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SELECTED MENA COUNTRIES' ATTRACTIVENESS TO G7 INVESTORS

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Abstract

The objective of this paper is to evaluate the relative attractiveness of seven MENA countries (Algeria, Egypt, Iran, Saudi Arabia, Morocco, Tunisia and Turkey) as a location for foreign portfolio investment (FPI) from the G7 investors viewpoint. We suggest a methodology based on the combination of the gravity model, the Analytic Hierarchy Process (AHP) and the goal programming model (GP). The gravity model is used to determine the attractiveness factors of a country with respect to FPI for 30 investing and 43 receiving countries for the year 2001. Results show the importance of information costs and bilateral trade in the determination of the bilateral asset holdings. The AHP method is applied to prioritize the set of FPI location alternatives from the different viewpoints of G7 investors according to variables' significance in the gravity model outcome; information costs, bilateral trade, investment freedom, GDP, institutional quality and geographic distance. Results for the year 2005 show that Saudi Arabia is the most attractive country for Japanese and American investors, Turkey is the favorite location for French, German, Italian and British investors and Algeria is the preferred destination for Canadian investors. A combined AHP-GP model has been used to determine the degree of portfolio investment in each MENA country from the viewpoint of G7 investors for the period 2003-2006. Results show that the relative attractiveness of MENA countries is time-varying but they have approximately the same degree of attractiveness from the G7 investor's viewpoints. In general, the most attractive country for FPI is Turkey for all G7 investors and Saudi Arabia ranks second. For a MENA country to attract more FPI it should especially improve bilateral trade and institutional quality and reduce foreign investment restrictions and information costs.

ملخص

الغرض من هذه الورقة هو تقويم الجاذبية النسبية لدول الشرق الأوسط وشمال إفريقيا السبع (مصر- الجزائر- إيران- المملكة العربية السعودية – المغرب – تونس وتركيا) باعتبارها مركزا إقليميا لاستثمار الحقائب المالية الأجنبية (FPI) من وجهات نظر مستثمري مجموعة الدول السبع. ونقترح هنا منهجيه تقوم على الربط بين نموذج الجاذبية وعملية التسلسل الهرمي التحليلية(AHP) ، ونموذج برمجة الهدف (GP). وتستخدم نموذج الجاذبية لتحديد عوامل الجاذبية للدولة لاستثمار الحقائب المالية الأجنبية، ذلك بالنسبة لثلاثين من الدول المستثمرة وثلاثة وأربعون من الدول المستقبلة للاستثمارات في عام 2001. وتدل النتائج على أهمية تكاليف المعلومات والتجارة الثنائية في تحديد الممتلكات الثنائية للأصول. وتطبق عملية التسلسل الهرمي التحليلية بغرض تحديد الأولويات بالنسبة لمجموعة البدائل لمراكز استثمار الحقائب المالية الأجنبية من وجهات النظر المختلفة لمستثمرين مجموعة الدول السبع، وفقا لأهمية المتغيرات في نتيجة نموذج الجاذبية، تكاليف المعلومات، والتجارة الثنائية، حرية الاستثمار، الناتج القومي الإجمالي، الجودة المؤسسية والبعد الجغرافي. وتدل نتائج عام 2005 على أن المملكة العربية السعودية هي الدولة الأكثر جاذبية للمستثمرين اليابانيين والأمريكيين، وان تركيا هي الموقع المفضل بالنسبة للمستثمرين الفرنسيين والألمان والايطاليين والبريطانيين وأن الجزائر هي الموقع المفضل للمستثمرين الكنديين. وقد استخدم نموذج مركب يجمع بين عملية التسلسل الهرمي ونموذج برمجة الهدف لتحديد مدى استثمار الحقائب المالية في كل دولة من دول الشرق الأوسط وشمال إفريقيا من وجهة نظر مستثمري مجموعة الدول السبع خلال الفترة من 2003 إلى 2006. وتبين النتائج أن الجاذبية النسبية لدول الشرق الأوسط وشمال إفريقيا تتفاوت من حيث الوقت، بيد أنها تحظى بذات القدر من الجاذبية من وجهات نظر مستثمري مجموعة الدول السبع. وعلى وجه العموم فقد تقدمت تركيا تلك الدول من حيث الجاذبية لاستثمارات الحقائب المالية الأجنبية، وتلتها المملكة العربية السعودية. وحتى تتمكن الدولة في الشرق الأوسط وشمال إفريقيا من اجتذاب المزيد من استثمارات الحقائب المالية الأجنبية يتعين عليها بصفة خاصة أن تحسن من التجارة الثنائية والجودة المؤسسية وان تخفف من القيود المفروضة على الاستثمار الأجنبي وتكاليف المعلومات.

1. Introduction

The attractiveness assessment of MENA (Middle East and North Africa) countries as a location for foreign portfolio investment (FPI) from the G7 investors' viewpoints is an important feature that contributes to estimate the degree of economic and financial development of host countries.

The MENA countries received comparatively a limited amount of foreign investments; they attracted only 2.8 percent of global funds because of institutional and regulatory barriers[1]. However, most of the MENA countries through stock market modernization and liberalization, state owned firms' privatization, regulatory improvements and huge reform programs have reached an undeniably high level of financial development and stabilization and a significant success in the evolution of property rights and legal structures. The ratio market capitalization to GDP in the MENA region is equal to 31% which is higher than in Latin America (24%) and Eastern Europe (26%)[2]. This development is accompanied by policies aiming at attracting foreign investors.

Zaher (2007) highlights the major developments and structural changes in MENA markets and marks a noticeable growth during the last decade. He reaches this conclusion starting from the record growth rates in market capitalization, the number of listed companies, the value traded and the shares traded in most of the MENA capital markets. The same author concludes that to support growth in the capital market and to attract more local and foreign investors, MENA markets would need to continue to incorporate changes in the procedures, laws as well as the professional infrastructure in the financial market. He adds that MENA markets need to improve the procedures of information diffusion. Lagoarde-Segot and Lucey (2007) investigate the presence of portfolio diversification benefits in seven MENA markets. Their results underline the presence of outstanding potential diversification benefits in the MENA region, whether transactions are denominated in local currencies or in US dollar. These authors predict that MENA markets will be able to attract even more portfolio flows in the future.

Kamaly (2002) notes that lagged real GDP growth and lagged value of FDI/GDP are the only significant determinants of FDI flows to the MENA region. Onyeiwu (2003) finds that corruption/bureaucratic radical beliefs and trade openness explain why MENA countries receive less FDI than other countries. According to Sekkat and Veganzones-Varoudakis (2004), the important factors in attracting FDI flows to MENA region are trade and foreign exchange liberalization. Méon and Sekkat (2004) study the impact of institutions on manufactured exports and FDI attractiveness in the MENA region and show that the deterioration of the institutions quality has in general a negative effect on manufactured exports and FDI attractiveness. Recently, Onyeiwu (2008) illustrates by using 61 MENA and non MENA countries that the key factors of attractiveness as to FDI flows are openness of the economy, GDP per capita and political risks.

In this paper we propose a methodology combining the gravity model, the Analytic Hierarchy Process (AHP) and the goal programming model (GP). First the gravity model is used to identify the variables which best explain differences between countries as hosts to FPI. We consider both the basic gravity variables as well as several other barriers to international investment. These variables are; gross domestic product, geographic distance, investment freedom, information costs, bilateral trade, institutional quality, and the liability of self-dealing. Other factors like property rights, expropriation risk, market development and transaction costs have been rejected from the study because of their high correlation with the

[1] Lagoarde-Segot and Lucey (2006).

