The opposing view is that FDI and trade are complements. This occurs if the basis for trade is not a difference in relative factor endowments. If trade is based on different production technologies, distortions in product or factor markets, external economies of scale, with equal factor proportions, then factor mobility generates differences in factor proportions and an additional basis for goods trade. Monopoly in one country as a basis for trade and competitive factor markets lead to differences in factor prices. Factor mobility then results in an inflow of the factor used intensively in production and enlarges the volume of trade.

Third, the chosen foreign country must present location advantages that make it more attractive site for FDI than the others. Given the objective of the study, the rest of the literature review will focus on the determinants of the host country attractiveness (location advantages).

An early survey by Agarwal (1980) summarized the basic economic determinants of country attractiveness with respect to FDI. He suggested three main factors: the difference in the rate of return on capital across countries, portfolio diversification strategy of investors and market size of the host country. The difference in the rate of return is dependent on incentives for foreign investors and supply of cheap labor. Empirical evidence shows that the effect of incentives provided by the host country on FDI is only marginal however. Agarwal explains this unexpected finding by the fact that incentives are generally accompanied by a set of restrictions and requirements. The supply of cheap labor appears as 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 the expected profits and the perceived risk. Portfolio diversification helps reducing the total risk as long as returns are highly correlated within the country and weakly correlated between the home and the host countries. The empirical evidence in favor of this hypothesis remains weak. Some authors attempted to understand why multi-national companies tend to contribute more to FDI than to portfolio investments which are more likely to provide better instrument for geographical diversification. They argued that this preference might be due either to the absence of organized security markets (the case of LDCs) or to presence of high inefficiencies on these markets when they exist.

Finally, FDI is considered to be a function of output or sales on the host market, usually approximated by GDP or GNP. Most empirical studies reviewed by Agarwal have lent support to the relationship between FDI and market size of the host countries. This view is, however, challenged by Lucas (1993). Focussing on seven Asian countries (Indonesia, Malaysia, Philippines, Singapore, South Korea, Thailand and Taiwan) over the period 1960-87, he considered two measures of market size. One concerns the export market and the other concerns 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 are also found to be more responsive to wages than to costs of capital including taxes. The results by Alessandrini and Resmini (1999) who investigated the determinants of FDI inflows in Central and Eastern Europe and in the Mediterranean region over the period 1990-97 gave mixed results. For Central and Eastern Europe, the results indicate the significant effect of market size and openness in FDI decisions. Human capital and the degree of industrialization seem to be negatively related to FDI flows. For the Mediterranean region, the degree of industrialization and human capital affect positively FDI flows, whereas openness and risk factor affect them negatively and market size seems to play an insignificant role.

II.3. Trade Policy and FDI

The analysis of the role of economic policy in attracting FDI concerns commercial, exchange rate and investment incentive policies. The incentive schemes to attract FDI are grants, subsidies, tax abatement, loan guarantees and interest subsidies. Gubert and Mutti (1991) found that incentive schemes designed to attract FDI flows were effective in altering foreign investment decisions. Brewer (1993) points out that these policies can either increase or decrease market imperfections and therefore increase or decrease levels of FDI. He makes a distinction between policies that affect directly (capital controls, government transfer pricing policies, labor policies and intellectual property laws) and those with indirect effects (monetary policies including exchange rate management). Loree and Guisinger (1995) suggest that the effect of policies on FDI may differ between developing and developed countries. They clearly state, 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. The effects of trade liberalization depend on the motives for incurring 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. 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 valid 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) show that trade liberalization plays a significant and consistent role in the investment stock locations of the United States and Japan. The size and openness of the host countries are important determinants of FDI flows. Host country policies play less role than historical patterns, market size or per capita income. Belderbos (1997) analyses data on Japanese firms in the electronic sector in order to reveal the link between FDI and protectionists measures and in particular if such measures taken in the EU and the US have led to Japanese tariff-jumping FDI. He uses a logit model that tries to explain a Japanese firm decision to build a production unit in a given region. The results show that antidumping actions in the EU are more threatening for exports and are more likely to induce tariff - jumping FDI. Just the beginning of an antidumping action is enough to induce a Japanese firm to start investing without waiting for the outcome. Usual tariff barriers increase FDI. Belderbos also finds asymmetric effects of antidumping actions on big and small producers.

