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AGNÈS BÉNASSY-QUÉRÉ, LIONEL FONTAGNÉ
and
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RSC No. 2001/41
Mediterranean Programme Series

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ROBERT SCHUMAN CENTRE
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MENA Countries in the Competition for FDI: Designing an Exchange Rate Strategy

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EUI Working Paper **RSC** No. 2001/41

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© 2001 Bénassy-Quéré, Fontagné and Lahrèche-Révil
Printed in Italy in November 2001
European University Institute
Badia Fiesolana
I – 50016 San Domenico (FI)
Italy

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Abstract

This paper highlights the impact of the exchange rate arrangement on inward foreign direct investment in MENA countries. We use an econometric equation where inward FDI in each country depends on various exchange-rate related determinants. We simulate the impact of a fixed peg to the euro in three MENA countries. The Euro-med area appears very heterogeneous, with Turkey unambiguously experiencing gains from pegging to the euro, while Morocco and Israel are in a much more mixed situation. In any case, the gain would be lower should many emerging countries follows the same strategy, because competition would increase among recipient countries. We conclude that stabilizing MENA currencies against the euro would exacerbate the competition with the CEECs.

JEL: F21, F23, F31, F33.
Keywords: exchange rate regime, foreign direct investment, monetary regionalism, MENA countries, EU.

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Introduction*

In 1995, the Barcelona agreement gave new impetus to the Euro-mediterranean relations, with an ambitious program designed, among others, to reinforce the economic integration between the fifteen European countries and twelve Middle-Eastern and North-African countries (the MENA countries). The creation of a free trade area was planned for 2010, and a financial program was launched to support this ambition.

This project is in the line of the extensive regionalization of trade and capital flows that was experienced in recent years, and that reflects in the exceptional performance of gravity models in explaining trade and foreign direct investment (FDI) flows by geographic distance (Eaton and Tamura, 1994). In this framework, MENA countries belong to a Euro-Mediterranean region, together with the European Union and with Central and Eastern European Countries (CEECs). The enlargement process of the European Union and, to a lesser extent, the Euro-Mediterranean agreements should reinforce the regional links between the two emerging areas and the European Union. However the competition between the MENA countries and the CEECs will likely be tough.

This coming competition is a source of concern for MENA countries, which are not popular locations for FDI: in 1996, the stock of FDI only reached 2.0% of GDP (or 8.3 billion dollars) in five MENA countries, whereas it reached 5.7% of GDP (or 18 billion dollars) in seven CEECs.[1] This situation is a source of concern on both shores of the Mediterranean sea (see for instance the official statement of the Fourth Euro-Mediterranean Conference held in Marseille, in November 2000, where the low level of FDI flows to the region was highlighted), since it constrains growth and supply in MENA countries. Microeconomic inefficiencies and political uncertainty are largely responsible for this situation (see Petri, 1997, Bechri, 1999, or Loewendahl and Etugal-Loewendhal, 2000, about Turkey). However we believe that exchange-rate strategies are also important for attracting FDI. These strategies concern both the level of the real exchange rate (i.e. the competitiveness and the international purchasing power of the currency) and the risk associated to the nominal exchange rate (i. e. the volatility of the exchange rate), which both determine foreign investment decision, because hedging is generally not possible for such investments.

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* This paper was presented at the Second Mediterranean Social and Political Research Meeting, Florence, March 21-25, 2001, Mediterranean Programme, Robert Schuman Centre for Advanced Studies, European University Institute.

[1] The MENA countries here include Algeria, Egypt, Israel, Morocco and Tunisia. The CEECs are Bulgaria, the Czech Republic, Hungary, Poland, Romania, Slovenia and Slovakia. OECD mirror data concern 17 capital exporting, industrialized countries.

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In theory, the impact of the real exchange rate on FDI is ambiguous, and depends on the motivations of foreign investors. For instance, a depreciation makes local assets and production costs cheaper, leading to higher inflows of FDI. However it can also soften protectionism and hence reduce the incentive for foreign firms to enter the local market through producing locally, as tariff jumping becomes less useful. In fact, the effect of the real exchange rate should depend on whether local production is to be re-exported (in this case, FDI and trade are complements, and hence an appreciation of the local currency reduces FDI inflows through lower competitiveness), or to serve the local market (FDI and trade are then substitutes, and an appreciation of the local currency can raise FDI inflows due to higher purchasing power and/or to higher trade barriers, which are frequent when exchange rates tend to appreciate). Unfortunately, available data do not disentangle the two motivations, and we have to rely on empirical analysis to discriminate between them. As a matter of fact, a real depreciation of the recipient country's currency is generally shown to induce more FDI inflows, although FDI coming from the United States might behave differently (see Ito et *alii*, 1996 or Goldberg and Klein, 1997).

As to the impact of exchange rate instability, it is also theoretically ambiguous. A foreign firm facing large exchange rate volatility will produce in the local country if it intends to sell on the local market, but refrain from doing so if it intends to re-export[2]. Another ambiguity comes from the possibility of diversifying the risk across locations. According to Ito et *al.* (1996), "Countries whose exchange rates are negatively correlated with global returns to capital (such as oil-exporting countries) may actually benefit from their role as portfolio hedges. An increase in these countries' exchange rates may actually raise their FDI inflows on diversification grounds" (p. 54). Empirical evidence concerning the impact of exchange rate volatility on FDI is mixed (see Cushman, 1988; Goldberg and Klein, 1997). But the diversification hypothesis has not been tested.

In this paper, we argue that the exchange rate strategy should not be designed in a bilateral framework. On the contrary, the presence of competing emerging countries within the Euro-Mediterranean region should be taken into account. More specifically, MENA countries could increase their attractiveness to FDI by making the proper trade-off between (*i*) low uncertainty on their exchange rates against the euro, (*ii*) moderate real exchange rate appreciation against the euro and (*iii*) differentiation with the exchange rate strategies of the CEECs.

[2] There is no clear consensus in the literature about the link between exchange rate volatility and trade. According to recent works however, a higher volatility seems to lead to less trade (see Rose, 2000, or Fontagné and Freudenberg, 1999).