[2] Lagoarde-Segot and Lucey (2007).

dependent variables. Data contains 30 investing and 43 receiving countries for the year 2001. Second, the AHP is employed to prioritize the set of portfolio investment location alternatives from the different viewpoints of G7 investors according to variables significance in the gravity model outcome. Except for the liability of self-dealing, all the other variables are significant. The AHP analysis is limited to seven MENA countries and six factors according to Saaty (1980) work which recommends using a maximum of seven criteria or alternatives to allow for consistent pairwise comparisons. We use qualitative judgments and quantitative data for the year 2005 to determine respectively the relative importance of criteria and alternatives. Third, the GP approach takes into consideration both the AHP priority levels of MENA countries and the objective of return maximization measured by the relative GDP growth. It is used to determine the weights of portfolio investment in each MENA country from the viewpoint of G7 investors for the period 2003-2006. We didn't consider explicitly the risk in GP specification for two reasons: firstly to focus on the importance of the link between factors in assessing MENA countries' attractiveness and secondly earlier studies have shown that G7 investors can benefit from diversifying their portfolios in MENA region and, as we have short annual data period for the GDP variable we didn't adjust GDP changes by its volatility.

The gravity model outcomes show the importance of information costs and bilateral trade in the determining bilateral asset holdings. The AHP results indicate that Saudi Arabia is the most attractive country for Japanese and American investors, Turkey is the favorite country for French, German, Italian and British investors, and Algeria is the most preferred country for Canadians. The combined AHP-GP model shows that for the period 2003-2006, Turkey is the most attractive country for G7 investors as a location for FPI. Saudi Arabia ranks second.

The remainder of this paper is organized as follows: Section two presents the theoretical basis of the gravity model applied to bilateral asset holdings. It also reviews most important works related to it. Section three describes the AHP and the GP model and presents some of their applications. Section four describes the data and the three-step methodology based on the combination of the gravity model, the AHP approach and the GP optimizer. Section five analyzes the results and compares them to earlier studies. Section six concludes and gives important recommendations to policy makers.

2. Gravity Model of International Portfolio Holdings

Following the success of the gravity model in explaining bilateral trade patterns, recent empirical analysis have shown that asset flows can also be modeled by the same gravity equation.

2.1 The theoretical basis

From a theoretical standpoint, Martin and Rey (2004) propose a two period model where a gravity equation of international trade in assets is revealed. They presume incomplete asset markets, iceberg costs in financial markets and endogenous asset creation. The main implication of their model is that gross flows of asset trade between two countries should depend inversely on transaction costs (banking commissions and variable fees, exchange-rate transaction costs and information costs) between two countries and proportionally on market size. Based on a simplified version of this model, Aviat and Coeurdacier (2007) have derived a financial version of the gravity equation for the bilateral asset holdings for N countries[3]. They assume that the number of projects in each country is exogenous and equals to the number of agents. Each country i $(0 \leq i \leq N)$ is populated with n_i risk averse investors. In the

[3] See also Faruquee, Li and Yan (2004) and Coeurdacier and Martin (2009) for a derivation of financial gravity equation in a related framework.

first period, agent *h* in country *i* (h_i) is endowed with y_i units of freely traded goods and a risky project x_{h_i} which he can choose to consume, sell shares of his project, or buy shares of other agents' projects . When agents in country *i* purchase shares of a project run in country *j*, they pay $p_j(1+\tau_{ij})$[4]. In the second period, there are *L* equally likely states of nature. The risky project x_{hi} pays $\delta_{mhi}d_i$ in state $m, m \in \{1,...,L\}$, where, $\delta_{mhi} = 1$ if $h_i = m$ and zero otherwise. This assumption makes assets imperfect substitutes and diversification improves safety. The total number of projects in the world is $M = \sum_{j=1}^{N} n_j$. *M* is always lower than *L* which means that markets are incomplete.

By maximizing the following two-period utility function subject to budget constraint for an agent *h* in country *i*, Aviat and Coeurdacier (2007) have found the gravity equation for portfolio asset holdings.

$$\underset{\{c_1,h_i,(x_{h_i}^j)\}}{Max} \; E(U_{h_i}) = \left\{ c_1, h_i + \beta E\left(\frac{c_{2h_i}^{1-1/\sigma}}{1-1/\sigma} \right) \right\} \qquad (1)$$

$$s.t.: c_1 h_i + \sum_{j=1}^{N} n_j p_j (1+\tau_{ij}) x_{h_i}^j = y_i + p_i$$

Where β is the rate of discount of the future; σ is the inverse of risk aversion degree; c_1 and c_2 are respectively the consumption in the first and the second period and $x_{h_i}^j$ is the demand of agent h_i located in country *i* for an asset developed by agent h_j located in country *j*.

The gravity equation is:

$$log(Asset_{ij}) = log(n_i n_j) - (\sigma - 1) log(1+\tau_{ij}) + (\sigma - 1) log(R_j) + log(\beta^{\sigma} / L) + \varepsilon_{ij} \qquad (2)$$

The first term reflects market sizes of both investing and host countries. The second term is related to trading costs in financial markets. The third term is a "return chasing" component and the last term is a constant.

2.2 Previous research

The gravity model has been applied successfully to study the determinants of different types of capital flows between two countries such as FDI and FPI.

2.2.1 Gravity model and FDI

Stone and Jeon (1999) investigate whether the gravity model can be used to estimate bilateral flows of FDI. Their log-linear FDI equation stipulates that FDI from source to host country can be determined by supply conditions at the home country, by demand conditions in the receiving country, and by other economic forces assisting or resisting the flow movements. Stone and Jeon (1999) use 200 observations of bilateral FDI flows in the Asia-Pacific region each year during 1987–1993 and find that FDI are driven more by market size and income in source country than by factors in the receiving country. Buch, Kokta, and Piazolo (2003) investigate FDI redirection from Southern Europe to the Central and Eastern countries using panel datasets for the year 1980 to 1999. They use an empirical gravity model to compare expected and actual FDI stocks and conclude with the absence of evidence of FDI redirection

[4] τ_{ij} is an iceberg cost that features the frictions on international financial markets , τ_{ii} is assumed equal zero.

between these two regions. Bevan and Estrin (2004) use the gravity model and a panel dataset from 1994–2000 to study the determinants of FDI from Western countries (mainly in the European Union) to Central and Eastern European countries. They find that FDI is related positively to GDP of both source and host countries, and correlated negatively to the distance, and to labor unit costs.

Frenkel, Funke, and Stadtmann (2004) study the determinants of FDI flows from the five largest countries worldwide to a number of emerging economies in Asia, Latin America, and Central and Eastern Europe using a panel analysis and different specification of gravity model. They conclude that, while market size and distance play an important role for FDI flows, risk and economic growth factors in host countries are also fundamental for attracting foreign investors. Recently, Kreinin and Plummer (2008) use an augmented gravity model to evaluate the effect of regional integration on FDI outflows from the US, Japan, France, and Germany. Their results show the presence of a positive effect of regional integration on FDI. Also, FDI and trade are substitutes in a significant number of cases but complements in some cases.

