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Risk Capital Investors'***

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# How Attractive is Central Eastern Europe for Risk Capital Investors?

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## Abstract:

This paper addresses the attractiveness of Central Eastern European countries for Venture Capital and Private Equity investors by the construction of a tailored composite index. We define six key drivers that determine an emerging country's attractiveness for this type of investment, based on a survey among institutional investors. We use 42 socio-economic data series as proxies for the six key drivers, and benchmark the Central Eastern European ("CEE") countries with EU-15, Norway and Switzerland. We identify six tier groups of country attractiveness. We highlight socio-economic strengths and weaknesses of CEE, and hence, provide guidelines for policy improvements to attract more risk capital funding to spur innovation, entrepreneurship, employment, competitiveness, and growth in the emerging countries.

JEL codes: G23, G24, M13, O16, P34, P52

Keywords: Central Eastern Europe, Economic Transition, Emerging Markets, Venture Capital, Private Equity

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# 1. Introduction

The Central Eastern European (CEE)<sup>1</sup> countries are still in a transitional stage. EBRD (2005) emphasizes that improvements in governance, enterprise restructuring, and the financial sector have been the main features of the transition process in the last years. The CEE countries lessened the burden of business regulation, such as licensing and tax administration, and they progressed in reducing corruption and organized crime. EBRD (2006) highlights that the speed of the transition process varies in each country; some of them show strong attempts to reform, while others have decreased the pace of reform, partly influenced by recently-elected new governments. Unfortunately, EBRD (2007) remarks that reforms have recently slowed down since accession to the European Union, and that much of CEE lacks domestic political and social consensus, leading to fragile coalition governments which are less inclined to pursue difficult reforms.

Kolodko (2000) and Wagner and Hlouskova (2005) argue that the CEE countries are in a period of catch-up that might last for several decades. Süppel (2003) bases his view on the observation that per-capita GDP are still below average, while education in CEE countries is at a high level, and institutional structures have been converging for some time. The growth estimates above the European average, coupled with the political will to promote innovative enterprises should lead to a strong demand for risk capital in the CEE countries and hence, to a high attractiveness for Venture Capital and Private Equity (VC/PE) investors.

Venture Capital and Private Equity constitutes an asset class where institutional investors provide capital for non-quoted corporations. Financial intermediaries, the VC/PE funds, or General Partners, found limited partnerships, raise capital, and manage it. The term Venture Capital is used to describe investments that flow into young and start-up corporations with high growth potential. Private Equity defines investments to finance ownership changes of established businesses. The

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<sup>1</sup> We define CEE countries as those Central Eastern European countries that lately (i.e., 2004 and 2007 respectively) accessed the European Union; namely Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovakia, Slovenia, and the Baltic States including Estonia, Latvia, and Lithuania.

nature of these types of investment is return-driven. The institutional investors ask for an appropriate risk premium for their exposure.

Hellmann and Puri (2000), and Kortum and Lerner (2000) show that VC/PE-backed companies are more efficient innovators. Belke et al. (2003), and Fehn and Fuchs (2003) prove that they create more employment and growth than their peers. Levine (1997) documents well the role of VC/PE funds in fostering innovative firms, and indeed, there now exists a broad consensus that a strong VC/PE culture is a cornerstone for commercialization and innovation in modern economies. Hence, policymakers should focus on the creation of an adequate setting for a prospering VC/PE market to support entrepreneurial activities and growth, especially in transition countries. However, the risk capital supply is rather small compared to other European economies and relative to the expected growth opportunities in the CEE countries, even if institutional investors are increasingly looking internationally for new investment opportunities. The first funds were raised shortly after the fall of Communism. According to EVCA (2003, 2004, 2005 and 2006), since then, and up to the initiation of our study, only a little more than €9bn has been raised in funds dedicated to CEE countries.

Foreign direct investments (FDI) were established immediately after the fall of Communism in CEE. This raises questions about the reasons constraining the development of the VC/PE market in that region compared to FDI. One could assume that VC/PE investments are similar to FDI. However, this is not the case: First, capital for VC/PE investments is provided by institutional investors as portfolio investments and not by corporations that follow a strategic rationale. Second, the investments are made via agents, the Venture Capital and Private Equity funds, and not directly: The institutional investors hold shares of a closed end fund as Limited Partners and do not directly take control of the finally financed corporation. This is the VC/PE funds' task. The General Partners are "active investors", and monitor and control the investee corporations. These characteristics lead to additional and more severe determinants for VC/PE allocations than for FDI: The VC/PE investments have to be liquidated after some time, to return the proceeds to the investors. Further, there has to exist an infrastructure and a network of finance professionals to perform and support transactions, and to finally divest. Additionally, there is no knowledge transfer

from a parent company to a subsidiary. Hence, knowledge and strategies have to be developed and deployed by the investee corporation. Therefore, education, expected entrepreneurial management capabilities, and entrepreneurial culture in a host country receive a high importance in the international VC/PE allocation process.

In this paper, we address these issues and determine the attractiveness of the CEE countries for Venture Capital and Private Equity investors. We review the literature and search for factors that impact international VC/PE allocations. However, since there is no consensus about the relevance of the numerous determinants, we conduct a survey among Limited Partners: We simply ask the institutional investors about the importance of several emerging markets allocation criteria. This yields a tailored ranking of determinants for an emerging country's attractiveness for VC and PE investors. We technically transfer the ranking into a weighting scheme for the criteria and assess the attractiveness for 27 sample countries using 42 different socio-economic data series. The sample consists of 10 CEE countries, the 15 members that belonged to the European Union before May 1<sup>st</sup> 2004 (the "EU-15"), and the non-EU countries Switzerland, and Norway. We run robustness checks where we alter the weighting scheme and the statistical method for the data aggregation, and obtain four slightly different rankings of the 27 individual economies. However, we can clearly identify six tier groups of attractiveness for all of our sample countries and three tier groups for the CEE countries. The CEE countries all rank below the EU-15 average. The best ranked CEE country is Hungary, even ahead of France, followed by Slovenia, Lithuania, Poland, and Latvia. Portugal is next, before the Czech Republic, Estonia, and Bulgaria. Surprisingly, Spain and Italy follow, while the ranking concludes with Slovakia, Romania, and finally Greece as the least attractive countries for VC and PE investments. We analyze the tracking power of our index by correlating the index scores with the VC/PE fundraising activity in the particular countries. We find a high correlation between the index scores and fundraising activity. None of the individual data series used for the index aggregation nor any other broader index describing general business conditions serves as indicator for VC/PE country attractiveness as good as our index. Since there is no correlation between foreign direct investment and VC/PE activity, our index is likewise not a good indicator for FDI.

Our composite index is appropriate to focus on the particular strengths and weaknesses of the CEE region compared to the EU-15 average. CEE countries attract VC/PE investors with their tax regime. The average of the CEE countries is on a par with the EU-15 average regarding protection of investors and corporate governance. They are also on a par considering their human and social environment. CEE ranks below the EU-15 average when we focus on entrepreneurial culture and opportunities, and on the prosperity of their economies. However, their largest deficit is the size and liquidity of their national capital markets. Their relatively small capital markets demonstrate the negligible infrastructure of professional actors to perform and support transactions. This constitutes the major obstacle for Venture Capital and Private Equity investments in the CEE region.

Our index allows for comparison on more granulated informational levels and for benchmarking individual countries. CEE policy makers will benefit from our results by realizing particular strengths and weaknesses of their countries to attract international VC and PE. Improvements of the revealed weaknesses shall lead to more supply of risk capital and will hence spur innovation, entrepreneurship, employment, competitiveness, and growth.

The paper is structured as follows: We review the most important literature on the determinants of vibrant VC and PE markets, and describe our survey among the institutional investors. We briefly present the survey results and the methods to determine the index weights. Next, we present 42 socio-economic data series to assess the attractiveness of our sample countries, and calculate the index. We confirm the results in robustness checks and by analyses of our index's tracking power. We benchmark the CEE region against EU-15 and conclude with recommendations to increase CEE's attractiveness for risk capital investors.

## **2. Literature Review**

We review papers that relate socio-economic determinants with entrepreneurial activity or international investments, and papers that deal with the constitutive factors for vibrant VC and PE markets directly. The variety of papers is tremendous, and we group the discussed findings into six major categories. We will later refer to these categories as the "six key drivers" for Venture Capital

and Private Equity activity. We arrange our survey questions correspondingly, and likewise try to find data series used as proxies for these key drivers to assess country attractiveness.

## **2.1. *The Importance of Economic Activity***

Intuitively, the state of a particular country's economy affects VC/PE activities. Gompers and Lerner (1998) point out that there are more attractive opportunities for entrepreneurs if the economy is growing quickly. Wilken (1979) argues that economic development facilitates entrepreneurship as it provides a greater accumulation of capital for investments. The ease of start-ups is expected to be related to societal wealth, not only due to the availability of start-up financing, but also to higher income among potential customers in the domestic market. Romain and van Pottelsberghe de la Potterie (2004) find that VC/PE activity is cyclical and significantly related to GDP growth.

## **2.2. *The Importance of the Capital Market***

Jeng and Wells (2000) stress that the main force behind the cyclical swings in the VC/PE market is the IPO activity because it reflects the potential return to the VC/PE funds. Kaplan and Schoar (2005) confirm this. Black and Gilson (1998), and Gompers and Lerner (2000) point out that risk capital flourishes in countries with deep and liquid stock markets. Schertler (2003) uses either the capitalization of stock markets or the number of listed firms as a measure for stock market liquidity. He finds that the liquidity of stock markets has a significant, positive impact on VC investments at early stages.

Greene (1998) emphasizes the availability of debt financing as an important entrepreneurial obstacle in many countries. Entrepreneurs need to find backers who are willing to bear risk, such as banks or VC/PE funds. Hellmann et al. (2004) argue that banks represent the dominant financial institutions in most countries. They examine the role of banks for the VC/PE industry and stress that banks invest in VC/PE mainly for strategic reasons. They try to build early relationships for future lending activities. Cetorelli and Gamera (2001) provide evidence that bank concentration

promotes the growth of those industrial sectors that have a higher need of external finance by facilitating credit access to younger firms.

Additionally, the VC/PE activity in a particular country relates to the status of the VC/PE market's maturity level. Sapienza et al. (1996) mention that acceptance in a country's society and the historical development of the VC/PE market determines investor confidence. Balboa and Martí (2003) find that annual fundraising volume is highly dependent on the previous year's market liquidity. Chemla (2005) argues that the management of VC/PE funds is costly. Particular regions become attractive to investors when the transaction volumes and expected payoffs exceed a certain amount to cover the management fees.

