Regional Conflict, Country Risk, and Direct Foreign Investment in the Middle East

Victor Lavy

The Hebrew University of Jerusalem

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TABLE OF CONTENTS

INTRODUCTION

Since the late 1980s Israel's economy has grown at a fast pace. From 1986 to 1989 the growth rate of gross domestic product was 3.7%. From 1992 to 1995 the growth rate averaged an impressive 6.0% (Bank of Israel, 1997, p. 3). Two main factors were responsible for this renewed growth: the wave of immigration from the former Soviet Union and the peace process (Bank of Israel, 1996, pp. 1–3). Since 1990, 700,000 new immigrants have arrived in Israel, a change that affected both the aggregate supply and aggregate demand in the economy. The immigration wave resulted in a 12% increase in the population and a larger increase in the work force, especially in its skilled component. The relatively quick absorption of the immigrants in the economy and the negative pressure it exerted on wages led to an expansion in aggregate supply that was reflected in a growth rate that was faster than that of the economies of other developed countries, without causing significant inflationary pressures (Bank of Israel, 1996, p. 2). Aggregate demand increased as well because of a significant increase in consumption. For example, the housing demand of the new immigrants led to an expansion in the construction industry, which was the initial engine of the renewed growth process.

The peace process began in 1991 with the Madrid Conference, continued with the Oslo agreement, and has, to date, concluded with the signing of the peace agreement between Israel and Jordan in October 1994. These political developments contributed to the growth process in several ways. First, they led to the development of economic ties with neighboring countries, though in modest dimensions. The much larger size of the Israeli economy and its

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higher level of development are often cited as the reasons for the modest scope of possibilities for trade between Israel and its neighbors (Kleiman, 1994, pp. 33–34). However, the removal of the secondary Arab boycott and the establishment of diplomatic ties with many nations had positive effects on the economy. Many Asian nations began to trade with Israel, which is particularly important since the Israeli economy is open and foreign trade oriented. In addition, the removal of the tertiary Arab boycott means that many multinational corporations (MNCs), which were reluctant to do business either in or with Israel because of fear that they would lose Arab business, are taking an interest in the opportunities available to them in Israel (Bank of Israel, 1996, p. 44).

The peace process made it easier for the U.S. government to approve the loan guarantees amounting to $10 billion over a five-year period. These guarantees gave Israel the breathing space to make the necessary investments to improve the national infrastructure and to implement many needed policy reforms such as privatization of public companies, trade policy reforms, reduction in trade barriers, and the signing of free trade agreements with the European Union and others.

However, the most important contribution of the peace process to the Israeli economy was its effect on improving the business atmosphere within the country, especially as it was perceived by the international business community. For example, as early as 1993 Standard and Poor, an important international financial company, announced an improvement in Israel's country risk rating, arguing that it reflected the strengthening of Israel's standing in the region in light of the peace agreements with Jordan and the Palestinians. At the end of 1995, Standard and Poor raised Israel's credit rating from BBB to A, before the issuance of Israeli government bonds in New York. Standard and Poor explained that in addition to the improvement in Israel's geopolitical situation, there were also signs that there would be reductions in the deficit, inflation, and foreign debt (Kedar and Meltz, 1995, p. C1). *The Economist*, in a 1994 report, noted a number of positive indicators, including the privatization initiative, an increase in the

level of human capital due to the immigration wave, and a decrease in foreign debt. The report argued that the improvement in Israel's country risk rating was a result of the peace process and of Israel's long-term economic prospects. Similar arguments were made in reports of other large investment banking firms such as Salomon Brothers, Goldman Sachs, and UCS. This attitude can be summarized by the Salomon Brothers report's assertion that Israel should not be regarded as a developing country, but as a developed country like Ireland or New Zealand (Bank Leumi, 1994, pp. 14–17).

Israel's improved ranking in the international business community since the inception of the peace process was accompanied by a new trend in foreign direct investment in the country. Since 1992, there has been an increase in foreign capital inflow to Israel; 1995 was a record year with over $2 billion in foreign investment of which over $1 billion was foreign direct investment (Bank of Israel, 1996b, p. 5). Foreign investors directed their money to a large range of sectors and industries, among them the food, automobile, and chemical industries. The most significant change, however, is in the telecommunication and high-tech sectors. For example, large multinationals such as Bell South, Northern Telecom, and Cable & Wireless have invested impressive amounts of capital in Israel in recent years (see Appendix 2 for more details).

The purpose of this paper is to determine whether the joint occurrence of improvement in Israel's country risk rating and of the increased level of foreign direct investment that was witnessed in recent years reflects a causal relationship between these two variables. More precisely, we would like to determine whether the Israeli economy's improved international rating as a result of the peace process has led to some of the increased level of foreign direct investment in the economy. Since the peace process constitutes a regional change, we embed the analysis in a regional context and extend the questions to Israel's neighbors as well. In particular, we examine the trends and patterns of change in country risk and foreign direct investment in Egypt, Jordan, and Syria and the dynamics of

intraregional correlation in these variables among the countries in the region, before and after the initiation of the peace process in 1991. We compare the evidence derived from the countries that are directly involved in the Arab-Israeli conflict to similar evidence derived from a sample of other Mediterranean countries (Algeria, Morocco, Portugal, Tunisia, and Turkey).

The next section briefly presents theories of the relationship between country risk and foreign direct investment; the subsequent section describes the changes in risk measures and foreign direct investment from 1982 to 1995; the section after that presents the statistical methodology and the data; and the final section summarizes the empirical evidence on the causal relationship between country risk measures and foreign direct investment.

THEORIES OF COUNTRY RISK AND FOREIGN INVESTMENT

According to the neoclassical model, investment spending depends on the user cost of capital and is geared to maintaining the optimal capital stock and an associated level of output. Motivated by the poor empirical performance of the neoclassical theory, and also, later, of Tobin's Q-theory, recent work on investment broadly falls into two categories: (1) studies in the investment, irreversibility, and uncertainty tradition, and (2) work that has attempted to relate investment to measures of political and country risk. The latter branch of the literature is especially relevant to the determinants of investment in developing countries since it tends to emphasize those macroeconomic or institutional features that are specific to developing countries such as vulnerability to external shocks, large external debt positions, credit rationing, complementarities between public and private investment, and shifts in income distribution.

Investment, Irreversibility, and Uncertainty
In contrast to earlier theories that assume perfect markets for capital goods, the new approach emphasizes that investment decisions are inherently

irreversible, that agents typically have some discretion over the timing of investments, and that investment returns are uncertain. The emphasis on uncertainty about values or returns as a determinant of investment flows helps to explain some past anomalies. It indicates why investment may not be directly responsive to changes in interest rates or to policies that change the relative prices of capital and consumption goods, since investment is shown to depend more on the variability of prices and interest rates than on their absolute values. Since the theory does not predict the exact relationship between investment and uncertainty, this relationship becomes an empirical issue. Very little evidence is available on this subject.

Investment and Country Risk
In addition to the revision of the microeconomic foundations of investment theory summarized above, recent research has also addressed how investment behavior in the aggregate depends on measures of country risk. One approach is simply to add a country risk premium to the global real interest rate to capture how local risk factors influence the cost of investment capital to a particular country. The risk premium may be a function of the external debt-to-GDP ratio and other creditworthiness variables. Other approaches develop hypotheses about country risk and investment within simple models of macroeconomic equilibrium. Another hypothesis is that openness to trade, through the discipline of the international market, is a way of improving the credibility of government policies. This, in turn, lowers country risk and increases sociopolitical instability. The latter, by creating uncertainty in the politico-economic environment, reduces investments.

Political risk has recently become the subject of increased interest, particularly in the context of foreign direct investment. Political risk is defined as the possibility that political decisions, events, or conditions in a specific country will affect the business climate such that investors will lose money or their profits will be reduced (Howell and Chaddick, 1994, p. 71). This definition is very broad and includes a variety of variables from the

possibility of war, of coup d'état, the kind of government and its stability, to the possibility of a country nationalizing foreign investments, to the country's macroeconomic performance (Agmon, 1985, pp. 2–3). Political risk can be rated by assessing each variable and their total effect on the economy.

The development of political risk as an area for research, both among the academic and business communities, began after the Second World War. This period, which began with the GATT accord and Bretton-Woods, is characterized by a large increase in international trade and foreign investment by companies that have become international in their scope (multinational corporations). The 1960s saw the beginnings of new phenomena, including nationalization and trade boycotts. These phenomena were prevalent in developing countries, which used these practices as a way of increasing their limited capital (Howell and Chaddick, 1994, p. 72). The need for accurate estimates of political risk grew in the late 1970s and early '80s. The two seminal events in this period were the fall of the Shah in Iran and the Latin-American debt crisis. In addition, China's new openness to foreign companies was an unexpected positive development during the period (Blank, 1980, p. 1).

These events forced businesses to understand the degree of uncertainty of the political situation in countries around the world and the influence of sudden changes on their profits. Thus, the assessment of political risk gained importance, although there has been debate as to its efficacy. There are two schools of thought in the assessment of political risk, namely, the qualitative and the quantitative.

The qualitative approach is generally used when concentrating on one country and generally for a specific project. Experts who have experience in the country in question and in the specific project are asked to assess the political risk accompanying the project. These experts are expected to use historical and cultural information along with other macro-economic indicators to assess the risk (Raddock, 1986, pp. 149–152).

The quantitative approach uses specific, predetermined variables to

measure country risk. The obvious advantage of this approach is that it allows an easy cross-country comparison of risk (Raddock, 1986, pp. 149–152). The disadvantage is that it often affords only a cursory analysis of the actual risk in a given country. The risk indices do not generally differentiate between different industries and between different sorts of economic activities. In addition, quantitative risk analysis focuses on the risk and not on the potential for gain that always accompanies risk. Finally, even quantitative analyses are ultimately based on a subjective rating of each parameter and on how much each parameter contributes to the total country risk (Haendel, 1979).

Despite the disadvantages of the qualitative approach, it does allow firms to select certain countries that they may then choose to analyze in greater detail. More important, the country risk ratings are often used in negotiations with the country in order to obtain better treatment from the host country, such as a lower tax rate or larger grants (Howell and Chaddick, 1994, p. 72). Another important use of the country risk rating is in determining the rate of interest a given country can obtain on loans in the international market. The lower the rating, the more difficult it becomes for a country or a firm based in that country to obtain credit and the credit it obtains will be loaned at a higher interest rate (Bank of Israel, 1993, p. 83).

In order to supply the demand for political risk rating, several companies began to supply country risk indices. The best services are those that use the qualitative approach, but also provide a written report for each country explaining how the rating was obtained.

Although it seems clear that country risk determines, at least to a degree, the flow of foreign investment, theories of foreign investment do not deal with country risk as a factor in the foreign investment decision. This omission can be explained in several ways. Perhaps the most important reason for ignoring country risk is that in the 1980s only 19% of foreign direct investment was invested in less developed countries. Seventy percent of all the foreign direct investment flows were directed to Japan, Germany, France, the United States, and the United Kingdom (Graham and

Krugman, 1993, p. 14). Since these countries do not experience significant political unrest or dramatic changes in their economies, at least in comparison to less developed countries, firms can be expected to be less concerned with country risk when making their foreign investment decisions.

The only references to country risk in these theories concern exchange rate and tax rate fluctuations. Unfortunately, trends in foreign investment cannot be explained by exchange rate fluctuations, for several reasons. Firms that are interested in investing abroad are generally interested in a long-term investment and, therefore, are less likely to be concerned with the exchange rate. Wide swings in exchange rates, which have been the norm since the collapse of the Bretton-Woods arrangements, make foreign operations more important, as the ability to move production to a different location to take advantage of a favorable exchange rate becomes more important. Thus, it may not be the specific exchange rate but rather the exchange rate's volatility that makes foreign investment attractive (McCulloch, 1993, p. 42). Tax rates in all likelihood do play a role in determining the level and the direction of foreign direct investment, but since international corporate tax law is so complex, little work has been done in this area (Graham and Krugman, 1993, p. 28).

Generally, theories of foreign investment concentrate on theories of the firm. Firm-level theories tend to ignore country risk. The models assume that a market for a given product exists abroad and the firm must decide whether or not it is profitable to invest in the foreign market or to try to sell to that market from its domestic operation. Thus, country risk is not emphasized.

