Private equity development in the MENA region. An exploratory analysis.

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Abstract

The objective of this paper is to explore private equity market attractiveness in the MENA region based on a modified questionnaire and a set of bootstrapped attractiveness indices which we analyze through a cluster method. Our conclusions are the following. First, investor's perceptions and real institutional development levels differ, suggesting the presence of informational asymmetries. Second, attractiveness levels are very heterogeneous. This suggests that investors should not consider the region as a block for allocation purposes.

JEL classification: G11;G12;G15
Keywords: MENA economies, international finance, economic development.

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1. Introduction

Fifteen years after the launching of the Barcelona Process, the emerging transition economies of the MENA[3] region are still contending with dysfunctional financial systems. At an internal level, financial structures are heavily bank-oriented, with bank assets accounting for 85% of total financial assets, versus 48% in emerging Asian countries, 41% in Emerging Europe and 33% globally (Abed and Soueid, 2005). At an external level, these countries remain net capital exporters, as oil-related surpluses indeed tend to be channelled abroad through OECD financial intermediaries rather than invested domestically (OECD, 2006). This dynamic takes place in a context of massive investment needs, as 22 million new jobs must be created before 2020 in order to stabilize the region's unemployment levels at their current rate of 15% (FEMISE, 2006).

Taking this into account, the development of a local private equity industry may be viewed as a necessary component of financial sector modernization. Four theoretical mechanisms indeed unite private equity to economic development. *First*, the private equity industry brings lenders and borrowers together where asymmetric information and uncertainty costs exist, thereby allowing for the riskiest projects to obtain financing (Bonini and Alkan, 2006). *Second*, stage financing usually implies a tight control on a firm's operations. This helps to ensure productive efficiency in small business entities often characterized by a lack of management expertise (Gorman and Sahlman, 1989). *Third*, private equity industry participate in the creation of a knowledge-based economy. Private equity investors play an important social role in the innovation process through their involvement in four embedded networks: financial markets, entrepreneurs, services to business and labour market professionals (Hellmann, 2000). *Fourth*, a large number of family-owned companies operate in emerging markets. While often profitable and employing large numbers of workers, these companies usually do

[3] This paper focuses on ten MENA countries: Morocco, Egypt, Tunisia, Turkey, Israel, Algeria, Jordan, Lebanon, Lybia and Syria. These countries are referred to as the MEDA group by the European Commission.

not comply with international norms of transparency, corporate governance and investor protection, and often operate at the borderline of informal economy. In this context, private equity markets may act a bridge from traditional proprietary companies to modern listed companies (OECD, 2006). Overall, private equity market development in the MENA region could (i) channel greater investment flows into domestic economies; (ii) diversify financing sources for local firms; and (iii) increase productivity through managerial externalities.

A growing awareness of these issues has led most MENA countries to undertake significant financial reforms over the last decade. Foreign investment is liberalized, and the region's stock markets are active and developing (Lagoarde-Segot and Lucey, 2008). However, virtually nothing is known about private equity in the region. As shown in table 1, the only available aggregated data highlights that the region is still lagging behind Emerging Asia and Eastern Europe ($5,027 billion invested in 2007 versus $28,668 billion and $14,629 billion, respectively). In addition, Israel accounts for more than half of the region's private equity investment flows (ANIMA, 2008).

Table 1 Emerging Private Equity Fundraising Total, 2003-2007 (US$ billions)

	Emerging Asia	CEE/Russia	Latin America	Sub-Saharan Africa	MENA
2003	2,200	406	417	NA	NA
2004	2,800	1,777	714	NA	NA
2005	15,446	2,711	1,272	791	1,915
2006	19,386	3,272	2,656	2,353	2,946
2007	28,668	14,629	4,419	2,340	5,027

Source: Emerging Private Equity Association 2007.

Taking this into account, the objective of this paper is to explore the MENA private equity market development dynamic by juxtaposing local investors' perceptions and the observed institutional reform process. We thus first discuss investors' perception of the region through a modified questionnaire. We then compare MENA countries to other emerging markets in terms of institutional reforms using cross-country data. We finally consider the intersection of these results and discuss the gap between investor's perceptions and institutional developments, which allows us to raise a set of conjectures for the conduct of policy-making.

The remainder of the paper is structured as follows. Section 2 reviews the determinants of private equity market development. Section 3 describes the questionnaire and discusses investor's perceptions of the MENA region. Section 4 develops a battery of attractiveness indices and proceeds to a cluster analysis for a panel of emerging markets. Section 5 brings together our conclusions.

2. Emerging markets characteristics and private equity development

The size of the domestic economy is clearly a major determinant for the development of private equity investment, whose volumes are usually significantly correlated with GDP growth (Romain and van Pottelsberghe de la Potterie, 2004). Gompers and Lerner (1998) indeed pointed out that there are more attractive opportunities for entrepreneurs in large and dynamic economies. Although hard to quantify, political risk is another key variable for emerging market investment, as it determines the risk premium associated to local projects (Chuah, 1992). Local financial development is also essential. Black and Gilson (1998) suggested a positive relationship between financial development and private equity investment levels. Gompers and Lerner (1998) also emphasized that risk capital flourishes in countries with deep and liquid stock markets, while the maturity of the private equity market itself may also attract foreign investors.

In addition, the overall business environment may also play a significant role in determining private equity investment levels. For instance, Jeng and Wells (2000) found that labour market rigidities, the level of IPOs, entrepreneurship climate, and bankruptcy procedures explained a large part of cross-country variations in private equity activity. Focusing on fiscal factors, Poterba (1989) argued that lower tax rates prompt employees to become entrepreneurs, leading to more demand for private equity funds. This was confirmed by Gompers and Lerner (1998) who found that lower capital gains tax rates have strong effect on the amount of VC investments supplied. Similarly, legal development is an important factor.

Cumming et al. (2006) indeed suggested that the quality of a country's legal system has a stronger impact on private equity activity than the size of its stock market, while Johnson et al. (1999) emphasized the importance of the protection of property rights for private equity markets.

High levels of human capital are also necessary for the development of private equity markets. Schertler (2003) emphasized that the number of employees in the R&D field and the number of patents have a positive impact on the development of private equity activity. Along the same lines, Farag et al. (2004) highlighted that the quality of management ranks as a primary reason for private equity investment failure in Central Europe. Finally, social environment may also have a role to play. For instance, Baughn and Neupert (2003) argued that national attitudes towards entrepreneurial activity determine the development of a local risk-capital culture and affect the set of investment opportunities for international investors.

Based on this literature review, we classify institutional underpinnings of private equity market development into eight criteria, including (i) economic activity, (ii) business opportunities, (iii) favourable taxation environment, (iv) political stability, (v) capital market development, (vi) human capital, (vii) legal investor protection and (viii) social environment.

3. Local investor's perceptions

3.1 Data

In an effort to measure investor's perceptions of the MENA private equity markets, the following questions were asked to a panel of private equity investors:

1. How do you regard the attractiveness of the following emerging markets for Private Equity investors? (7=excellent, 1= poor)
2. How important are each of the attractiveness criteria in your decision to invest in a given country in general? (7=very important, 1=not important at all)

3. How attractive do you consider the MENA region according to the same criteria? (7=very attractive, 1=not attractive at all)
4. How attractive are the MENA countries for you as an investor? (7=very attractive, 1=not attractive at all)

This short questionnaire was first sent by email to 1500 private equity investors worldwide, using email contacts from European Venture Capital Association, Gulf Venture Capital Association, and the African Venture Capital Association websites. This approach yielded 13 responses. MENA markets private equity investors were directly interviewed by phone, yielding 22 responses[4]. Finally, the questionnaire was distributed to investors participating in the 2nd EUROMED Capital Forum held in Tunis on April 24-25th, 2008, yielding 25 additional responses. In total, we thus obtained 60 responses, a reasonable sample for our exploratory purposes. By comparison, Groh, Liechtenstein and Canela (2008), considered a sample of 75 responses in a study focusing on Eastern Europe.