Da Rin et al. (2005) stress that policymakers should consider a wide set of policies to improve emerging VC/PE markets, rather than simply channeling funds into the segment. Armour and Cumming (2006) confirm this rationale and show that government programs often hinder rather than help the development of VC/PE markets.

### **2.3. *The Importance of Investor Protection and Corporate Governance***

Legal structures and the protection of property rights also appear to influence the attractiveness of a VC/PE market. La Porta et al. (1997 and 1998) confirm that the legal environment strongly determines the size and extent of a country's capital market and local firms' ability to receive outside financing. They emphasize the difference between law on books and the quality of law enforcement in some countries. Glaeser et al. (2001), and Djankov et al. (2003 and 2005) suggest that parties in common-law countries have greater ease in enforcing their rights from commercial contracts.

Cumming et al. (2006a) find that the quality of a country's legal system is more strongly connected to facilitating VC/PE-backed exits than the size of a country's stock market. Cumming et al. (2006b) extend this finding and show that cross-country differences in legality, including legal origin and accounting standards, have a significant impact on the governance of investments in the VC/PE industry. Desai et al. (2006) discuss that fairness and property rights protection largely determine the growth and emergence of new enterprises. Cumming and Johan (2007) highlight

that the perceived importance of regulatory harmonization increases institutional investors' allocations to the asset class. La Porta et al. (2002) find lower cost of capital for companies in countries with better investor protection. Lerner and Schoar (2005) confirm these findings. Johnson et al. (1999) show that weak property rights limit the reinvestment of profits in start-up firms. Even so, Knack and Keefer (1995), Mauro (1995), and Svensson (1998) demonstrate that property rights significantly affect investments and economic growth.

## **2.4. *The Importance of Taxes***

Gompers and Lerner (1998) stress that the capital gains tax rate influences VC/PE activity. In fact, they confirm Poterba's finding (1989), who builds a decision-model to becoming an entrepreneur. Bruce (2000 and 2002), and Cullen and Gordon (2002) prove that taxes matter for businesses entry and exit. Bruce and Gurley (2005) explain that increases in the tax rates on wages raise the probability of becoming an entrepreneur. Hence, the difference between personal income tax rates and corporate tax rates tends to be an incentive to create self-employment. Djankov et al. (2008) find in a comprehensive study among 85 countries that corporate tax rates have a large adverse impact on entrepreneurial activity, aggregate investment, and foreign direct investments.

## **2.5. *The Importance of the Human and Social Environment***

Rigid labor market policies negatively affect the evolution of a VC/PE market. Lazear (1990), and Blanchard (1997) discuss how protection of workers can reduce employment and growth. Black and Gilson (1998) show that variations in labor market restrictions correlate with VC/PE activity.

Djankov et al. (2002) investigate the role of administrative and bureaucratic burdens for start-ups in different countries. They conclude that the highest barriers and costs are associated with corruption, crime, a larger unofficial economy, and bureaucratic delay. Baughn and Neupert (2003) argue that bureaucracy in the form of excessive rules and procedural requirements, multiple institutions from which approvals are needed, and numerous documentation requirements may

severely constrain entrepreneurial activity. Lee and Peterson (2000) stress that the time and money required to meet such administrative burdens may discourage new venture creations.

## **2.6. *The Importance of Entrepreneurial Opportunities***

Access to viable investments is probably another important factor for the attractiveness of a regional VC/PE market. In order to foster a growing risk capital industry, Megginson (2004) argues that R&D culture, especially in universities or national laboratories, plays an important role. Gompers and Lerner (1998) show that both industrial and academic R&D expenditure is significantly correlated with VC/PE activity. Kortum and Lerner (2000) highlight that the growth in VC/PE fundraising in the mid-90s may be due to a surge of patents in the late 1980s and 1990s. Schertler (2003) emphasizes that the number of employees in the field of R&D, and the number of patents, as an approximation of the human capital endowment, has a positive and highly significant influence on VC/PE activity. Furthermore, Romain and von Pottelsberghe de la Potterie (2004) find that the level of entrepreneurship interacts with the R&D capital stock, with technological opportunities, and the number of patents. Lee and Peterson (2000), and Baughn and Neupert (2003) argue that national cultures shape both individual orientation and environmental conditions, which lead to different levels of entrepreneurial activity in particular countries.

## **2.7. *Summary of the Literature Review and Implications for our Survey and the Index Aggregation***

As designated by the headlines of the sub-sections, we group all the criteria into six main determinants that impact a country's attractiveness for VC/PE investors. We refer to these main criteria as the "six key drivers": Economic Activity, Capital Markets, Taxation, Investor Protection and Corporate Governance, Human and Social Environment, and Entrepreneurial Opportunities. Our index shall assess these key drivers for the particular countries. However, the literature overview does not provide a consensus about the importance ranking for the individual criteria nor for any of the key drivers. The question, for example, of whether the size and liquidity of the capital market is more important than the number of patents or the corporate tax rate still remains open.

Therefore, we run a questionnaire among institutional investors and simply ask them about the relevance of the discussed criteria when investing in emerging VC and PE markets. Thereby, we group the criteria into the same six key drivers. Using the survey responses, we can assign weights to the individual criteria, and the key drivers, with respect to their relevance for the investment decision. Finally, we proxy the key drivers with socio-economic data and assess country attractiveness, using the assigned weights. The individual steps are subsequently described.

### **3. The Survey**

#### **3.1. *The Questionnaire and Addressees***

Due to space limitations we do not describe the questionnaire in detail. It is available from the authors on request. In brief, the questionnaire is divided into two parts and addresses several other issues beyond the scope of this paper: The first part contains descriptive information on the respondent's institution in terms of its type, size, and geographic origin, among others. With the first part of the questionnaire, we are able to present descriptive statistics of our sample and to address a potential sample selection bias. The second part comprehensively deals with socio-economic criteria the respondent considers for the international asset allocation decision process when investing in emerging markets VC/PE Limited Partnerships.

The survey was addressed via email to 1,079 Limited Partners world-wide. The emails were personalized, using the name of the Limited Partner and an investment manager in charge. The addressees were invited to an online database. The geographic distribution of the addressees is as follows: 77% of the Limited Partners have their headquarters in the USA or Canada, 17% in Europe, 5% in Asia, and 1% in other continents. The names and email addresses are collected from four commercial databases (Dow Jones and Company: The Directory of Alternative Investment Programs 2005, Dow Jones and Company: Galante's Venture Capital & Private Equity Directory 2005, Private Equity Intelligence: The 2005 Global Fund Raising Review, and Private Equity International: The Global Limited Partners Directory 2005). It is not known what the entire population of LPs is in terms of numbers and funds under management, as a reliable or official list

of institutional investors that qualify as VC/PE Limited Partners does not exist. Each of the four databases used claims to cover the whole population of LPs, but, in matching them, we increase the number of players and, hence, gain a unique world-wide compendium of Limited Partners. Furthermore, we check several references and actively search for important and well-known LPs, and deliberately attempt to cover as many LPs as possible. Nevertheless, matching the databases and the cross-checks might not secure a collection of LPs that sufficiently represents the entire population. Regarding the geographical distribution of investors, for example, we have the following concern: Even though the USA, as strongest economic region and with the best developed financial market, probably embodies the biggest (in terms of fund volumes), most sophisticated, and the largest number of LPs, other regions, notably Asia, might be under-represented. However, in terms of funds under management, our data collection reliably represents the population. In our repository, none of the larger LPs should be missing, be it in the USA, Europe or Asia, and the larger institutions are the more important ones because of their market weight. An over-representation of the number of US LPs will not harm our conclusions, unless US LPs respond in a different manner. We address this issue in the next section and investigate our sample with respect to potential differences in the allocation decision processes of several sub-groups of the investors.

### **3.2. *Sample Size and Structure***

From the 1,079 Limited Partners addressed we received valid and valuable responses from 75. This is a response rate of 7% and quite satisfying, when compared to some other studies that collect primary data about investors' behavior by means of a questionnaire. For instance, Lerner and Schoar (2005) work with data from 28 investors, while Köke (1999) considers a sample of only 21 responses.

The responding LPs are segmented into the following groups: corporate investors, government agencies, banks, pension funds, insurance companies, funds of funds, endowments, and others. A geographic distinction is made according to the origin of the investors: USA and Canada, Europe, and Rest of the World. The segmentation is presented in Table 1.

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Insert Table 1 about here

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Unfortunately, the response rate from LPs that qualify themselves as ‘Others’ is relatively large, and therefore, only the ‘Funds of Funds’ group can be distinguished as homogeneous. Furthermore, we received more answers from European LPs (49.3% of all the answers), as compared to their occurrence in our repository at 17%. This might bias the results of our study. Anyway, the geographical distribution might not be the only cause of a selection bias. The types of investors, the fund sizes, or other criteria might not be sufficiently representative as well.

Unfortunately, as mentioned above, since no comparable comprehensive repository of investor data exists that provides the necessary information to correct for a potential bias we are unable to correct for this issue. However, we assess the magnitude of a potential bias and distinguish the responses of sub-groups of investors, e.g. Europeans and non-Europeans, funds of funds and others, or small and large funds. The results of these segmentations are presented in Appendix A to this paper. We find that there are no meaningful differences in their international capital allocation approaches. This leads us to conclude that even if our sample does not perfectly represent the world-wide population of Limited Partners, the findings are not biased, and we can construct our index with the gathered information.

### **3.3. Responses**

The questionnaire considers all the issues mentioned in our literature overview, and groups them into the six key drivers Economic Activity, Capital Market, Taxation, Investor Protection & Corporate Governance, Human & Social Environment, and Entrepreneurial Opportunities. The respondents are asked to evaluate the importance of the individual criteria for their VC/PE asset allocation decisions when investing in emerging markets on a seven-point Likert scale, ranging from “not at all important” 1, to “very important” 7. To ensure that no relevant determinant is missing in our questionnaire, we ask the respondents in parallel to determine their three most

important international asset allocation criteria using keywords. The analysis of these keywords reveals that no major topic is left out in our questionnaire. Figure 1 presents the six major categories, all the individual criteria, the number of valid responses, their mean values, and the +/- range of one standard deviation around the means.<sup>2</sup>

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Insert Figure 1 about here

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Figure 1 reveals that corporate governance principles and the protection of investors' rights is the most important criterion for Limited Partners' investments in emerging markets, and that the availability of public subsidies is the least important of all of them. The findings provide a large potential for interpretation and further analyses. However, in this paper, we cannot comment on these results, but rather use the gathered information to calculate the CEE countries' attractiveness for Venture Capital and Private Equity investors.<sup>3</sup>

#### **4. Assessing Country Attractiveness**

Our measure for country attractiveness shall reflect the importance of the individual allocation criteria as revealed in the previous section. Therefore, in the ideal case, we would use data on our European sample countries that perfectly match the required criteria. If this data existed, the weight of the individual criterion in the measure would be equal to its mean importance level. Unfortunately, the required data to follow this direct approach is not available. For example, while data on GDP, the number of IPOs, or the stock and M&A market is existent, it is impossible to compare the qualification of GPs, the expected entrepreneurial management skills, or language and cultural differences among our European sample countries. Therefore, we search for adequate data series that qualify as proxies for the key drivers. If we can assess the key drivers, we can use the responses of the survey participants to assign weights for their aggregation. In the subsequent

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<sup>2</sup> It should be noted that the ordinate is truncated at level 7 and hence, in some cases this limits the representation of the standard deviation.