Some empirical work (Healy and Palepu, 1993, p. 247) suggests that GDP growth is positively correlated with direct investment. As the target country's economy grows, it becomes more attractive to foreign investors. Some risk indices, such as the *Euromoney* risk index, do take economic performance into account when creating their ranking. The aforementioned study, however, only deals with a few of the most developed countries;

hence, it is not clear if this result would apply to less developed countries.

There have not been many attempts to test theories of political risk. An article by Goldsmith tested several hypotheses about a country's stability and economic growth. Goldsmith attempted to test the theory that democratic regimes are more likely to experience higher economic growth than nondemocratic regimes. He used data from developing countries, and tried to use the level of freedom in a country, as indexed by an American research organization, as a predictor for five measures of economic growth: the *Institutional Investor*'s Country Risk Index, the BERI (Business Environment Risk Intelligence) political risk index, changes in government consumption, the domestic savings rate, and the export ratio. If democratic economies are more likely to grow, then as the amount of freedom in a country increases all of the measures of economic growth should improve. With the exception of the export ratio, none of the indicators moved in a positive direction as freedom increased. None of the results, however, were statistically significant. Therefore, Goldsmith concludes that while democratic regimes may not cause increased economic growth, they do not hinder economic growth (Goldsmith, 1994, p. 115).

RISK MEASURES AND FOREIGN DIRECT INVESTMENT

Measuring Country Risk

A basic issue is the choice of an appropriate definition of country risk. Narrowly defined, country risk arises in the context of the credit assessment of sovereign loans. An important consideration in measuring sovereign risk is assessing transfer risk. Transfer risk is the risk of potential restrictions on the ability to remit funds across national borders. For sovereign loans, this amounts to whether or not a debtor government is willing and able to service its hard currency loan commitments. Transfer risk largely depends on macrocosmic policies including debt management, economic growth, and the composition and volatility of a country's balance of payments.

More broadly defined, country risk comprises exchange risk and political

risk in addition to transfer risk. Exchange risk arises when investments are
denominated in local currency and the investor is interested in remittance in
a different currency. Political risk is the risk that asset values decline as a
result of revolution, war, or any significant politically motivated change in
economic policies. The broader measure of country risk applies when the
investment universe is expanded to include loans and investment in the
private sectors of host countries as well as loans of sovereign borrowers.

There are three well-known, publicly available indices of country risk:
(1) the *Institutional Investor* (II) index, (2) the *Euromoney* (EM) index, and
(3) the *Economist Intelligence Unit* (EIU) index. These indices tend to
capture the narrow transfer-risk dimension of country risk as well as some
dimension of political risk such as incidence of social unrest and quality of
legal regulatory institutions. The II index rates country credit on a scale
from 0 to 100, with a higher number indicating a better rating. II scores are
computed by polling 75 to 100 leading international banks for their overall
country rankings. The EM and EIU indices are based on smaller surveys of
expert opinion. The variation in these indices more closely follows move-
ments in a common set of underlying economic indicators. The II index is
the least variable of the three, but all three are highly correlated–
not surprising, perhaps, since they are each designed to measure a country's
capacity to service external obligations and political risk factors. Unfor-
tunately, definitions and measures of political risk are problematic by
nature. Political variables tend to be relatively subjective quantities that are
not easily observable. Political situations are also complex balances of many
competing interests. Moreover, the strategic or gaming dimension of politics
tends to make political outcomes inherently unstable and subject, on
occasion, to rapid shifts.

Nevertheless, recent research has attempted to apply a systematic,
quantitative approach to measures of political risk. Political risk or
instability measures may focus on either the government or the population
at large. In the former approach, political risk is measured by incidence of
phenomena of social unrest such as demonstrations, riots, revolts, assassi-

nations, and warfare. It is not generally clear which approach is preferable for measuring the impact of political risk on investment behavior. Indeed, the relative importance of the two sets of factors will likely depend on the particular country, sector, investor, the time frame, and contractual terms, among other things.

In our analysis we make use of the II and EM indices because they are available since 1980 for all the countries included in this study. The II index includes only the final rank of the country . The EM index includes the nine categories that contribute to the final score. The components are: economic performance (25%), political risk (25%) (political risk refers to the odds of a country defaulting on its loans), indices of foreign debt (10%), debt in default or rescheduled (10%), credit ratings (10%), access to bank lending (5%), access to short-term finance (5%), access to capital markets (5%), and discount on forfeiting (5%).

Dynamics of Country Risk Indices
Figures 1 and 2 present the *Institutional Investor* index (II) and the *Euromoney* index (EMI), respectively, for five Middle Eastern countries, Egypt, Israel, Jordan, Lebanon, and Syria, for the years 1982-1995. The II reveals much smoother changes than the EMI, which shows sharp annual fluctuation for every country in the sample. Both risk indicators surprisingly reveal that Israel's risk rating is the only one to have registered a dramatic improvement over the period. This improvement appears in both risk indices, but is much more dramatic in the EMI.

In 1982 Israel's EMI rating was about 26, climbing to 72 in 1988, before declining again to just over 50 in 1990. However, following the initiation of the peace process and the opening of the Madrid Conference, Israel's EMI reached almost 80 in 1993, settling at around 75 in 1994–1995. This is more than a 250% improvement since 1982. The change in the II over the same period is only of 40%. The difference can probably be explained by the way each index is compiled. The II is compiled by surveying banks; thus, each bank's appraisal may be based on a variety of different factors including gut

feelings. In contrast, the EMI uses a specific formula that includes economic performance. This can be seen in Figure 2, where Israel's risk rating improves slowly until 1985-1986, when it registers a dramatic improvement until 1988. This reflects the economic stabilization program implemented in July 1985. The rating then declines from 1988 to 1990, which reflects the high unemployment caused by the influx of immigrants from the former Soviet Union. Finally, with the beginning of the peace process in 1991 and the improvement in the Israeli economy, in large part due to the successful absorption of the immigrants into the economy, the risk rating improves again.

As seen in Figure 1, Israel's neighbors' risk ratings were relatively stable from 1982 to 1995. The II rating for Egypt was 36 in 1982 and 37 in 1995; similarly, Syria improved from 21 to 25. Jordan did register a steep decline in its rating, from 37 to 27. As already noted, the outstanding feature of the figure, however, is Israel's steady improvement from a low of 28 in 1984 to 49 at the end of the period. Figure 2, which shows the EM country risk ratings for the region from 1982 to 1994, is more erratic, but interesting trends emerge here as well. First, aside from Israel all of the countries in the region converge to the same risk rating at the end of the period, between 42 and 46. This represents a considerable decline, or worsening, of Egypt and Jordan's risk levels since the beginning of the period, whereas Syria increased its rating from 34 to 44. Israel's risk rating, however, is the only one to have improved significantly over the period.

A similar pattern is apparent among the peripheral states of the Middle East (Cyprus, Morocco, Tunisia, Turkey). Figures 3 and 4 plot the country risk of states in the Mediterranean. Turkey and Cyprus both register improvements in their risk ratings over the period, but they are much smaller than Israel's improvement. Morocco improves slightly, while Tunisia declines slightly. The EMI is more volatile, but there is almost no change between the risk ratings at the beginning of the period and at its end, despite swings in the middle of the period. The Gulf States' risk indices (Bahrain, Kuwait, Saudi Arabia, UAE) are also stable over the period

(Figures 5 and 6), although the UAE's risk ratings fell over the period and Bahrain's improved. Kuwait, despite a dip during the Gulf War, did not finish the period much below where it started. The Gulf States' indices, both the EMI and the II, converge at the end of the period.

Country Risk and Foreign Direct Investment: The Simple Association
Figure 7 shows the level of foreign direct investment in millions of dollars in Egypt, Israel, and Jordan. From 1982 to 1990, foreign direct investment in Israel remained stagnant between $50 and $230 million dollars per annum with a peak in 1987-1988. After 1990, investment began to increase steeply, reaching half a billion dollars in 1993 and a billion dollars in 1995. Investment in Jordan remained almost constant throughout the period, fluctuating between $28 and $43 million. Egypt, on the other hand, experienced a dramatic increase in foreign direct investment in the early 1980s accompanied by an equally dramatic decline in 1990-1991. From 1992 to date Egypt registered a small recovery, but it did not regain the high level of $1.2 billion of foreign direct investment of the mid-1980s.

Figure 8 presents the level of foreign direct investment of the Mediterranean sample. All four countries (Cyprus, Morocco, Tunisia, and Turkey) had low and stable foreign direct investment from 1982 until 1988. From 1989 all four countries witnessed a trend of increasing foreign direct investment. The most dramatic change is the increase of foreign direct investment to Turkey, from about $150 billion in 1988 to over $800 million in 1992. Morocco's change is also impressive, from less than $100 million in 1988 to almost half a billion dollars in 1993.

Figures 9–14 present the level of foreign direct investment against the two risk indices for Israel, Egypt, and Jordan. As can be seen in Figures 9–12, in the case of Israel and Egypt, the risk indices are generally correlated with investment. In Figures 9–10, the II shows much more stability than investment, and the EMI is almost perfectly correlated with the Israeli investment trend. In Figures 11–12, again, at least from 1985, investment patterns are correlated with the risk indices. Although it is more difficult

to see in Figures 13 and 14, which plot Jordan's country risk and foreign direct investment, Jordan's country risk is also correlated with its investment level.

Country Risk: Intraregional Correlations
Tables 1 and 2 present the cross-country correlations of the EM and II country risk indices, respectively. Israel's EM risk index is negatively correlated with all of its neighbors' with the exception of Syria's (Table 1). The positive correlation with Syria, however, is small and not significantly different from zero–as is the negative correlation with Lebanon. Egypt's index is positively correlated with the other Arab states', as are Jordan, Syria, and Lebanon's indices. The II intraregion correlations replicate the negative correlations between Israel's risk index and those of Egypt and Jordan (Table 2). However, Israel's EM index is positively correlated with the Lebanese and Syrian indices. Egypt remains positively correlated with the other Arab states, but Lebanon and Syria are negatively correlated with Jordan. Thus, an increase in Israel's EM index is associated with a decrease in the other states' indices, while an increase in Jordan's II index is associated with a reduction in the other states' indices (with the exception of Egypt).

Foreign Direct Investment: Intraregional Correlations
Table 3 presents the correlation of foreign direct investment between the countries in the region. The correlation coefficients in the table indicate that foreign direct investment in Israel is negatively correlated with foreign direct investment in other states in the region with the exception of Lebanon. These negative correlations are in a way consistent with the negative correlations between the country-specific risk measures. This consistency could reflect correlation in behavior but most likely it mainly reflects the correlation in time trends. All the other states in the region are negatively correlated with Lebanon and Israel and positively correlated among themselves–an interesting phenomenon that is not readily explained.

EMPIRICAL ANALYSIS

Statistical Methodology

A simple statistical model that has been used in numerous econometric studies (see, e.g., Ashenfelter, 1978; Ashenfelter and Card, 1985) uses the assumption that any differences between countries in the sample are fixed over time. In this case, repeated observations of the same countries can be used to make the countries comparable. Let X_{it} denote the risk measures and let Y_{it} denote the potential foreign direct investment of any country i in year t. The formal statistical model states that in the absence of any country risk or any other effects, the potential FDI of country i at time t can be written as:

(1) $Y_{it} = V_i + \delta_t + \varepsilon_{it}$

V_i is a country-specific intercept, δ_t is a period effect common to all countries, and ε_{it} is an independent identically distributed (i.i.d.) error term. The effect of country risk on FDI is $X_{it} \delta$. Adding this term to equation (1) we get:

(2) $Y_{it} = X_{it} \beta + V_i + \delta_t + \varepsilon_{it}$

where ε_{it} is assumed to be uncorrelated with X_{it}. The idea behind this model is that differences between countries in FDI, except those induced by $X_{it} \delta$, are not temporary: instead, they are due to differences in characteristics that can be viewed as permanent. In this model, simple differences in FDI do not estimate the causal effect of the differences in country risk because the time-covariant characteristics of countries differ. On the other hand, the assumptions of this model imply that the changes in FDI correspond across countries to the changes in country risk. Let t = a denoting the postpeace-process level of FDI and let t = b denoting the prepeace-process level of FDI. Thus we have:

(3) $E(Y_{ia} - Y_{ib}) = X_{it} \beta$

The sample analog of equation (3) is called a differences-in-differences

estimate of the change in risk effect because it contrasts the change in FDI between groups of countries that experienced different magnitudes of country risk.