2.2.2 Gravity model and FPI

Faruqee, Li and Yan (2004) use the IMF survey dataset of cross-border equity holdings at the end of 1997 to study the determinants of international portfolio holdings. They find that market size, transaction costs and information asymmetry are major determinants of cross-border portfolio choice. Vlachos (2004) uses an empirical gravity model to study the impact of cross-country differences in securities regulation on bilateral asset holdings. His results show that bilateral differences in securities regulation lead to decreased portfolio holdings. Portes and Rey (2005) explore a panel dataset on bilateral gross cross-border equity flows between 14 countries for the period 1989–1996 and find that market size in source and destination country, efficiency of the transaction technology and distance are the most important determinants of transaction flows.

Aviat and Coeurdacier (2007) use a simultaneous gravity equations framework to study the complementarities between bilateral trade in goods and bilateral asset holdings. They conclude that bilateral trade in goods generates bilateral asset holdings and vice versa. Mishra (2007) analyzes the bilateral, source and host factors driving portfolio equity investment across countries using the International Monetary Fund's dataset on international equity holdings at the end of the years 1997, 2001 and 2002. His empirical results show that bilateral equity investment is strongly correlated with the underlying patterns of trade conforming to Aviat and Couerdacier (2007). Information asymmetries and cultural-institutional proximity, such as a common language and a common legal origin are also important for bilateral equity investment. Lane and Milesi-Ferretti (2008) apply a gravity model that links bilateral equity holdings to bilateral trade in goods and services. They use data on international equity holdings at the end of 2001 and find a positive correlation between equity holdings and trade which confirm the results of Mishra (2007) and Aviat and Couerdacier (2007).

Papaioannou (2009) uses a gravity model and a large panel dataset to study the determinants of international financial flows from banks. He finds that the presence of low performance institutions is the major barrier to foreign bank capital. Hahm and Shin (2009) employ gravity model and a unique dataset to investigate the pattern of bilateral cross border asset holdings. Their results show the presence of complementarities between portfolio equity holdings, short term and long term debt, and bank loans. These complementarities are partially explained by standard gravity variables such as, economic size and distance.

From the above discussion, the attracting factors of FPI can be different from those attracting FDI or at least having a different degree of consideration by investors and hence, the attractiveness of a country to FPI can be different from the FDI attractiveness. Guerin (2006)

uses the gravity model to investigate the determinants of FDI, trade and portfolio investment flows and finds that geographical factors have a significant role in explaining FDI and portfolio investment as well as trade. Furthermore, portfolio investment flows are more sensitive to changes in GDP per capita than FDI. Daude and Fratzsher (2008) study whether there is a natural pecking order in cross-border investment and focus on the impact of information frictions and institutions on the trade of financial assets (FDI, loans and portfolio investment). Their results show, that FDI is most sensitive to information frictions and portfolio investment to market development and institutions features.

3. Analytic Hierarchy Process and Goal Programming

3.1 Analytic hierarchy process

Developed by Saaty (1980), the AHP method is a simple decision analysis model appropriate to complex, unrestricted and multi-attribute problems. The AHP has three basic steps: structuring the hierarchy, setting priorities and maintaining logical consistency.

- - Structuring the hierarchy: consists of the decomposition of the overall goal into a number of factors and sub factors. The top level of the hierarchy refers to the goal. The subsequent levels include the elements that affect the decision (called attributes or criteria). The bottom level consists of the decision alternatives.
- - Setting priorities: consists of determining, for each level of the hierarchy, the relative importance between each pair of factors. The pairwise judgment starts from the second level to the lowest. A nine-point scale is commonly used for these evaluations as shown in Table 1 (Saaty, 1980; 1982).
- - Maintaining logical consistency: while the comparison of different factors is based on subjective measures, the coherence is not guaranteed. To solve this problem, the AHP requires the evaluation of the pairwise comparison matrices. A standardized eigenvector is extracted from each matrix, allowing us to assign weights to criteria and alternatives.

Several studies have used the AHP method. Levary and Wan (1999) employ the AHP to develop a methodology for choosing the most appropriate entry mode for an individual firm considering FDI. Saraoglu and Setzler (2002) use the AHP as a method to solve the complex problem of selecting mutual funds. Meziani (2003) uses the AHP to evaluate market barriers to cross-border investment. He argues that optimal international portfolio can be constructed by selecting national markets having the least important barriers. Lai and Fisher (2006) use the AHP to determine the criteria explaining the localization of foreign real estate investors in Taiwan. Le (2008) employs the AHP to formalize a process to determine the suitability of a potential investment portfolio to a potential investor.

3.2 The GP model

The GP is a technique used for optimizing problems that have multiple conflicting criteria. The standard version of GP was introduced initially by Charnes, Cooper and Ferguson (1955) and more explicitly defined by Charnes and Cooper (1961). Since then, important extensions and numerous applications have been proposed.

The standard GP is presented as follows:

Minimize:

$$Z = \sum_{i=1}^{p} \left(d_i^- + d_i^+ \right) \tag{3}$$

Subject to:

$$f_i(x) + d_i^- - d_i^+ = g_i, \quad i = 1 \ldots p, \qquad \mathrm{x} \in \mathrm{X}, \tag{4}$$

$d_i^- \text{ and } d_i^+ \geq 0.$

Where $f_i(x)$ is a linear function (objective) of x, and g_i the target value for that objective. d_i^- and d_i^+ represent the negative and positive deviations from this target value. X is the set of achieved solutions.

Several studies have applied the GP to the portfolio choice problem. GP models offer to investors an increased flexibility and control over how they compute optimal portfolios by allowing them to simultaneously set targets for both return and risk, Nichols and Ravindran (2004). Parra, Terol and Uría (2001) apply a fuzzy GP to the problem of portfolio selection for a private investor taking into account three criteria: return, risk and liquidity. Lai (1991), Chunhachinda, Dandapani, Hamid and Prakash (1997), Prakash, Chang and Pactwa (2003), and Canela and Collazo (2007) apply the polynomial GP method to the portfolio selection problem in presence of skewness.

3.3 The combined AHP-GP model

The combined AHP-GP model implements the AHP results in a GP framework. Badri (1999) show how a combined AHP and GP model can be used to aid in global-location-allocation decisions. He first applies the AHP model to prioritize the set of location alternatives with respect to four criteria; political situation, global competition, government regulations, and economic related factors. Then, he uses a goal programming model by considering the AHP results as a ranking system and resources limitations faced by the organization when making location-allocation decisions. Badri (2001) uses a combined AHP-GP model to select the optimal set of service quality control instruments. Bertolini and Bevilacqua (2006) propose a combined AHP-GP model to the selection of maintenance strategies for the centrifugal pumps of an oil refinery plants. The AHP is used to provide the priority levels of the three maintenance strategies (corrective, preventive and predictive) with respect to three criterions: occurrence, severity and delectability. The combined AHP-GP model is used to investigate the maintenance selection problem taking into account the resources burden and the priority level of the different maintenance alternatives.

4. Data and Methodology

4.1 Data description

Our datasets concern the year 2001 and 2005 respectively for the gravity model and the AHP method. Data on the GDP rate growth for the years 2003–2006 are collected from the Word Development Indicators (WDI) and used to run the GP optimizer. Geographical data concerning the total portfolio investments (equity, long term and short term debt securities) and collected from the newly released Coordinated Portfolio Investment Survey (CPIS) undertaken by the IMF in the end of 2001[5]; are used to estimate the gravity equation of bilateral asset holdings. These datasets are now available for the period 2002–2007 but they are not derived from benchmark surveys in all countries (Lane and Milesi-Ferretti, 2008). Data used is limited to 30 investing countries and 43 receiving ones.