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Recent currency crises have shown the importance of stable, long term capital inflows as opposed to short term, unstable financing. In addition, FDI will also be crucial to Euro-Mediterranean partnership because it will enhance trade and technology transfers between the two areas. In this paper, we show that, should MENA countries choose to stabilize their currencies against the euro, FDI inflows from the euro zone would be enhanced, but the competition with the CEECs for attracting FDI would become tougher.

A theoretical model is presented in section 2, which links FDI in and emerging country to the behavior of its exchange rate, and which allows for an econometric estimation. Section 3 uses econometric results to analyze the impact of MENA countries pegging their currencies to the euro, depending on whether other emerging countries share the same strategy or not. Conclusions are drawn in section 4.

The model

Our argumentation relies on a model developed in Bénassy-Quéré, Fontagné and Lahrèche-Révil (1999). This two-period model considers the choice of a representative, risk-adverse multinational firm facing two possible locations. The firm invests during the first period, and produces during the second one. Its products are sold only on its domestic market, at a given price (hence, we deal with FDI aimed at re-export[3]). Labor costs depend on local wages (which are known by the time it invests) and on the nominal exchange rate (which future behavior is unknown). Wages are assumed not to react to exchange rate variations, at least over the investor's horizon. This assumption generates a foreign exchange uncertainty on profits. Of course, in reality, wages do react to exchange-rate variations, to an extent that depends on indexation mechanisms. However monthly and even quarterly data are often missing for wages and prices in developing countries, which prevents from computing annual series of profit uncertainty. This shortcoming is limited however, since wage variations are smoother and delayed compared to exchange rate fluctuations, triggering a high correlation between the nominal and the real exchange rate. In other terms, the uncertainty surrounding the nominal exchange rate dominates that on nominal wages, which justifies the simplifying assumption of wage rigidity when measuring profit uncertainty.

[3] The re-export framework is suitable for relatively small emerging countries such as MENA countries. In the absence of a wide, regional market, reducing output costs becomes the main motivation for investing abroad (see Michalet, 1997). The re-export hypothesis is validated here on the basis of our econometric tests, suggesting that even FDI to large countries such as China or Brazil contains a significant part which aims at re-exporting the production (for an analysis of FDI in China, see Lemoine, 2000).

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The firm considers the exchange-rate regime as given[4]. We also assume that, although it is aggregated across multinationals, inward FDI has no impact in terms of real appreciation. FDI can be assimilated to a positive supply shock and does not carry inflation pressures in the host country. Empirically, Artus (1999) shows that there is little correlation between average FDI net flows (as a percentage of GDP) and the average growth of the real exchange-rate, for a set of 18 developing countries over the 1992-1996 period. In addition, there is no reason why *bilateral* exchange rates should react to *bilateral* FDI: since forex markets are typically small in emerging, host countries and large in OECD, investing countries, a bilateral capital inflow will typically impact on the exchange rate of the host against all other currencies, leaving exchange rates between key currencies unchanged.

The firm also faces fixed costs and transportation costs. Fixed costs are an incentive to produce in only one location, whereas transportation costs modify the labor cost advantage of each country, and are an incentive to spread production. Finally, capital is costly, and there is no residual value of capital after the production period.

The theoretical model is detailed in Box 1. Low costs in country *i* attract FDI in country *i* provided transportation costs and exchange-rate volatility are not too high. Low costs in country *j* have an ambiguous impact on FDI to country *i*, depending on whether the exchange rates of *i* and *j* against the investor's currency are positively or negatively correlated. In the former case, the two countries are substitutes, and lower costs in country *j* reduce FDI to country *i*. In the latter case, the two countries are complements, and lower costs in country *j* increase FDI to country *i*. These cross effects are larger the lower transportation costs. This is to say that these effects should be important for MENA countries and CEECs which are close to the European Union.

[4] Hence, we exclude a strategic game between the firm and the government: no firm is powerful enough to impact on the exchange-rate regime chosen by the government.

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Box 1: the equations of the model

• Profit of the multinational firm:

$$\pi = P(Q_1 + Q_2) - W_1(F + L_1/\tau_1)S_1^{'} - W_2(F + L_2/\tau_2)S_2^{'} - r\left(R_1K_1S_1/\tau_1 - R_2K_2S_2/\tau_2\right) \quad (1)$$

Where P is the world price of the goods produced (in the currency of the investing country); Q_i, L_i and K_i are output, labor and capital used by the firm in country i; W_i and R_i are nominal wage and capital price in country i, in local currency. Both W_i and R_i are assumed to be given for the investing firm (no pressure on the local markets of labor or capital goods). The fixed cost F is assumed to be identical in both locations, whereas the transportation cost $1/\tau_1$ is different[5]. r is one plus the nominal interest rate (firms creating an international set of operations are supposed to be able to borrow at the conditions of the international market). S_i is the nominal exchange rate of currency i against the investor's currency in the first period ($S_i^{'}$ in the second period). The nominal exchange rate is hit by exogenous shocks that can be fully or partially neutralized by foreign exchange interventions, feedback rules and/or capital controls.

• Production function (complementary factors):

$$Q_i = L_i = K_i/k \qquad i=1,2 \qquad (2)$$

• Profit maximization:

$$\begin{cases} MaxU = E\pi - \phi Var\pi \\ Q_1, Q_2 \end{cases} \qquad (3)$$

where Φ is the risk aversion coefficient.

• Solution[6]:

$$Q_i = \frac{1}{2\phi(1-\rho^2)}\left(\frac{\tau_i^2}{W_i^2\sigma_i^2}C_i - \frac{\rho\tau_i\tau_j}{\sigma_i\sigma_j W_i W_j}C_j\right) - F\tau_i \qquad i=1,2 \qquad (4)$$

where ρ denotes the expected correlation between $S_1^{'}$ and $S_2^{'}$, σ_i is the expected standard deviation operator $S_i^{'}$ and $C_i = P - \left(ES_i^{'}\frac{W_i}{\tau_i}\right) - krR_i\frac{S_i}{\tau_i}$ measures the competitiveness of country i.