Our analysis of the risk effects begins with the simple differences-in-differences estimator (3). However, the assumption that X_{it} is independent of Y_{it} may not be realistic. We can easily imagine a situation where higher foreign direct investment leads to an improvement in country risk ratings. Regression methods can be used to estimate the effect of an endogenous explanatory variable. To identify the effect of X_{it} on Y_{it}, we propose to use instrumental variable regression technique using lagged values of the risk measure as instruments. To overcome the problem that arises from autocorrelation in the risk measure, we use four- and five-period lagged values as instruments. We use two versions of equation (2). The first is a simple one-period first difference of equation (2):

(4) $(Y_{it} - Y_{it\text{-}1}) = (X_{it} - X_{it\text{-}1})\beta + \varepsilon_{it} - \varepsilon_{it\text{-}1}$

The country- and year-specific effects are differenced out in equation (4). We then instrument $(X_{it} - X_{it\text{-}1})$ with $(X_{it} - X_{it\text{-}1})_{t\text{-}4}$. The second version we estimate is the following 22 model:

(5) $(Y_{it} - \bar{Y}_1) = (X_{it} - \bar{X})\beta + \varepsilon_{it} - \bar{\varepsilon}$

where $(X_{it} - \bar{X})_{t\text{-}4}$ is used as an instrument to identify $(X_{it} - \bar{X})_t$. The advantage of equation (4) over equation (5) is that if ε_{it} is autocorrelated, the differencing procedure helps to eliminate it, especially if it is a first-order autocorrelation with $\rho = 1$.

Data

The data used in this paper was collected from three sources. All economic data was obtained from the International Financial Statistics prepared by the Bureau of Statistics of the International Monetary Fund. Specifically, we obtained data on gross domestic product (GDP), foreign direct investment (FDI), average exchange rate, population, and the U.S. CPI for the years

1982–1994. The FDI data was denominated in millions of U.S. dollars; GDP was denominated in millions of the local currency. We then calculated real FDI per capita by dividing FDI by the U.S. CPI and the total population. Real GDP per capita was computed by dividing GDP by the average exchange rate, the U.S. CPI, and the local population. For a few countries in the sample, observations on the population and GDP were missing for a few years, so the panel data is not balanced. In cases where IMF data on FDI was missing, we used information from UNCTAD's *World Investment Report* for the years 1988-1994. It should be noted that comparing the two sources of information for FDI showed that they were almost perfectly correlated for the countries and years for which information was available from both sources.

Data on country risk was obtained directly from *Euromoney* and the *Institutional Investor*, which publish their country risk indices as indicated above. Table 4 provides descriptive statistics for Israel and two samples of countries: the Middle Eastern sample, which includes Israel, Egypt, Jordan, Syria, and Lebanon, and the Mediterranean sample, which includes Algeria, Morocco, Portugal, Tunisia, and Turkey. These constitute the sample used for the correlation reported above and the regressions reported below.

As can be seen from Table 4, Israel's mean risk ratings for the period 1982–1994 are higher than the mean average risk ratings for the Middle East, but its mean risk ratings are lower than the mean average risk ratings of the group of Mediterranean countries. Also, Israel's mean per capita FDI is lower than both the Middle Eastern and Mediterranean averages during the period, despite the fact that its mean per capita GDP is significantly greater than both the mean for the Middle East and that for the Mediterranean sample.

RESULTS

Differences of Differences

We begin the analysis by examining the averages of and differences of foreign direct investment and country risk, between two three-year periods as shown in Table 5. The first period, 1989-1991, precedes the 1992 Madrid Conference and the second, 1993-1995, follows it. The variables analyzed in the table are foreign direct investment and the two risk measures. The first row presents the data for Israel and the second row the data for the other Middle Eastern countries. Average FDI in Israel in the second period ($39 million) is almost four times larger than the FDI average for the first period ($135 million). Similarly, the EMI risk rating for Israel improved from an average of 53.2 in the first period to 75.6 in the second period. A similar direction of change is observed for the II risk measure. On the other hand, Israel's neighbors' FDI did not change at all between the two periods although they experienced some improvement in their average risk ratings. The (column) differences between Israel and its neighbors are presented in the third row of the table.

The lower part of Table 5 contrasts the Middle Eastern and the Mediterranean samples. Between the two periods the Middle Eastern countries experienced, on average, a large increase in their FDI and risk measures. No similar changes are observed for the Mediterranean sample. Actually, the Mediterranean countries experienced a decline in FDI from period to period and their risk ratings barely changed. As a result the gap in FDI between the two groups of countries was reduced from an average of $40 in the first period to zero in the second period. The gap in the risk ratings was also eliminated, from about 20 to 5–7. Note, however, that theses changes are entirely due to the inclusion of Israel in the sample, but that the decline in the Mediterranean FDI is still greater than the negligible decline in FDI experienced by the Middle Eastern countries excluding Israel.

If the Mediterranean sample is perceived as an appropriate comparison

group, then the difference in the level of FDI in the second period can be causally linked to the improvement in the risk ratings of the Middle Eastern countries. Of course the assumption that all the differences between the two sets of countries are eliminated by differencing across the two periods is too simplistic and probably not realistic. However, this comparison does suggest a plausible direction of change.

OLS, Fixed Effects, and First Differences Regressions
Table 7 presents the results of a variety of ordinarily least squares regressions used to estimate the effect of the risk indices on foreign direct investment. The table reports results for the two samples of countries, the Middle Eastern and the Mediterranean. The estimations are repeated for each of the two risk indices.

The OLS estimates presented in the first column show a significant positive association between FDI and both the EMI and II risk indices. This result is replicated for both samples, the Middle Eastern and the Mediterranean countries. The second row in the table present the results of adding to the equation fixed effects for time and countries. This approach of adding to the model with dummy variables to control for the year and the country effects shows very similar results. In fact, the OLS estimate for the EMI in the Middle East does not change when fixed effect estimation is employed. Estimates using first differences also return a significant positive effect on FDI,[1] but the size of the effect is considerably smaller and the effect is much less precisely estimated.

IV, IV Fixed Effect, and IV First Differences Estimates
Instrumental variable (IV) estimation using a lag of four and five years as an instrument also yields a significant positive effect on FDI. The first-stage regressions are shown in Table 6. The IV estimates are larger than the OLS estimates. IV estimation combined with fixed effect estimation also shows a positive effect of the risk indices on FDI, but this effect is significantly different from zero only in columns (1) and (4) of Table 7. The effect of the

EMI among the Mediterranean group of countries is not significant, nor is the effect of the II in the Middle Eastern sample.

Finally, using IV estimation combined with first differences shows a significant positive effect of the EMI on FDI whereas the positive effect is not significant for the II. This estimation method with the Mediterranean sample did not yield a significant result, although the effects were positive.

Summary of Results

The *Euromoney* risk index explicitly includes elements of political risk and therefore is more likely to be affected by the peace process. This can explain why our most consistent results are obtained while using this index. Column (1) in Table 7 presents a very diverse set of estimates of the effect of country risk on FDI. Our preferred estimate is the IV first difference, the bottom row of Table 7. We believe that it is a consistent and credible estimate since it corrects for the endogeneity of the risk measure, accounts for any country- and year-specific effect, and rids the error term of first-order autocorrelation if the autocorrelation coefficient is near 1.

The IV first differences estimate is twice as large as the OLS estimate, .0167 vs. .0088. Does it reflect a large effect? Calculating the foreign capital inflow elasticity with respect to the EMI at the Israeli means of the data yields an elasticity of .85. This means that a 10% improvement in the Israeli risk rating leads to an 8.5% increase in direct foreign investment, definitely a large effect. During the post-Madrid Conference years (1993–1995), the *Euromoney* risk rating of Israel improved by 22.4%. This improvement should have led, given the above-estimated elasticity, to about a 40% increase in foreign direct investment in Israel. The actual increase in FDI during this period was about 96%. The difference between this actual change and the change accounted for by the improved risk rating is due to other economic factors such as the faster growth of the economy.

APPENDIX 1
Survey of Studies on the Effect of Political Risk
on Foreign Direct Investment

Early survey analyses[2] of the influences of foreign direct investment led to the belief that political risk[3] ranked very high among the matters taken into consideration by transnational corporations in determining the location of overseas operations. In contrast, the earlier statistical studies that included political environment indicators tended to find them insignificant.

Thus, Bennet and Green (1972) found political stability in 46 host countries to be insignificantly related to U.S. foreign direct investment, for both developed country and developing country subsamples. However, since the dependent variable was U.S. foreign direct investment stock in 1965 and the political instability measure covered either the previous eight or 16 years, the test may be considered rather insensitive.[4] A similar study by Green and Cunningham (1975) covered only 25 countries, but a wider range of independent variables, among which political stability again proved insignificant. Using a dependent variable comprising the number of new manufacturing subsidiaries established in 11 developed countries and 48 developing countries from 1964 to 1967 by the 187 U.S. firms in the Harvard database on transnational corporations, Kobrin (1979) applied factor analysis to 33 environmental (political, social, economic) variables. The factor analysis produced six clusters of variables of which three (labeled by Kobrin "rebellion,"[5] "government instability,"[6] and "subversion")[7] were politically oriented. In a range of multiple regression tests, for both all countries and developing countries, Kobrin (1978) defined three types of "political violence." Of these, only "Conspiracy" (assassinations, coups, revolutions, general strikes) was significantly negatively related to foreign direct investment.[8] This result also held strongest where it was most likely to result in a response inimical to the interests of foreign direct investment (i.e., at relatively high levels of socioeconomic development and relatively efficient bureaucracy).

Discriminant analysis was applied by Root and Ahmed (1979) to a sample of 58 developing countries, which were classified as "unattractive," "moderately attractive," or "highly attractive" for foreign direct investment from 1966 to 1970. Of 38 economic, social, and political variables, only six emerged as significant discriminators (at 5%) between the groups. Of these only "the number of regular (constitutional) changes in government leadership between 1957 and 1967" was a political variable. Although both "number of armed attacks by internal groups (1956 to 1967)" and "role of Government in the economy" were significant (negatively and positively, respectively, at 10%),[9] the "degree of nationalism" was insignificant at that level. Furthermore, Agodo (1978) found "political stability" to have a positive and significant effect on foreign direct investment in an analysis of 33 U.S. firms that had 46 manufacturing investments in 20 African countries.