Table 2 shows that the most important average of bilateral asset holdings for the year 2001 is for US investors with 47,037 million US dollars. The most important amount of foreign assets held by US investors correspond to UK assets with 512,975 million US dollars. Also, the most important amount of US assets is held by UK investors. Malaysia has the least important average of bilateral asset holdings with 42 million US dollars. The most important amount of assets held by Malaysian investors corresponds to Russian assets with 471 million

[5] http://www.imf.org/external/np/sta/pi/geo.htm.

US dollars. Thus, there is preliminary evidence of the role of geographical proximity in the explanation of international investment patterns.

In order to explain the international asset investment patterns, we use two types of variables; standard gravity model variables and the barriers to international investment. Gravity variables are the GDP in US dollars obtained from the World Development Indicators (WDI) and the geographical distance between two main cities in kilometers are from www.nber.org/~wei[6]. Barriers to international investment variables concern many factors. First the restrictions on investment measured by the investment freedom constructed by the Economic Freedom Network[7].Values vary from zero to 100 with 100 meaning that foreign investment is encouraged and treated the same as domestic investment. Second the information determinants of trade in assets measured by the cost of international phone calls per five minutes[8]. Given skype and website information, the cost of phone call is not the unique and perfect proxy to information cost but the limited availability of bilateral internet traffic and the link between the phone cost and internet access especially in emerging countries, the cost of phone call is shown to be a reasonable determinant in investment decision, (Eichengreen and Luengnaruemitchai, 2006). Mishra (2007) uses phone cost as a proxy for information costs. "Phone cost reflects both the cost component of the information friction (price of calls) and a cultural one (links between two countries because of immigration, tourism, etc.)"[9]. Third the amount of bilateral trade (imports and exports) between countries to measure the degree of familiarity. Data is obtained from the United Nations Statistics Division Databases. Fourth, we use the index of institutional quality which is a simple average of six governance indicators (voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption)[10]. These variables are obtained from Kaufman, Kraay and Zoido-Lobaton (2006). The indicators cover 213 countries and territories for 1996, 1998 and 2000, and the years from 2002 to 2005. The variables range from -2.5 to 2.5 with a mean of zero and a standard deviation of one. The larger the values, the better they indicate their institutional quality. Before we use this information, we proceed with a transformation by using exponential function to eliminate negative values. Finally, we consider the liability for self-dealing index (director liability index) to measure the strength of minority shareholder protections against misuse of corporate assets by directors for their personal gain. Djankov, La Porta, Lopez-De-Silances, and Shleifar (2008) present an anti-self dealing index to measure the protection of minority shareholders. The index used in this paper is from the World Bank's Doing Business. Values range from zero to ten, with higher value indicating greater liability of directors.

Table 3 presents data of four explanatory variables for each of 43 host countries. The US has the highest value of GDP (million $US 10,019,700) and New Zealand the lowest (million $US 51,389). The most important value of investment freedom is for Germany, Hong Kong, Netherlands, New Zeeland, and Singapore with a value of 90. This value means that there are very few restrictions on foreign investment in sectors related to national security. Values of the liability for self-dealing range from 1 for China and France to 9 for five countries: Canada, Malaysia, New Zealand, Singapore and the United States. Institutional quality variables vary from 0.39 (Pakistan) to 6.30 (Switzerland).

[6] The data are used in Frankel and Wei (1998).

[7] http://www.heritage.org.

[8] http://www.phone-rate-calculator.com.

[9] Mishra (2007).

[10] The same measures have been used by Faria, Mauro, Minnoni and Zaklan (2006) and Wei (2006).

Table 4 presents descriptive statistics of geographic distance, information costs, and bilateral trade for each of 30 investing countries. Average values of information costs range from US$ 0.78 (US) to US$ 4.46 (Malaysia). Average values of distance vary from 5,843 kilometers for Austria to 13,996 for New Zealand and average values of bilateral trade vary from 581 million US dollars for New Zeeland to 40,601 million US dollars for US.

Table 5 presents the correlation matrix of explanatory variables for the year 2001. The most important correlation coefficient is between the GDP of investing countries and bilateral trade with a value of 0.533.

4.2 Methodology and analysis

In order to determine the level of portfolio investment in MENA countries from the G7 investors' viewpoints, we use a methodology based on three steps: the first is based on the gravity model, the second on the AHP and the third on the GP optimizer.

4.2.1 The gravity model

The gravity model has a standard specification in the empirical literature on the determinants of bilateral trade, and has also been recently used to bilateral equity flows and bilateral equity holdings. It states that bilateral asset holdings depend on the product of the GDPs of both economies and the distance between them, in analogy to Newton's gravitational attraction between two bodies. In general, empirical studies show the importance of market size for both source and receiving countries as well as distance in the explanation of international investment patterns (Portes and Rey, 2005; Aviat and Coeurdacier, 2007; Hahm and Shin, 2009).

Beyond standard gravity variables, there are many other factors that can affect the attractiveness of a country as a location for FPI. Ahearne, Griever and Warnock (2004) suggest that although capital controls have been greatly reduced in many countries, they still affect bilateral asset investment. Lane and Milesi-ferretti (2008) show that bilateral equity holdings are strongly correlated with bilateral trade in goods and services. Mishra (2007) reveals that information asymmetries are important for cross-border investment. Portes and Rey (2005) argue that the geographical information is the main determinant of the international transaction pattern. Thapa and Poshakwale (2009), show that investor protection has a positive impact in attracting foreign equity investment. Faria, Mauro, Minnoni and Zaklan (2006) give evidence that countries with good institutions are likely to attract more equity-like capital flows (FDI and portfolio equity flows) than other types of capital. Wei (2006) shows that better institutional quality leads to a higher share of FDI and portfolio debt in total capital flows, but a lower share of foreign loans.

The basic regression specification used in this paper is:

$$\begin{aligned} ln(PFINVEST_{ij}) = {} & CONSTANT + \beta_1 ln(GDP_i) + \beta_2 ln(GDP_j) + \beta_3 ln(DIST_{ij}) \\ & + \beta_4 ln(INVFRE_j) + ln\,\beta_5(INFOR_{ij}) + \beta_6 ln(TRADB_{ij}) + \beta_7 ln(DLIAB_j) \\ & + \beta_8(IQULT_j) + \varepsilon_{ij} \end{aligned} \tag{5}$$

This empirical specification establishes a log linear relationship between the endogenous variable measured by the total portfolio investment of country *j* held by the residents of country *i* in million US dollars (*PFINVEST*); and a set of exogenous variables measured by the gross domestic product at current price of country i in million US dollars (*GDP*); the physical distance in kilometers between the capital cities of country *i* and *j* (*DIST*); the investment freedom (*INVFRE*); the information costs measured by the cost of phone calls per five minutes from a country *i* to a country *j* in US dollars (*INFOR*); the amount of bilateral

trade between country *i* and country *j* in million US dollars (*TRADB*); the liability for self-dealing (*DLIAB*); and the institutional quality (*IQULT*).

4.2.2 The AHP method

The AHP application needs initially to turn the multi-criteria decision-making problem into a hierarchical problem (Figure1).