Girma *et al* (1999) look at the role of trade policy and anti-dumping actions in determining the distribution of Japanese FDI inflows across sectors in the UK. They use a Tobit model in which the dependant variable is either employment or fixed assets in Japanese subsidiaries based in the UK. Girma and al. find that trade barriers acted as an incentive to Japanese FDI in the UK, mainly due to the anti-dumping cases taken against Japan. Antidumping cases against other countries reduced the level of Japanese FDI, an explanation being that they helped Japanese exports by penalizing competitors. There is evidence that Japanese firms are attracted to highly integrated sectors across Europe. 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) analyzes the theoretical effects of real exchange rate risk and expectations on direct investment and then uses econometric models to test for risk and expected effects on US outflows. The theoretical part of the paper considers four types of models in which there is a two-period time frame where the firm must implement capital investment in the current period, in order to realize profits in a future period for which price levels, the nominal exchange rate and the real exchange rate are uncertain. The difference between the four models is that in the first case the firm sells the output abroad using foreign inputs and can finance its capital at home or abroad. In the second case, the firm produces and sells abroad, exports a domestically produced intermediate good to the foreign subsidiary and capital is financed domestically. In the third model the firm produces and sells domestically, imports an intermediate good from its foreign subsidiary and its capital is financed at home. 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 show 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 model, the dependant variable is the FDI outflows. The explanatory variables are the stock of direct investment at the beginning of the period, corporate cash flows in the US 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 show significant decreases in US FDI linked with increases in the current value of foreign exchange. Also there is 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, 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, support the claim that a depreciated currency can stimulate in buying control of productive corporate assets.

Goldberg and Kolstad (1995) examine the implications for FDI when both foreign demand and the exchange rate are subject to random real shocks. They assumes risk aversion with a two-period model in which a horizontally-integrated multinational produces for the foreign market only, 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, the dependant 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, it seems 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 in a systematic way the impact of economic policy on FDI in LDCs using two data sets. The first set concerns aggregate FDI inflows over the period 1970-95 and the second set concerns FDI from the United States by the sector of destination over the period 1983-84. Three main finding come out from this study. 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. Growth expectations exert a strong effect on FDI. Finally, the corruption index seems to be negatively related FDI flows.

III. The Empirical Analysis

III.1. Trade and Foreign Exchange Liberalization

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:

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

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 supposed 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 participate in 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*) taking 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 BMP 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 above indicator (*S-W*). We, then, split this indicator into two components: one concerns openness to trade and the other concerns 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. Several MENA countries have high trade ratios reflecting partly the nature of their factor endowment (oil in particular). We therefore use an indicator which correct for this bias. The indicator chosen is calculated as the ratio of imports

plus exports to GDP from which we have deducted the “Natural Trade Openness” of the economies calculated by Frankel and Romer (1999)¹, as well as the exports of oil and mining products. This indicator reflects more that the simple trade openness ratio the trade policy (*TPol*) of a country.

Regarding exchange market, we use the dollar real exchange (*REER*), its volatility (*REERVol*) and the Black Market Premium (*BMP*). The later — which is a widely used measure of distortion in foreign exchange market — as well as REER volatility and appreciation are expected to affect negatively FDI flows.

$$\text{Log}(FDI) = \alpha_0 + \alpha_1 \log(GDP) + \alpha_2 \log(GDPpc) + \alpha_3 (RGDP) + \alpha_4 \log(TPol) + \alpha_5 \log(REER) + \alpha_6 (REERVol) + \alpha_7 \log(BMP) + \mu \quad (1')$$

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 48 to 72 countries (excluding OECD and East European countries, see *Annex 1* for the list of countries). We used 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
(Dependant variable Logarithm of total FDI)

Specifications Variables	Specification 1		Specification 2		Specification 3		Specification 4		Specification 5	
	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)
REER 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 WDI (2002). **: not significant .