In an analysis of the determinants of annual average inflows of foreign direct investment in 25 developing countries, Levis (1979) used two perceptions of political stability. The first was the more common view of political stability, which equates it with the "absence of domestic civil conflict and violent behavior." The measure used was that of Feierabend and Feierabend, who identified political instability with aggressive behavior and defined it (quoted in Levis, 1979, p. 61) as the "degree or the amount of aggression directed by individuals or groups within the political system against other groups or against the complex of officeholders and individual groups associated with them."[10] In Levis's stepwise regression tests, this variable was third most important (of seven) and significant as a determinant of foreign direct investment for the period 1962-1964, but seventh and insignificant for the lagged period (independent variable unchanged) 1965–1967. The second indicator of political instability was based on the legitimacy of the regime, "that is, the extent to which the political system and its outputs are accepted as right and proper by the population" (Levis, 1979, p. 62). The indicator[11] used for this ranked sixth and insignificant for the unlagged period (1962–1964), but fifth and

significant in the lagged period (1965–1967). Other studies that used samples of developing countries found political instability to be persistently and significantly negatively related to foreign direct investment in regressions (either with GNP per capita as the sole control variable, or with a wider selection of independent variables). Although "government ideology" was never significantly related to foreign direct investment, the proportion of a country's foreign aid coming from developed market economies was found to be a significantly positive determinant and that from socialist countries significantly negative; the amount of multilateral aid was also significantly positive.[12]

Nigh's (1985) analysis broadened the study in two useful ways. First, by pooling time-series data on U.S. manufacturing foreign direct investment in 24 countries for 21 years (1954–1975), the possibility of systematic investigation of lags was opened up. Second, four separate dimensions of political events were distinguished, by taking account of both conflictive and cooperative events, occurring both within host countries (intranation events) and between countries (internation events). "Conflictive internation" events are unfriendly acts directed by the host country at the United States, "cooperative internation" events are friendly acts directed by the host country at the U.S., "conflictive intranation" events are associated with a deteriorating environment in a host country,[13] and "cooperative intranation" events are associated with an improved environment in a host country.[14] For developing countries, Nigh (1985) found both conflictive and cooperative internation events and conflictive intranation political events to be significant determinants of foreign direct investment (signs as predicted) at 1% when lagged by one year. When unlagged data were used for developing countries, both types of internation event were insignificant, but both types of intranation political event were then found to be significant.[15] For developed countries, both types of internation political event were significant (signs as predicted) at 1% when lagged by one year, with the same result for unlagged data.[16]

In a separate analysis, Nigh (1986) applied the same approach to eight

Latin American countries for the same period. Here, both types of internation political event were significant for a one-year lag, but insignificant when unlagged; both types of intranation political event were significant when unlagged but insignificant with a one-year lag. Thus, Nigh's results suggest, first, that the differentiation of political event variables, to incorporate both internation and intranation events and both conflictive and cooperative events, imparts an extra dimension of subtlety to the results; second, that part of this subtlety is reflected in differences between developed and developing countries[17] (with only internation events relevant to the former); and third, that the ability to analyze lags is valuable since (where relevant, i.e., for the developing country host) the response of investors to intranation events seems more prompt than to internation events.[18]

APPENDIX 2
Examples of Recent Foreign Direct Investment in Israel

Since 1992, there has been an increase in foreign investment in Israel, 1995 being a record year with over $2 billion in foreign investment of which over $1 billion was foreign direct investment (*Ha'aretz*, 8 April 1996, p. C2). Foreign investors directed their investments to a large range of sectors and industries. One of the new and important areas in which foreigners are investing is the food industry. A wave of foreign chains, including MacDonald's, Pizza Hut, Burger King, and others entered the Israeli market, indicating the market's consumption potential. In addition, several strategic investments have been made in the Israeli market, which is seen as a bridge to other markets. The most obvious example is Nestle, which established a partnership with Osem. Strauss and Unilever, and Vita and Rich, are other examples of Israeli companies partnering with larger foreign companies (Nachshon, 1995, p. 16).

The automobile industry has also seen several large foreign direct investments. Volvo is working with Merkavim, and Volkswagen is investing $300 million to develop a magnesium plant in partnership with the Dead Sea Works (Yellnick, 1995, p. 9).

Another area receiving attention from foreign investors is chemicals. The Israel Corporation, which despite its name is a foreign investor in Israel, controlled by the Eisenberg family, recently bought Israel Chemicals and Deshnim. In addition, pharmaceutical companies and beauty product manufacturers such as Johnson & Johnson, Henckel, and others have opened operations in Israel (Yellnick, 1995, p. 9).

Despite all these investments, the most significant developments have taken place in the telecommunications and high-tech sectors. Bell South and Northern Telecom have both invested in Israel. Cable & Wireless bought 10% of Bezeq, and Madge bought Lannet. Finally, Intel will open a new plant in Kiryat Gat (Yellnick, 1995, p. 9). These are just a few examples of large investments in this area.

It should be noted that some of these investments have been heavily criticized–for example, Shamrock's investment in Coors, where it was argued that the investment was made with Israeli capital. The large government assistance that will be extended to Intel was also criticized as unnecessary. However, this does not alter the fact that foreign companies have become interested in Israel and see it as a potential market and as a place in which they should have operations. In addition, it should be noted that in successful developing countries the level of foreign investment is approximately 3% of GDP; this leaves significant room for increased foreign investment in Israel to approximately $2 billion per year (Zilberfarb, 1994, p. 92). Therefore, barring drastic changes in Israel's economic outlook, it seems that foreign investment will continue to flow to Israel.

NOTES

1 The effect is significant at the 10% level. Unless otherwise noted, significance in this paper refers to a level of 5%.

2 The surveys of Aharoni (1966) and Basi (1963) seem to have notably influenced subsequent authors. See also Root and Ahmed (1978, p. 74).

3 For a detailed review of the concept of political risk, see Kobrin (1979). See also Kobrin (1978), pp. 113–117.

4 But see Kobrin (1979, pp. 31–32) for a defense of the use of stock data.

5 "Rebellion" included variables representing both planned and spontaneous rebellion against government authority; a measure of government reaction (purges); and an indicator of the type of regime most likely to be associated with political violence.

6 "Government instability" covered executive changes; cabinet changes; and crises (including constitutional or violent regime changes).

7 "Subversion" included armed attack and guerrilla warfare (planned quasi-military action against the regime).

8 The others were "turmoil" (protest demonstrations, riots) and "internal war" (deaths from domestic violence, armed attacks, guerrilla warfare).

9 These are the *only* extra variables significant at 10%.

10 For a more detailed description of the derivation of this index, see Levis (1979, p. 63).

11 It took into consideration "the effectiveness of the legislative process, the nature of the office nominating process, the existence of parliamentary pluralism, the government's structure and the parties' legitimacy" (Levis, 1979, p. 62).

12 Reuber et al. (1973, pp. 51–52) found a weak but positive relationship between aid and foreign direct investment flows.

13 It is predominantly this type of political event that was used in the earlier studies.

14 See Nigh (1985, pp. 14–15) for a description of the source data.

15 Two-year lag models found only internation political events to be significant.

16 Two-year lag models found none of the dimensions of political events to be significant.

17 Nigh (1985, pp. 8–9) formally demonstrated the inappropriateness of pooling developed and developing country data.

18 See Nigh (1986, p. 104) for a suggested explanation of this result.

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Table 1:

Simple correlation of country risk indices: the *Euromoney* index

	Egypt	Israel	Jordan	Lebanon	Syria
Egypt	1	−.678	.763	.629	.601
Israel	−.678	1	−.571	−.037	.041
Jordan	.763	−.571	1	.437	.571
Lebanon	.629	−.037	.437	1	.823
Syria	.601	.041	.571	.823	1

Table 2:

Simple correlation of country risk indices:
the *Institutional Investor* index

	Egypt	Israel	Jordan	Lebanon	Syria
Egypt	1	−.291	.511	.599	.257
Israel	−.291	1	−.737	.486	.767
Jordan	.511	−.737	1	−.199	−.491
Lebanon	.599	.486	−.199	1	.724
Syria	.257	.767	−.491	.724	1

Table 3:

Simple correlation of foreign direct investment

	Egypt	Israel	Jordan	Lebanon	Syria
Egypt	1	−.435	.071	−.561	.782
Israel	−.435	1	−.614	.722	−.628
Jordan	.071	−.614	1	−.252	.389
Lebanon	−.561	.722	−.252	1	−.874
Syria	.782	−.628	.389	−.874	1

Table 4:
Descriptive statistics
(Sample)[a]

Variables	Israel		Middle East		Mediterranean[b]	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
	(1)	(2)	(3)	(4)	(5)	(6)
Euromoney Risk Index	51.80	17.02	39.50	15.89	54.86	14.38
Institutional Investor Risk Index	34.71	4.92	25.12	9.51	40.90	11.88
Foreign Direct Investment[c]	230.27	156.63	276.64	401.57	377.34	587.65
GDP	44,188.55	11,447.16	33,196.06	22,729.26	46,539.95	39,879.56
Foreign Direct Investment (per capita)	46.37	29.19	18.91	22.73	31.70	60.25
GDP (per capita)[d]	9,658.31	1,700.08	3,613.60	3,619.94	2,333.60	1,546.65

Notes:
(a) Sample is for 1982–1994.
(b) Mediterranean sample includes: Algeria, Morocco, Portugal, Tunisia, Turkey.
(c) Foreign direct investment is measured in millions of US Dollars and has been divided by the US CPI.
(d) GDP is measured in millions of the local currency and has been converted to US Dollars and then divided by the US CPI.

Table 5:

Level, differences, and differences in differences of foreign direct investment and country risk measures[a]

	Foreign Direct Investment[b]			Euromoney Risk Index			Institutional Investor Risk Index		
	1989–1991	1993–1995	Difference (periods)	1989–1991	1993–1995	Difference (periods)	1989–1991	1993–1995	Difference (periods)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Israel	39.4	135.4	96.0	53.2	75.6	22.4	35.5	45.0	9.5
	(24.7)	(87.9)		(3.1)	(3.1)		(.8)	(3.9)	
Middle East (excluding Israel)[c]	5.9	5.1	-.8	28.1	43.2	15.1	19.1	25.0	5.9
	(7.6)	(7.8)		(8.6)	(6.1)		(7.4)	(4.2)	
Difference (countries)	33.5	130.3	96.8	25.1	32.4	7.3	16.4	20.0	3.6
Middle East (including Israel)	12.6	40.6	28.0	33.1	49.6	16.5	22.4	29.0	6.6
	(18.0)	(72.8)		(12.9)	(14.5)		(9.5)	(9.2)	
Mediterranean	52.3	38.7	-13.6	53.6	57.4	1.6	41.4	42.8	1.4
	(92.4)	(39.9)		(14.8)	(15.6)		(12.0)	(14.3)	
Difference (countries)	-39.7	1.9	41.6	-20.5	-7.8	14.9	-19.0	-13.8	5.2

Notes:

(a) Standard errors are in parentheses.

(b) Foreign Direct Investment is reported per-capita.

(c) Middle East sample includes Israel, Egypt, Jordan, Lebanon, and Syria. Mediterranean sample includes Algeria, Morocco, Portugal, Tunisia, and Turkey.

Table 6:
First-stage regression estimates
(Country Risk Measure)

| | Euromoney | | Institutional Investor | |
| | Risk Index | Foreign Direct Investment | Risk Index | Foreign Direct Investment |
Regression type	(1)	(2)	(3)	(4)
IV	.4959	.0059	.7244	.0105
	(.1385)	(.0025)	(.0975)	(.0041)
IV fixed effects	.3022	.0095	.1019	.0353
	(.1391)	(.0021)	(.2894	(.0077)
IV first differences				
Risk at t-4	.2740	.0052	.1355	.0177
	(.1484)	(.0025)	(.2106)	(.0105)
Risk at t-5	.1815	.0018	—	—
	(.1526)	(.0026)		

Note: Standard errors are in parentheses.

Table 7:

Regression estimates, foreign direct investment, and country risk indices[a]

(Country Risk Index)

Regression type	Euromoney		Institutional Investor	
	Middle East	Mediterranean[b]	Middle East	Mediterranean
	(1)	(2)	(3)	(4)
OLS	.0088	.0248	.0137	.0305
	(.0017)	(.0041)	(.0055)	(.0049)
Time and country fixed effects	.0088	.0195	.0190	.0289
	(.0019)	(.0063)	(.0055)	(.0086)
First differences	.0023	.0029	.0056	.0128
	(.0024)	(.0030)	(.0076)	(.0055)
IV	.0120	.0379	.0145	.0359
	(.0036)	(.0088)	(.0049)	(.0085)
IV fixed effects	.0313	.0544	.3461	.1206
	(.0136)	(.0478)	(.9617)	(.0483)
IV first differences	.0167	.0127	.1303	.0504
	(.0098)	(.0645)	(.2088)	(.0637)
N	49	61	49	61

Notes:
(a) Standard errors are in parentheses.
(b) Mediterranean sample includes: Algeria, Portugal, Morocco, Tunisia, Turkey. N is the number of observations used for the OLS estimates.