This hierarchy contains factors that influence FPI. The first level of the hierarchy identifies the objective: selecting the best destination country for FPI. We consider the viewpoint of the G7 investors: Canadian, French, German, Italian, Japanese, British, and American investors. The second level is relative to the criteria used to achieve the overall objective. These variables are selected from the significant factors that affect bilateral asset holdings according to the outcome of the gravity model. These are: information costs, bilateral trade, investment freedom, GDP, institutional quality, and geographic distance. The third and final level lists the suggested national markets of which this portfolio will be constructed. Seven markets are selected from the Middle East and North Africa (MENA) region. These markets are Algeria, Egypt, Iran, Morocco, Saudi Arabia, Tunisia and Turkey. Once the problem has been analyzed and the hierarchy constructed, we turn to a prioritization process in order to determine the relative importance of criteria (second level). The AHP uses pairwise comparisons to establish priority weights for all elements in the hierarchy. It does not need a formal dataset. Qualitative judgments are determined according to two things: The sensitivity of the bilateral asset holdings to each factor which is determined by the gravity model and the pairwise comparison scale initially elaborated by Saaty (1982) (Table 1). The best country from the G7 investors' point of view depends on the weight assigned to each criteria.

We will then state the consistent nature of the pairwise comparisons by computing the consistency index (*CI*) using the following formula:

$$CI = (\lambda max - s) / s - 1 \quad (6)$$

Where *CI* is the consistency index of the pairwise comparison matrix, s is the size of the comparison matrix, and λmax is a dominant real positive eigenvalue. Then, we calculate the consistency ratio (*CR*):

$$CR = CI / RCI \quad (7)$$

Where RCI is a random consistency index provided in Table 6.

A CR value that is lower than 0.10 is generally acceptable, otherwise, the pairwise comparison must be revised.

Once, the priority weights of each criterion are determined, we use quantitative data for the year 2005 to determine the priority weight of each of the seven MENA countries according to each criterion. The pairwise comparison being done, the weight of each country is directly determined with the AHP model.

4.2.3 The combined AHP-GP model

Based on these weights from the AHP procedure, the GP optimizer is used to determine the optimal country-portfolio composed of the seven considered MENA countries. The combined AHP and GP model provides a comprehensive way to assess to what extent G7 investors are willing to invest in MENA countries in a global-local-allocation setting. We consider that investors from G7 aim to maximize the return of their MENA investment measured by the GDP relative growth rate, and the proportions obtained from the AHP model are considered also as objectives in the GP model.

The combined AHP-GP model can be stated as follows:

Minimize:

$$O = d_r^- + \sum_{i=1}^{7} \left(d_i^- + d_i^+ \right) \quad (8)$$

Subject to:

$$\sum_{i=1}^{7} x_i r_i + d_r^- = r^*; \quad (9)$$

$$x_i + d_i^- - d_i^+ = X_i \text{ for } i = 1,...,7; \quad (10)$$

$$\sum_{i=1}^{7} x_i = 1; \quad (11)$$

$$x_i \geq 0; \quad (12)$$

$$d_i^- \geq 0; \quad d_i^+ \geq 0. \quad (13)$$

Where:

r_i : the rate of the GDP growth of country i ;

x_i : weight of country i in the optimal portfolio;

X_i : weight of country i in the portfolio obtained with AHP method;

r^* : the maximum rate of GDP growth;

d_i^- : non-negative variables which represent the negative deviation from the objective;

d_i^+ : non-negative variables which represent the positive deviation from the objective;

d_r^- : non-negative variables which represent the negative deviation from the maximum rate of GDP growth.

5. Results Analysis

5.1 Results concerning the gravity model

Table 7 shows that, with respect to the gravity model estimation for 30 investing and 43 receiving countries, all variables except for the director liability index (DLIAB) are significant. The adjusted R^2 equals 70.24% and the F-statistics is 329.143. The three gravity standard variables have significant coefficients. The coefficient estimates of market size (GDP) are positive and significant at 1% level. This may illustrate the importance of the market size in explaining the bilateral asset holdings. The coefficient estimate of the distance variable is negative and significant at 10% level. Results show also the importance of the information costs and bilateral trade in explaining the distribution of asset holdings. The coefficient linked to information costs is the most important with a value of -1.814 and the coefficient linked to bilateral trade equals 0.825. These results confirm those of Lane and Milesi-Ferretti (2008). Furthermore, institutional quality affects bilateral asset holdings; the coefficient linked to institutional quality is positive and equal to 0.083 with a t-statistic equal to 2.434 indicating that institutional quality plays an important role in attracting international investors.

5.2 Results concerning the AHP method

Table 8 represents the comparison matrix of the barriers to international investment. The vector of priority weights (column 8) describes the relative importance of one criterion over

another. The bottom row shows the consistency ratio (0.054) which is lower than the acceptable upper limit (0.10), (Saaty, 1982).

Regarding table 8, results show that the information costs are considered by international investors as the most important factors in determining the attractiveness of a country for FPI and that geographic distance is the least important one. The information costs turned out to be more important than the institutional quality and the GDP in the determination of the best destination country. The vector of priority weights shows that information costs and bilateral trade are more important than other factors in shaping international investment patterns.

The priority weights of the MENA countries for G7 investors according to each criteria are presented in Tables (9-a) and (9-b). According to the information costs criteria, Saudi Arabia is the most attractive market for all G7 investors, except American investors, where the preferable country is Turkey. With respect to bilateral trade criteria, Algeria is the most attractive for Canadian and French investors, Turkey for German, Italian, and British investors, and Saudi Arabia for Japanese and American investors. For the investment freedom criteria, Morocco has the most important priority weight for G7 investors and Iran, Saudi Arabia, and Tunisia have the least. According to the gross domestic product, Turkey is the most attractive country for G7 investors and Tunisia is the least. With respect to institutional quality, G7 investors prefer Turkey better than any other destination. Iran has the least priority weight. According to geographic distance, Canadian and American investors prefer Morocco. French and British investors opt for Algeria. German and Italian investors choose to invest in Tunisia.

The overall priorities of each of the seven MENA countries for G7 investors are presented in Table 10.

The priority of each of the seven MENA markets for G7 investors as an asset portfolio destination according to the criteria, priority weights and market priority weights with respect to all criteria (AHP model), shows that Saudi Arabia is the most attractive country for Japanese and American investors, Turkey is the favorite country for French, German, Italian and British investors. Canadian investors prefer Algeria. Petroleum resources may explain the findings related to Saudi Arabia and Algeria.

5.3 Results concerning the combined AHP-GP model

Table 11 presents the weights of the seven MENA countries in the optimal asset portfolio for G7 investors where short sales are not allowed for the period 2003–2006. Results show that for the year 2003, Egypt, Tunisia, and Turkey are not included in the optimal portfolio for any G7 investor. Saudi Arabia is the most dominant component, with a weight varying from 54.6 % for Canadian investors to 64.7% for British investors. For the year 2004, optimal portfolio for G7 investors consists of investing all of the wealth in Turkey. This may be due to the high Turkish GDP growth rate (9 %) compared to other countries in the sample. For the year 2005, optimal portfolio is composed only of Saudi Arabia and Turkey knowing that in the first country, the largest component varies from 71.9 % for Japanese investors to 85% for German investors. For the year 2006, only Egypt and Morocco are included in the optimal portfolio. Morocco is the most dominant component. For the period 2003–2006, Algeria and Egypt are not included in the optimal portfolio. Turkey is the dominant country with a value varying from 36% for Japanese investors to 50.3 % for Canadian investors. Saudi Arabia has the second largest component in all G7 investors.