Source: Authors' estimations

¹ The “Natural Openness” of the economy is calculated by Frankel and Romer (1999) by taking into account the size and the distance of the markets of the countries concerned.

Table 1 reports the estimation results. There are four specifications: the first one incorporates the Sachs-Warner indicator; 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*). This indicates that trade and foreign exchange reforms increases 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 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 trade openness of the host country has clearly increased total FDI inflows. As well, exchange rate volatility and distortions in the foreign exchange market had a negative impact on total FDI inflows. These results are consistent with Lucas (1993) who found 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 this region. Note also that Hufbauer *et al.* (1994) have found that the size and trade openness of the host countries are important determinants of FDI flows.

III.2. Investment Climate

The above results lend clear support to the positive impact of trade and foreign exchange liberalization on total FDI inflows. However, international evidence (see Dasgupta *et al.*, 2002) suggests that companion policies aiming at strengthening the investment climate would be needed to further increase the attractiveness of a country.

On the top of these, the availability of adequate human capital is a necessary condition because of the strong complementarity between FDI and human capital (Borensztein *et al.*, 1998). Also infrastructure availability appears to be an important determinant of FDI inflows to LDCs (Wheeler and Mody, 1992). Finally a stable political environment and sound economic policies are encouraging factors for foreign investors. They are expected to have a positive effect on FDI flows through their role in lowering profit uncertainty (Agarwal, 1980 and Schneider and Frey, 1985).

One can, therefore, wonder whether trade and foreign exchange liberalization still plays 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 with an indicator of each of them. The indicators were first introduced separately and then simultaneously (see Equation (2)).

We used the aggregate Sachs and Warner (1995) index of trade and foreign exchange liberalization (*S-W*) and did not use 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 those 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 enrolment ratio (*Enrol2*). The number of fixed phone per capita proxied the availability of infrastructure (*Phone*). The indicators of economic and political stability were drawn from the *International Country Risk Guide* (1999) where a numerical value is assigned 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 (*EcoStab*) provides an assessment of a country's current economic strengths and weaknesses² while the aim of the political risk rating (*PolStab*) is to provide a means of assessing the political stability of the countries³ (see ICRG, 1999).

$$\text{Log}(FDI) = \alpha_0 + \alpha_1 \log(GDP) + \alpha_2 \log(GDPpc) + \alpha_3 (RGDP) + \alpha_4 (S - W) + \alpha_5 \log(Enrol2) + \alpha_6 \log(Phone) + \alpha_7 (EcoStab) + \alpha_8 (PolStab) + \mu \quad (2)$$

The estimation results are presented in Table 2. A first interesting result

Table 2: Trade and Foreign Exchange Liberalization and Business Environment
(Dependant variable Logarithm of total FDI)

Specifications Variables	Specification 1		Specification 2		Specification 3		Specification 4		Specification 5	
	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 Stability					0.03	(4.61)			0.02	(2.24)
Economic Stability							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	

Note: Data have been compiled from the WDI (2002) and from ICRG (1999) for political and macroeconomic stability. **: not significant

Source: Authors' estimations

² The economic risk rating includes: GDP per capita, real GDP growth, annual inflation rate, budget and current account balance as percentage of GDP.

³ The political risk index is composed 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.

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 (i.e. between 0.44 and 0.64, see Tables 1 and 2).

When additional determinants of FDI are introduced separately (e.i. human capital (*Enrol2*), fixed phones (*Phone*), political (*PolStab*) and economic stability (*EcoStab*)), their coefficients are always significant with the expected positive sign. When these are introduced simultaneously, the coefficient of human capital (*Enrol2*) become insignificant — due to possible co-linearity.