Figure 1: Institutional Investor Risk Index, 1982–1995
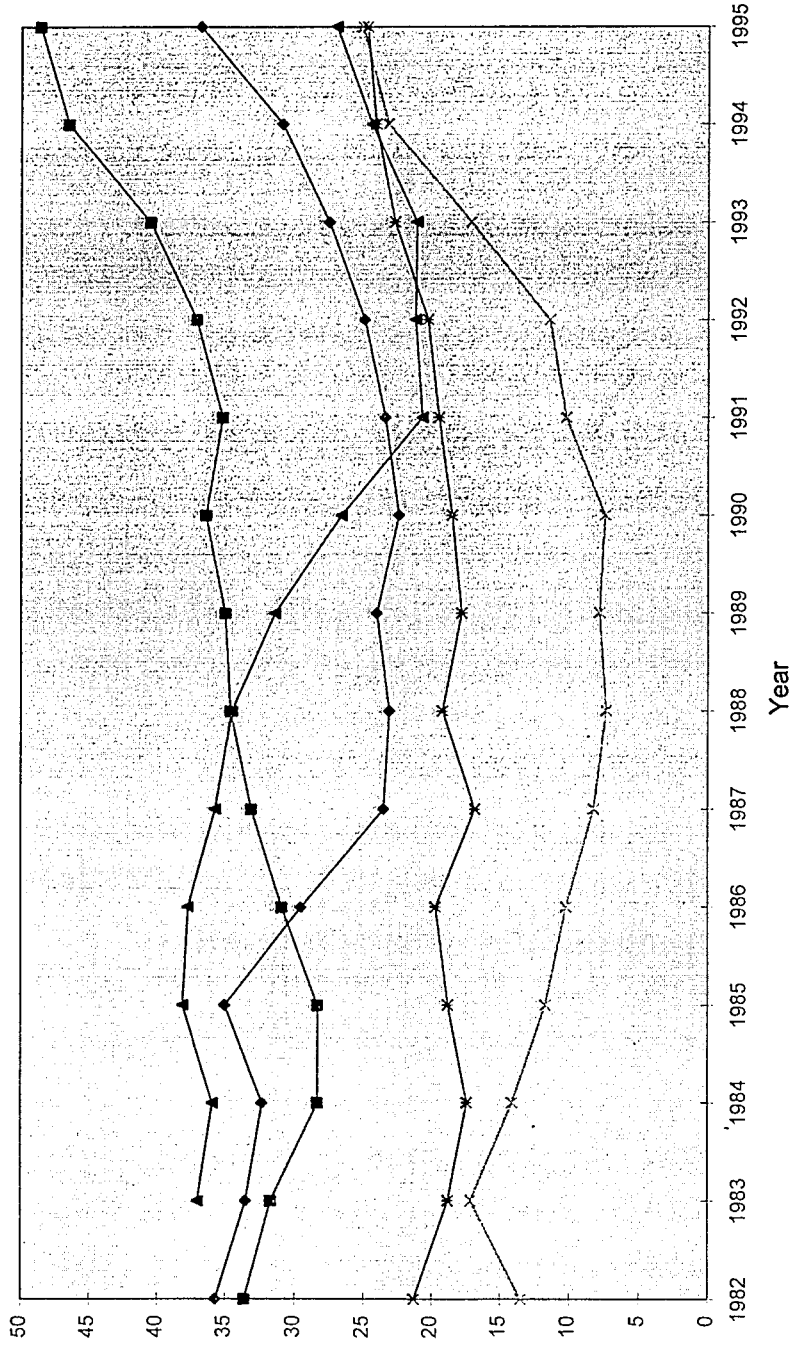
Figure 2: Euromoney Risk Index, 1982–1995
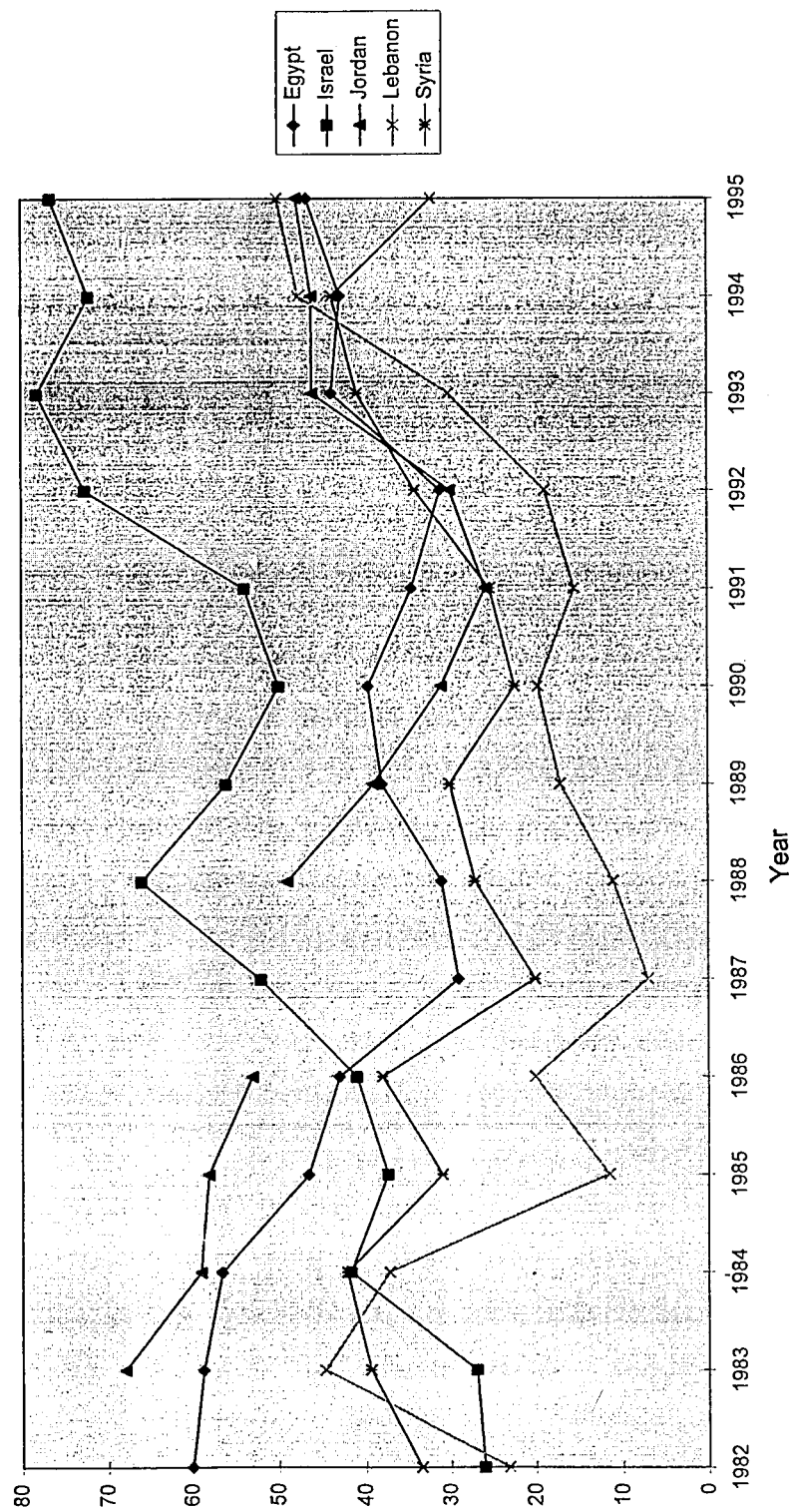
Figure 3: Institutional Investor Risk Index: Mediterranean, 1982–1995
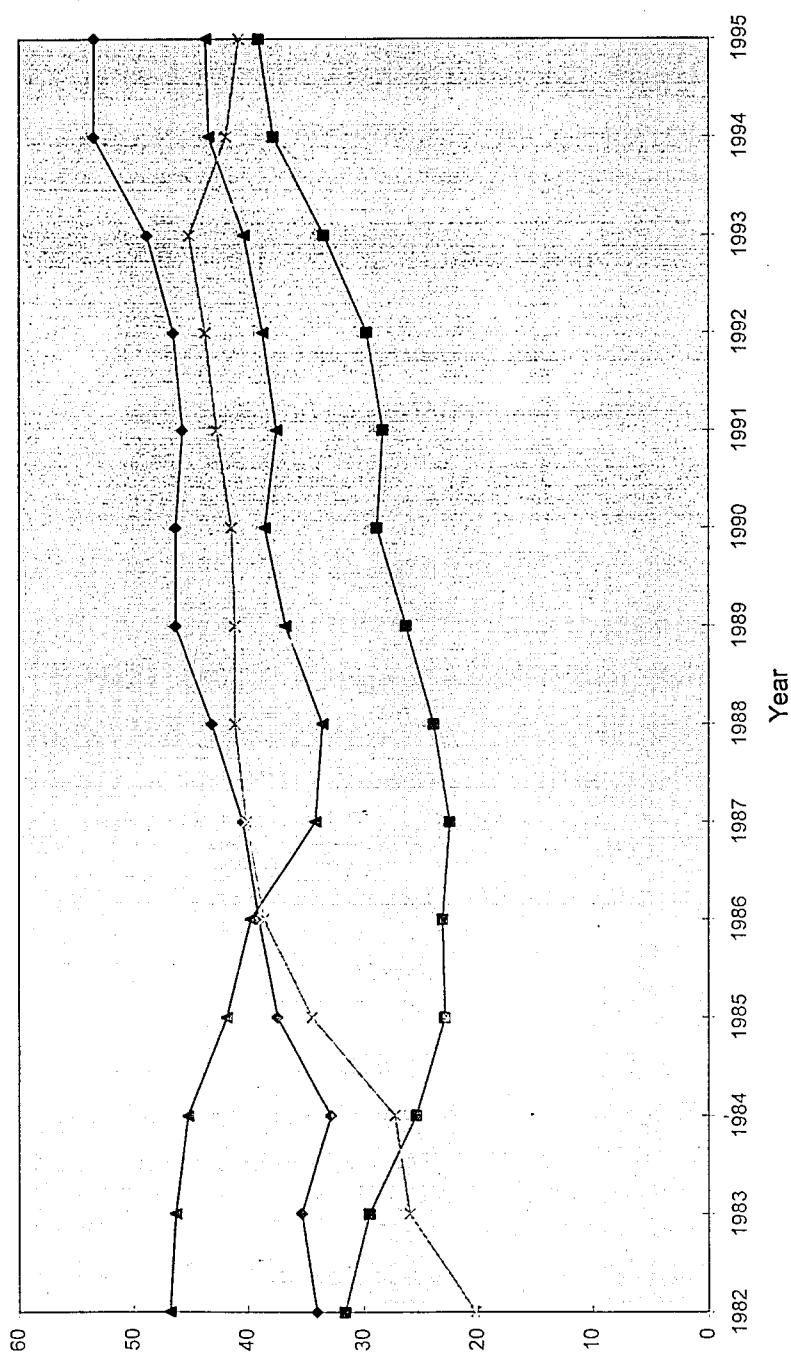
Figure 4: Euromoney Risk Index: Mediterranean, 1982–1995
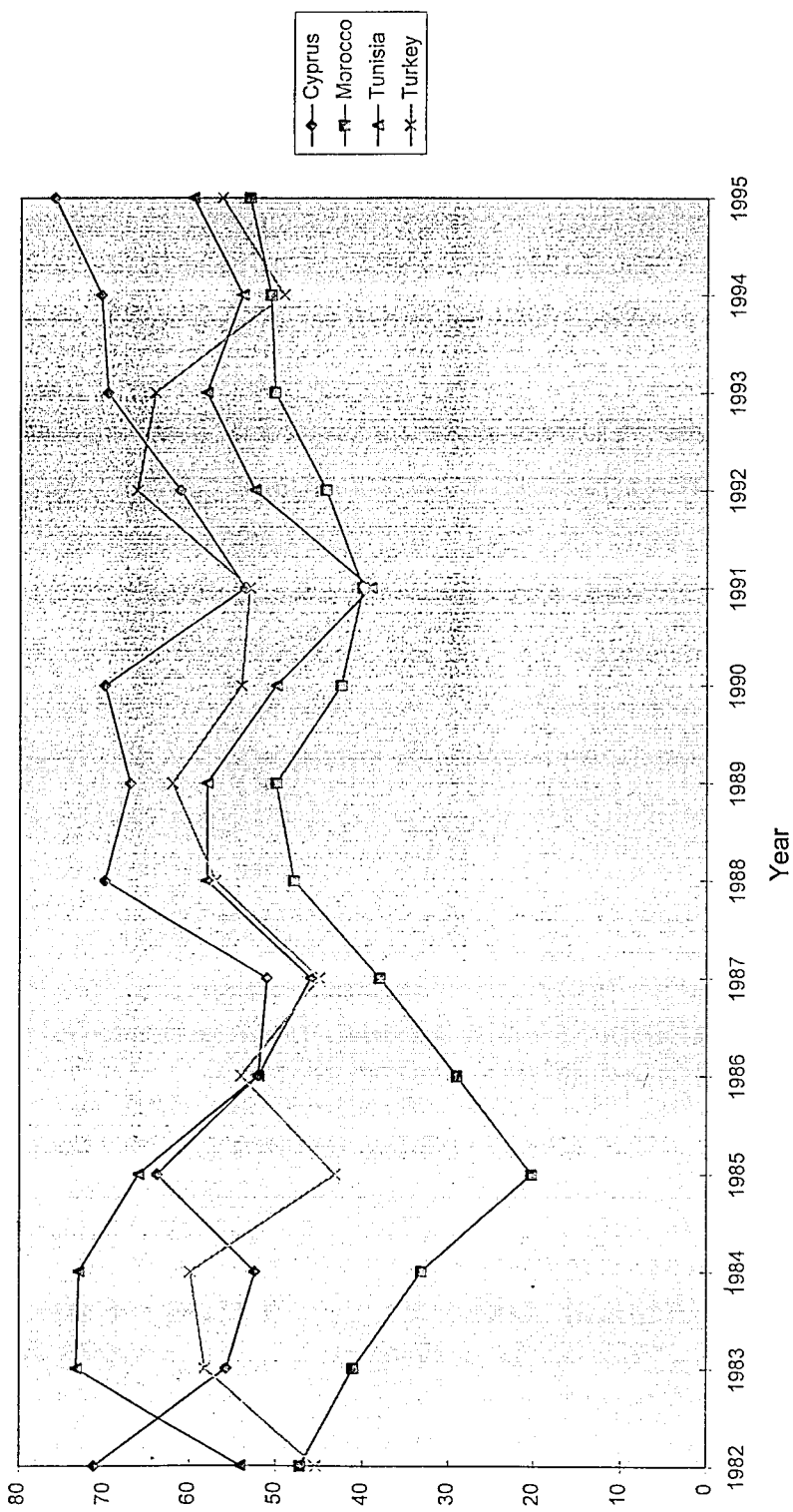
Figure 5: Institutional Investor Risk Index: Gulf States, 1982–1995
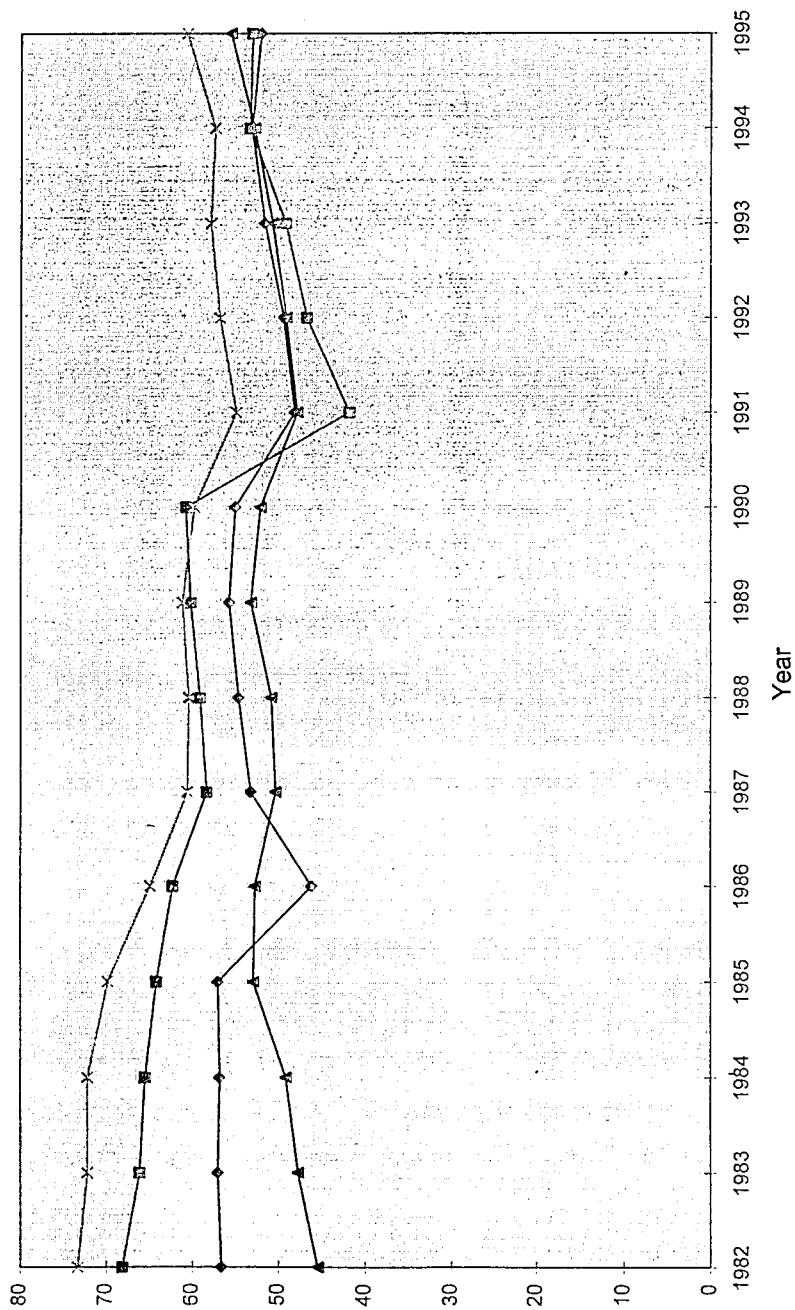
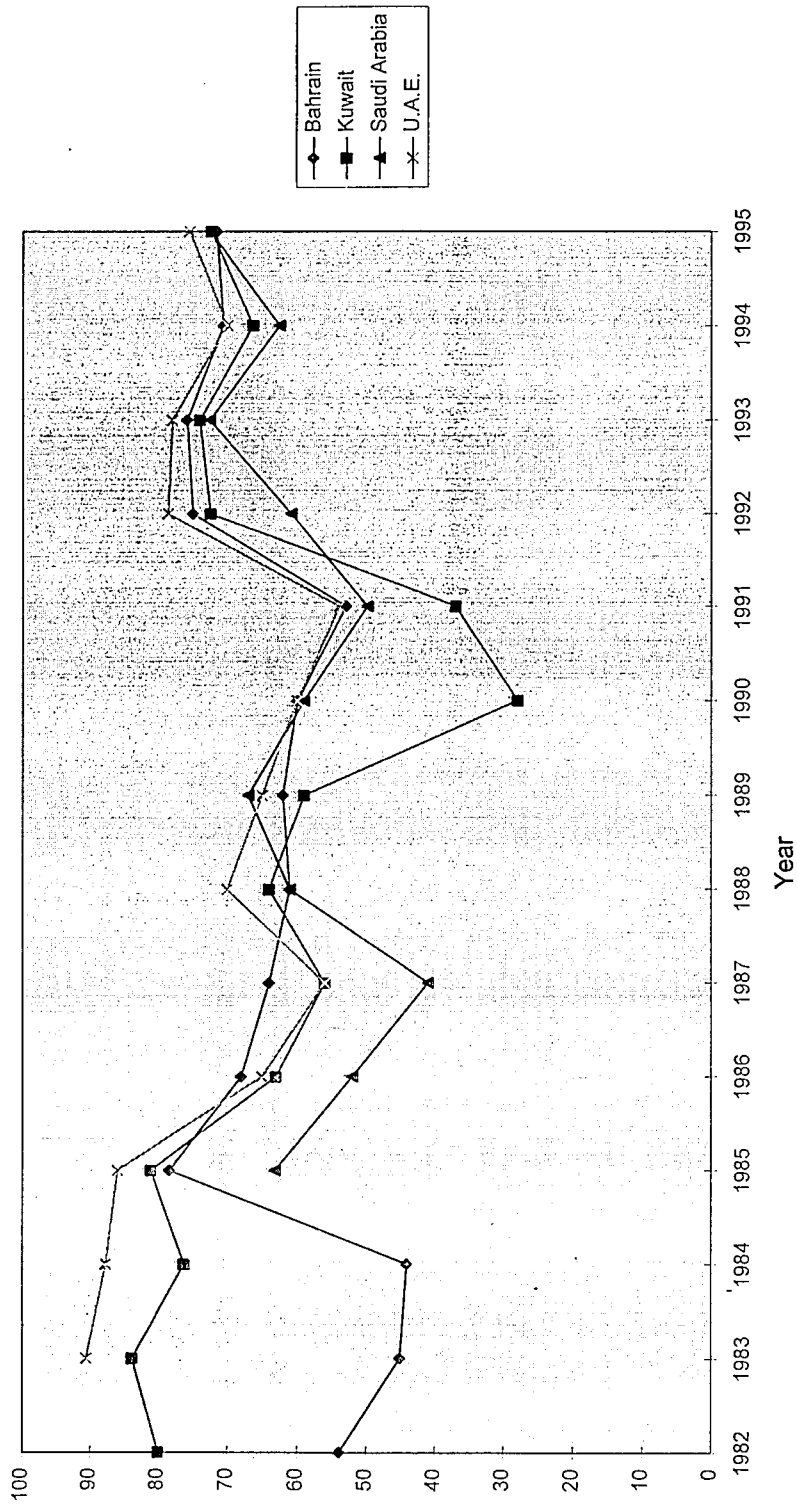Figure 6: Euromoney Risk Index: Gulf States, 1982–1995