Hence, the production in each location i depends positively on expected competitiveness and negatively on currency risk in location i. However it also depends on the competitiveness and risk associated to the alternative location j, in a sense that depends on the correlation between both exchange rates.

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[5] We assume standard iceberg transportation costs for tractability.

[6] If the variance is zero (in case of a currency board, for instance), the firm maximises its expected profit. The first order condition then leads to $P = (W_1ES^{'}_1 + rR_1kS_1)/\tau_1$ which is a form of purchasing power parity.

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In order to validate the model, we carried out a panel estimation for a range of 42 host, emerging countries and 17 investing, industrialized countries over the 1984-1996 period (hence, the maximum size of the sample is 42×17×13=9,282 observations). The following equation was estimated using OECD FDI data[9]:

$$\log FDI_{it}^{k} = a_0 + a_1 \log C_{it}^{k} + a_2 Vol\ S_{it}^{k} + a_3 \rho_{it}^{k} \times \log C_{jt}^{k} + a_4 \log DIST_{i}^{k} + a_5 OPEN_{i} + OIL_{t}\left(a_6 \log C_{it}^{k} + a_7 Vol\ S_{it}^{k} + a_8 \log DIST_{i}^{k}\right) + e_t + e^{k} + u_{it}^{k}$$

where $\log FDI_{it}^{k}$ stands for the logarithm of the stock of FDI received by country i from country k at time t (in constant dollars)[10]. The competitiveness of country i (C_i in the theoretical model) is proxied by the real exchange rate of i against each investing country k (a rise in C_{it}^{k} signals a depreciation of country i's currency). Consistently, the competitiveness of the alternative location (C_j in the theoretical model) is the real exchange rate of the emerging countries aggregate j against each investor (GDP-weighted average) C_{jt}^{k}.[11] $Vol\ S_{it}^{k}$ is the quarterly volatility of country i nominal exchange rate against k, defined as the coefficient of variation of the nominal exchange rate over the past three years (excluding t); ρ_{it}^{k} is the correlation of i/k and other emerging currencies/k exchange rates (over the same period)[12], which multiplies the competitiveness of alternative locations, consistently with the theoretical model. Finally, $DIST_{i}^{k}$ is a measure of distance between i and k.[13] In a standard fashion, we add fixed effects for time (e_t) and for investing countries (e^{k}). The latter control for the size and other characteristics of the investing countries, whereas the former catch trends in the world economy such as deregulation. The size of the host country is partially captured by the openness variable (see below), although other characteristics not accounted for by the theoretical model such as human capital are not included in the estimation.

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[9] The estimated equation includes MENA countries, but we have checked that it is robust to the exclusion of MENA countries from the sample: the sign and significance of estimated coefficients are not modified by the change in the country sample. Hence, the estimates are not biased towards a particular behaviour of MENA countries.

[10] The stock of FDI is preferred to the flow because it is consistent with the theoretical model, where the explained variable is the output in the host country which is proportional to the stock of capital. Note that de stock of FDI does not exhibit any trend over the period under study.

[11] Since the interdependence effect between pairs of host countries cannot be tested for, we specify it for each host countries in relation to the aggregate of all possible locations. See Appendix for the calculation of the aggregate.

[12] The use of past volatility and correlation can be justified by the auto-regressive pattern of volatility: except for institutional breaks like the settlement of a currency board, looking at past volatility helps to forecast future volatility.

[13] We are grateful to Michael Pajot for kindly providing this measure.

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In addition to the theoretical model referred to above, we introduce an openness variable ($OPEN_{it}$), which is designed to control for the nature of foreign direct investment: if FDI aims at re-export, then it should translate into a large openness ratio (the ratio of exports plus imports to GDP), since entering the small domestic markets can hardly be the investor's motivation.[14] A dummy (OIL_i) is also introduced to control the particular behavior of oil exporting countries. In these countries, FDI is mostly related to the energy sector, which is itself linked to the real exchange rate through a Dutch disease effect: when the energy sector booms, the real exchange rate tends to appreciate, but at the same time FDI is attracted because its profitability in this sector is increased.[15] Hence, we should expect a positive link between real appreciation and FDI, in contradiction with the theoretical model, which mainly describes manufacturing FDI. Along the same line, the effect of exchange rate volatility is likely to be important in oil exporting countries, since the law of one price applies to oil exports: a large volatility in the nominal exchange rate means a large uncertainty on local operating costs and thus on profits. Lastly, transportation costs are expected to have little role in the location strategy since the location of primary commodities is determined by Nature.

The definition of the variables and the data sources are detailed in Appendix. Although causality tests cannot properly be implemented on annual data, reverse causality should not be very important between the exchange rate and inward FDI, as noted above. The result of the econometric estimation, ran on 1749 available observations, is the following:

$$\log FDI_{it}^{k} = \underset{(2.614)}{0.222}\log C_{it}^{k} - \underset{(-3.179)}{0.597} Vol\ S_{it}^{k} - \underset{(-2.537)}{0.044}\,\rho_{it}^{k} \times \log C_{jt}^{k} - \underset{(-6.389)}{0.310}\log DIST_{i}^{k}$$

$$+ \underset{(16.009)}{0.891} OPEN_{it} + OIL_{i}\left(\underset{(-3.717)}{-0.454}\log C_{it}^{k} - \underset{(-1.947)}{0.742} Vol\ S_{it}^{k} + \underset{(4.800)}{0.352}\log DIST_{i}^{k} \right)$$

$$\overline{R}^{2} = 0.604$$

Student statistics are given in parentheses. All the coefficients are significant at the 1% level, except that on exchange rate volatility in the oil exporting countries, which is significant at the 5% level. Given that no microeconomic variable is included in the equation, a 60% explanatory power appears satisfactory.

[14] The causality between trade and FDI is complex indeed (see Henry, 1994, or Fontagné and Pajot, 1998). However inward FDI is more likely to be associated to re-export in countries having a large openness ratio. In contrast, relatively closed countries (due to their policies or size) are more likely to attract foreign investors at penetrating the domestic market.