In fact — as a first step of our empirical analysis — we can conclude that the impact of trade and foreign exchange liberalization has appeared to be 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 FDI⁵. This is the case of physical infrastructures (proxied by the number of fixed phone per capita) which improvement shows a significant impact on FDI too (one standard deviation leading to an increase of 0.11 point of the log of FDI)⁶.

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 climate investment on total FDI flows to the developing world. FDI in manufacturing being more productive than total FDI, it is interesting to ask the question of its determinants.

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

$$\begin{aligned} \text{Log}(FDI - \text{manuf}) = & \alpha_0 + \alpha_1 \log(GDP) + \alpha_2 \log(GDPpc) + \alpha_3(RGDP) + \alpha_4(S - W) + \\ & \alpha_5 \log(Enrol2) + \alpha_6 \log(Phone) + \alpha_7(EcoStab) + \alpha_8(PolStab) + \mu \end{aligned} \quad (2')$$

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

⁴ In this case — although positive — the significance level of the coefficient is slightly below 10%.

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

⁶ Impact of economic and political stability is, however, less significant : one standard deviation leads to an increase respectively of 0.0004 and 0.0002 of the log of FDI.

FDI in manufacturing, our sample has been substantially reduced. As before, we used panel data econometric techniques⁷.

The estimation results are presented in Table 3. As previously, 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.

Table 3: Trade and Foreign Exchange Liberalization and Business Environment
(Dependant variable Logarithm of FDI in the manufacturing industry)

Specifications Variables	Specification 1		Specification 2		Specification 3		Specification 4		Specification 5		Specification 6	
	Coef.	t-stat.	Coef.	t-stat.	Coef.	t-stat.	Coef.	t-stat.	Coef.	t-stat.	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 Stability							0.05	(4.25)			0.05	(3.7)
Economic Stability									0.01**	(0.4)	-0.03**	(1.3)
Nbr 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**	

Note: Data have been compiled from the WDI (2002), from UNCTAD for the FDI in the manufacturing industry and from ICRG (1999) for political and macroeconomic stability.

** : not significant (probability > 90%).

Source: Authors' estimations

Another important findings consists in the magnitude of the coefficient of the liberalization index. This coefficient is almost double than in 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 of 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

⁷ Half of the tests for fixed or random effect models concluded in favor of fixed effect models (specifications 1,2 and 6). We, however, 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.

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 as good incentives for the manufacturing sector to invest — especially when export oriented.

When additional determinants of FDI are introduced separately in the equation (e.i. human capital (*Enrol2*), fixed phones (*Phone*), political (*PolStab*) and economic stability (*EcoStab*)), their coefficients have the expected positive sign but are not always significant. This is the case of education (*Enrol2*) and of macroeconomic stability (*EcoStab*). When these indicators are introduced simultaneously, only the coefficient of political stability (*PolStab*) remains significant⁸.

In summary, the estimation of the determinants of FDI in the manufacturing industry has revealed to be more difficult than the one of total FDI. Some results seems, however, robust. This is the case of the size of the market (which give to the foreign investors a positive signal to invest in a country), of trade and foreign exchange liberalization (which impact on FDI flows is always significant), as well as of political stability. These are interesting findings which 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 — when focusing on FDI in the manufacturing industry — must explain the difficulties in estimating Equation (2'). These factors should, nevertheless, be considered carefully when implementing the reform agenda of the MENA countries.