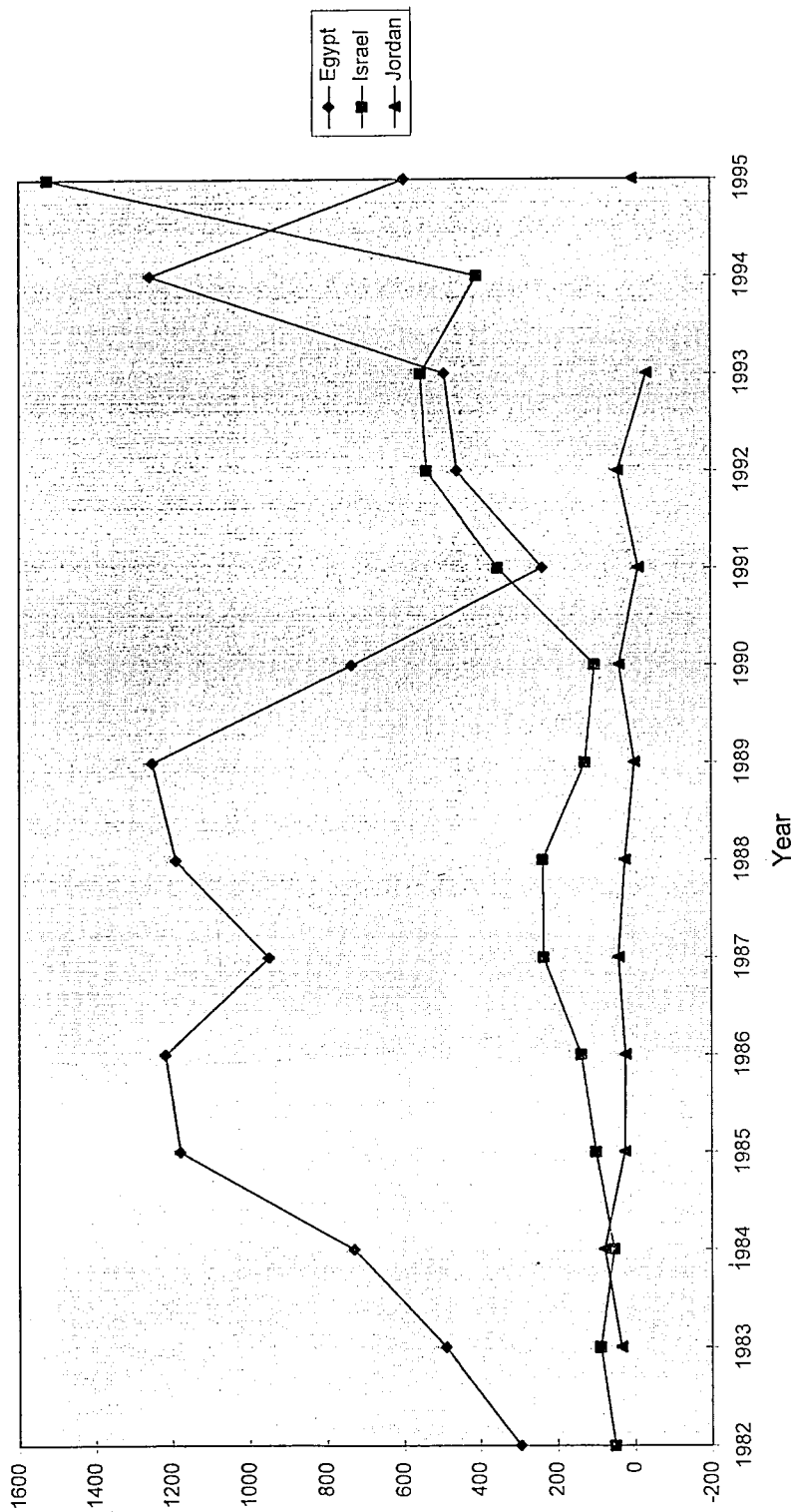Figure 7: Foreign Direct Investment, 1982–1995 (in 1990 US$)
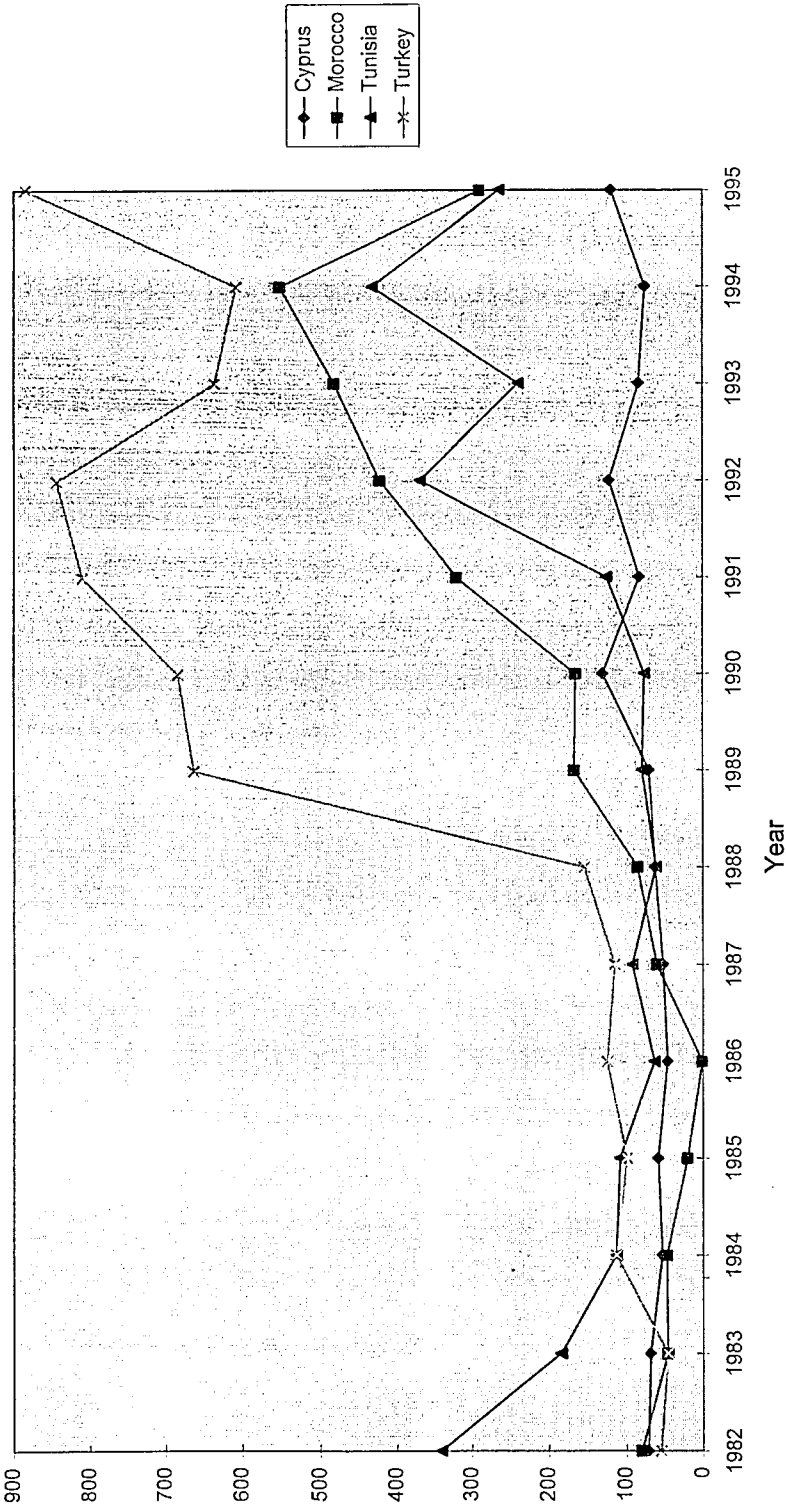
Figure 8: Foreign Direct Investment: Mediterranean, 1982–1995 (in 1990 US$)