3.2 Results

As shown in table 2, responding investors are quite optimistic about the region's ability to attract further private equity investment. Taken as a whole, the MENA region (5.09) is indeed ranked first among emerging countries, ahead of Asia (4.64), Central Europe (4.63), Sub-Saharan Africa (4.45) and Latin America (4.13). Investors' perceptions on the region as a whole appear relatively homogeneous, as standard deviation (1.54) is third lowest, behind Sub-Saharan Africa (1.38) and Latin America (1.47).

[4] We thank Raphaël Botiveau from the ANIMA Investment Network (http://www.animaweb.org) for gracefully providing this data.

Table 2 Investors' perceptions

Question 1: How do you regard the attractiveness of the following emerging markets for Private Equity investors?					
	N.Obs.	Mean	SD	Min	Max
MEDA	55,00	5,09	1,54	1,00	7,00
Asia	53,00	4,64	1,82	1,00	7,00
Central Europe	51,00	4,63	1,60	1,00	7,00
Sub-Saharan Africa	53,00	4,45	1,38	2,00	7,00
Latin America	48,00	4,13	1,47	1,00	7,00
Question 2: How attractive are the following MEDA countries for you?					
Morocco	57.00	5.18	1.68	1.00	7.00
Tunisia	57.00	5.05	1.62	1.00	7.00
Turkey	53.00	4.98	1.69	2.00	7.00
Egypt	55.00	4.89	1.51	2.00	7.00
Jordan	55.00	4.51	1.14	1.00	7.00
Algeria	57.00	4.25	1.89	1.00	7.00
Israël	49.00	4.00	2.00	1.00	7.00
Lybia	55.00	3.85	1.94	1.00	7.00
Lebanon	55.00	3.82	1.59	1.00	7.00
Syria	54.00	3.65	1.75	1.00	7.00
Question 3: How important are the following criteria in your decision to invest in a given country in general?					
Business opportunities	56.00	5.39	2.02	1.00	7.00
Investor protection	56.00	5.18	2.22	1.00	7.00
Political risk	53.00	5.17	2.04	1.00	7.00
Human capital	55.00	5.13	1.72	1.00	7.00
Economic activity	57.00	5.02	1.88	1.00	7.00
Capital market development	55.00	4.87	1.49	2.00	7.00
Taxation	56.00	4.79	1.82	1.00	7.00
Social environment	54.00	4.63	1.42	2.00	7.00
Question 4: How attractive do you consider the MEDA region according to the same criteria?					
Business opportunities	54.00	5.33	1.78	1.00	7.00
Economic activity	54.00	5.30	1.72	1.00	7.00
Political risk	49.00	5.08	1.59	1.00	7.00
Taxation	54.00	4.80	1.50	1.00	7.00
Investor protection	54.00	4.70	1.56	1.00	7.00
Human capital	51.00	4.69	1.44	1.00	7.00
Capital market development	54.00	4.61	1.42	1.00	7.00
Social environment	53.00	4.45	1.50	1.00	7.00

Turning to an intra-regional assessment of private equity attractiveness, investors ranked Morocco first (5.18), followed by Tunisia (5.05), Turkey (1.69), Egypt (4.89) and Jordan (4.51). Finally, Algeria (4.25), Israel (4.00), Libya (3.85), Lebanon (3.82) and Syria (3.65) constitute a third group of countries. The low ranking of Israel is somewhat surprising given that this country has one of the world's most developed private equity markets. However, our respondents were all based in the MENA region, whereas the Israeli private equity market is relying on national and global investors (especially US investors). The low ranking of Israel

might thus reflect a low intra-regional economic integration. It may also reflect negative local perceptions due to the persistence of the Middle-East conflict.

Turning to attractiveness criteria, investors seem to adopt a holistic approach to country assessment, as all criteria obtain average scores higher than 4: from business opportunities (5.33) to social environment (4.63). Investor protection (5.18) and political stability (5.17) obtain very close scores, suggesting that these are deeply connected in this region. These are followed by human capital (5.13), economic activity (5.02), and capital market development (4.87), other important factors for private equity development. Taxation (4.79) and social environment (4.63) come at last. Overall, this suggests that labour costs are not as important as economic opportunities and legal guarantees in the allocation of international private equity investment flows.

Interestingly, the MENA countries' attractiveness for private equity stems mostly from business opportunities (5.33), economic activity (5.30) and political stability (5.08). This may result from a strong policy commitment to economic reforms, which has resulted in a significant privatization program and in a relatively high rate of capital accumulation, most MENA countries experiencing economic growth rates in excess of 4%. However, areas of improvements can be identified in human capital (4.69), capital market development (4.61) and social environment (4.45).

4. Attractiveness indices

4.1 Data

Our dataset covers the 53 countries classified as either 'emerging' or 'frontier' markets by the Standard & Poors rating agency. We gather data from the CEPII's 2006 *Institutional Profile* (IP) database and the World Bank's 2006 *World Development Indicators* (WDI) database. The IP database is developed by means of a questionnaire addressed by French Embassies in 86 countries and offers a very comprehensive analysis of international institutional

arrangements. The WDI database offers key economic variables as well as a set of institutional ratings developed by benchmark agencies. We consider the cross section of these databases and identify a set of variables reflecting the eight chosen components of private equity attractiveness: (i) economic activity, (ii) business opportunities, (iii) political stability, (iv) capital market development, (v) investor protection, (vi) social environment, (vii) tax environment and (viii) human capital. Merging these two databases leaves a total of 42 countries in the sample. In many cases, scale, direction and magnitude of each variable differ. We thus rescaled and normalized raw indices so that variables range from 0 to 1, a higher score indicating higher attractiveness. Selected index components and sources are described in annex 1.

4.2 Methodology

We generate a set of synthetic indexes reflecting the criteria described in table 2.These indexes can be described as follows:

$$
\begin{cases}
ECOINDEX_i = \alpha_i ECO1 + \beta_i ECO2 + \chi_i ECO3 + \delta_i ECO4 + \phi_i ECO5 + \gamma_i ECO6 \\
BUSINDEX_i = \alpha_i BUS1 + \beta_i BUS2 + \chi_i BUS3 + \delta_i BUS4 + \phi_i BUS5 \\
POLINDEX_i = \alpha_i POL1 + \beta_i POL2 + \chi_i POL3 + \delta_i POL4 + \phi_i POL5 + \gamma_i POL6 + \mu_i POL7 + \sigma_i POI8 + \rho_i POI9 \\
CAPINDEX_i = \alpha_i CAP1 + \beta_i CAP2 + \chi_i CAP3 + \delta_i CAP4 + \phi_i CAP5 + \gamma_i CAP6 + \mu_i CAP7 \\
TAXINDEX_i = \alpha_i TAX1 + \beta_i TAX2 + \chi_i TAX3 \\
INVINDEX_i = \alpha_i INV1 + \beta_i INV2 + \chi_i INV3 + \delta_i INV4 + \phi_i INV5 + \gamma_i INV6 + \mu_i INV7 \\
SOCINDEX_i = \alpha_i SOC1 + \beta_i SOC2 + \chi_i SOC3 + \delta_i SOC4 + \phi_i SOC5 + \gamma_i SOC6 \\
HUMINDEX_i = \alpha_i HUM1 + \beta_i HUM2 + \chi_i HUM3 + \delta_i HUM4 + \phi_i HUM5 + \gamma_i HUM6 + \mu_i HUM7 + \sigma_i HUM8
\end{cases}
\qquad (1)
$$

For each index, weights are comprised between 0 and 1 and are derived based on a nonparametric bootstrap technique. The process is the following. We first generate 10,000 random combinations of uniformly distributed weights adding up to unity in the interval [0,1]. The corresponding indexes are calculated for each of these combinations, and the selected index value corresponds to the 50th percentile of the associated cumulative distribution. This

methodology allows us to derive a significance level for the index without relying on strong distributional assumptions on investor's preferences[5].