[15] See Corden and Neary (1982) for theoretical developments on the Dutch disease.

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As expected in the case of re-export strategies, a depreciation (rise in the real exchange rate) of i against the investing country raises inward FDI (*competitiveness effect*), whereas an increase in the nominal exchange rate volatility tends to reduce FDI (*volatility effect*). The coefficient associated to the multiplicative variable $\rho_{it}^{k} \times C_{jt}^{k}$ (*interdependence effect* thereafter) also bears the negative, expected sign: when the exchange rate of other emerging countries is positively correlated to that of country i, an improved competitiveness in other emerging countries reduces FDI inflows to country i (through substitution); conversely, in the case of a negative correlation, an improved competition in other emerging countries raises FDI to country i (through complementarity).

Geographic distance (which proxies transportation costs) accounts for a significant part of the investing behavior of industrialized countries, consistently with the literature on economic geography. Moreover, openness has a significant impact on FDI, consistently with the assumed re-export nature of FDI.

The effect of a real appreciation is opposite in oil producing countries compared to other emerging countries: it raises FDI inflows. This is consistent with the Dutch disease effect referred to above. The impact of volatility is reinforced compared to other emerging countries, whereas the coefficient on economic distance is almost zero (0.357-0.347=0.010).

Exchange rate strategies

Official and effective exchange rate regimes in MENA countries

The majority of the MENA countries of the sample have officially adopted managed exchange rate regimes, even though the exact arrangement differs from one country to the other, from a flexible managed float to pegs to currencies or baskets (Table 1).[16]

[16] The IMF now accounts for the observed behaviour of the authorities when assessing exchange-rate regimes, whereas it previously relied on official statements only. This explains why Egypt has moved from a managed float to a dollar peg. In 2000, Turkey adopted a more rigid exchange rate arrangement (a peg to a basket, with a preannounced rate of depreciation) in the framework of a new IMF adjustment program.

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Table 1: Official exchange rate regimes in the MENA countries of the sample

Country	Official exchange rate regime
Algeria	Managed float.
Egypt	Managed float, considered by the IMF as a *de facto* peg to the dollar since 2000.
Israel	Since 1991, crawling band to a basket comprising the dollar, the euro, the pound sterling and the yen.
Morocco	Peg to a basket defined according the main trading partners of the country.
Tunisia	Crawling peg.
Turkey	Managed floating until mid-1998; crawling peg to a basket comprising the euro and the dollar since then (with a pre-announced rate of depreciation).

Source : IMF, *Annual Report on Exchange Arrangements and Exchange Restrictions*, various issues.

In the following, we drop Algeria and Egypt which, as OPEP countries, display a specific behavior as far as attracting FDI is concerned. Tunisia is dropped too, due to the lack of data on FDI stocks. Hence, we concentrate our analysis on three MENA countries: Israel, Morocco and Turkey. There is now extensive evidence on the mismatch between *de jure* and *de facto* exchange-rate regimes (see Levy Yeyati and Sturzenegger, 1999; Calvo and Reinhart, 2000; or Bénassy-Quéré and Coeuré, 2000). *De facto* regimes can be approximated by the volatility of MENA currencies against the currencies claimed as anchor currencies (Table 2). The picture is very different across MENA countries: Israel obviously tends to stabilize the external value of the shequel against the USD: the volatility of the Israeli currency against the DM is more than twice its volatility against the USD. The volatility of the Moroccan dirham is more evenly distributed against the European currencies, the French Franc being an apparent anchor for this currency. Finally, the managed float under which the Turkish lira operated in the 1990s has led to stabilize this currency in the same proportion against all the currencies of the sample.

Table 2: Effective exchange rate regimes in selected MENA countries, in 1996
Relative volatility of MENA currencies against the Deutschemark and other currencies(*)

Relative volatility	DM/ French Franc	DM/ Pound Sterling	DM/ Japanese Yen	DM/ US dollar
Israel	1.1	1.7	0.8	2.6
Morocco	1.4	1.0	0.4	0.6
Turkey	1.0	1.0	0.9	1.0
Emerging countries(**)	1.0	1.1	0.9	1.1

Source: authors' calculation, based on IMF, *International Financial Statistics*.
(*) Coefficient of variation of the quarterly exchange rate against the DM over coefficient of variation of the quarterly exchange rate against the alternative anchor.
(**) Volatility of the emerging countries aggregate against the different potential anchors (authors' calculations).

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Hence, there seems to be no particular stabilization of non-OPEP MENA currencies against the currencies of the euro (the DM and the French Franc), excepted maybe for Morocco. However, the trade orientation and debt denomination of these countries would justify a clearer pegging policy against the euro (Bénassy-Quéré and Lahrèche-Révil, 1999). This is particularly true for Turkey, which applies for membership of the European Union. This is also the case for Morocco, which also has a long-lasting policy of cooperation with the European Union, and is a member of the Euromed agreements. This is not as evident for Israel, given its long story of cooperation with the United States (and despite its planned membership in the Euromed agreements). However, given the relative proximity of Israel to the European Union, this country has a potential for attracting European FDI, which could be enhanced and magnified by a strategy of pegging to the euro.

In the rest of the paper, we try to quantify the consequences for MENA countries of a peg to the euro.

Scenarios of exchange rate policies in MENA countries

We use the estimates reported above in order to study what would have been the impact of a fixed peg to the euro in three MENA countries: Israel, Morocco and Turkey. Such polar exercise provides a useful benchmark to study the impact of a stabilization of MENA currencies against the euro.

Pegging MENA currencies against the euro should bear very different consequences depending on behavior of inflation in southern Mediterranean countries. Indeed, if their inflation rates do not converge to the average EMU one, MENA countries will endure a continuous worsening in terms of competitiveness, which is not sustainable in the long run. In such a case, fixing the exchange rate allows to attract FDI through the canceling of volatility; but it can prevent investors to enter the market, because domestic costs are continuously rising.