<sup>3</sup> For detailed analyses of the responses we refer the reader to Groh and Liechtenstein (2008).

section, we describe two alternative ways to determine these weights. After that, we introduce our selection of country data series to assess the six key drivers, and their aggregation.

#### **4.1. Determining the Weights of the Individual Criteria**

We follow two approaches to determine the weights of the individual allocation criteria. The reason for proposing two approaches is to provide alternatives, while the different results can be analyzed in robustness checks. We know by the analysis of the key words the respondents provided that we do not omit any important emerging market VC/PE allocation criterion in our survey. Hence, our first approach is to determine the weight ( $w$ ) of every individual criterion according to its mean nomination ( $\mu$ ). We compare the mean importance of one criterion with the mean importance of the other criteria within one key driver group. We calculate the average key driver importance, and repeat the procedure to determine the weights of the six individual key drivers:

$$w_i = \frac{\mu_i}{\sum \mu} \quad (1)$$

The second approach is to perform factor analyses. Factor analysis is an adequate technique to determine a common structure among variables, hence the commonality of individual allocation criteria in our case. A detailed discussion of factor analyses is carried out in, for example, Hair et al. (1998). The general linear factor model for  $p$  observed variables and  $q$  factors or latent variables takes the form:

$$x_i = \alpha_{i1} F_1 + \alpha_{i2} F_2 + \dots + \alpha_{iq} F_q + e_i, \quad (i = 1, \dots, p), \quad (2)$$

where the  $x_i$  represent the nominations of importance, and  $\alpha_{i1}, \dots, \alpha_{iq}$  are factor loadings related to the latent factors  $F_1, \dots, F_q$ , while  $e_i$  are residuals. It is assumed that the factors are uncorrelated with each other, and with the residuals. Further, they have zero means, and unit variance. Additionally, the residuals are uncorrelated with each other, have zero means, but not necessarily equal variances. Next, the appropriate method to extract the first  $m$  latent factors in our model is principal component analysis. The decision of when to stop extracting factors depends on the point when only little 'random' variability remains. Various stopping rules have been developed as described in, for example, Dunteman (1989). We follow Kaiser's (1958) criterion, which is one of

the most widely-used stopping rules and recommends dropping all factors with an Eigenvalue below one.

There are two statistical measures commonly used to prove that factor analysis yields a satisfying result. The first one is the Measure of Sample Adequacy (MSA). The MSA value should be above 0.5 for every single variable included in the analysis, and for the overall analysis. If single variables have MSA values below 0.5, they should be omitted in the analysis. The second measure is the Bartlett Test of Sphericity, where the test-value should be below the 0.05 significance value.

Factor analysis yields a matrix of factor loadings. The interpretation of these loadings is possible after rotation, which is a mathematical procedure to maximize the loadings of the extracted factors on the individual criteria. The factor matrix after rotation likewise serves for the calculation of the weights of the individual criteria within the construct. The weight is simply determined by the ratio between the squared factor loading and the overall variance explained by the single factor. If several factors are extracted, the final weight of one criterion is a weighted average of the ratios between explained variances (by the single factors) and the overall explained variance. Since factor analysis is only valid if there are more than two criteria, and if the MSA values and the Bartlett Test of Sphericity are satisfying, we cannot always use it to determine criteria weights. In these cases we either refer to the mean nomination weighting procedure as described above or we discard variables from the analysis.

Following the two described weighting approaches, we obtain the weights for the six key drivers as presented in Table 2. The calculations of the weights according to the mean nominations are straightforward. However, the detailed factor analyses are documented in the Appendix B to this paper.

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Insert Table 2 about here

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Table 2 presents the weights of the key drivers of country attractiveness for VC/PE investors when investing in emerging markets. Using mean nominations, Investor Protection & Corporate

Governance receives the highest weight (0.204). The other key drivers are almost on an equal importance level. However, using factor analysis changes the results. Economic Activity is assigned a very low weight (0.068), while Investor Protection & Corporate Governance is not as important as in the first approach (0.158). The other key drivers gain more weight, but all of them on an almost equal level.

The reason for the different weights according to both approaches is the dispersion of importance-nominations of the individual criteria. While there is only a little dispersion of responses regarding the relevance of Investor Protection & Corporate Governance, the dispersion is very high for Taxation and Entrepreneurial Opportunities (as also revealed in Figure 1). It is a principle, and a consequence of factor analysis to assign more weight to those criteria that stronger contribute to the variance in the data set.

As we mention above, the rationale for proposing factor analysis as an additional method to determine index weights is to gain an alternative weighting scheme. We are indifferent regarding a preference for either scheme and rather address the impact of the two alternatives in robustness checks. It turns out that the country attractiveness ranking remains stable across the two schemes. As a consequence, countries have to show preferable characteristics regarding all the named criteria to reach a favorite ranking while the choice of the mathematical weighting procedure is negligible.

Anyway, as already stressed, factor analysis is not applicable for the constructs that consist of less than three criteria. Therefore, we cannot perform factor analyses within the key drivers Economic Activity, Taxation, and Investor Protection & Corporate Governance. Additionally, factor analysis is not applicable if MSA values or the Bartlett Test of Sphericity do not reach the thresholds. This, unfortunately, is the case within the Human & Social Environment key driver. As a result, we use the mean nominations for the individual sub-criteria to determine the importance scores for these four key drivers. However, in the next step, we can use factor analysis to calculate the six key drivers' weights. Hence, factor analysis is not feasible in all cases to determine the individual criteria's weights within the key drivers, and in those cases we refer to the mean

nomination technique and format them in italics in Table 2, but factor analysis is adequate and feasible on the level of the six key drivers.

Further, we have to omit Diversification Effects and the Number of IPOs in the factor analysis for the Capital Market construct. Both criteria have low MSA values, and additionally, the Number of IPOs criterion highly correlates with the criterion General Capital & M&A Market Conditions and hence, otherwise, would be considered twice.

## **4.2. *Data Selection to Assess the Key Drivers***

The next step is to find adequate data series for 27 European countries to proxy the key drivers as defined above. A comprehensive search of commonly available and reliable data sets leads to a selection of 42 data series that we use as proxies for the key drivers. Table 3 presents the data set, the sources, and the structure to aggregate the information on the level of the six key drivers.

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Insert Table 3 about here

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We use yearly data ranging from 2000 to 2005 and usually refer to the last data record. Some of the data-points are averages over a certain time-period to smooth fluctuations. GDP figures, VC/PE activity or M&A transaction volume among others are such averages considering the period from 2000 to 2005. For large fluctuations and large differences between the countries we also use logs of the averages (please refer to the legend of Table 3 for detailed information). In less than one percent of all cases, data was not available for a certain year. If data-points are missing, we apply the three methods suggested by Nardo et al. (2005) in the following order: a) We try to find missing data in other databases or via the Internet, b) we interpolate between the adjacent data records, and c) we use the latest available data before 2005. To enable cross-country comparison of the data series, we relate the variables to the sizes of the economies/countries and use either GDP or population as deflators.

However, we do not always use raw data but sometimes refer to broader indices on general business conditions, like the Doing Business Indices from the World Bank, among others. For instance, our key driver for Investor Protection and Corporate Governance is assessed by such indices. For descriptions of the individual index items, we refer to the sources, where comprehensive definitions and descriptions of the data series are available.

Due to the large number of index items (42), and data-points (105) per country (including the data records over a certain period to calculate the averages), we follow the method proposed by Nicoletti et al. (2000) and determine a pyramidal structure of three levels for the aggregation. We group the items that we expect to correlate with each other, as indicated by the outline of Table 3. For example, key driver 5 Human and Social Environment is assessed by several criteria. 5.2 Labor Regulations is among those criteria, while Labor Regulations itself is expressed by three sub-criteria. One of these sub-criteria is 5.2.1 Rigidity of Employment which, again, is made up by three sub-categories. The main advantage of this pyramidal structure is twofold. First, we can trace back indicator values to increasing levels of detail. This will help in interpreting the strengths and weaknesses of the individual countries and in drawing up the conclusions. Second, the individual criteria do not achieve too much weight in the aggregation procedure.

### **4.3. Data Aggregation**

We need to introduce a common scale to aggregate the data. There exist various techniques, each one with particular advantages and disadvantages as discussed by Freudenberg (2003), Jacobs et al. (2004), and Nardo et al. (2005). We use rescaling in our approach. The method is vulnerable for extreme values or outliers that can distort the transformation. However, rescaling can widen the range of indicators lying within small intervals more than using other transformation techniques. The rescaling method is defined as:

$$y = \frac{x \cdot \min(x)}{\max(x) \cdot \min(x)} \quad (3)$$

We convert all variables of the particular data series to a common scale from 1 to 100 points. Thereby, 100 represent the best score, while 1 is the worst. For every individual criterion, we

define whether high values positively or negatively influence the attractiveness for VC/PE investors and assign the scores accordingly.

Next, we have to determine weights to aggregate the gathered information. Therefore, once again, we follow two different approaches. The first approach assigns equal weights to all of the data series when aggregating them on their upper construct level. The second approach is identical on the low aggregation levels, but we use factor analysis in the last step to determine the scores for the six key drivers. However, identical to the problem described above, factor analysis is not feasible for constructs with less than three data series, or where MSA values and the Bartlett's Test do not reach the threshold. This is the case for the Taxation and the Investor Protection & Corporate Governance constructs. Hence, we use equal weights when aggregating the constructs' data. Table 4 presents the weights of the individual criteria and the constructs according to both approaches. The aggregation based on equal weights is straightforward and can be reconciled from the proposed index structure. We present the detailed factor analyses in Appendix B to this paper.