To refine our understanding of institutional development in the MENA region, we then analyzed those indexes with a hierarchical clusters based on Ward's (1963) linkage. Within this framework, the squared Euclidean distance is used as a measure of dissimilarity. For each cluster, the means for all the variables are computed. Then, for each object, the squared Euclidean distance to the cluster means is calculated. These distances are summed for all the objects. At each stage, the two clusters with the smallest increase in the overall sum of squares within cluster distances are combined. The recurrence formula is the following:

$$d_{k(i,j)} = \frac{\eta_i + n_k}{\eta_i + \eta_j + \eta_k} d_{ki} + \frac{\eta_j + n_k}{\eta_i + \eta_j + \eta_k} d_{kj} - \frac{n_k}{\eta_i + \eta_j + \eta_k} d_{ij} \quad (2)$$

Where η_i, η_j, η_k are the numbers of observations contained in groups i, j and k, respectively. d_{ij} is the distance between cluster *i* and cluster *j*, $d_{k(ij)}$ is the distance between cluster *k* and the new cluster formed by joining clusters i and *j*. The optimal number of clusters is identified based on the pseudo F index (Calinski and Harabasz, 1974) which is defined as $F = \frac{Trace[B/(k-1)]}{Trace[W/(n-k)]}$ where *n* is the number of observations in a sample, *K* is the number of clusters, *B i*s the between cluster sum of squares and cross product matrix, and *W* is the pooled within cluster sum of squares and cross products matrix. Using this method, the optimal number of clusters is determined by plotting the F index against the number of clusters. An inspection of the repartition of clusters across the scatterplot matrix provides insight into their respective characteristics.

[5] The distribution of normalized indexes and robustness tests on the indices' properties are available on request.

4.3 Results

Country positions are shown in figure 1 to 8 and highlight that the MENA region is very heterogeneous, countries being scattered evenly across the emerging markets universe. As shown in figure 1, levels of economic activity are extremely variables in the MENA region. Israel (3.38), the first MENA country, comes third in the entire sample, after China (3.40) and South Korea (3.52). It is followed by Turkey (3.24), which may be compared to Chile (3.25). Then come Algeria (3.16) which can be compared to India (3.15); and Tunisia (3.04), Egypt (3.08) and Lebanon (3.02), which are close to the Philippines (3.03). Finally, Jordan (2.90) and Morocco (3.00) are lagging behind and can be compared to Sri Lanka (2.92).

Business opportunity indices are charted in figure 2. Jordan (0.82) and Israel (0.82) come first in the entire sample, hence confirming investor's claim that the MENA region is the most attractive among emerging markets. Morocco (0.65) comes third and can be compared to Brazil (0.66) and Poland (0.65). Then come Turkey (0.59) and Egypt (0.57) which are ranked ahead of Bulgaria (0.56) and Chile (0.56). Tunisia (0.45) and Algeria (0.41) are significantly lower in our ranking and can be compared to Mexico (0.45) and Malaysia (0.42). Finally, Lebanon (0.32) and Syria (0.27) seem to offer the least attractive business opportunities in the MENA region and can be compared to Argentina (0.31) and Botswana (0.27).

Inspection of figure 3 suggests that the MENA region does not compare favourably with other emerging market areas in terms of political stability. The MENA countries are indeed located in the lower segment of the figure. Israel (0.67) nevertheless comes first in the MENA region and can be compared to Ukraine (0.68). Jordan (0.58), Tunisia (0.55) and Turkey (0.54) follow, and can be compared to India (0.58), Botswana (0.57) and Peru (0.53), respectively. Morocco (0.51) and Algeria (0.46) can be compared to Bangladesh (0.48) and Indonesia (0.47). Finally, Lebanon (0.39), Egypt (0.35) and Syria (0.34) are lagging behind and can be compared to Venezuela (0.38) and Zimbabwe (0.32), respectively.

Turning to capital market development, figure 4 shows that Israel (0.82) comes first in the entire sample. Within the MENA region it is followed by Turkey (0.58). Then come Lebanon (0.56) and Tunisia (0.55) which can be compared to Indonesia (0.54). Egypt (0.49) and Morocco (0.47) follow and can be compared to Thailand (0.48) and Peru (0.47). Jordan (0.37), Algeria (0.35) and Syria (0.20) are lagging at the lower end of the sample.

Taxation environment is described in figure 5, which highlights that Israel (0.77) is the most fiscally competitive country in the entire sample, well ahead of Czech Republic (0.67). Morocco (0.46) and Jordan (0.44) seem to constitute an intermediate group that is comparable to Argentina (0.45). By contrast, Algeria (0.38), Tunisia (0.34), Syria (0.33), Lebanon (0.26), Egypt (0.21) and Turkey (0.14) are located in the lower end of the figure and compare unfavourably with other emerging markets.

Social environment constitutes an interesting case. As shown in figure 6, Israel (0.72) clearly outperforms most emerging markets as it is ranked just behind the Czech Republic (0.73). Algeria (0.56), Morocco (0.56), Lebanon (0.53) and Tunisia (0.53), which are all civil law countries, constitute a very homogeneous group and are ranked just above Indonesia (0.50) and Thailand (0.50). Syria (0.48), Jordan (0.48) and Turkey (0.44) follow, while Egypt (0.34) is lagging behind.

Inspection of figure 7 highlights that the highest level of investor protection can be observed in Israel (0.87), which is ranked just behind Chile (0.88). Jordan (0.65) comes second in the MENA region and can be compared to Korea (0.65). Tunisia (0.61), Morocco (0.56), Turkey (0.54) and Algeria (0.54) constitute a relatively homogeneous group, while Lebanon (0.50), Egypt (0.40) and Syria (0.38) appear to be the region's least investor friendly countries.

Finally, human capital levels are also very heterogeneous. As shown in figure 8, Israel (0.85) offers the most educated workforce in the entire sample, ahead of Estonia (0.81). It is followed by Lebanon (0.58) and Jordan (0.57), which have attained similar levels to Brazil

(0.58) and Sri Lanka (0.55), respectively. Turkey (0.53) and Tunisia (0.51) are close to one another, while Algeria (0.42), Syria (0.39), Morocco (0.28) and Egypt (0.28) are located at the bottom of the figure. Overall, this analysis suggests that Israel is one of the most attractive emerging private equity markets, an observation in line with high private equity activity in this country. It also highlights the existence of a real success story in the MENA region.