Conversely, if the adoption of a fixed exchange rate regime induces MENA countries to fight successfully against inflation, so that inflation differentials with the EMU disappear, the peg creates a double-sided gain: FDI is attracted in MENA countries both through the suppression of exchange rate volatility and through the stability of competitive conditions.

The most likely outcome of a peg would probably lie between these extreme situations. Here, we run two kinds of scenarios, which match the two extreme hypothesis of inflation persistence *versus* inflation convergence. These scenarios

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define the span of likely situations in the euro-mediterranean area, were MENA countries to adopt a rigid peg against the euro.

We assume the peg lasts during the three years preceding the years under study. Pegging a MENA currency to the euro has three implications in our model, the first of which is highly dependent on the assumption made concerning prices:

a) Competitiveness effect:
   In the first scenario, the peg does no curb inflation. The real exchange rate of each MENA currency against the euro[18] therefore appreciates through cumulative inflation differentials, and the real exchange rate against other OECD currencies moves through both inflation differentials and variations of the euro against these currencies. This scenario refers to a non credible peg, which yields the worst results in terms of competitiveness.
   However, if the peg is credible and economic agents adapt their behavior to the regime break, inflation differentials should narrow. As a benchmark, we study the polar case where the inflation differential falls to zero.[19] In this case, there is no competitive loss from the peg between MENA countries and euro countries, and real exchange rates against third countries only move through variations in the euro exchange rate against these currencies.
b) Volatility effect: in both scenarios, the volatility of each MENA currency against the euro is reduced to zero, and its variance against other OECD currencies is equal to the variance of the euro against these currencies.
c) Interdependence effect: in both scenarios, the correlation between the exchange rate of the euro against each MENA currency and against other emerging currencies shrinks to zero (because one exchange rate is constant). Conversely, the correlation between other OECD currencies against each MENA currency and against other emerging currencies is equal to the same correlation where each MENA currency is replaced by the euro.

[17] The euro did not exist at that time. We use the ECU as a proxy for European exchange rate and inflation. The drawback of this proxy is that the ECU basket included non-euro currencies, such as the British pound

[18] For the sake of simplicity, we will speak of the euro in the rest of the paper, even if simulations were done using the ECU.

[19] For the sake of simplicity, we ignore inflation led by a Balassa-Samuelson effect in MENA countries.

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MENA countries and the euro

The three alterations on exchange rate variables mentioned above are introduced in the econometric model to study their impact on the stock of FDI in 1995 and 1996[20] (two distinct scenarios are simulated, corresponding to the hypothesis on price behavior). This impact is split into the three contributions of competitiveness, volatility and interdependence, in order to point out the trade-off between exchange rate stability and competitiveness more explicit. We also look at the impact of the peg on FDI coming from the various parts of the world. The results are given in Tables 3 and 4.

Table 3: impact of a peg to the euro on the whole FDI stock received by MENA countries. (% of observed FDI, 1995-1996 average)

Country	FDI stock (% of GDP)	Δ FDI Impact of the peg		Contribution of					
				Competitiveness		Volatility		Interdependence	
		PC	NPC	PC	NPC	PC	NPC	PC	NPC
Israel	1.91	0.0	-3.5	3.3	-0.2	0.3	0.3	-3.6	-3.6
Morocco	3.24	-12.6	-13.9	0.6	-0.7	-0.4	-0.4	-12.8	-12.8
Turkey	1.75	108.0	84.8	-2.4	-25.7	109.6	109.6	0.9	0.9
Total	1.95	59.2	44.9	-0.4	-14.8	62.3	62.3	-2.6	-2.6

Source: authors' calculations.
PC: assumption of price convergence between MENA and euro countries. PNC: assumption of no price convergence between MENA and euro countries.

The first column reports the observed stock of FDI in each host country as a percentage of GDP in average for 1995 and 1996. The total stock of FDI is rather low in the MENA countries of sample. The second column reports the simulated impact of a peg to the euro on the average FDI stock (1995-1996). The other columns split the effect into three.

As a whole, the MENA countries of the sample would have gained from a peg to the euro, since the global FDI stock would have increased by 45 to 60%, depending on the inflation scenario (remember that the initial stock is low, which explains this high figure); this would have raised the stock to around 3% of GDP (which remains far below the level observed in the CEECs for instance). This result mainly stems from gains arising from the reduction in volatility, which is positive and prominent for the three countries.

[20] Since FDI is rather unstable for each country under review, the simulations are performed for the two last years of our sample (1995 and 1996), and the tables provide average results for these two years.

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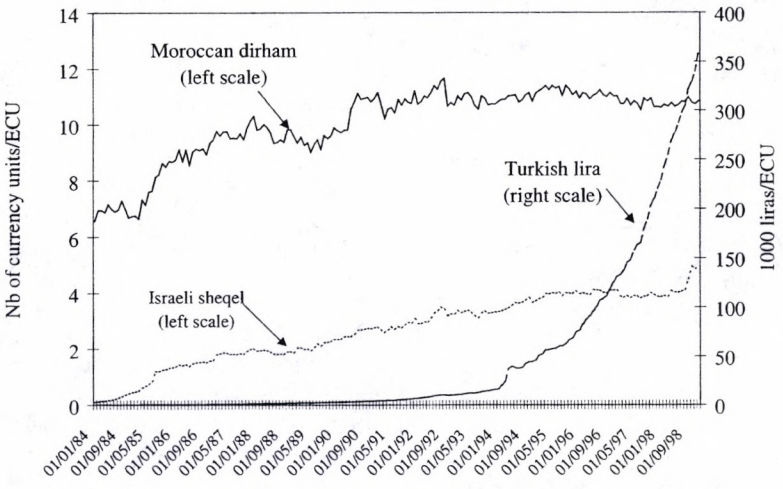
When inflation rates are constrained to converge between pegged countries, fixing exchange rate has a positive, although very small, *competitiveness effect* on inward FDI. This is due to the fact that the ECU has tended to depreciate over the 1995-1996 period. Hence, Israel and Morocco benefit from improved competitiveness against non-euro countries. Turkey is in a slightly different situation, since it records a small loss. This is due to the fact that pegging to the euro cancels the advantage of the continuous depreciation that the lira experienced over the period (see Graph 1), which over-compensated for the inflation differential. However, the loss is small.