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Insert Table 4 about here

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## 5. Results

We apply the weights of the importance nominations for the six key drivers from Table 2 to the individual countries' key driver scores, calculated according to the weighting schemes in Table 4. Hence, we match our survey responses with the country data. As pointed out before, we use two different approaches to determine the weights of the importance nominations of the individual key drivers, and we also use two methods to assess these key drivers with the country data. We combine all these approaches and run four separate index calculations to detect differences resulting from the alternative procedures. First, we use the key driver weights as determined by the mean importance-nominations, and match it with the key driver scores based on equal weighting of the underlying data series (index version 1). Next, we use the key driver weights determined with

factor analysis and match this case with the same key driver scores as before (version 2). Finally, we repeat the procedure and alternate the methods to determine the key driver weights (based on mean importance nominations, and factor analysis), but now use factor analyses instead of equal weights, to calculate the key driver scores (versions 3 and 4). As a result, we achieve four different attractiveness scores for every country and four corresponding country rankings. Figure 2 presents the different country rankings for the 27 sample countries. The vertical lines mark the highest and lowest ranks achieved, while the dots designate the average ranks of the countries across the four calculations. The final order from left to right is determined by these average ranks of the countries.

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Insert Figure 2 about here

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Figure 2 reveals six tier groups of country attractiveness for VC and PE investors. The top performers are the United Kingdom, Sweden, Luxembourg, Ireland, and Denmark. The highest ranked CEE country is Hungary with an average rank of 14, which is ranked ahead even of France. Behind France, the other CEE countries follow, interrupted by Portugal, and surprisingly, Spain and Italy. However, the least attractive country is Greece. The dashed lines mark the six tier groups. While there might be some fluctuation across the ranks within a certain tier group with respect to the applied procedures for the data aggregation, and for the determination of the key drivers' importance, there is hardly any transition among the tier groups. This proves the robustness of our approach which is not affected by the chosen statistical methods, but rather by the socio-economic criteria. In other words, a country's ranking position is not depending on the applied mathematical approach, but on the characteristics of the individual criteria. A country needs to have favorable conditions in many or all of the criteria considered to gain a good ranking.

### **5.1. Tracking Power of the Index**

We determine the correlations of the individual countries' index scores with the actual Venture Capital and Private Equity fundraising activities to reveal which one of our four different

aggregation methods best describes the country attractiveness for VC/PE investors. For each country, we use the average of the ratios of funds raised, and GDP for the years 2001 until 2005 from EVCA (2003, 2004, 2005, and 2006). This ratio is commonly used for international comparisons of VC/PE activity. We use averages of these ratios due to their high fluctuations in the CEE countries. Raised funds in CEE at that time came from zero levels, and reached extraordinary peaks in particular years.

Using raised funds as an indicator for a country's attractiveness might draw some criticism: The data on raised funds were gathered according to the "office-approach". That means the headquarters of the fund-raising General Partner determines the statistics. This can be misleading, as a General Partner based in the UK can search for investments in CEE, for example. Alternatively, we might use invested capital in a particular country. However, invested capital is always a historical number. Additionally, invested capital in a particular country reflects the national demand for VC/PE. We focus on the supply-side and take the perspective of institutional investors who decide upon their international VC/PE allocations and select geographically. From our survey, we know that the quality of local General Partners is an important selection criterion, and this criterion shall also be reflected in our analyses on the tracking power. It would not be reflected if we used invested capital as indicator: For example, a Limited Partner might invest in a CEE-focused fund based in the UK, instead of considering a local fund, because he doubts the local General Partners' quality, or he misses the infrastructure of finance professionals in CEE. This deficit shall be accounted for in our index, and likewise in the benchmark to measure its tracking power. Finally, raised funds are more adequate to express expectations, as the capital raised will be invested in the future. This better matches the goal of our index, to be used as a proxy for investors' expectations.

The correlation analyses reveal that index version 4 has the highest tracking power for country attractiveness. In index version 4, we use factor analyses twice; first, to determine the weights for the key drivers from the survey responses, and second, to calculate the key driver scores for the countries. The Pearson correlation is 0.634, at a two-tailed 0.000 significance level. The correlation becomes slightly worse ( $\rho = 0.630$ , and two-tailed p-value = 0.000), when we switch to the mean

importance-nomination weighting scheme to determine the key driver weight, as in index version 3. The quality of the result decreases further if we also avoid factor analyses to calculate the key driver scores. Index version 1 has a correlation coefficient of 0.563 at a 0.002 significance level, while version 2 correlates to 0.562, also at a 0.002 significance level.

## **5.2. *Potential Endogeneity***

In a further robustness check, we control for the potentially endogenous variable historical VC/PE investment activity, which we use to describe the Capital Market key driver. We detect its high correlation of 0.831 with raised funds (at a 0.000 significance level). This is in line with Balboa and Marti (2003) who highlight the importance of historical activity and the maturity of a national VC/PE market for its further development. The result is not surprising, as one would expect investors to continue allocating their capital where a historical track record of successful transactions is already proven. Hence, while considering the data series is economically justified, our index might be affected by the use of this potentially endogenous variable, even if its weight is maximal at only 0.0453, as in index version 4. We address the endogeneity-issue and re-calculate index version 4 discarding the data series 2.5 VC/PE Activity. We analyze the tracking power of this “reduced index 4” and find almost no change of the correlation of the index scores with funds being raised. The correlation coefficient becomes 0.631 (still at a 0.000 significance level). The explanation for this minimal effect is rather simple. As we comprehensively comment in the following section, the historical VC/PE investments also have a strong correlation with IPO activity, and the size and liquidity of the public market. Hence, the data series does not add valuable information to the Capital Market key driver, and can likewise be omitted.

## **5.3. *Uniqueness***

In additional analyses, we search for more relationships and determine the correlation matrix of all individual data series. We find many correlations within the data, but focus on the results regarding our proxy for country attractiveness: raised VC/PE funds. Hence, we analyze if any other data series highly correlates with the characteristic in question and could qualify to assess country attractiveness.

We find a strong correlation of raised VC/PE funds with 2.2.1 Stock Market Capitalization ( $\rho = 0.514$ , at a 0.007 significance level), and with 2.1 IPO Volume ( $\rho = 0.428$ ,  $p = 0.029$ ). This confirms the findings of Black and Gilson (1998), Jeng and Wells (2000), Gompers and Lerner (2000), Schertler (2003), and Kaplan and Schoar (2005): The size and liquidity of a national capital market plays an important role for Venture Capital and Private Equity activity.

Further, we detect that several broader indices describing general business conditions also correlate with VC/PE fundraising activity. For example, the World Bank's indices 5.2.1.2 Rigidity of Hours ( $\rho = 0.407$ ,  $p = 0.035$ ), and 6.5 Burden of Starting a Business ( $\rho = 0.390$ ,  $p = 0.044$ ) correlate with funds raised. This confirms Lazear (1990), Blanchard (1997), Black and Gilson (1998), Djankov et al. (2002), Baughn and Neupert (2003), and Lee and Peterson (2000) who stress the importance of labor market conditions and the burden for entrepreneurial activities for the general economic development.

Additionally, we find that the index 5.3 Bribing and Corruption by Transparency International highly correlates with VC/PE fundraising ( $\rho = 0.521$ , at a 0.005 significance level). This is in line with Djankov et al. (2002) who emphasize the negative impact of corruption. Finally, the 6.1 General Innovativeness Index ( $\rho = 0.489$ ,  $p = 0.010$ ), and our construct 6.2 R&D Expenditures ( $\rho = 0.519$ ,  $p = 0.006$ ) have significant correlations with raised VC/PE funds. That points to the importance of intellectual property and innovations for the asset class, as referred to by Gompers and Lerner (1998), Kortum and Lerner (2000), and Schertler (2003).

However, we detect no correlation between VC/PE fundraising activity and any other individual data series, construct or ready-made index, higher than in the case of our composite measures. As a consequence, our proposed aggregation structure, the data set, and the applied statistical approaches lead to the best possible indicator for Venture Capital and Private Equity country attractiveness. This distinguishes our tailor-made index from other indicators focusing on general business conditions, and makes it especially useful to determine strengths and weaknesses of countries or regions, as presented in a subsequent section of this paper, where we benchmark CEE with the EU-15 members.

## **5.4. Our Index and FDI**

A final interesting issue is the question of whether there is a relationship between foreign direct investments and VC/PE attractiveness, as FDI could partly be driven by similar criteria. However, we detect no correlation between foreign direct investments and the VC/PE fundraising activities among our sample countries ( $\rho = 0.062$ ,  $p = 0.757$ ). Correspondingly, our indices are bad proxies for FDI attractiveness. The correlation of, for example, our index version 4 with foreign direct investments is a non-significant 0.362 only ( $p = 0.114$ ).

This finding is not surprising with regard to the nature of both types of investments, as described in the introduction to this paper. VC/PE investments have to be liquidated at a certain stage to return the proceeds to the investors. This is usually not the rationale of strategically-motivated foreign direct investments. Additionally, to perform transactions and for their divestments, VC/PE funds require support by other professional institutions, such as investment banks, and consulting and law firms. This infrastructure of finance professionals is not required to that extent for industrial firms planning a foreign direct investment. Hence, the state of the public capital market is, unlike for VC and PE, not a dominant driver for FDI. This is also revealed by the fact that there is no correlation between IPO volume and FDI ( $\rho = -0.073$ ,  $p = 0.719$ ), and no correlation with market capitalization either ( $\rho = 0.211$ ,  $p = 0.291$ ).

## **5.5. Benchmarking CEE**

Focusing on the CEE region, and disaggregating the result from index version 4 on the level of the six key drivers, we can present the region's strengths and weaknesses in Figure 3.<sup>4</sup> The chart shows the GDP-weighted averages of the six key drivers for the CEE region, and GDP-weighted averages for the EU-15 states which are rescaled to 100 points to facilitate comparison. Taxation is the strongest component of the CEE countries' attractiveness for VC/PE investors. However, this criterion is highly dependent on the local legislations, and relatively quickly and arbitrarily

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<sup>4</sup> Detailed similar analyses and charts for every sample country are available from the authors on request.

adaptable by politicians. The United Nations (2004) reports that CEE governments try to attract investors with low corporate tax rates and tax incentives within the European Union accession process.