As shown in table 4, most indices are positively and significantly correlated. This suggests that institutional development reforms in the MENA region should be coordinated. Interestingly, although significantly correlated with investor protection, the business opportunities index does not appear directly related to other components of private equity market attractiveness; suggesting that improving institutional climate requires a specific reform program.

Figure 1 Economic activity

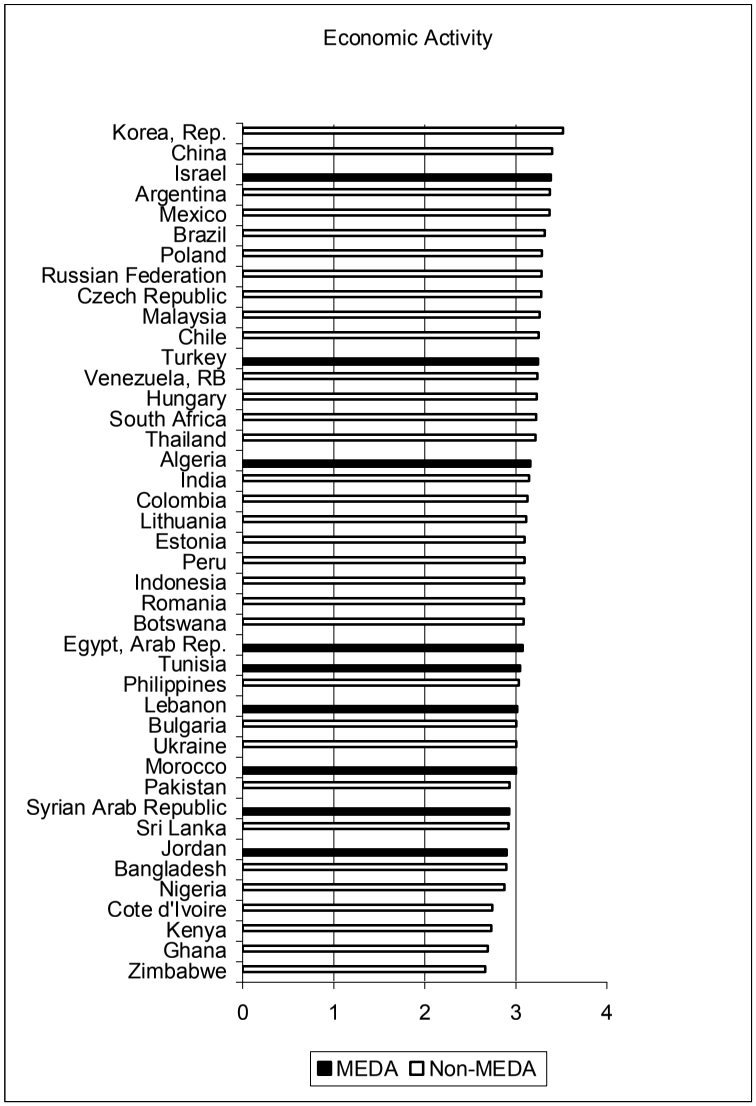

Figure 2 Business opportunities

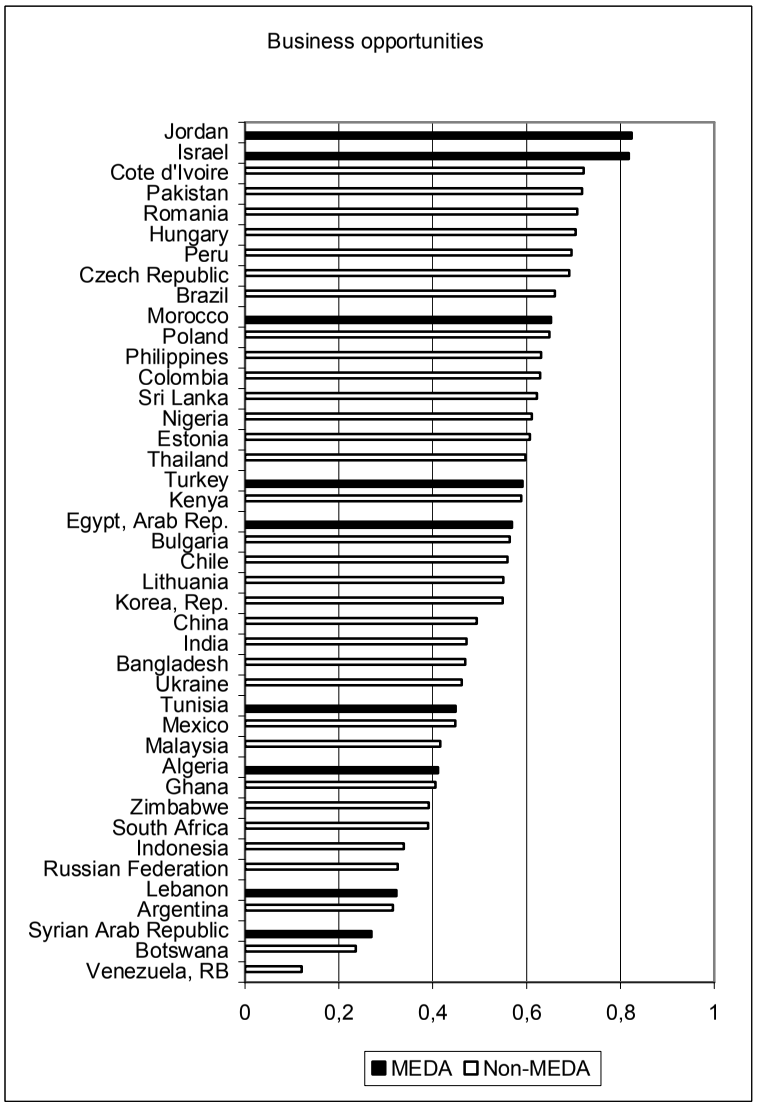

Figure 3 Political stability

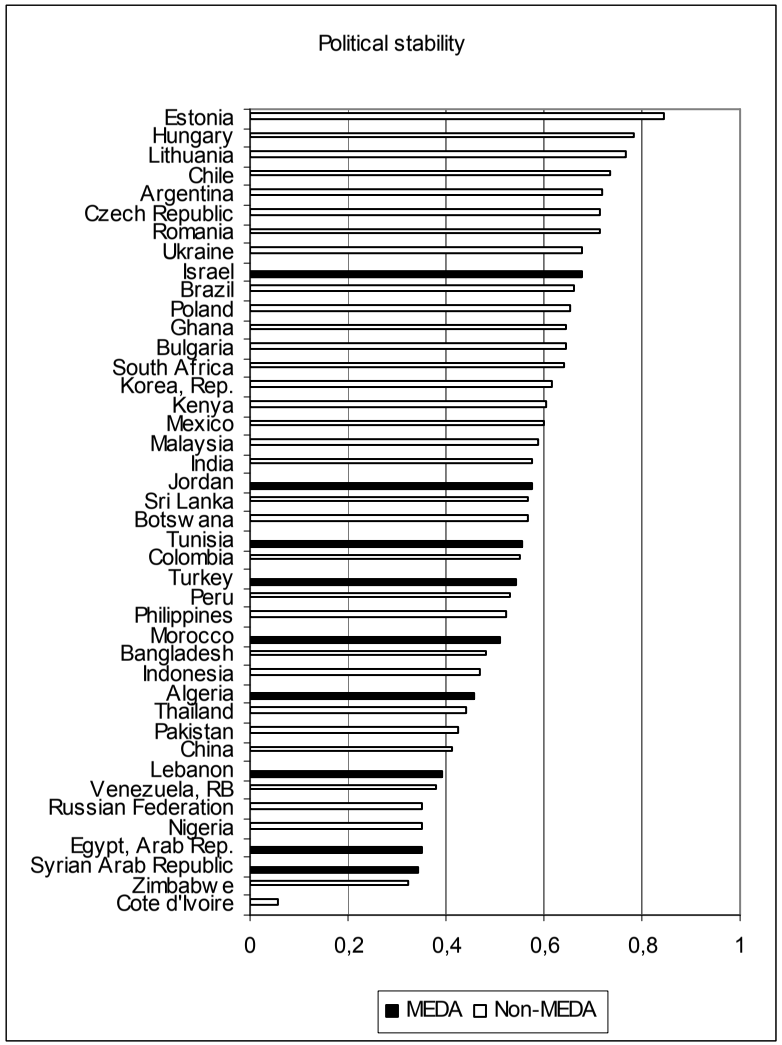

Figure 4 Capital market development

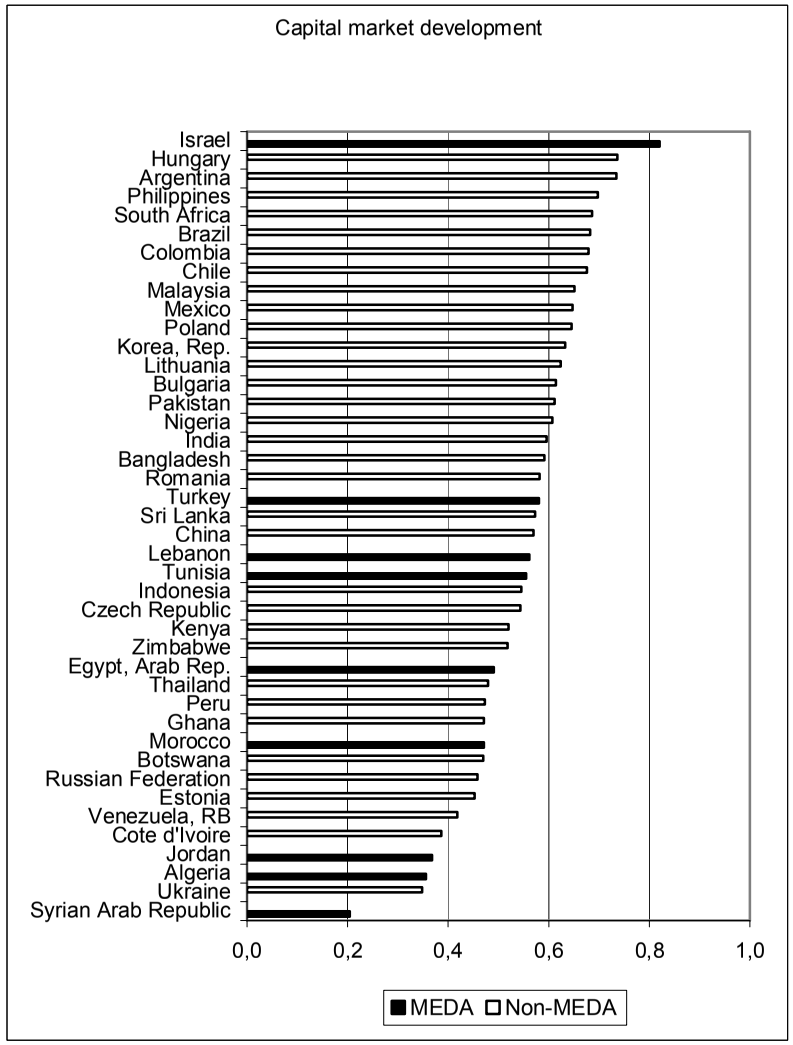

Figure 5 Taxation environment

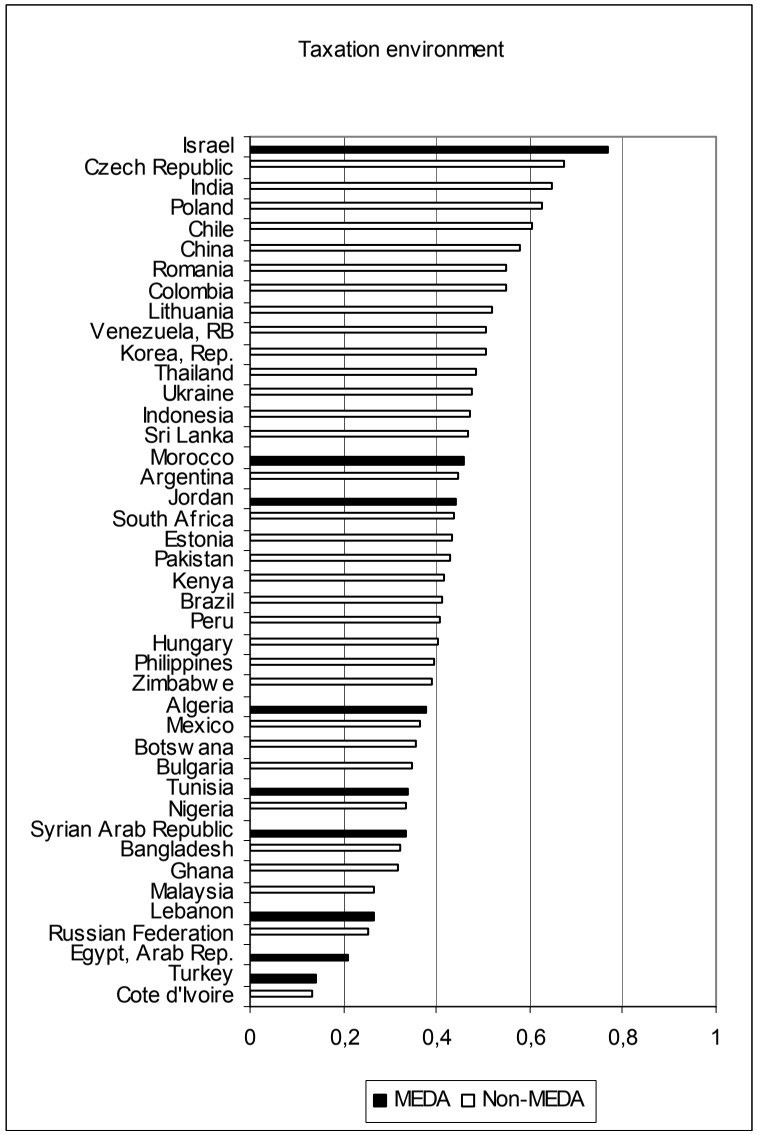

Figure 6 Social environment

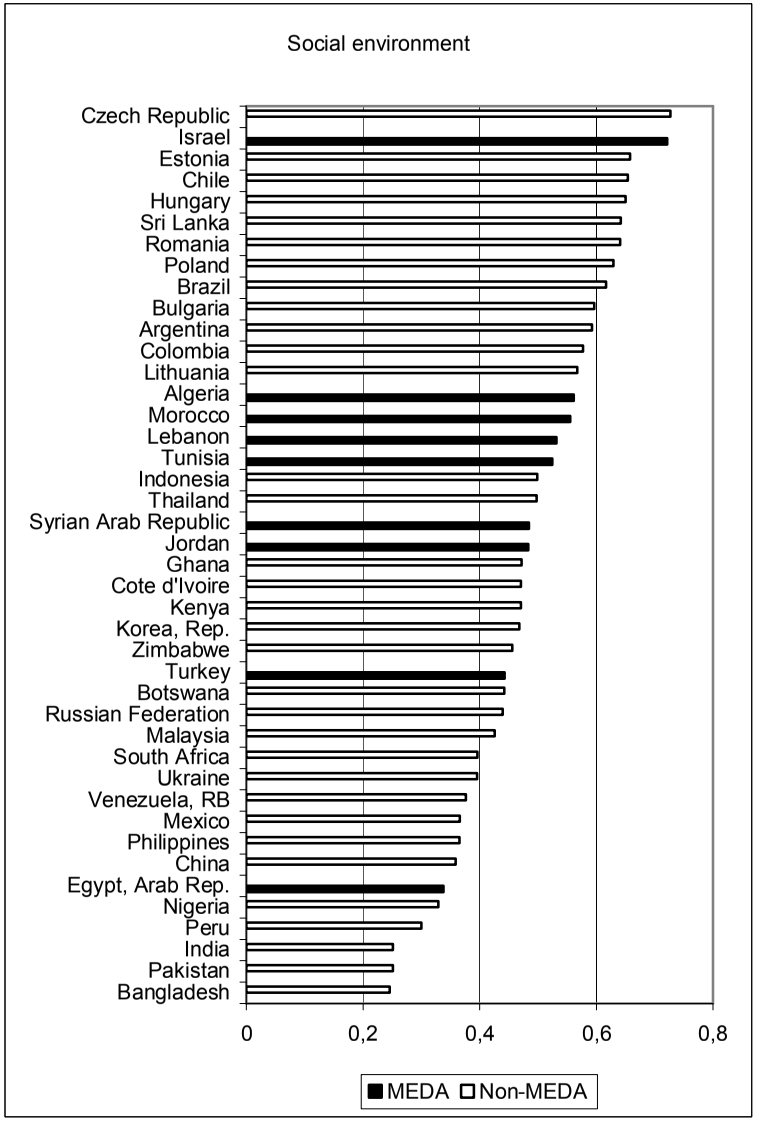

Figure 7 Investor protection

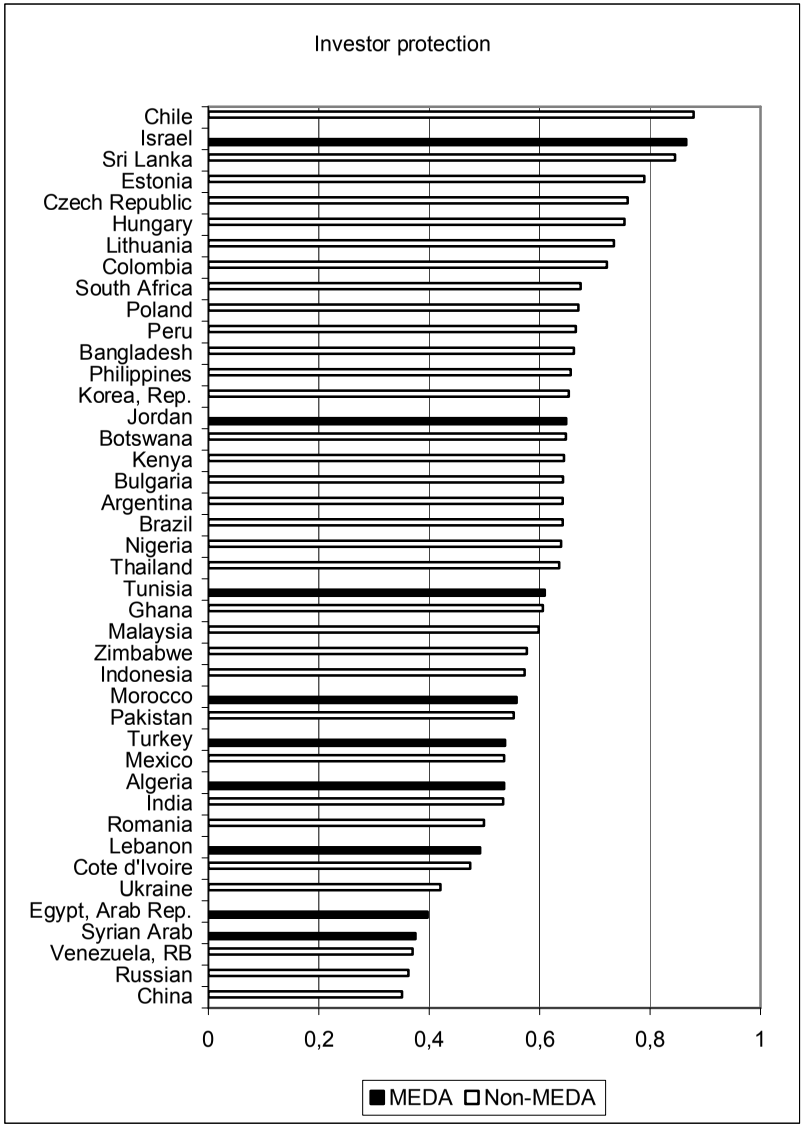

Figure 8 Human capital

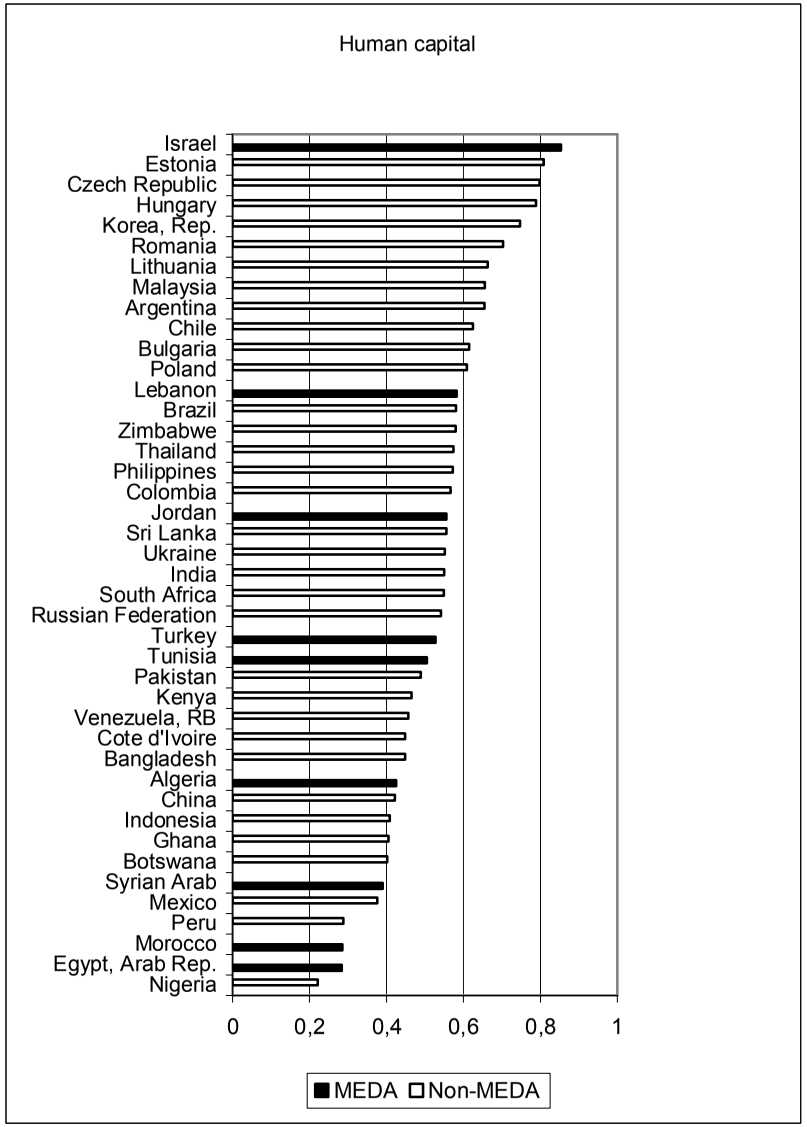

Table 4 Index correlation matrix

	ECOINDEX	SOCINDEX	BUSINDEX	TAXINDEX	POLINDEX	CAPINDEX	HUMINDEX	INVINDEX
ECOINDEX	1.0000							
SOCINDEX	0.2236	1.0000						
	(0.1546)							
BUSINDEX	-0.0398	0.2785	1.0000					
	(0.8023)	(0.0741)						
TAXINDEX	0.3947**	0.3666	0.2487	1.0000				
	(0.0097)	(0.0170)	(0.1122)					
POLINDEX	0.3766**	0.5053**	0.2247	0.5020**	1.0000			
	(0.0140)	(0.0006)	(0.1525)	(0.0007)				
CAPINDEX	0.4539**	0.2063	0.2825	0.3389*	0.4547**	1.0000		
	(0.0025)	(0.1900)	(0.0699)	(0.0281)	(0.0025)			
HUMINDEX	0.3976**	0.6323**	0.2708	0.4505**	0.6074**	0.4473**	1.0000	
	(0.0091)	(0.0000)	(0.0829)	(0.0028)	(0.0000)	(0.0030)		
INVINDEX	0.0849	0.5267**	0.4681**	0.4174**	0.6213**	0.5492**	0.5008**	1.0000
	(0.5928)	(0.0003)	(0.0018)	(0.0060)	(0.0000)	(0.0002)	(0.0007)	

Note : p-values are between brackets. * and ** indicate significance at the 5% and 1% level, respectively.