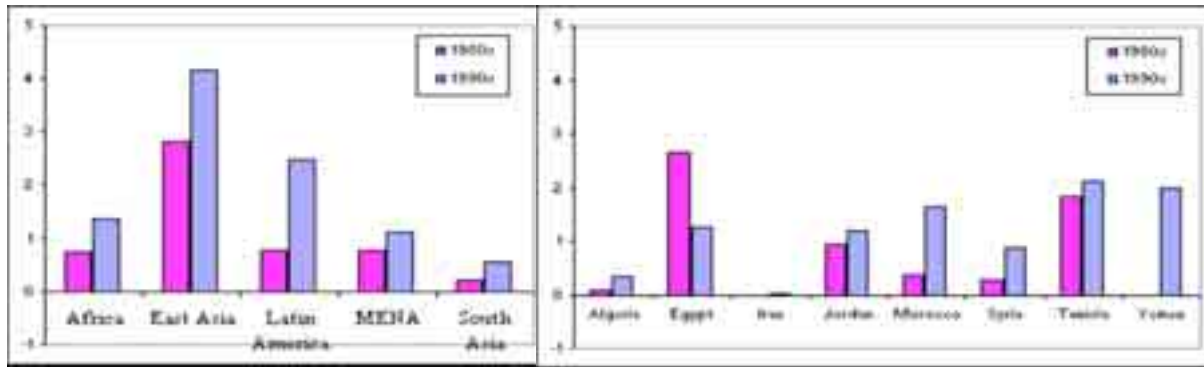
IV. Trade and Foreign Exchange Liberalization and Investment Climate in the MENA Countries

In this section, we use the econometric framework developed previously to explain the low attractiveness of the MENA countries as far as FDI is concerned. We work on our 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 *Chart 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 in these economies.

Actually, if *Figure 1* in introduction is compared to *Figure 3* below, it can be noticed 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, the rest of the paper is based on this reduced sample.

⁸ In addition, the coefficients of *GDP* has the expected sign, but is only significant in half of the cases (specifications 1,2 and 5). On another side, GDP per capita (*GDPpc*) and GDP growth rate (*RGDP*) are never significant.

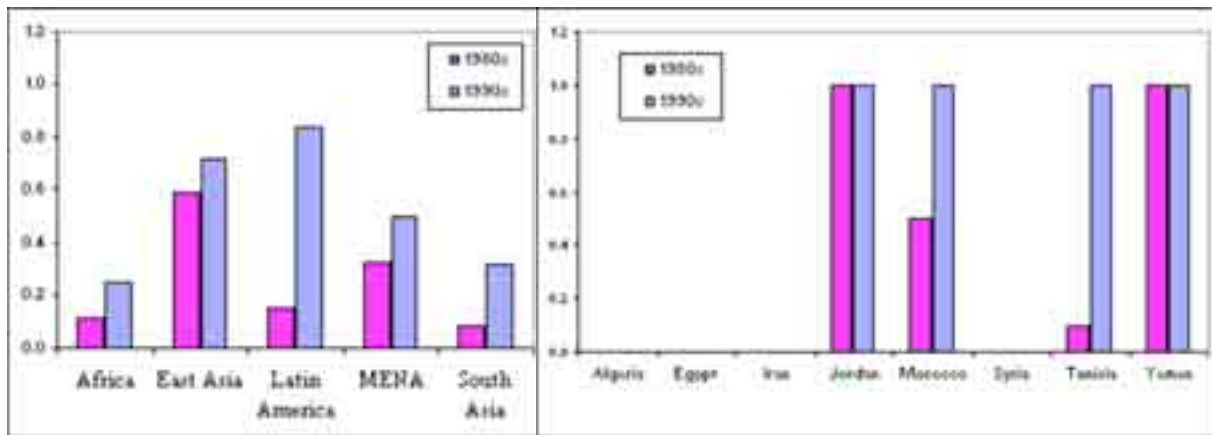
Figures 3 and 4: FDI in our sample of countries (% GDP)



Source: Authors' calculations from WDI (2002, 72 countries)

Makdissi *et al* (2000), Dasgupta *et al* (2002) and Nabli and Veganzones-Varoudakis (2003a) 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 of trade and foreign exchange liberalization which has lagged behind other regions. This can be assessed through the S-W index. While trade and foreign exchange liberalization in the MENA region has been more effective than in Africa, it has most of the time lagged behind Latin America and East Asia (see Chart 5). *Tunisia, Morocco, Jordan* and *Yemen* are the exception, with a level of trade and foreign exchange liberalization very satisfactory during the 1990s – compared to the other MENA economies (see Chart 6). Actually, this deficit in reforms constitutes factor that has highly participated in the low attractiveness of the MENA countries.