6. Conclusion and Recommendations

MENA countries receive a comparatively limited amount of foreign investments because of institutional and regulatory barriers. However thanks to stock market modernization and

liberalization, state owned firms' privatization, regulatory improvements and huge reform programs, most of MENA countries have managed to reach an undeniably high level of financial development and stabilization.

In this paper we try to evaluate the relative attractiveness of seven MENA countries (Algeria, Egypt, Iran, Saudi Arabia, Morocco, Tunisia and Turkey) as a location for FPI from the G7 investors' viewpoints. The methodology used is composed of the gravity model, the AHP method and the GP optimizer. The gravity model measures the attractiveness sensitivity factors of a country with respect to foreign portfolio investment for 30 investing and 43 receiving countries for the year 2001. The basic gravity variables were considered as well as several other barriers to international investment. These variables are the GDP, geographic distance, investment freedom, information costs, bilateral trade, institutional quality and the liability of self-dealing. Results show the importance of information costs and bilateral trade in the determination of the bilateral asset holdings. The AHP method is applied to prioritize the set of FPI location alternatives from the different viewpoints of G7 investors according to significant variables in the gravity model outcome. Except for the liability of self-dealing, all other variables are significant. We have used qualitative judgments and quantitative data for the year 2005 to determine respectively the relative importance of criteria and alternatives. Results show that Saudi Arabia is the most attractive country for Japanese and American investors, Turkey is the favorite location for French, German, Italian and British investors and Algeria is the preferred destination for Canadians. The GP involves both the priority levels of MENA countries and the objective of return maximization. It has been used to determine the degree of portfolio investment in each MENA country from the viewpoint of G7 investors for the period 2003–2006. Results show that the relative attractiveness of MENA countries is time-varying. However, MENA countries have approximately the same degree of attractiveness from the G7 investors' viewpoints. In general, the most attractive country for FPI is Turkey. Saudi Arabia ranks second. For a MENA country to attract more FPI, it should especially improve bilateral trade and institutional quality, reduce foreign investment restrictions and information costs and limit corruption and bureaucratic radical beliefs. The importance of petroleum resources may play a central role in attracting countries such as Saudi Arabia and Algeria.

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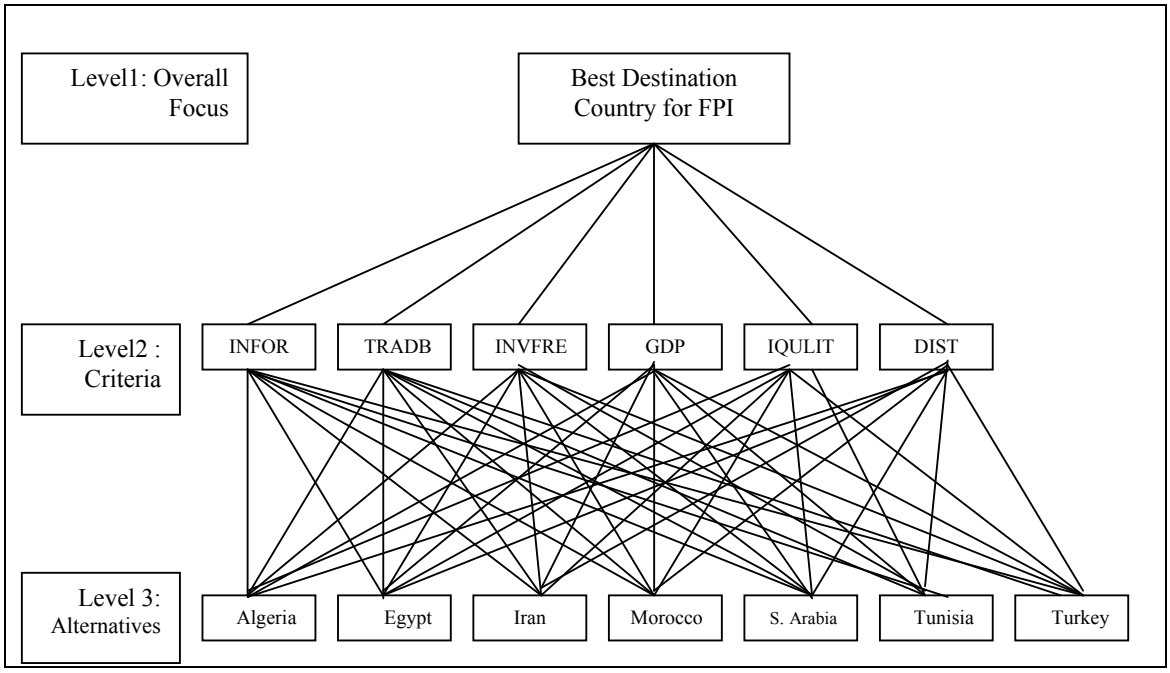
Figure1: Hierarchy of the Best Destination Country for Foreign Portfolio Investment



Where: INFOR: information costs; TRADB: bilateral trade; INVFRE: investment freedom; GDP: gross domestic product; IQUALT: institutional quality; DIST: geographic distance.

Table 1: Saaty's Nine-Point Scale and Its Explanation

Intensity of importance	Definition	Explanation
1	Equal importance of both elements	Two elements contribute equally to the property
3	Weak importance of one element over another	Experience and judgment slightly favor one element over another
5	Essential or strong importance of one element over another	Experience and judgment strongly favor one element over another
7	Demonstrated importance of one element over another	An element is strongly favored and its dominance is demonstrated in practice
9	Absolute importance of one element over another	The evidence favoring one element over another is of the highest possible order of affirmation
2,4,6,8	Intermediate values between two adjacent judgments	Compromise is needed between two judgments
Reciprocals of the above non-zero numbers	If activity i has one of the above non-zero numbers assigned to it when compared with activity j, then j has the reciprocal value when compared to i	

Source: Saaty (1982).

Table 2: Descriptive Statistics of Geographic Breakdown of Total Portfolio Investment Assets in Millions of U.S. Dollars (2001)

Source Country	Mean	St. dev.	Max	Min	Source Country	Mean	St. dev.	Max	Min
Argentina	274	1648	10694	0	Japan	23972	78067	490200	7
Australia	1857	6993	44446	0	Korea Republic	157	582	3764	0
Austria	2226	5320	30472	0	Malaysia	42	103	471	0
Belgium	5020	10421	41632	0	Netherlands	10988	25563	142411	2
Brazil	96	351	1878	0	New Zealand	289	921	5268	0
Canada	5910	23644	152701	1	Norway	2295	4940	26850	0
Chile	90	401	2610	0	Portugal	1044	1586	5879	5
Czech Republic	72	145	601	0	Singapore	2988	4473	18011	1
Denmark	1931	4086	21117	7	South Africa	988	3518	16585	0
Finland	2320	2817	8275	11	Spain	4021	7986	32783	1
France	14459	28430	116530	0	Sweden	3119	8510	51144	0
Germany	15168	27558	108168	0	Switzerland	7386	17017	83054	4
Greece	133	291	1284	0	United Kingdom	27329	56177	308986	39
Hong Kong	3284	8067	39253	0	United States	47037	91036	512975	180
Italy	8516	17441	74001	3	Venezuela	185	611	2123	0

Table 3: Descriptive Statistics of Host Country Factors (2001)