Graph 1. Observed Monthly nominal exchange rate of MENA countries against the ECU.



Source: authors' calculations, based on IMF, *International Financial Statistics*.

The competitiveness effect is negative when inflation rates are kept unchanged. In this case, all MENA countries lose from pegging to the euro, since they cannot compensate for higher domestic inflation rate by managing the nominal exchange rate. The impact is rather small for low inflation countries like Morocco and Israel; it is of course of much higher magnitude in the high-inflation country, Turkey.

The *volatility effect* is very small in Israel, where the currency was pegged to the dollar over the period under review: moving to a peg to the euro induces gains from the euro area, but losses from third countries, whose exchange rate tend to be more volatile against the euro than against the dollar. The same phenomenon occurs in Morocco, but in this case, the increase in volatility

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against third currencies slightly over-compensates for the positive impact of fixing the exchange rate with euro-countries.

In the case of Turkey, the volatility effect of the peg is clearly very positive. This is of course due to the very high instability of the Turkish lira over the period, which has been continuously, and increasingly, depreciating (and therefore volatile – see Graph 2) against the euro since the mid-1990s.

Finally, in all the countries but Morocco, the *interdependence effect* is either negligible, as in Turkey, or negative, as in Israel, where it is however very small. Morocco exhibits a very different picture: there is a high loss due to the interdependence effect. In Morocco, during the 1992-1995 period (which is concerned by correlation and volatility measures, since we have a 3-years lag), the exchange rate tended to depreciate and then to appreciate against the dollar and the ECU, while the currencies of most other emerging countries tended to depreciate in nominal terms against the ECU. Hence, there was a negative correlation between the investing countries/Moroccan dirham and investing countries/emerging world exchange rates: when the rest of the world depreciated against the ECU, the dirham tended to appreciate against the ECU. Fixing all correlations against the euro to zero would have raised correlations, and therefore reduced FDI in Morocco. This loss would have caused the euro peg to be detrimental for Morocco.[21]

Hence, even if, on average, the MENA countries of our sample would have gained from a peg to the euro, this gain would have only come from Turkey which exhibited an especially high exchange-rate volatility over the period under review. Morocco is an unambiguous loser, mostly because it managed its exchange rate in such a way that it appears as a good host country when diversification strategies are concerned. Indeed, over the 1995-1996 period, it attracted more FDI from countries outside the euro area than Israel and Turkey did.

[21] Note however that the correlations of the Moroccan dirham might have been affected by the turmoil on European exchange markets in 1995 and 1996. As a consequence, the results could have been different on a different period.

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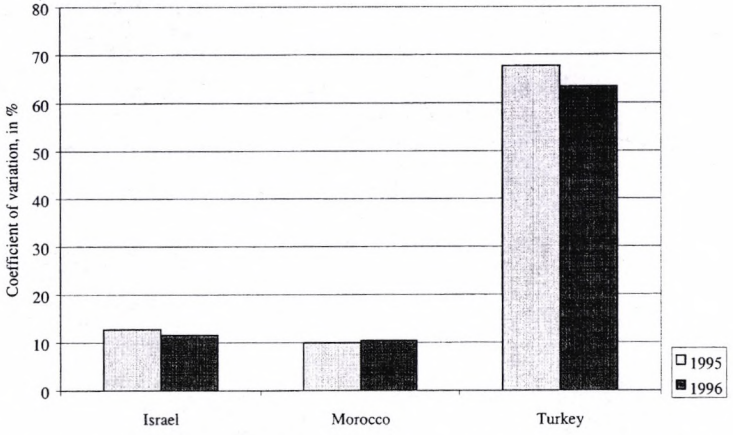
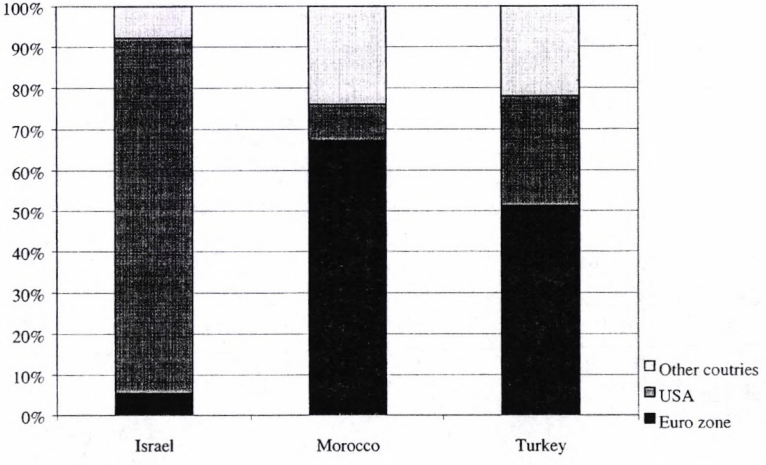
Graph 2: volatility of MENA currencies against the ECU



Source: authors' calculations, using IMF quarterly data; volatility is computed on the three years preceding the one under study.

Graph 3: geographical origin of the FDI stock in MENA countries. In % of total FDI



Source: OECD and authors' calculations

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Observing the movements in FDI stocks by investor countries (Table 4) yields the same conclusion, that MENA countries constitute a heterogeneous group.

Table 4: impact of a peg to the euro on the FDI stock received by MENA countries, by investors' countries

(% of observed FDI, 1995-1996 average)

Country	FDI stock (% of GDP)	Δ FDI Impact of the peg		Contribution of					
				Europe		The USA		Other countries	
		PC	NPC	PC	NPC	PC	NPC	PC	NPC
Israel	1.91	0.0	-3.5	1.1	0.9	-0.9	-3.9	-0.2	-0.4
Morocco	3.24	-12.6	-13.9	-4.6	-5.5	-1.6	-1.7	-6.4	-6.7
Turkey	1.75	108.0	84.8	61.2	49.4	26.1	19.8	20.7	15.6
Total	1.95	59.2	44.9	34.3	27.3	14.3	9.9	10.6	7.6

Source: authors' calculations.