Investor Protection & Corporate Governance is another criterion where local legislation copied Western European standards to quickly catch up in the accession process. Generally speaking, investors are as well-protected in the CEE countries as they are in the average EU-15. EBRD (2007) finds all CEE countries in high compliance with the EU principles. Both the character of the legal rules and the quality of law enforcement are covered in our selected sub-indices. Human & Social Environment is also on a par with the EU-15 level. However, the other key drivers cannot reach the EU-15 average. Economic Activity, Entrepreneurial Opportunities, and Capital Markets lag (far) behind the EU-15 countries.

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Insert Figure 3 about here

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Figure 4 disaggregates further, and presents the next lower level of information, again for the GDP weighted averages of the CEE countries and the EU-15 states as the benchmark. It reveals that relatively small economies, high unemployment rates, and small and illiquid capital markets characterize the CEE countries. The capital markets in particular constitute a strong deficit in every sub-criterion compared to the EU-15 benchmark.

The Human & Social Environment of the CEE countries is equal to the EU-15 average. High educational standards, good labor regulations and low crime rates constitute the strengths of the CEE culture. However, bribery and corruption remain higher in the CEE countries than in the Western European benchmarks.

While privatization and large enterprise restructuring processes are nearly completed, entrepreneurial opportunities are rather weak in CEE. In particular, the burden for starting a business is much higher than the EU-15 average. Additionally, the innovativeness of the CEE

countries is ranked very poorly. The small number of patents and low public and private R&D expenditure contribute to that deficit.

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Insert Figure 4 about here

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## 6. Conclusions and Outlook

We assess the attractiveness of Central Eastern European countries for Venture Capital and Private Equity investors by a tailor-made composite measure. We review the related literature for criteria that are considered important for institutional investors' international VC/PE allocation decisions. Since literature does not provide a conclusion for the order of relevance of the numerous criteria, we run a survey among institutional investors. We simply ask them about the importance of certain asset allocation determinants when investing in emerging markets. Using this information and socio-economic country data for 27 European countries, we create a composite structure to measure their attractiveness. We show that our tailor-made composite measure is more appropriate to assess VC/PE country attractiveness than any other discussed criterion or any broader index focusing on general business conditions. We prove the results in robustness checks and find six tier groups regarding the sample countries' attractiveness rankings. The CEE region lags behind the average of the EU-15 states. However, some of the CEE countries are more attractive for VC/PE investors than certain EU-15 states. We present a detailed analysis of the strengths and weaknesses of the CEE region compared to the EU-15 states. Low corporate taxes (on average) are the strongest incentive for investors in CEE. Due to the European Union accession process, investor protection and corporate governance rules are on an equal level with EU-15, and also the human and social environment is on a par. On the other hand, the size and liquidity of the CEE capital markets is the biggest investment obstacle and, also, bribery and corruption and innovativeness still remain issues compared to the Western European benchmarks.

What needs to be done to improve CEE's ability to attract risk capital investors? Our survey reveals that corporate governance and the protection of investors' rights is the most important

criterion in institutional investors' international asset allocation processes. However, our data shows that investors find themselves well-protected in all of the European economies. The ranking of the important allocation determinants is followed by criteria that capture the size and liquidity of public and private capital markets, and the professional finance environment. Investors rely on the skills of their agents and search for qualified investment professionals, supporting institutions, and entrepreneurial managers. We consider these issues by assessing the human and social environment and the state of the capital markets in our sample countries. While there is not much dispersion regarding their human and social environments, there is a very high dispersion in the states of their capital markets. So, obviously, the development of the national capital markets makes the difference.

Future research should provide an update of the index related to the development of the CEE VC/PE market. Additionally, with our survey, the aggregation approach, and the calculations, we present a method to calculate a tailored composite measure that can be adapted to determine similar indices. For example, the calculation of an emerging markets attractiveness index for the public stock market, FDI, or real estate investments seems to be a promising line of further research. Finally, the proposed principle to combine individual data series and to create constructs will allow some more insights, not only into the drivers of Venture Capital and Private Equity but also into foreign direct investment activity in emerging markets. This directly leads to the challenging conclusion that, in a next step, the calculation of our composite measure should be expanded to cover other emerging regions.

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## Appendix A

### ***Magnitude of Potential Sample Selection Bias***

We partition our heterogeneous sample of 75 LPs in several homogeneous sub-samples and analyze the different response behavior of the sub-samples to address a potential sample selection bias in our responses. The following categories can be assigned to the respondents: They are either European or are not, they are either small or big (split by the median of fund size), they are either funds of funds or are not. First, we distinguish European and non-European LPs.

It could be argued that European and non-European investors follow different criteria in their international asset allocation process. To test these hypotheses we perform Mann-Whitney U tests, using  $H_0: \mu_i = \mu_k$ , and  $H_1: \mu_i \neq \mu_k$ . Having tested for every single parameter, we present only the test statistics with a significant result in Table A1.

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Insert Table A1 about here

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Table A1 shows the test statistics for the analyses, where partitioning the sample into European (= 1) and non-European (= 0) LPs yields a significant ( $p < 0.05$ ) result. Non-European investors focus more on growth expectations in their international allocation process than the Europeans. However, we do not find any other significant difference between European and non-European LPs. This leads us conclude that, even if our sample does not match the geographical distribution of the population, the little difference regarding one single allocation criterion will not harm our overall results.

Next, we differentiate the size of the funds and split the sample by the median of the assets under management. We test all parameters available for potential differences of the two groups of funds using Mann-Whitney U tests, with  $H_0: \mu_i = \mu_k$ , and  $H_1: \mu_i \neq \mu_k$ . Table A2 presents the test statistics with significant results.

=====

Insert Table A2 about here

=====

We find that larger funds evaluate the availability of debt and public subsidies in the target country, diversification effects, and language and cultural differences as less important than smaller funds. This result is not surprising, since smaller funds have more need for diversification and for additional financing resources. Anyway, the three criteria do not have a high importance compared with the other criteria, as presented in Figure 1 (in the body of the paper). Additionally, it is not at all clear if the size distribution of our respondents does not correspond to the distribution of the population. Therefore, we can conclude that even if the size distribution does not correspond, the slightly different response behavior related to fund size will not impact our final attractiveness ranking.

The final distinction is made by separating funds of funds from other categories of investors. To test the hypotheses of different importance regarding the individual allocation criteria we perform Mann-Whitney U tests once more, using  $H_0: \mu_i = \mu_k$ , and  $H_1: \mu_i \neq \mu_k$ . The test statistics with significant results are presented in Table A3.

=====

Insert Table A3 about here

=====

Funds of funds pay greater attention on the quality of local General Partners and on the acceptance of the VC/PE asset class by the population of a certain country. These differences might be explained with a more complex agency relationship around fund of fund investors: In the expanded chain of agents the participants rely more strongly on the quality of the subsequent agent. Additionally, since the majority of the funds of funds exclusively allocate their capital into VC and PE funds (and no other asset classes as is the case in the “others” group), it seems obvious

that they prefer countries where VC and PE is commonly accepted within the population, and where they do not face political and societal unpopularity.

Summarizing the insight of partitioning the sample, we claim that there are some minor differences regarding international asset allocation criteria of certain sub-groups. We find a geographical bias in our sample, but we do not know about the sample's representativeness regarding fund size or type. The revealed differences in the response behavior will slightly impact the weights of individual criteria when we calculate the countries' attractiveness. However, we find differences in only a very few criteria and they are too small to finally drive the general results to a meaningful extent. Additionally, the detected differences are independent among the proposed investor sub-groups, in the sense that the Europeans are not also the funds of funds at the same time. With our robustness checks, where we vary the weights of the individual criteria largely, we confirm that our calculations are robust with respect to minor changes of criteria importance. Hence, we claim that a potentially insufficient representation of the universe of Limited Partners in terms of their geographic origin, size, or fund type, does not strongly impact our overall results.

## Appendix B

In Appendix B we describe the factor analyses to determine the weights that we assign to the key drivers for the index aggregation resulting from the survey responses, and the similar procedures to determine the weights when aggregating the socio-economic data on the level of the six key drivers. We begin with the description of the analyses of the survey responses.

### **B.1. Factor Analyses to Determine the Importance of the Individual Asset Allocation Criteria for their Aggregation on the Key Driver Level**

As pointed out in the body of the paper, we perform factor analyses to determine the weights of the individual criteria for the Capital Market and the Entrepreneurial Opportunities constructs only.

#### **Determination of the Criteria Importance within the Capital Market Construct**

The first step is to verify the feasibility of factor analysis by the MSA values and the Bartlett Test statistic. For the Capital Market construct, the MSA value and Bartlett's test are satisfying to proceed with the factor analysis. The MSA value and the statistics of Bartlett's test are presented in Table B1.

=====

Insert Table B1 about here

=====

Extracting three factors with Eigenvalues above 1 explains 73.16% of the construct variance. Table B2 shows the Eigenvalues, the percentage of variance explained by each factor, the cumulative explained variance, and the reallocation of these values after rotation.

=====

Insert Table B2 about here

=====

Rotation of the component matrix leads to the interesting interpretation of the determining factors of the Capital Market construct. The first factor is "external financing", with high loadings on

the availability of debt financing, interest rates, and public subsidies. The second one is “deal flow expectations”, determined by the general capital, M&A market, and the deal flow conditions. The third criterion is “professionalism”, characterized by the qualification of GPs and professional institutions. The rotated component loadings are presented in Table B3.

=====

Insert Table B3 about here

=====

Finally, we can calculate the criteria weights to determine the importance of the Capital Market construct using the squared loadings of the (rotated) factor matrix. Table 4 shows the derivation of these weights.

=====

Insert Table B4 about here

=====

### **Determination of the Criteria Importance within the Entrepreneurial Opportunities Construct**

For the Entrepreneurial Opportunities construct, the MSA value and Bartlett’s test are satisfying to proceed with the factor analysis. Table B5 presents the MSA value and the Bartlett’s test statistics.

=====

Insert Table B5 about here

=====

According to the Kaiser (1958) criterion, we extract only one factor with an Eigenvalue of 1.869 that explains 62.29% of the construct variance. Table B6 shows the Eigenvalues, the percentage of variance explained by each factor, and the cumulative explained variance.

=====

Insert Table B6 about here

=====

No rotation for the component matrix is necessary, and the single factor can be interpreted as entrepreneurial opportunities, exactly according to the intention. This is highlighted in Table B7.

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Insert Table B7 about here

=====

The squared loadings finally determine the importance of the three individual criteria. Table B8 shows these weights.

=====

Insert Table B8 about here

=====

## **B. 2. Factor Analyses to Determine the Importance of the Six Key Drivers**

The next step is to use the information to determine the weights of the six key drivers. The MSA value and Bartlett's test are satisfying to proceed with the factor analysis. The MSA value and the statistics of the Bartlett's test are presented in Table B9.