Figures 5 and 6: Trade and Foreign Exchange Liberalization (S-W indicator)



Source: Authors' calculations from Sachs and Warner (1995)⁹

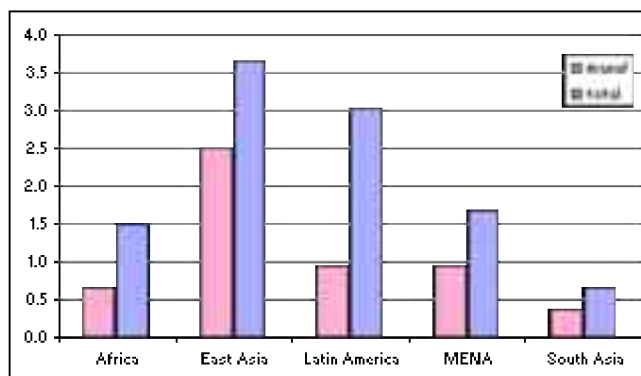
In fact, it can be calculated from Equation (2) (specification 5) that FDI flows to the region could have been of 2.3% of GDP (instead of 1.2%) during the 1990s, if trade and foreign exchange liberalization had reached the level of East Asia. In the case of *Algeria, Egypt, Iran* and *Syria*, FDI flows could have increased of 1.5% of GDP and reached respectively 1.8%, 2.8%, 1.5% and 2.4% (instead of 0.3%, 1.3%, 0% and 2.4%, see Table 4). These figures enlighten the high contribution of the

⁹ We will remind that the Sachs and Warner indicator (*S-W*) is a dummy variable which value is 1 in 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*, such level has not been reached. The *S-W* indicator has taken the value of zero during the whole period.

deficit in trade and foreign exchange reforms to the low attractiveness of the MENA countries.

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 very high in East Asia where trade and foreign exchange reforms have always been significant (see Figure 9). If MENA had undertaken the same level of reforms, FDI in manufacturing could have increased of 1.2 % of GDP (for a lower level than total FDI).

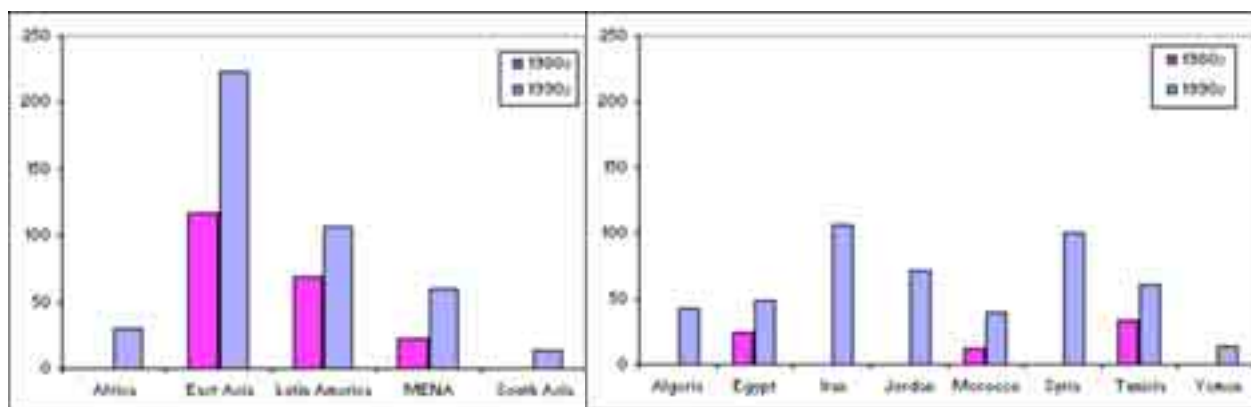
Figure 7: FDI to GDP (%)



Source: Authors' calculations from UNCTAD (26 countries¹⁰, see *Annex 1*)