Figure 9: Foreign Direct Investment and Institutional Investor Risk Index: Israel, 1982–1994
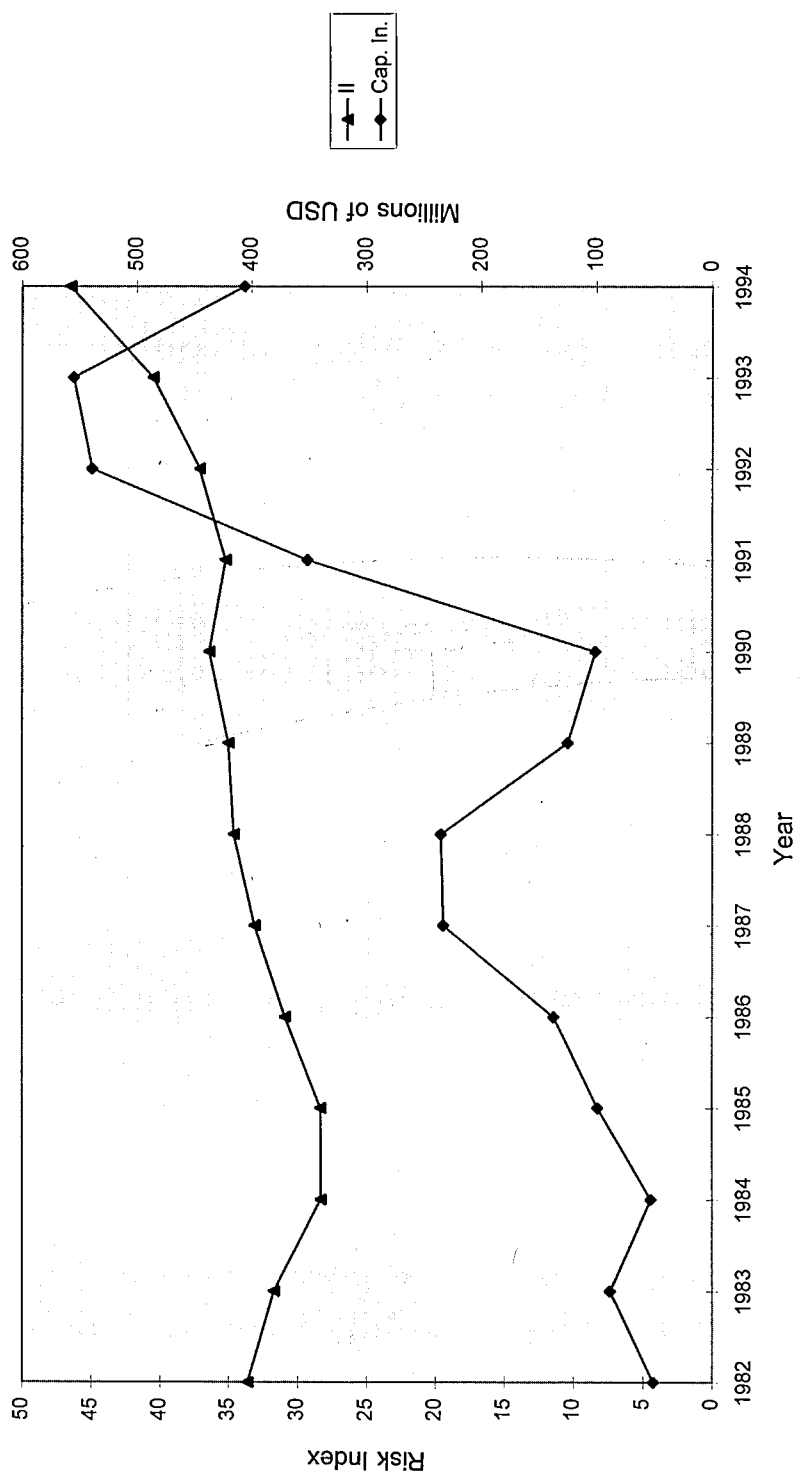
Figure 10: Foreign Direct Investment and Euromoney Risk Index: Israel, 1982–1995
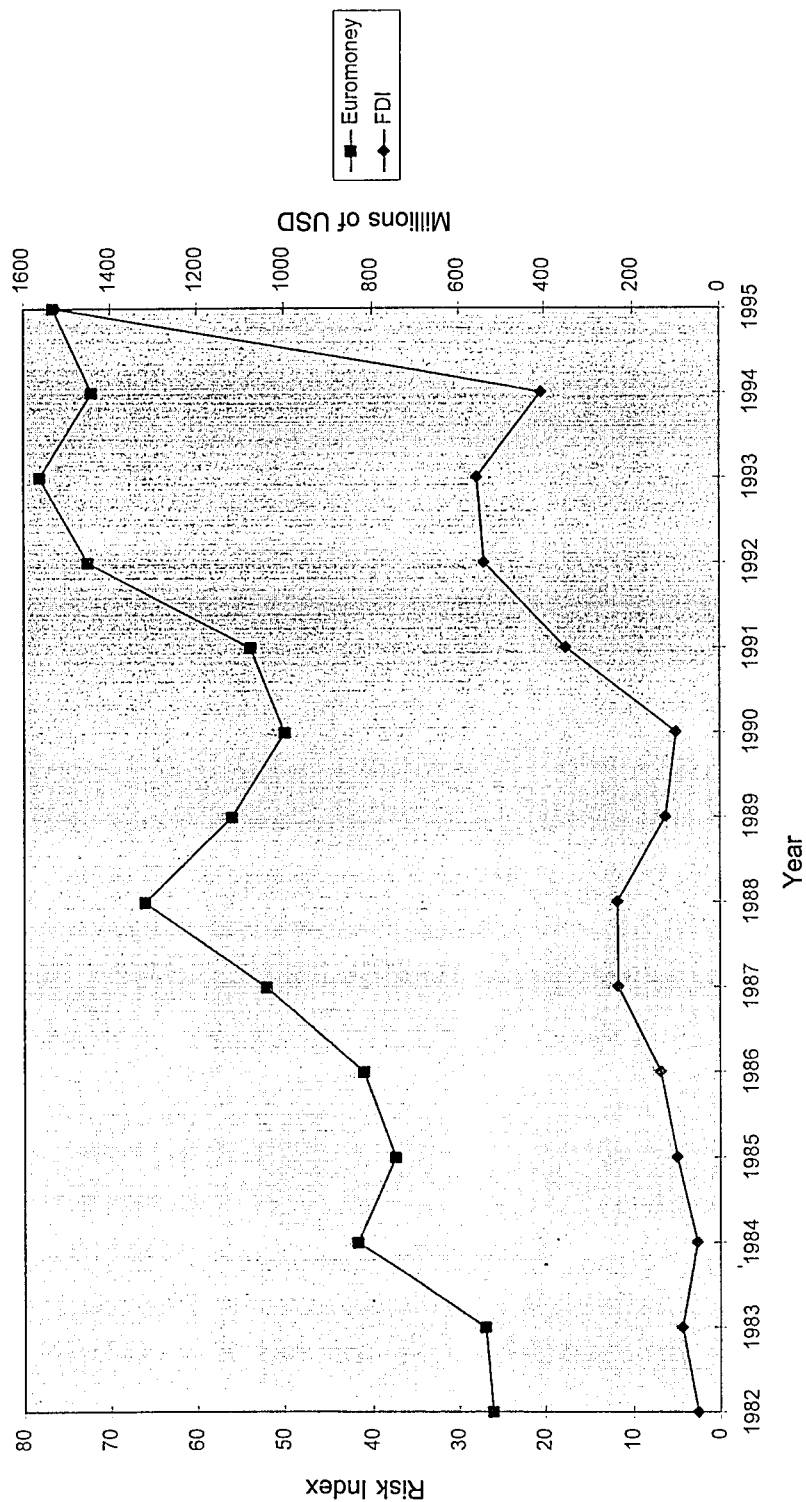
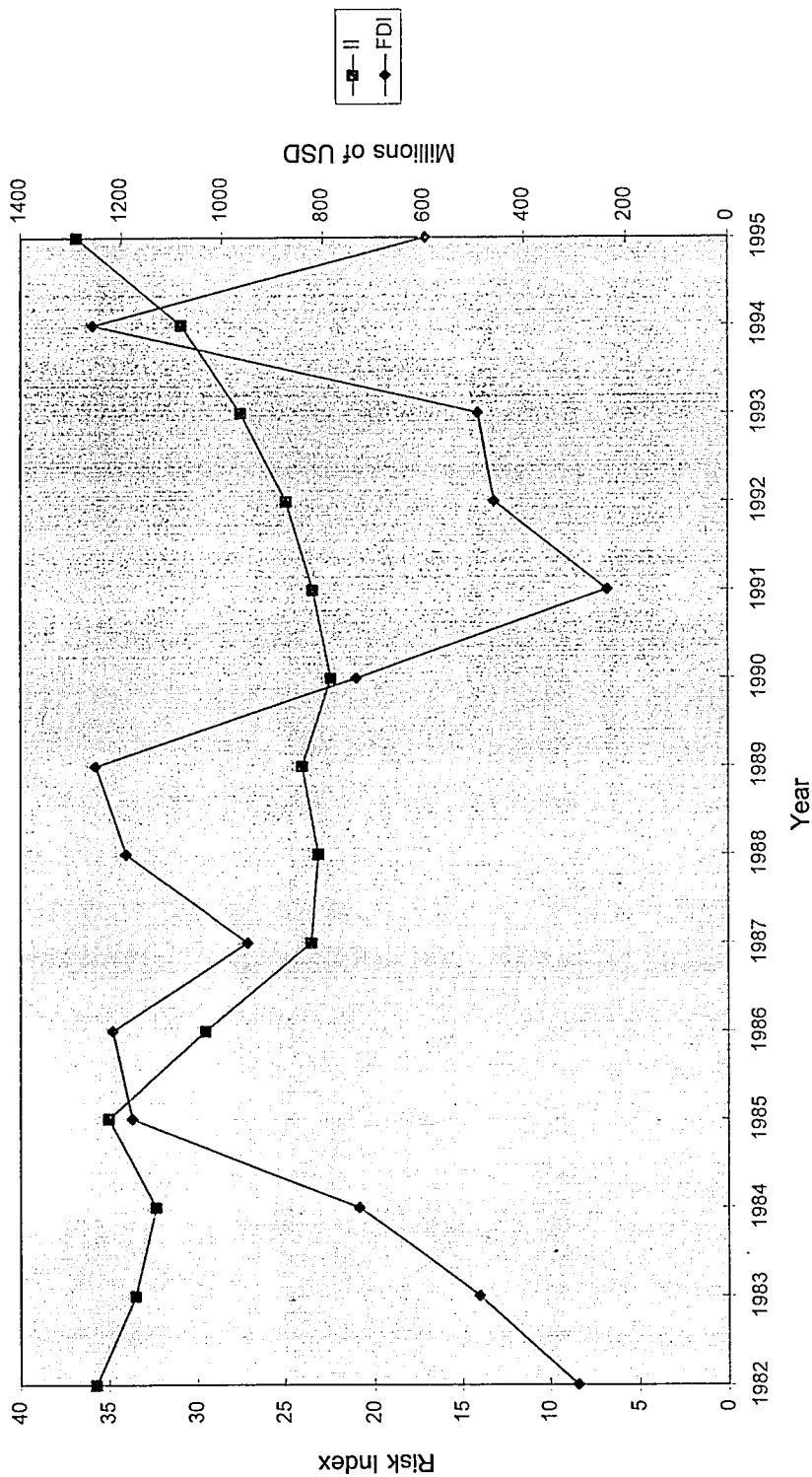Figure 11: Foreign Direct Investment and the Institutional Investor Risk Index: Egypt, 1982-1994