Comparing objective attractiveness levels with investor perception constitutes an interesting question. To this end, we calculate a composite attractiveness index. The latter is defined as a weighted average of our eight attractiveness indices. Such weights are determined by average score to question 3 "*How important are the following criteria in your decision to invest in a given country in general?"* and hence directly reflect investor's preferences. Results are shown in table 5.

Looking first at regional averages for each index, the comparative advantages of the MENA region seem to be business opportunities and social environment, as the region is ranked second after Central Europe in both criteria. Economic activity, political stability and taxation environment constitute areas of improvements, as the MENA region is ranked behind Asia, Central Europe and Latin America in each criterion. Finally, the region's weakest points are human capital, investor protection and capital market development. The MENA region is indeed ranked last in each of these criteria.

Interestingly, there appears to be a significant gap between local investors' perception and the region's attractiveness: investors optimistically perceive the MENA region as the most attractive of emerging market areas. However, within our composite index this region is ranked behind Central Europe, Latin America and Asia. This suggests that MENA private equity markets benefit from a home bias, which could be attributed to geographical and cultural proximity from the Euro-Mediterranean area and the Gulf countries.

Turning to country level ranking, investors converge with the composite indices in the case of Turkey (ranked third in both), Algeria (ranked sixth in both), Syria (ranked last in both) and Lebanon (ranked eighth by investors and ninth in our composite index). Investors may be overly optimistic in the case of Morocco (ranked first by investors and fifth in our index), Tunisia (ranked second by investors and fourth in the composite index) and Egypt (ranked fourth by investors and eighth in the composite index). By contrast, investors may be overly pessimistic in the case of Jordan (ranked fifth by investors and second in the composite index) and Israel (ranked seventh by investors and first in the composite index). This suggests that private equity investment decisions do not reflect institutional development levels in the region and may be affected by psychological factors.

The cluster analysis allows us to further analyze the attractiveness of the MENA private equity markets. As shown in table 6, the MENA countries are scattered in four different clusters. Egypt, Lebanon, Syria and Algeria belong to cluster A. In spite of relatively favourable taxation levels (taxation index is the second highest), this cluster seems to gather the least attractive emerging private equity markets. This cluster is the second lowest in terms of human capital, social environment, and economic activity. It also gathers countries with the lowest investor protection, political stability and capital market development, indicating areas of improvement for these four countries.

Table 5 Indices and questionnaires

	PERCEPTION	COMPOSITE	ECO	SOC	BUS	TAX	POL	CAP	HUM	INV
MENA	5.09 (1)	1.517 (4)	3.08	0.52	0.55	0.37	0.49	0.49	0.49	0.56
Asia	4.64 (2)	1.533 (3)	3.14	0.40	0.53	0.46	0.51	0.59	0.54	0.61
Central Europe	4.63 (3)	1.568 (1)	3.15	0.59	0.58	0.48	0.68	0.56	0.68	0.63
Sub-Saharan Africa	4.45 (4)	1.491 (5)	2.81	0.45	0.50	0.34	0.45	0.52	0.49	0.59
Latin America	4.13 (5)	1.550 (2)	3.25	0.50	0.49	0.47	0.60	0.62	0.51	0.64
Morocco	5.18 (1)	1.514 (5)	3.00	0.56	0.65	0.46	0.51	0.47	0.29	0.56
Tunisia	5.05 (2)	1.520 (4)	3.05	0.52	0.45	0.34	0.55	0.55	0.51	0.61
Turkey	4.98 (3)	1.522 (3)	3.24	0.44	0.59	0.14	0.54	0.58	0.53	0.54
Egypt	4.89 (4)	1.459 (8)	3.08	0.34	0.57	0.21	0.35	0.49	0.28	0.40
Jordan	4.51 (5)	1.536 (2)	2.90	0.48	0.82	0.44	0.58	0.37	0.56	0.65