PC: assumption of price convergence between MENA and euro countries. PNC: assumption of no price convergence between MENA and euro countries.

[(a)] Austria, Germany, Finland, France, Italy, Netherlands.

[(b)] Australia, Canada, Denmark, Iceland, Japan, New Zealand, Norway, United-Kingdom, Sweden, Switzerland.

On average, the gain of MENA countries would have come mostly from euro area countries. The gain for Turkey would have flowed mostly from the euro area, which is due to the fact that pegging dramatically reduces exchange rate volatility against the anchor currency. But since the euro is less volatile against other currencies than the Turkish lira is, FDI would have increased also from the rest of the world, with comparable magnitude.

Israel would have recorded a small (indeed, almost insignificant, around 1% of observed FDI stock) increase in FDI stock from the euro area. The low level of the gain is mostly attributable to the fact that the Israeli sheqel was not very volatile, nor very distorted, against the euro. Suppressing exchange rate volatility cannot produce important gains. But Israel records a loss of FDI stock from the USA, due to the interdependence effect when inflation rates converge to the euro level, and to the joint impact of competitiveness and interdependence in the other case: by pegging to the euro, the sheqel becomes more similar in behavior to other emerging countries, and Israel loses its status of hedging location. This is worsened by the loss of competitiveness, which is experienced against euro countries, but also against the USA and the rest of industrialized countries.

[22] Note however that the correlations of the Moroccan dirham might have been affected by the turmoil on European exchange markets in 1995 and 1996. As a consequence, the results could have been different on a different period.

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Finally, Morocco would have lost from all investing countries, which is due mostly to the interdependence effect: by pegging to the euro, Morocco would have been much less differentiated against other emerging countries, and would have therefore offered fewer diversification opportunities for investors. This would have translated in a reduction in the FDI stock.

MENA countries and the CEECs

Still, MENA countries are not the only emerging countries that contemplate anchoring their currencies to the euro. The CEECs will likely adopt such exchange rate arrangements in the future[23], whereas Asian emerging countries may introduce the euro in their explicit or implicit basket pegs. In order to study the externality of other emerging countries choosing the same exchange rate regime as the MENA countries, we consider the extreme case where *all* emerging countries would choose a fixed peg against the euro. The competitiveness and volatility effects for MENA countries are unchanged compared to the case where only MENA countries adopt a peg to the euro. The difference comes from the interdependence effect. Namely, the correlation between MENA currencies and other emerging currencies exchange rates against all non euro currencies (including the dollar) rises to unity. This introduces some substitutability between the various possible locations of FDI coming from the United States or from other non euro investors, which is detrimental to all emerging countries including MENA countries (Table 5, to be compared to Table 3).

Table 5: impact of a general peg to the euro on the whole FDI stock received by MENA countries.

(% of observed FDI, 1995-1996 average)

Country	FDI stock (% of GDP)	Δ FDI Impact of the peg		Contribution of					
				Competitiveness		Volatility		Interdependence	
		PC	NPC	PC	NPC	PC	NPC	PC	NPC
Israel	1.91	-4.8	-8.3	3.3	-0.2	0.3	0.3	-8.4	-8.4
Morocco	3.24	-12.8	-14.1	0.6	-0.7	-0.4	-0.4	-13.0	-13.0
Turkey	1.75	106.0	82.7	-2.4	-25.7	109.6	109.6	-1.2	-1.2
Total	1.95	56.8	42.4	-0.4	-14.8	62.3	62.3	-5.1	-5.1

Source: authors' calculations.

PC: assumption of price convergence between MENA and euro countries. PNC: assumption of no price convergence between MENA and euro countries.

As expected, all MENA countries would lose from increased interdependence, in relative or in absolute terms, depending on the individual cases. On average, the loss is limited, since MENA countries would lose about 2 to 3% of observed

[23] When applying to EU membership, the CEECs commit to apply to euro membership later on.

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FDI stock, compared to the scenario where other emerging economies do not peg to the euro. This is due to a however significant change in the interdependence effect, which is doubled.

Once again, individual situations appear rather contrasted in the Mediterranean area. Morocco would not be penalized (this is because Morocco would have already lost from pegging to the euro, independently from the behavior of other emerging countries). A generalized peg on the euro would therefore be almost neutral for this country. Turkey would not be too much hit either, the interdependence loss being completely compensated by the positive impact of reduced volatility. As to Israel, it would record a systematic loss due to the interdependence effect, which is more than twice the loss it would incur if only MENA countries pegged to the euro. This loss arises from the US, and stems from the fact that Israel would no longer be differentiated from other emerging countries.

On the whole, the geographical distribution of losses and gains shows that the generalization of a euro-peg reduces FDI from the USA in all cases, and has a smaller negative effect on FDI stemming from the rest of the industrialized countries (Table 6, to be compared to Table 4).

Table 6: impact of a general peg to the euro on the FDI stock received by MENA countries, by investors' countries

(% of observed FDI, 1995-1996 average)

Country	FDI stock (% of GDP)	Δ FDI Impact of the peg		Contribution of					
				Europe		The USA		Other countries	
		PC	NPC	PC	NPC	PC	NPC	PC	NPC
Israel	1.91	-4.8	-8.3	1.1	0.9	-5.7	-8.7	-0.2	-0.4
Morocco	3.24	-12.8	-14.1	-4.6	-5.5	-2.0	-2.1	-6.3	-6.5
Turkey	1.75	106.0	82.7	61.2	49.4	24.6	18.3	20.2	15.1
Total MENA	1.95	56.8	42.4	34.3	27.3	12.2	7.8	10.3	7.3

Source: authors' calculations.

PC: assumption of price convergence between MENA and euro countries. PNC: assumption of no price convergence between MENA and euro countries.