Figure 12: Foreign Direct Investment and the Euromoney Risk Index: Egypt, 1982–1995
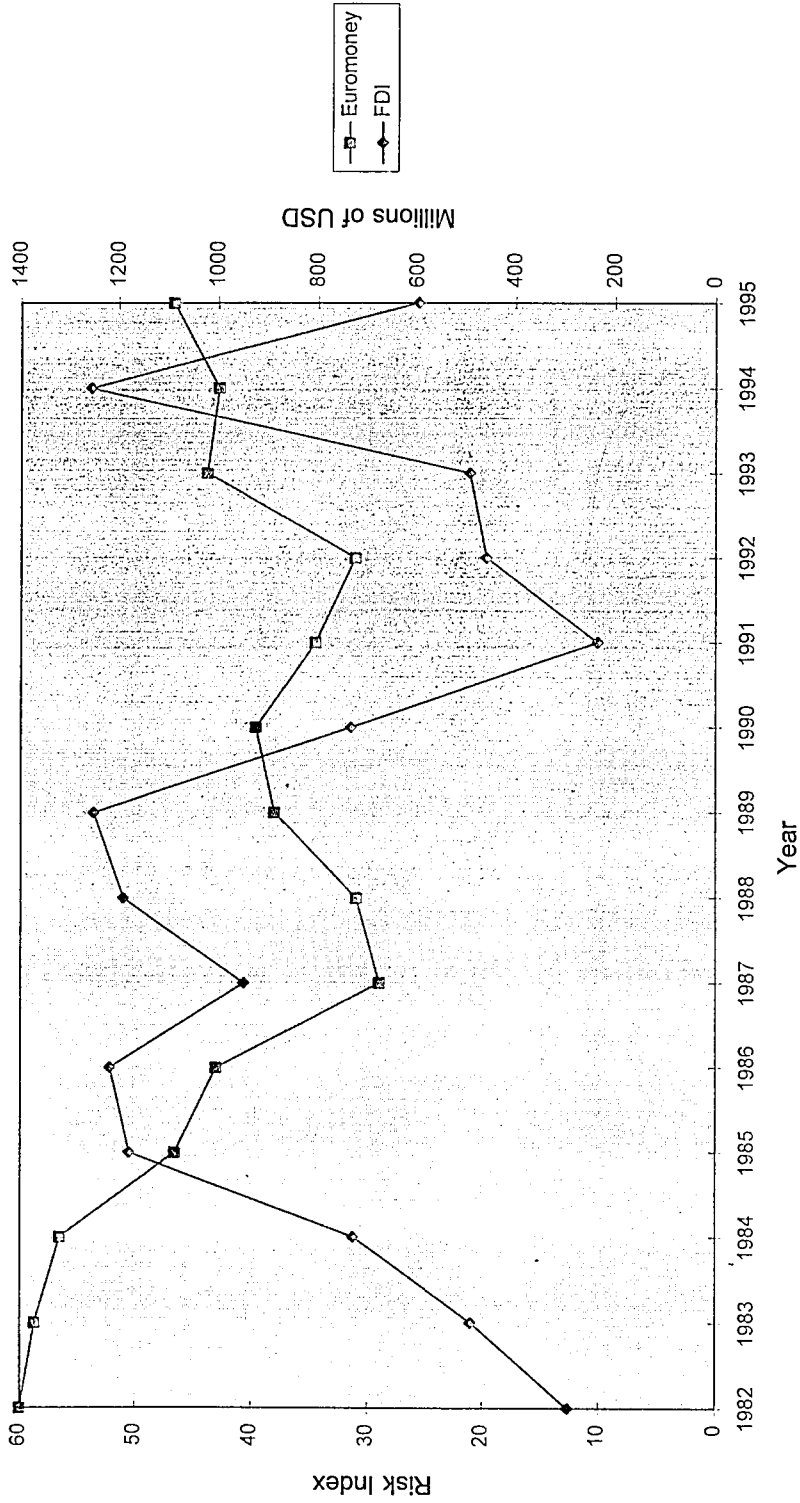
Figure 13: Foreign Direct Investment and the Institutional Investor Risk Index: Jordan, 1982–1995
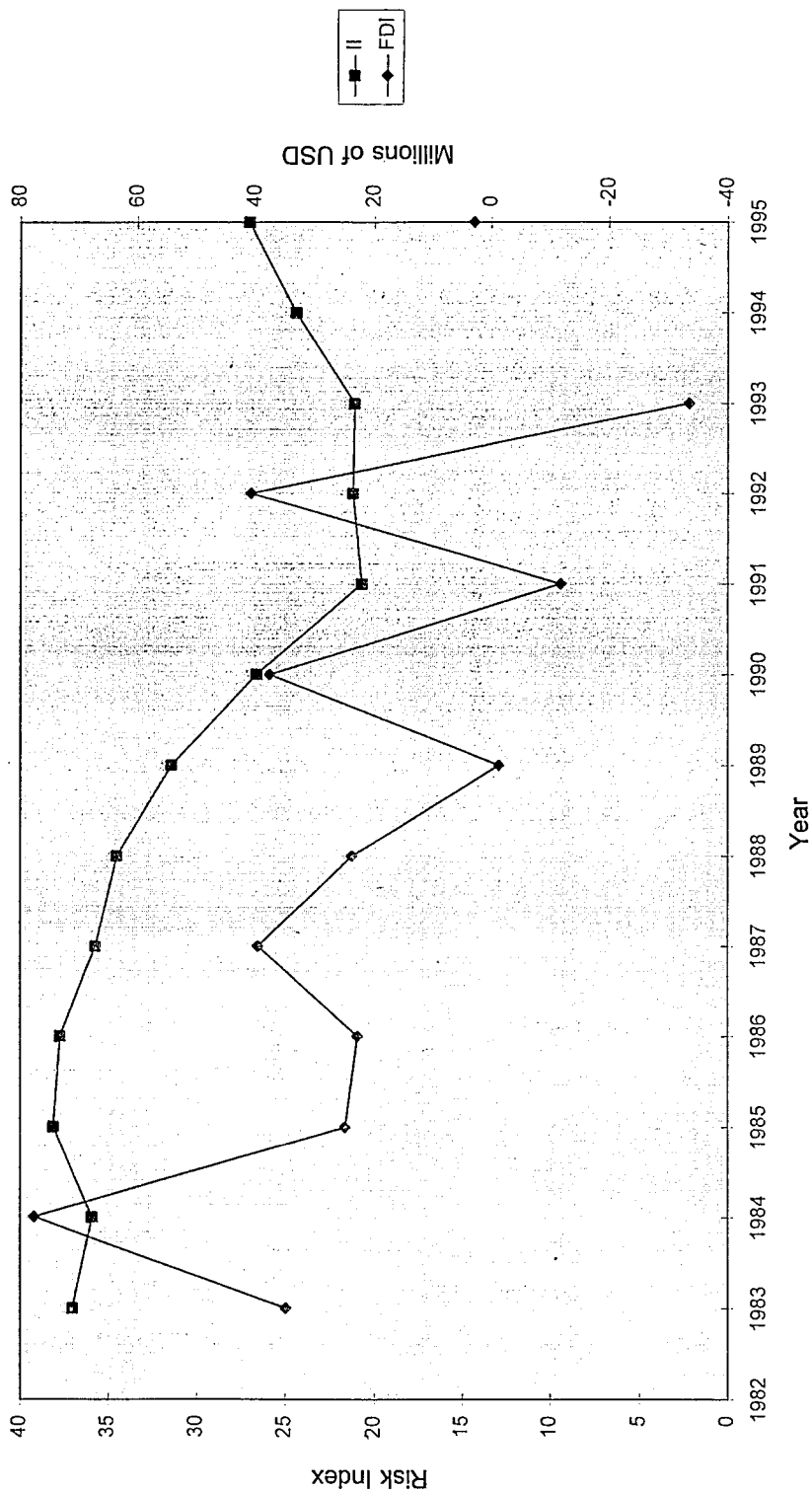
Figure 14: Foreign Direct Investment and the Euromoney Risk Index: Jordan, 1982–1995