Algeria	4.25 (6)	1.499 (6)	3.16	0.56	0.41	0.38	0.46	0.36	0.43	0.54
Israël	4 (7)	1.651 (1)	3.39	0.72	0.82	0.77	0.68	0.82	0.85	0.87
Lebanon	3.82 (8)	1.490 (7)	3.02	0.53	0.32	0.26	0.39	0.56	0.58	0.49
Syria	3.65 (9)	1.427 (9)	2.93	0.48	0.27	0.33	0.34	0.20	0.39	0.37

Note: this table shows regional averages and country scores for investor perception, the composite index (using a logarithmic scale) and each of the bootstrapped indices. Numbers between brackets denote region and country ranks.

Morocco and Jordan belong to cluster B, which displays relatively good performance in business opportunities and investor protection, which echoes previous results. However, these countries perform relatively poorly in terms of political stability, capital market development and taxation; and also have the lowest human capital, economic activity and social environment scores. Considering that business opportunities and investor protection are necessary but not sufficient conditions for the development of a private equity market, this suggests areas of improvements.

Tunisia and Israel belong to cluster C, which gathers mostly Central European markets and is ranked first in terms of political stability, business opportunities, taxation environment, investor protection and social environment. It comes second in terms of economic activity and capital market development. These two countries thus seem the most attractive private equity markets of the MENA region.

Finally, Turkey belongs to cluster D, gathering advanced emerging markets with the highest economic activity and capital market development. This cluster comes second in terms of human capital, social environment, and political stability. Areas of improvements include

business opportunities, investor protection and taxation environment. For Turkey, one priority should be to improve the overall business climate in order to increase private equity levels.