In brief, the picture is very contrasted for MENA countries as far as attracting FDI through exchange rate strategies is concerned. When exchange-rate volatility is high, like in Turkey, the drop in volatility has a positive impact on inward FDI that overcomes both the competitiveness and the interdependence effects. However, when the regime switch consists just in changing the anchor currency in a context of low inflation, which is the case for Morocco and Israel, the picture changes: pegging to the euro produces few gains in terms of competitiveness or volatility, and makes MENA countries more substitutable

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with other emerging countries. In this case, the tradeoff between competitiveness and exchange rate instability is more explicit, and volatility gains can be compensated by competitiveness or interdependence losses.

Of course, the fact that all emerging countries peg to the euro is highly unlikely. However, the attractiveness of the euro as a monetary anchor for the CEECs as well as for MENA countries could raise a source of concern for some of the latter. This concern is all the more acute that, as the theoretical model shows, interdependence effects are more important for countries which are close to the investing area. Correlations will likely increase between the exchange rates of MENA countries and of CEECs against the euro, as both areas will have an incentive to stabilize their currencies against the euro. Hence, these countries will become more substitutable, and the relative competitiveness of MENA countries against the CEECs will become more and more important. This will be especially the case for Morocco and Turkey whose specializations are relatively close to those of the CEECs (Chevallier and Freudenberg, 1999).

Finally, following similar exchange rate strategies could exacerbate the competition among MENA countries. However, choosing the same external anchor could be a way of creating some monetary cooperation in the region, which could complement the development of intra-regional trade. In short, adopting a common anchor in the MENA region would be favorable to regional economic integration while raising the needs for inflation discipline and business-friendly reforms.

Conclusion

The choice of an exchange-rate regime is generally viewed as a trade-off between flexibility, i.e. the ability to smooth macroeconomic shocks, and credibility, i.e. the provision of an anchor to price expectations (see Edwards and Savastano, 1999). In MENA countries, however, the main impediment to sustained growth may be the lack of inward FDI. Although raising FDI would need extensive microeconomic reforms, we have shown in this paper that the exchange-rate regime may not be neutral to FDI. Namely, there is a trade-off between maintaining external competitiveness, which needs some flexibility in the nominal exchange rate, and reducing foreign exchange volatility. We have shown that, over the past, a peg to the euro would have raised inward FDI in Turkey, because a large drop in foreign exchange volatility would have resulted from the peg, whereas the outcome of the trade-off would have been ambiguous in Israel and Morocco, where foreign exchange volatility was not very large. In these countries, adopting an exchange-rate regime that differs from that of the

[24] Bulgaria, Estonia and Bosnia have already introduced a currency board against the euro. For a discussion, see Masson (1999), or Bénassy-Quéré and Lahrèche-Révil (2000).

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main competitors (especially in Central and Eastern Europe) may provide additional inward FDI in the framework of a diversification of production locations. This would mean going away from pegs to the euro if the main competitors tend to stabilize their own currencies against the European device, as will likely be the case in the CEECs. Alternatively, it means that adopting a peg to the euro in these MENA countries would make international competition tougher as far as attracting FDI is concerned, and hence raise the needs for controlling inflation and completing business-friendly reforms.

Of course, our results should be qualified according to the precise exchange rate arrangement that would be adopted: here, we get a very strong impact of the volatility drop by imposing a strict fixed exchange rate regime, but this regime would not be viable if inflation differentials between MENA countries and the euro-zone were not to fall. We would certainly get a more mixed conclusion with a crawling peg regime, where volatility would be less reduced, but appreciation less important. Moreover, the magnitude of gains and losses depends probably highly on the chosen time span, while the choice of the peg is a long term choice. Nevertheless, we believe that there is indeed a trade-off between exchange-rate volatility and competitiveness that should be weighted when choosing an exchange-rate regime, especially in MENA countries where the lack of inward FDI is a major impediment to sustained growth.

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Appendix: The data and the definition of variables

1 – ***Inward FDI stocks*** are tabulated using mirror data statistics, i.e. outward FDI stocks from OECD countries (source: OECD). Real FDI stocks series are constructed as follows, with the world consumer price index (in current dollars) coming form IMF, *International financial statistics*, line 64:

$$log\ FDI = log\left(\frac{\text{FDI stock in millions USD}}{\text{World consumer price index}}\right)$$

2 – ***The competitiveness indicator*** C_{it}^{k} is the real exchange rate of country i against country k (units of consumer goods in i needed to buy a unit of consumer goods in k) in level (hence, real exchange rates can be compared across countries and not just across time). It is taken from the CEPII-CHELEM database.

3 – ***The volatility*** $VolS_{it}^{k}$ is the coefficient of variation of the quarterly nominal exchange rate of country i against country k, during the three years preceding year t. Source: IMF, *International financial statistics*, line rf.

4 – ***The coefficient of correlation*** between i/k and the rest of emerging countries/k exchange rates. The exchange rate between the emerging countries (j) and the investing country k is an effective, quarterly, nominal exchange rate of j against k, where each emerging country exchange rate is weighted by the GDP of this country in the total GDP of emerging countries (source : IMF, *International financial statistics*, line rf for nominal exchange rates and line 99 for GDPs).

5 – ***The competitiveness of emerging countries*** against k is computed using the CEPII-CHELEM data-base on real exchange rates. It is a real, effective, annual exchange rate, where each emerging country exchange rate is weighted by the GDP of this country in the total GDP of emerging countries. GDP data come from IMF, *International financial statistics*, line 99.

6 – ***Distance data*** are constructed as follows : $DIST_{i}^{k}$ is the distance between i and k when i and k have no common border. $DIST_{i}^{k}$ is set to one when i and k share a common border. Data were provided by Michaël Pajot.

7 – ***Openness*** $OPEN_{it}$ is the ratio of the sum of total exports and imports of country i, to the GDP of country i. Source: OECD, Direction of Trade.

8 – The OIL_{i} variable is a ***dummy*** variable, which takes the value of 1 for oil-exporting countries, and zero otherwise. The countries to which this dummy is applied are Algeria, the United Arab Emirates, Egypt, Indonesia, Iran, Kuwait, Libya, Mexico, Saudi Arabia and Venezuela.

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