Same conclusions can be drawn for physical infrastructures (proxied by the number of fixed phones). Identically, the gap with East Asia explains significantly the deficit in FDI flows to the region. In the 1990s, if the MENA countries had increased their dotation in infrastructures to the level of the East Asian economies, FDI flows could have reached 2.5% of GDP (compared to 1.2%). As far as countries' experience is concerned, *Yemen, Morocco, Algeria* and *Egypt* have shown a low development in physical infrastructures. In the case of these countries, a level of equipment similar to the one of East Asia would have boost FDI which could have increased of 1.4 to 1.7% of GDP (see Table 4).

Figures 8 and 9: Number of Fixed Phone per Capita



Source: Authors' calculations from WDI (2002, 72 countries)

¹⁰ *Morocco* and *Tunisia* are the only two countries for which data were available. Their average of total FDI and in manufacturing is higher than the MENA average.

Finally, if trade and foreign exchange liberalization and development of infrastructures are considered at the same time, FDI flows to MENA could have significantly catch up with East Asia (3.6% of GDP in average compared to 4.1% in East Asia in the 1990s). This is an important message to policy makers, which should not be forgotten when implementing the reform agenda of the MENA economies¹¹.

Table 4: FDI to GDP in the 1990s (%)

	Increase with improvement in			
	Actual	T & FE Reform	Phone	Potential
Algeria	0.3	1.5	1.4	3.2
Egypt	1.3	1.5	1.3	4.1
Iran	0	1.5	1.2	2.7
Jordan	1.2	0	1.3	2.5
Morocco	1.6	0	1.4	3.0
Syria	0.9	1.5	1.2	3.5
Tunisia	2.1	0	1.3	3.4
Yemen	2.0	0	1.7	3.7
MENA	1.2	1.1	1.3	3.6

Source: Authors' calculations

V. Conclusion

In this paper, it has been shown for a panel of 26 to 72 countries studied during the 1990s, that trade and foreign exchange liberalization has constituted 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. In particular, addition of variables of investment climate — such as human capital, physical infrastructure, politic and macroeconomic stability — reinforces our findings.

In this way, 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, 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 has not been systematically taken into consideration up to now.

As far as the MENA countries are concerned, the weak FDI record of the region can largely be explained by the lack of reforms of the economies. This is the case of trade and foreign exchange reforms which — despite some progress in the 1990s — has been insufficient compared to other more successful countries in East Asia and Latin America. Actually, the deficit in reforms constituted a real obstacle for foreign investors which could have almost doubled their participation if MENA countries had reached in the 1990s the same level of liberalization than in East Asia

¹¹ We will not comment the impact of economic and political stability, which is rather small compared to the one of trade and foreign exchange liberalization and of core infrastructures.

(2.3% of GDP instead of 1.2%). This impact is even stronger if we consider FDI in the manufacturing sector (which could have been higher of 1.2 % of GDP). Even if some economies like *Tunisia*, *Morocco*, *Jordan* and *Yemen* can be seen like leader in the field of trade and foreign exchange liberalization, progress needs to be made by other MENA countries if they want to attract more FDI.

Same conclusions can be drawn for physical infrastructures. In fact, the gap in equipment compared to East Asia has caused a deficit of 1.3% of GDP of FDI flows to the region. All MENA countries are concerned by a substantial effort to improve their dotation in infrastructure. In fact, FDI flows to MENA could have significantly catch up with East Asia (3.6% of GDP in average compared to 4.1%), if both effects — trade and foreign exchange liberalization and development of infrastructures — were taken into consideration. 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 Veganzones-Varoudakis, 2003).

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Appendix 1

List of Countries of our Various Sample

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
<i>Egypt</i>	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
<i>Iran.</i>	Y	Y	Y	
Israel	Y	Y	Y	
Jamaica	Y			
<i>Jordan</i>	Y	Y	Y	
Kenya	Y	Y	Y	Y
<i>Kuwait</i>		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