Host Country	GDP (Millions $)	Investment Freedom	Institutional Quality	Director Liability
Argentina	268697	70	0.53	2
Australia	368762	70	5.06	2
Austria	189580	70	4.96	5
Belgium	227543	70	4.32	6
Brazil	508433	50	0.97	7
Canada	694475	50	5.16	9
Chile	66450	70	3.42	6
China, P.R.	1175716	30	0.67	1
Czech Republic	57186	70	2.16	5
Denmark	159234	70	6.04	5
Egypt	98476	50	0.64	3
Finland	121512	70	6.94	4
France	1320421	50	3.40	1
Germany	1853406	90	4.64	5
Greece	117160	70	2.23	3
Hong Kong	162833	90	2.95	8
Hungary	51834	70	2.47	4
India	478524	30	0.77	4
Indonesia	141255	50	0.40	5
Italy	1091844	70	2.42	4
Japan	4175595	50	3.02	6
Korea, Republic	481969	70	1.89	2
Malaysia	87976	30	1.45	9
Mexico	622328	50	1.07	5
Netherlands	384043	90	6.01	4
New Zealand	51389	90	5.86	9
Norway	169780	50	5.54	6
Pakistan	58765	50	0.39	6
Philippines	72043	50	0.74	2
Poland	185788	70	1.88	2
Portugal	110046	70	3.54	5
Russian Fed	306603	50	0.53	2
Singapore	84871	90	5.18	9
South Africa	114233	70	1.36	8
Spain	583119	70	3.31	6
Sweden	219439	70	5.84	4
Switzerland	245839	70	6.30	5
Taiwan	N.A	50	2.37	4
Thailand	115544	70	1.15	2
Turkey	145244	70	0.73	4
United Kingdom	1429665	70	4.89	7
United States	10019700	70	3.74	9
Venezuela	126197	50	0.40	3

Table 4: Descriptive Statistics of Bilateral Factors (2001)

Investing	Geographic Distance (Km)				Information Costs($)				Bilateral Trade (Millions $)			
Country	Mean	St. dev.	Max	Min	Mean	St. dev.	Max	Min	Mean	St. dev.	Max	Min
Argentina	12274	4262	19646	1133	2.87	0.71	5.56	2.27	992	2054	11483	19
Australia	12726	4282	18194	2229	1.94	0.80	4.73	1.25	2611	4316	20135	8
Austria	5843	4805	18171	217	1.66	0.71	4.13	1.12	2822	7565	47942	45
Belgium	5970	4954	18744	174	1.85	0.80	4.65	1.18	8217	15961	64957	268
Brazil	11417	4314	18817	1683	2.93	0.80	5.74	2.27	2405	4664	27975	60
Canada	8745	3752	15880	1037	1.28	0.80	4.07	0.60	11288	57116	367458	133
Chile	12595	4183	18873	1133	3.74	0.80	6.54	3.06	763	1267	6460	8
Czech Repub	N.A	N.A	N.A	N.A	3.16	0.71	5.64	2.63	1468	3890	24750	9
Denmark	5879	4773	17977	485	1.35	0.80	4.15	0.67	1969	3552	18851	54
Finland	5967	4439	17094	399	2.22	0.80	5.02	1.54	1660	2305	10130	38
France	6049	4969	19005	262	1.50	0.80	4.29	0.82	12328	19706	90467	449
Germany	5916	4938	18620	195	1.21	0.80	4.00	0.53	22482	27491	105433	873
Greece	6109	4427	17537	819	2.50	0.81	5.31	1.83	715	1102	5080	13
Hong Kong	8403	4710	18700	810	1.47	0.71	3.94	0.93	8830	25891	157802	191
Italy	6044	4775	18562	696	1.50	0.80	4.29	0.82	9731	15581	77717	378
Japan	8809	3992	18547	1158	2.58	0.80	5.38	1.90	15293	31577	185953	433
Korea Rep	8324	4301	19443	885	1.74	0.71	4.21	1.20	4910	9170	43135	172
Malaysia	8846	4571	18058	318	4.46	0.80	7.26	3.79	3537	6907	29655	23
Netherlands	5956	4922	18585	174	1.64	0.80	4.44	0.96	7200	12777	67206	296
New Zealand	13996	4512	19871	2229	1.46	0.71	3.94	0.93	581	1139	5512	7
Norway	5997	4633	17689	416	1.79	0.80	4.58	1.11	2096	3414	14157	32
Portugal	6776	4831	19593	504	2.43	0.81	5.23	1.76	1428	3029	15455	33
Singapore	9013	4608	18371	318	1.78	0.80	4.58	1.11	5043	9498	41227	64
South Africa	9536	2024	14608	6219	1.72	0.71	4.21	1.20	782	1100	4749	16
Spain	6513	4900	19871	504	1.78	0.80	4.58	1.11	5744	10298	48625	160
Sweden	5931	4585	17461	399	1.42	0.80	4.22	0.74	3153	4483	19341	103
Switzerland	6016	4942	18970	414	1.28	0.80	4.07	0.60	3730	7518	43138	125
U K	6093	4925	18834	319	1.50	0.80	4.29	0.87	12681	19441	87988	691
United States	9217	3526	15810	1037	0.78	0.68	3.67	0.22	40601	73656	383825	1811
Venezuela	10467	4484	19191	3598	4.00	0.71	6.49	3.48	775	3078	19852	2

Table 5: Correlation Matrix of Explanatory Variables (2001)

	GDPI	GDPJ	DIST	INVFRE	INFOR	TRADB	IQULIT	DLIAB
GDPI	1							
GDPJ	-0.027	1						
DIST	-0.053	0.076	1					
INVFRE	-0.001	-0.121	-0.042	1				
INFOR	-0.360	-0.193	0.116	-0.303	1			
TRADB	0.533	0.514	-0.204	0.026	-0.478	1		
IQULIT	-0.008	0.107	0.039	0.522	-0.458	0.191	1	
DLIAB	-0.001	-0.061	0.106	0.230	-0.145	0.006	0.356	1

Where: INFOR: information costs; TRADB: bilateral trade; INVFRE: investment freedom; GDP: gross domestic product; IQUALT: institutional quality; DIST: geographic distance.

Table 6: RCI Value of Sets of Different Order S

S	1	2	3	4	5	6	7	8	9
RCI	0	0	0.58	0.90	1.12	1.24	1.32	1.41	1.45

Source: Saaty (1982).

Table 7: Bilateral Portfolio Asset Holdings (2001)

Variable	Coefficient	t-statistic
Constant	-12.023	-7.592
$\ln(GDP_i)$	0.376	6.203***
$\ln(GDP_j)$	0.405	6.536***
$\ln(DIST_{ij})$	-0.054	-1.667*
$\ln(INVFRE_j)$	0.572	2.342**
$\ln(INFOR_{ij})$	-1.814	-14.210***
$\ln(TRADB_{ij})$	0.825	16.970***
$\ln(DLIAB_j)$	0.058	0.555
$IQULIT_j$	0.083	2.434**
Adjusted R^2	0.702	
F-statistic	329.14	

Where: Dependant variable is log of 1+ total asset of country j (in millions of US dollars) held by the resident of country i[11]. Explicative variables are log of GDP of investing country (ln GDP_i) , and receiving country (ln GDP_j), log of geographic distance in kilometers between country i and country j (ln $DIST_{ij}$), log of investment freedom (ln $INVFRE_j$), log of phone costs by five minutes between county i and country j (ln $INFOR_{ij}$), log of bilateral trade (in millions of US dollars) between country i and country j (ln $TRADE_{ij}$), log of director liability (ln $DLIAB_j$) and institutional quality ($IQULT_j$),). Results are obtained by OLS estimation for the year 2001. "***"significant at1% level, "**"significant at 5% level, "*"significant at10% level.