=====

Insert Table B9 about here

=====

We extract two factors with Eigenvalues above 1 that explain 64.14% of the data variance. Table B10 shows the Eigenvalues, the percentage of variance explained by each factor, the cumulative explained variance, and the reallocation of these values after rotation.

=====

Insert Table B10 about here

=====

Rotation of the matrix of the factor loadings leads to the interesting result that institutional investors' allocation decisions mainly depend on two aspects, the "socio-economic environment" with high loadings on Economic Activity, the Capital Market, the Human and Social Environment, and the Entrepreneurial Opportunities. The other aspect can be labeled "legal and taxes", as it has high loadings on Taxation, and on Investor Protection and Corporate Governance. The matrix of the rotated component loadings is presented in Table B11.

=====

Insert Table B11 about here

=====

Finally, the importance of the individual key drivers is derived from the squared component loadings. The derivation is illustrated in Table B12.

=====

Insert Table B12 about here

=====

### **B.3. Factor Analyses for the Assessment of the Six Key Drivers with Country Data**

Subsequently, we describe the factor analyses to aggregate the socio-economic country data on the level of the six key drivers. As pointed out in the body of the paper, we run analyses for the Economic Activity, the Capital Market, the Human & Social Environment, and the Entrepreneurial Opportunities constructs only.

#### **Analysis for Economic Activity**

The MSA value and Bartlett's test reach the thresholds, so we can proceed with the factor analysis. Table B13 reveals the MSA value and the statistics of the Bartlett's test.

=====

Insert Table B13 about here

=====

We extract two factors that explain 76.10% of the construct variance. Table B14 shows the Eigenvalues, the percentage of variance explained by each factor, the cumulative explained variance, and the reallocation of these values after rotation.

=====

Insert Table B14 about here

=====

Rotation of the matrix of factor loadings leads to the loadings presented in Table B15.

=====

Insert Table B15 about here

=====

The final weights to assess the Economic Activity key driver are calculated according to Table B16.

=====

Insert Table B16 about here

=====

### **Analysis for Capital Market**

The MSA value and Bartlett's test for the data on the Capital Market reach the thresholds, so we can proceed with the factor analysis. The statistics are provided in Table B17.

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Insert Table B17 about here

=====

According to Table B18, we extract two factors that explain 75.18% of the construct variance.

=====

Insert Table B18 about here

=====

Table B19 presents the matrix of the rotated factor loadings.

=====

Insert Table B19 about here

=====

Table B20 reveals the calculation of the weights to assess the Capital Market key driver.

=====

Insert Table B20 about here

=====

### **Analysis for Human and Social Environment**

For the Human and Social Environment construct we determine an MSA value and a Bartlett's test that allow proceeding with factor analysis. The test statistics are presented in Table B21.

=====

Insert Table B21 about here

=====

The Kaiser (1958) criterion suggests extracting two factors that explain 79.72% of the construct variance. The Eigenvalues, the percentage of variance explained by each factor, the cumulative explained variance, and the reallocation of these values after rotation, are presented in Table B22.

=====

Insert Table B22 about here

=====

Table B23 shows the matrix of rotated factor loadings.

=====

Insert Table B23 about here

=====

From the rotated components, we calculate the weight of the individual data series according to Table B24.

=====

Insert Table B24 about here

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**Analysis for Entrepreneurial Opportunities**

Table B25 reveals that the MSA and Bartlett’s test value reach the threshold for the Entrepreneurial Opportunities construct, and hence allow factor analysis.

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Insert Table B25 about here

=====

As presented in Table B26, we extract two factors that explain 81.76% of the construct variance.

=====

Insert Table B26 about here

=====

Table B27 illustrates the rotation of the matrix of factor loadings.

=====

Insert Table B27 about here

=====

We assess the Entrepreneurial Opportunities in the particular countries using the weights for the individual data series, as in Table B28.

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Insert Table B28 about here

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## Tables

*Table 1: Segmentation of Respondents (Type and Origin of Investors)*

| Type of Investor    | Occurrence | Origin of Investor | Occurrence |
|---------------------|------------|--------------------|------------|
| Corporate Investors | 4          | USA and Canada     | 34         |
| Government Agency   | 1          | Europe             | 38         |
| Banks               | 3          | Rest of the World  | 3          |
| Pension Funds       | 8          |                    |            |
| Insurance Companies | 1          |                    |            |
| Funds of Funds      | 29         |                    |            |
| Endowments          | 2          |                    |            |
| Others              | 26         |                    |            |
| Not Available       | 1          |                    |            |

*Table 2: Weights of the Allocation Criteria According to Mean Nominations, and Factor Analyses*

| Weighting Scheme                         | Mean Nominations |                          |                 |                   | Factor Analyses          |                   |
|------------------------------------------|------------------|--------------------------|-----------------|-------------------|--------------------------|-------------------|
|                                          | Mean Nomination  | Weight within Key Driver | Key Driver Mean | Key Driver Weight | Weight within Key Driver | Key Driver Weight |
| <b>Criteria/Key Driver [Nominations]</b> |                  |                          |                 |                   |                          |                   |
| <b>Economic Activity</b>                 |                  |                          | 5.180           | .161              |                          | .068              |
| Economic Size [70]                       | 4.757            | .454                     |                 |                   | .454                     |                   |
| Economic Growth [58]                     | 5.724            | .546                     |                 |                   | .546                     |                   |
| <b>Capital Market</b>                    |                  |                          | 4.960           | .155              |                          | .188              |
| Availability of Debt [71]                | 4.915            | .109                     |                 |                   | .136                     |                   |
| Interest Rates [66]                      | 4.333            | .096                     |                 |                   | .165                     |                   |
| Capital and M&A Market [69]              | 5.725            | .127                     |                 |                   | .143                     |                   |
| IPOs [69]                                | 4.899            | .109                     |                 |                   | omitted                  |                   |
| Deal Flow [70]                           | 6.171            | .137                     |                 |                   | .141                     |                   |
| Professionals [70]                       | 5.357            | .119                     |                 |                   | .149                     |                   |
| Qualified GPs [68]                       | 6.353            | .141                     |                 |                   | .127                     |                   |
| Public Funding [69]                      | 3.232            | .072                     |                 |                   | .139                     |                   |
| Diversification [64]                     | 4.156            | .092                     |                 |                   | omitted                  |                   |
| <b>Taxation</b>                          |                  |                          | 4.830           | .151              |                          | .197              |
| Corporate Tax Rate [71]                  | 4.648            | .479                     |                 |                   | .479                     |                   |
| Div. and Cap. Gains Taxes [60]           | 5.050            | .521                     |                 |                   | .521                     |                   |
| <b>Inv. Protection &amp; Corp. Gov.</b>  |                  |                          | 6.550           | .204              |                          | .158              |
| Prop. Rights & Corp. Gov. [70]           | 6.550            | 1                        |                 |                   | 1                        |                   |
| <b>Human &amp; Social Environment</b>    |                  |                          | 5.250           | .164              |                          | .190              |
| Bribing & Corrupt. [70]                  | 5.914            | .188                     |                 |                   | .188                     |                   |
| Crime Rate [70]                          | 4.914            | .156                     |                 |                   | .156                     |                   |
| Entr./Mgmt. Quality & Skills [71]        | 6.352            | .201                     |                 |                   | .201                     |                   |
| Lang. & Cult. Differences [69]           | 4.000            | .127                     |                 |                   | .127                     |                   |
| Labor Market Rigidities [70]             | 4.871            | .154                     |                 |                   | .154                     |                   |
| VC/PE Acceptance [70]                    | 5.486            | .174                     |                 |                   | .174                     |                   |
| <b>Entrepreneurial Opportunities</b>     |                  |                          | 5.310           | .166              |                          | .198              |
| Already Proven Success [69]              | 5.536            | .349                     |                 |                   | .371                     |                   |
| Entrepreneurial Activity [69]            | 5.754            | .363                     |                 |                   | .403                     |                   |
| Techn. Innov. & Patents [68]             | 4.559            | .288                     |                 |                   | .226                     |                   |