Table 6 Cluster analysis

Cluster A	**Cluster B**	**Cluster C**	**Cluster D**
India	Kenya	Romania	Argentina
China	Bangladesh	Tunisia	South Africa
Syrian Arab Republic	Jordan	Hungary	Korea, Rep.
Indonesia	Cote d'Ivoire	Israël	Turkey
Russia	Nigeria	Czech Republic	Malaysia
Egypt	Ghana	Chile	Mexico
Lebanon	Peru	Estonia	
Botswana	Zimbabwe	Lithuania	
Ukraine	Pakistan	Bulgaria	
Algeria	Philippines	Thailand	
Venezuela	Morocco	Sri Lanka	
		Brazil	
		Poland	
		Colombia	

Table 7 Descriptive statistics

Cluster	ECOINDEX	POLINDEX	BUSINDEX	CAPINDEX	TAXINDEX	INVINDEX	SOCINDEX	HUMINDEX
A	11	11	11	11	11	11	11	11
	3.13	0.45	0.37	0.46	0.41	0.46	0.43	0.46
	0.14	0.11	0.13	0.12	0.14	0.10	0.09	0.09
B	11	11	11	11	11	11	11	11
	2.87	0.46	0.61	0.52	0.37	0.61	0.40	0.43
	0.15	0.17	0.14	0.10	0.09	0.06	0.11	0.12
C	14	14	14	14	14	14	14	14
	3.17	0.66	0.63	0.62	0.51	0.72	0.62	0.66
	0.13	0.11	0.09	0.10	0.12	0.11	0.07	0.11
D	6	6	6	6	6	6	6	6
	3.33	0.62	0.45	0.66	0.36	0.61	0.45	0.58
	0.11	0.06	0.10	0.05	0.14	0.06	0.08	0.13

Note: This table shows descriptive statistics for the four clusters described in table 4. In each cell, the first row displays the number of observations, the second row shows the cluster average and the third row displays standard deviation.

5. Conclusion

The objective of this paper was to conduct an exploratory analysis of private equity market development in the MENA region. We focused on a set of eight criteria: (i) economic activity, (ii) business opportunities (iii) political stability, (iv) capital market development, (v) investor protection, (vi) tax environment, (vii) social environment and (viii) human capital and

proceeded to a set of international comparisons. In doing so, we analyzed answers from a questionnaire and developed a set of comprehensive attractiveness indices. Considering the intersection of these analyses permits raise a set of conjectures.

First, as shown in the questionnaire, local investors rank the MENA region ahead of other emerging markets areas. In addition, we observe a gap between investor's perceptions and a set of quantitative attractiveness indices. Our indices indeed suggest that taken as a whole, the MENA region is in fact less attractive than Central Europe, Asia or Latin America. These positive investors' perceptions could be interpreted as evidence of a Mediterranean *home bias*. In addition, investors appear overly optimistic in the case of Morocco and Tunisia and Egypt, and overly pessimistic in the case of Jordan and Israel. This suggests a possible interference of psychological factors in the allocation of private equity investment to this region.

A cluster analysis also revealed that the MENA countries may be divided into three main groups: Israel, Tunisia and Turkey seem to be converging towards the most attractive emerging private equity markets. Morocco and Jordan display strong business and investor protection but have low human capital, economic activity and social environment scores. Finally, Egypt, Lebanon, Syria and Algeria belong to the least attractive segment of emerging private equity markets. From a policy point of view, this highlights potential improvement areas for each country. Interestingly, our attractiveness indices are significantly correlated, suggesting that that policy reforms should be coordinated if the region is to attract higher investment levels.

It should be noted, however, that the expected developmental effect of private equity investment depends upon its sectoral allocation. For a positive impact of be reached, these flows must indeed be channelled towards the riskiest and most innovative segment of investment projects, rather than towards traditional sectors (such as real estate, textile and

manufacturing). In the latter case, the high returns demanded by private equity investors would indeed constitute an un-necessary punction on productive capital, especially if profits are repatriated abroad, or used as collateral to borrow from local bank and invested internationally. More research is thus needed in order to disentangle the nature and impact of private equity investment in this region. In this context, the recent European institutional surge in interest for the Mediterranean economies could offer interesting research opportunities.

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Annex 1 Institutional data

INDEX 1 : Economic Activity	**Source**
ECO1 : 2006 logGDP (constant 2000 US$)	WDI database
ECO2: 2006 logGDP per capita (constant 2000 US$)	WDI database
ECO3 : 2006 logGNI per capita, PPP (current international $)	WDI database
ECO4: 2006 Gross fixed capital formation (% of GDP)	WDI database
ECO5: 2006 Gross domestic savings (% of GDP)	WDI database
ECO6 : 2006 GDP growth	WDI database
INDEX 2 : Business opportunities	
BUS1 : Price liberalization	CEPII database
BUS2: Reforms and privatization of non financial institutions between 2001 and 2006	CEPII database
BUS3 : Implementation of privatization program	CEPII database
BUS4 : Openness of privatization program	CEPII database
BUS5 : Weight of institutional shareholders	CEPII database
INDEX 3 : Political Stability	
POL1: Political rights and functioning of political institutions	CEPII database
POL2: Change in political rights over the last 3 years	CEPII database
POL3: Public freedom and civil society development	CEPII database
POL4: Change in public freedoms over the last 3 years	CEPII database
POL5 : Internal public security	CEPII database
POL6 : External public security	CEPII database
POL7: Change in security levels over the last 3 years	CEPII database
POL8 : Corruption	CEPII database
POL9 : Performance of judicial system	CEPII database
INDEX 4 : Capital market development	
CAP1 : Weights of small shareholders	CEPII database
CAP2 : Venture capital and innovation	CEPII database
CAP3 : Insurance, pension funds	CEPII database
CAP4 : Traditional credit systems	CEPII database
CAP5 : Disclosure requirement	CEPII database
CAP6: Financial system regulation reforms over the last 3 years	CEPII database
CAP7: Openness to foreign equity and loans	CEPII database
INDEX 5 : Taxation environment	CEPII database
TAX1 : Centralization vs .Fiscal autonomy	CEPII database
TAX2: Fiscal efficiency	CEPII database
TAX3: Fiscal reforms over the last 3 years	WDI database
INDEX 6 : Investor protection	
INV1: Enforcement of traditional property rights	CEPII database
INV2 : Formal property rights	CEPII database
INV3 : Nature of private contracts	CEPII database
INV4 : Enforcement of private contracts	CEPII database
INV5 : Enforcement of governmental contracts	CEPII database
INV6 : Financial information	CEPII database
INV7 : Respect of intellectual property	CEPII database
INDEX 7 : Social environment	
SOC1 : Labour market rigidity	CEPII database
SOC2: Labour market reforms over the last 3 years	CEPII database
SOC3 : Informal labour market	CEPII database
SOC4 : Protection of workers	CEPII database
SOC5 : Labour contract protection	CEPII database
SOC6 : Social dialogue	CEPII database
INDEX 8: Human capital	
HUM1: Education and health - basic public goods	CEPII database
HUM2: Attitude towards change and innovation	CEPII database
HUM3 : Investment for future generations	CEPII database
HUM4: Equity in access to public goods	CEPII database
HUM5 : Training of elite	CEPII database
HUM6 : Diffusion of innovation	CEPII database
HUM7 :Adult professional training	CEPII database
HUM8 : Social mobility	CEPII database