Table 8: Second Level of the Hierarchy: Comparison Matrix of the Determinants of Bilateral Asset Holdings

	INFOR	TRADB	INVFRE	GDP	IQULIT	DIST	Priority Weights
INFOR	1	3	4	5	7	8	0.438
TRADB	1/3	1	2	4	6	7	0.242
INVFRE	¼	1/2	1	2	5	6	0.151
GDP	1/5	1/4	1/2	1	4	5	0.099
IQULIT	1/7	1/6	1/5	1/4	1	2	0.040
DIST	1/8	1/7	1/6	1/5	1/2	1	0.029

$\lambda\max$ =6.337, CI=0.067, C.R.= 0.054

Where: INFOR: information costs, TRADB: bilateral trade, INVFRE: investment freedom, GDP: Gross Domestic Product, IQUALT: institutional quality, and DIST: geographic distance. $\lambda\max$: dominant real positive eigenvalue, C.I.: consistency index, C.R.: consistency ratio.

[11] While asset holdings data contain zero value, we use as dependent variable log of 1+ total asset.

Table 9A: Third Level of the Hierarchy: Country Priority Weights with Respect to Bilateral Factors (2005)

	Priority Weights						
	Canadian Investors	**French Investors**	**German Investors**	**Italian Investors**	**Japanese Investors**	**British Investors**	**American Investors**
				Information Costs			
Algeria	0.143	0.143	0.144	0.143	0.146	0.141	0.144
Egypt	0.141	0.139	0.140	0.139	0.137	0.140	0.139
Iran	0.146	0.147	0.144	0.147	0.150	0.147	0.149
Morocco	0.137	0.137	0.137	0.137	0.134	0.137	0.135
Saudi Arabia	0.151	0.152	0.150	0.152	0.153	0.152	0.145
Tunisia	0.137	0.137	0.137	0.138	0.131	0.137	0.134
Turkey	0.146	0.145	0.147	0.145	0.148	0.146	0.154
				Bilateral Trade			
Algeria	0.496	0.216	0.068	0.087	0.012	0.051	0.185
Egypt	0.051	0.049	0.060	0.080	0.018	0.076	0.083
Iran	0.036	0.105	0.122	0.158	0.238	0.044	0.004
Morocco	0.041	0.145	0.035	0.045	0.008	0.058	0.015
Saudi Arabia	0.241	0.135	0.136	0.183	0.671	0.251	0.552
Tunisia	0.008	0.138	0.046	0.130	0.003	0.026	0.008
Turkey	0.126	0.212	0.533	0.316	0.050	0.493	0.152
				Geographic Distance			
Algeria	0.148	0.155	0.153	0.155	0.140	0.154	0.147
Egypt	0.140	0.139	0.140	0.142	0.143	0.139	0.141
Iran	0.138	0.131	0.133	0.127	0.148	0.132	0.139
Morocco	0.149	0.151	0.147	0.144	0.138	0.150	0.149
Saudi Arabia	0.136	0.126	0.128	0.124	0.145	0.128	0.137
Tunisia	0.146	0.154	0.153	0.160	0.141	0.152	0.146
Turkey	0.142	0.144	0.146	0.147	0.145	0.144	0.142

Table 9B: Third Level of the Hierarchy: Country Priority Weights with Respect to Host Country Factors (2005)

	Investment Freedom		**GDP**		**Institutional Quality**	
	INVFRE	**Priority Weights**	**GDP (Millions $)**	**Priority Weights**	**IQULT**	**Priority Weights**
Algeria	50	0.161	101786	0.09	0.501	0.105
Egypt	50	0.161	89686	0.08	0.580	0.121
Iran	30	0.097	189784	0.17	0.364	0.076
Morocco	70	0.226	51621	0.05	0.719	0.150
Saudi Arabia	30	0.097	309779	0.27	0.673	0.141
Tunisia	30	0.097	28683	0.03	0.951	0.198
Turkey	50	0.161	363370	0.32	1.002	0.209

Table 10: Overall Priority of the Seven MENA Countries for G7 Investors: AHP Solution (2005)

	Overall Priority						
	Canadian Investors	**French Investors**	**German Investors**	**Italian Investors**	**Japanese Investors**	**British Investors**	**American Investors**
Algeria	0.224	0.157	0.122	0.126	0.108	0.116	0.149
Egypt	0.115	0.114	0.117	0.122	0.106	0.121	0.122
Iran	0.111	0.128	0.131	0.141	0.162	0.113	0.105
Morocco	0.119	0.144	0.118	0.120	0.109	0.123	0.112
Saudi Arabia	0.176	0.151	0.150	0.162	0.281	0.178	0.249
Tunisia	0.091	0.123	0.101	0.122	0.087	0.096	0.090
Turkey	0.163	0.184	0.262	0.209	0.146	0.252	0.173

Table11: Weights of the Seven MENA Countries in the Optimal Asset Portfolio: AHP-GP Solution (2003-2006)

Years	**Investors**	**Algeria**	**Egypt**	**Iran**	**Morocco**	**Saudi Arabia**	**Tunisia**	**Turkey**
2003	Canadian	0.224	-	0.111	0.119	0.546	-	-
	French	0.157	-	0.128	0.144	0.571	-	-
	German	0.122	-	0.131	0.118	0.630	-	-
	Italian	0.126	-	0.141	0.120	0.614	-	-
	Japanese	0.108	-	0.162	0.109	0.620	-	-
	British	0.116	-	0.113	0.123	0.647	-	-
	American	0.149	-	0.105	0.112	0.634	-	-
2004	Canadian	-	-	-	-	-	-	1.000
	French	-	-	-	-	-	-	1.000
	German	-	-	-	-	-	-	1.000
	Italian	-	-	-	-	-	-	1.000
	Japanese	-	-	-	-	-	-	1.000
	British	-	-	-	-	-	-	1.000
	American	-	-	-	-	-	-	1.000
2005	Canadian	-	-	-	-	0.176	-	0.824
	French	-	-	-	-	0.151	-	0.849
	German	-	-	-	-	0.150	-	0.850
	Italian	-	-	-	-	0.162	-	0.838
	Japanese	-	-	-	-	0.281	-	0.719
	British	-	-	-	-	0.178	-	0.822
	American	-	-	-	-	0.249	-	0.751
2006	Canadian	-	0.115	-	0.885	-	-	-
	French	-	0.114	-	0.886	-	-	-
	German	-	0.117	-	0.883	-	-	-
	Italian	-	0.122	-	0.878	-	-	-
	Japanese	-	0.106	-	0.894	-	-	-
	British	-	0.121	-	0.879	-	-	-
	American	-	0.122	-	0.878	-	-	-
Mean 2003-2006	Canadian	-	-	0.111	0.119	0.176	0.091	0.503
	French	-	-	0.128	0.144	0.151	0.123	0.454
	German	-	-	0.131	0.118	0.150	0.101	0.501
	Italian	-	-	0.141	0.120	0.162	0.122	0.456
	Japanese	-	-	0.162	0.109	0.281	0.087	0.360
	British	-	-	0.113	0.123	0.178	0.096	0.489
	American	-	-	0.105	0.112	0.249	0.090	0.445