*Table 3: Selected Data and Aggregation Structure to Assess the Six Key Drivers*

|                                                                                                                                                                                                                                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1 Economic Activity</b>                                                                                                                                                                                                      |
| 1.1 Gross Domestic Product                                                                                                                                                                                                      |
| 1.1.1 Total GDP [€/capita]*                                                                                                                                                                                                     |
| 1.1.2 Total GDP y-o-y Growth [%]**                                                                                                                                                                                              |
| 1.2 General Price Level [Index=1995]***                                                                                                                                                                                         |
| 1.3 Working Force (Unemployment Rate) [%]*                                                                                                                                                                                      |
| 1.4 Foreign Direct Investment, Net Inflows [% of GDP]*                                                                                                                                                                          |
| <b>2 Capital Market</b>                                                                                                                                                                                                         |
| 2.1 IPO [IPO Volume in % of GDP]****                                                                                                                                                                                            |
| 2.2 Stock Market <a href="http://trendchart.cordis.lu/http://trendchart.cordis.lu/">http://trendchart.cordis.lu/http://trendchart.cordis.lu/</a>                                                                                |
| 2.2.1 Stock Market Capitalization [% of GDP]*                                                                                                                                                                                   |
| 2.2.2 Stock Market Total Value Traded / GDP [% of GDP]*                                                                                                                                                                         |
| 2.3 M&A Market [sales % of GDP]*                                                                                                                                                                                                |
| 2.4 Debt & Credit Market <a href="http://trendchart.cordis.lu/http://trendchart.cordis.lu/">http://trendchart.cordis.lu/http://trendchart.cordis.lu/</a>                                                                        |
| 2.4.1 Central Bank Discount Rate [%]*                                                                                                                                                                                           |
| 2.4.2 Private Credit by Deposit Money Banks and Other Financial Institutions [% of GDP]*                                                                                                                                        |
| 2.4.3 Number of Banks [per Capita]                                                                                                                                                                                              |
| 2.5 VC/PE Activity [Funds Invested in % of GDP]****                                                                                                                                                                             |
| <b>3 Taxation</b> <a href="http://trendchart.cordis.lu/">http://trendchart.cordis.lu/</a>                                                                                                                                       |
| 3.1 Highest Marginal Corporate Tax Rate (%)                                                                                                                                                                                     |
| 3.2 Difference Between Income and Corporate Tax Rate [%]                                                                                                                                                                        |
| <b>4 Investor Protection and Corporate Governance</b>                                                                                                                                                                           |
| 4.1 Extent of Disclosure Index                                                                                                                                                                                                  |
| 4.2 Extent of Director Liability Index                                                                                                                                                                                          |
| 4.3 Ease of Shareholder Suits Index                                                                                                                                                                                             |
| <b>5 Human &amp; Social Environment</b>                                                                                                                                                                                         |
| 5.1<br>Education <a href="http://www.doingbusiness.org/ExploreTopics/HiringFiringWorkers/http://www.doingbusiness.org/">http://www.doingbusiness.org/ExploreTopics/HiringFiringWorkers/http://www.doingbusiness.org/</a>        |
| 5.1.1 Government Expenditure on Education [% of GDP]*                                                                                                                                                                           |
| 5.1.2 Amount Employees as Researchers in the University Sector [per capita] <a href="http://www.doingbusiness.org/E">http://www.doingbusiness.org/E</a>                                                                         |
| 5.1.3 Amount University Students [per capita]* <a href="http://www.doingbusiness.org/ExploreTopics/HiringFiringWo">http://www.doingbusiness.org/ExploreTopics/HiringFiringWo</a>                                                |
| 5.1.4 Amount University Establishments [per capita] <a href="http://www.doingbusiness.org/ExploreTopics/HiringFirin">http://www.doingbusiness.org/ExploreTopics/HiringFirin</a>                                                 |
| 5.2 Labor Regulations <a href="http://www.doingbusiness.org/ExploreTopics/HiringFiringWorkers/">http://www.doingbusiness.org/ExploreTopics/HiringFiringWorkers/</a>                                                             |
| 5.2.1 Rigidity of Employment <a href="http://www.doingbusiness.org/ExploreTopics/HiringFiringWorkers/">http://www.doingbusiness.org/ExploreTopics/HiringFiringWorkers/</a>                                                      |
| 5.2.1.1 Difficulty of Hiring Index <a href="http://www.doingbusiness.org/ExploreTopics/HiringFiringWorkers/">http://www.doingbusiness.org/ExploreTopics/HiringFiringWorkers/</a>                                                |
| 5.2.1.2 Rigidity of Hours Index <a href="http://www.transparency.org/policy_research/surveys_indices/">http://www.transparency.org/policy_research/surveys_indices/</a>                                                         |
| 5.2.1.3 Difficulty of Firing Index                                                                                                                                                                                              |
| 5.2.2 Hiring Cost [% of salary]                                                                                                                                                                                                 |
| 5.2.3 Firing Costs [weeks of wages]                                                                                                                                                                                             |
| 5.3 Bribing & Corruption Index                                                                                                                                                                                                  |
| 5.4 Crime <a href="http://trendchart.cordis.lu/http://trendchart.cordis.lu/http://www.transparency.org/policy_research">http://trendchart.cordis.lu/http://trendchart.cordis.lu/http://www.transparency.org/policy_research</a> |
| 5.4.1 Juvenile Offenders [per capita]* <a href="http://trendchart.cordis.lu/">http://trendchart.cordis.lu/</a>                                                                                                                  |
| 5.4.2 Offences [per 100,000 habitants]* <a href="http://trendchart.cordis.lu/">http://trendchart.cordis.lu/</a>                                                                                                                 |
| <b>6 Entrepreneurial Opportunities</b>                                                                                                                                                                                          |
| 6.1 General Innovativeness Index                                                                                                                                                                                                |
| 6.2 R&D Expenditure <a href="http://trendchart.cordis.lu/http://trendchart.cordis.lu/">http://trendchart.cordis.lu/http://trendchart.cordis.lu/</a>                                                                             |
| 6.2.1 Public R&D Expenditures [% of GDP]                                                                                                                                                                                        |
| 6.2.2 Business R&D Expenditures [% of GDP]                                                                                                                                                                                      |
| 6.3 Enterprise Restructuring                                                                                                                                                                                                    |
| 6.3.1 Small-Scale Privatization Index                                                                                                                                                                                           |
| 6.3.2 Large-Scale Privatization Index                                                                                                                                                                                           |
| 6.3.3 Governance and Enterprise Restructuring Index                                                                                                                                                                             |

|                                                               |                            |
|---------------------------------------------------------------|----------------------------|
| 6.4 Enterprise Stock Activity                                 |                            |
| 6.4.1 Number of Enterprises [per capita]                      | World Bank, EUROSTAT, OECD |
| 6.4.2 Enterprise Foundation Rate [%]*                         | World Bank, EUROSTAT, OECD |
| 6.5 Burden: Starting a Business                               |                            |
| 6.5.1 Procedures [numbers]                                    | World Bank Data            |
| 6.5.2 Time [days]                                             | World Bank Data            |
| 6.5.3 Cost of Business Start-Up Procedures [% GNI per capita] | World Bank Data            |
| 6.5.4 Min. Capital [% GNI per capita]                         | World Bank Data            |

- \* = arithmetic average of annual data from 2000 to 2005,  
\*\* = geometric average of annual data from 2000 to 2005,  
\*\*\* = log of arithmetic average of annual data from 2000 to 2005,  
\*\*\*\* = arithmetic average of annual data since coverage in the database for CEE countries, arithmetic average of annual data from 2003 to 2005 for the other countries, otherwise: 2005 data record.

*Table 4: Alternative Weights for the Upper Aggregation Levels*

|                                                                                                                                                                                                                   |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|                                                                                                                                                                                                                   |  |
| <b>1 Economic Activity</b>                                                                                                                                                                                        |  |
| 1.1 Gross Domestic Product                                                                                                                                                                                        |  |
| 1.1.1 Total GDP [€/capita]                                                                                                                                                                                        |  |
| 1.1.2 Total GDP y-o-y Growth [%]                                                                                                                                                                                  |  |
| 1.2 General Price Level [Index=1995]                                                                                                                                                                              |  |
| 1.3 Working Force (Unemployment Rate) [%]                                                                                                                                                                         |  |
| 1.4 Foreign Direct Investment, Net Inflows [% of GDP]                                                                                                                                                             |  |
| <b>2 Capital Market</b>                                                                                                                                                                                           |  |
| 2.1 IPO [IPO Volume in % of GDP]                                                                                                                                                                                  |  |
| 2.2 Stock Market <a href="http://trendchart.cordis.lu/http://trendchart.cordis.lu/">http://trendchart.cordis.lu/http://trendchart.cordis.lu/</a>                                                                  |  |
| 2.2.1 Stock Market Capitalization [% of GDP]                                                                                                                                                                      |  |
| 2.2.2 Stock Market Total Value Traded / GDP [% of GDP]                                                                                                                                                            |  |
| 2.3 M&A Market [sales % of GDP]                                                                                                                                                                                   |  |
| 2.4 Debt & Credit Market <a href="http://trendchart.cordis.lu/http://trendchart.cordis.lu/">http://trendchart.cordis.lu/http://trendchart.cordis.lu/</a>                                                          |  |
| 2.4.1 Central Bank Discount Rate [%]                                                                                                                                                                              |  |
| 2.4.2 Private Credit by Deposit Money Banks and Other Financial Institutions [% of GDP]                                                                                                                           |  |
| 2.4.3 Number of Banks [per Capita]                                                                                                                                                                                |  |
| 2.5 VC/PE Activity [Funds Invested in % of GDP]                                                                                                                                                                   |  |
| <b>3 Taxation</b> <a href="http://trendchart.cordis.lu/">http://trendchart.cordis.lu/</a>                                                                                                                         |  |
| 3.1 Highest Marginal Corporate Tax Rate (%)                                                                                                                                                                       |  |
| 3.2 Difference Between Income and Corporate Tax Rate [%]                                                                                                                                                          |  |
| <b>4 Investor Protection &amp; Corporate Governance</b>                                                                                                                                                           |  |
| 4.1 Extent of Disclosure Index                                                                                                                                                                                    |  |
| 4.2 Extent of Director Liability Index                                                                                                                                                                            |  |
| 4.3 Ease of Shareholder Suits Index                                                                                                                                                                               |  |
| <b>5 Human &amp; Social Environment</b>                                                                                                                                                                           |  |
| 5.1                                                                                                                                                                                                               |  |
| Education <a href="http://www.doingbusiness.org/ExploreTopics/HiringFiringWorkers/http://www.doingbusiness.org/">http://www.doingbusiness.org/ExploreTopics/HiringFiringWorkers/http://www.doingbusiness.org/</a> |  |
| 5.1.1 Government Expenditure on Education [% of GDP]                                                                                                                                                              |  |
| 5.1.2 Amount Employees as Researchers in the University Sector [per capita] <a href="http://www.doingbusiness.org/E">http://www.doingbusiness.org/E</a>                                                           |  |
| 5.1.3 Amount University Students [per capita] <a href="http://www.doingbusiness.org/ExploreTopics/HiringFiringWo">http://www.doingbusiness.org/ExploreTopics/HiringFiringWo</a>                                   |  |
| 5.1.4 Amount University Establishments [per capita] <a href="http://www.doingbusiness.org/ExploreTopics/HiringFiri">http://www.doingbusiness.org/ExploreTopics/HiringFiri</a>                                     |  |

|                                                               |                                                                                                                                                                                                                                                         |
|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5.2 Labor Regulations                                         | <a href="http://www.doingbusiness.org/ExploreTopics/HiringFiringWorkers/">http://www.doingbusiness.org/ExploreTopics/HiringFiringWorkers/</a>                                                                                                           |
| 5.2.1 Rigidity of Employment                                  | <a href="http://www.doingbusiness.org/ExploreTopics/HiringFiringWorkers/">http://www.doingbusiness.org/ExploreTopics/HiringFiringWorkers/</a>                                                                                                           |
| 5.2.1.1 Difficulty of Hiring Index                            | <a href="http://www.doingbusiness.org/ExploreTopics/HiringFiringWorkers/">http://www.doingbusiness.org/ExploreTopics/HiringFiringWorkers/</a>                                                                                                           |
| 5.2.1.2 Rigidity of Hours Index                               | <a href="http://www.transparency.org/policy_research/surveys_indices/">http://www.transparency.org/policy_research/surveys_indices/</a>                                                                                                                 |
| 5.2.1.3 Difficulty of Firing Index                            |                                                                                                                                                                                                                                                         |
| 5.2.2 Hiring Cost [% of salary]                               |                                                                                                                                                                                                                                                         |
| 5.2.3 Firing Costs [weeks of wages]                           |                                                                                                                                                                                                                                                         |
| 5.3 Bribing & Corruption Index                                |                                                                                                                                                                                                                                                         |
| 5.4                                                           |                                                                                                                                                                                                                                                         |
| Crime                                                         | <a href="http://trendchart.cordis.lu/http://trendchart.cordis.lu/http://www.transparency.org/policy_research/surveys_indices/">http://trendchart.cordis.lu/http://trendchart.cordis.lu/http://www.transparency.org/policy_research/surveys_indices/</a> |
| 5.4.1 Juvenile Offenders [per capita]                         | <a href="http://trendchart.cordis.lu/">http://trendchart.cordis.lu/</a>                                                                                                                                                                                 |
| 5.4.2 Offences [per 100,000 habitants]                        | <a href="http://trendchart.cordis.lu/">http://trendchart.cordis.lu/</a>                                                                                                                                                                                 |
| <b>6 Entrepreneurial Opportunities</b>                        |                                                                                                                                                                                                                                                         |
| 6.1 General Innovativeness Index                              |                                                                                                                                                                                                                                                         |
| 6.2 R&D Expenditure                                           | <a href="http://trendchart.cordis.lu/http://trendchart.cordis.lu/">http://trendchart.cordis.lu/http://trendchart.cordis.lu/</a>                                                                                                                         |
| 6.2.1 Public R&D Expenditures [% of GDP]                      |                                                                                                                                                                                                                                                         |
| 6.2.2 Business R&D Expenditures [% of GDP]                    |                                                                                                                                                                                                                                                         |
| 6.3 Enterprise Restructuring                                  |                                                                                                                                                                                                                                                         |
| 6.3.1 Small-Scale Privatization Index                         |                                                                                                                                                                                                                                                         |
| 6.3.2 Large-Scale Privatization Index                         |                                                                                                                                                                                                                                                         |
| 6.3.3 Governance and Enterprise Restructuring Index           |                                                                                                                                                                                                                                                         |
| 6.4 Enterprise Stock Activity                                 |                                                                                                                                                                                                                                                         |
| 6.4.1 Number of Enterprises [per capita]                      |                                                                                                                                                                                                                                                         |
| 6.4.2 Enterprise Foundation Rate [%]                          |                                                                                                                                                                                                                                                         |
| 6.5 Burden: Starting a Business                               |                                                                                                                                                                                                                                                         |
| 6.5.1 Procedures [numbers]                                    |                                                                                                                                                                                                                                                         |
| 6.5.2 Time [days]                                             |                                                                                                                                                                                                                                                         |
| 6.5.3 Cost of Business Start-Up Procedures [% GNI per capita] |                                                                                                                                                                                                                                                         |
| 6.5.4 Min. Capital [% GNI per capita]                         |                                                                                                                                                                                                                                                         |

Table A1: Test Statistics: Different Response Behavior Europeans vs. non-Europeans

| European |                        | Economic Growth |
|----------|------------------------|-----------------|
| 0        | N                      | 29              |
|          | Mean                   | 5.45            |
|          | Std. Deviation         | .827            |
| 1        | N                      | 28              |
|          | Mean                   | 5.96            |
|          | Std. Deviation         | .96             |
|          | Mann-Whitney U         | 258.5           |
|          | Z                      | -2.494          |
|          | Asymp. Sig. (2-tailed) | .013            |

Table A2: Test Statistics: Different Response Behavior Small vs. Large Funds

| Large Fund |                        | Availability of debt | Availability of public subsidies | Diversification |
|------------|------------------------|----------------------|----------------------------------|-----------------|
| 0          | N                      | 28                   | 27                               | 26              |
|            | Mean                   | 5.28                 | 3.85                             | 4.58            |
|            | Std. Deviation         | 1.36                 | 1.43                             | 1.42            |
| 1          | N                      | 29                   | 29                               | 26              |
|            | Mean                   | 4.76                 | 2.86                             | 3.62            |
|            | Std. Deviation         | 1.057                | 1.27                             | 1.63            |
|            | Mann-Whitney U         | 296.0                | 233.0                            | 226.0           |
|            | Z                      | -2.000               | -2.700                           | -2.089          |
|            | Asymp. Sig. (2-tailed) | .045                 | .007                             | .037            |

**Table A3: Test Statistics Different Response Behavior Funds of Funds vs. Others**

| Fund of Fund |                        | Presence of qualified GPs | Acceptance of VC/PE |
|--------------|------------------------|---------------------------|---------------------|
| 0            | N                      | 43                        | 43                  |
|              | Mean                   | 6.07                      | 5.21                |
|              | Std. Deviation         | 1.32                      | 1.34                |
| 1            | N                      | 25                        | 27                  |
|              | Mean                   | 6.84                      | 5.93                |
|              | Std. Deviation         | .374                      | 1.04                |
|              | Mann-Whitney U         | 364.0                     | 398.0               |
|              | Z                      | -2.630                    | -2.274              |
|              | Asymp. Sig. (2-tailed) | <b>.009</b>               | <b>.023</b>         |

**Table B1: MSA Value and Bartlett's Test for the Capital Market Construct**

|                                                  |                    |
|--------------------------------------------------|--------------------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | .583               |
| Bartlett's Test of Sphericity                    | Approx. Chi-Square |
|                                                  | 117.124            |
|                                                  | df                 |
|                                                  | 21                 |
|                                                  | Sig.               |
|                                                  | .000               |

**Table B2: Total Variance Explained for the Capital Market Construct**

| Component | Initial Eigenvalues |               |              | Rotation Sums of Squared Loadings |               |              |
|-----------|---------------------|---------------|--------------|-----------------------------------|---------------|--------------|
|           | Total               | % of Variance | Cumulative % | Total                             | % of Variance | Cumulative % |
| 1         | 2.564               | 36.631        | 36.631       | 2.041                             | 29.159        | 29.159       |
| 2         | 1.485               | 21.220        | 57.851       | 1.717                             | 24.536        | 53.695       |
| 3         | 1.071               | 15.306        | 73.157       | 1.362                             | 19.463        | 73.157       |
| 4         | .824                | 11.772        | 84.930       |                                   |               |              |
| 5         | .479                | 6.836         | 91.765       |                                   |               |              |
| 6         | .371                | 5.295         | 97.060       |                                   |               |              |
| 7         | .206                | 2.940         | 100.000      |                                   |               |              |

**Table B3: Rotated Component Matrix for the Capital Market Construct**

|                                                    | Component |       |       |
|----------------------------------------------------|-----------|-------|-------|
|                                                    | 1         | 2     | 3     |
| Availability of Debt Finance in the Target Country | .775      | .295  | .081  |
| Interest Rates in the Target Country               | .836      | .358  | -.123 |
| General Capital Market and M&A Market Activity     | .319      | .788  | .096  |
| Expected Deal Flow                                 | .020      | .805  | .271  |
| Presence of Professional Institutions to Support   | .303      | .047  | .818  |
| Presence of Qualified GPs                          | -.186     | .275  | .736  |
| Availability of Public Funding and Subsidies       | .715      | -.395 | .214  |

**Table B4: Determination of Weights of Criteria in the Capital Market Construct**

| Capital Market Construct                           | Component loadings |       |       | Component weights |      |      | Overall weights |
|----------------------------------------------------|--------------------|-------|-------|-------------------|------|------|-----------------|
|                                                    | 1                  | 2     | 3     | 1                 | 2    | 3    |                 |
| Availability of Debt Finance in the Target Country | .775               | .295  | .081  | .295              | .051 | .005 | .136            |
| Interest Rates in the Target Country               | .836               | .358  | -.123 | .343              | .075 | .011 | .165            |
| General Capital Market and M&A Market Activity     | .319               | .788  | .096  | .050              | .361 | .007 | .143            |
| Expected Deal Flow                                 | .020               | .805  | .271  | .000              | .377 | .054 | .141            |
| Presence of Professional Institutions to Support   | .303               | .047  | .818  | .045              | .001 | .492 | .149            |
| Presence of Qualified GPs                          | -.186              | .275  | .736  | .017              | .044 | .398 | .127            |
| Availability of Public Funding and Subsidies       | .715               | -.395 | .214  | .251              | .091 | .034 | .139            |
| Explained Variance                                 | 2.039              | 1.718 | 1.361 | 1                 | 1    | 1    | 1               |

|                          |      |      |      |     |     |
|--------------------------|------|------|------|-----|-----|
| Explained/Total Variance | .398 | .336 | .266 | Sum | Sum |
|--------------------------|------|------|------|-----|-----|

Table B5: MSA Value and Bartlett's Test for the Entrepreneurial Opportunities Construct

|                                                  |                    |        |
|--------------------------------------------------|--------------------|--------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. |                    | .601   |
| Bartlett's Test of Sphericity                    | Approx. Chi-Square | 39.929 |
|                                                  | df                 | 3      |
|                                                  | Sig.               | .000   |

Table B6: Total Variance Explained for the Entrepreneurial Opportunities Construct

| Component | Initial Eigenvalues |               |              |
|-----------|---------------------|---------------|--------------|
|           | Total               | % of Variance | Cumulative % |
| 1         | 1.869               | 62.293        | 62.293       |
| 2         | .754                | 25.136        | 87.429       |
| 3         | .377                | 12.571        | 100.000      |

Table B7: Component Matrix for the Entrepreneurial Opportunities Construct

|                                                | Component |
|------------------------------------------------|-----------|
|                                                | 1         |
| Already Proven Success Strategies              | .832      |
| Entrepreneurial Activity in the Target Country | .868      |
| Technological Innovations and Patents          | .650      |

Table B8: Determination of Weights for the Entrepreneurial Opportunities Construct

| Entrepreneurial Opportunities Construct        | Component loadings | Component weights |
|------------------------------------------------|--------------------|-------------------|
| Already Proven Success Strategies              | .832               | .371              |
| Entrepreneurial Activity in the Target Country | .868               | .403              |
| Technological Innovations and Patents          | .650               | .226              |
| Explained Variance                             | 1.868              | 1                 |
|                                                |                    | Sum               |

Table B9: MSA Value and Bartlett's Test for the Overall Index

|                                                  |                    |        |
|--------------------------------------------------|--------------------|--------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. |                    | .639   |
| Bartlett's Test of Sphericity                    | Approx. Chi-Square | 74.919 |
|                                                  | df                 | 15     |
|                                                  | Sig.               | .000   |

Table B10: Total Variance Explained for the Overall Index

| Component | Initial Eigenvalues |               |              | Rotation Sums of Squared Loadings |               |              |
|-----------|---------------------|---------------|--------------|-----------------------------------|---------------|--------------|
|           | Total               | % of Variance | Cumulative % | Total                             | % of Variance | Cumulative % |
| 1         | 2.694               | 44.902        | 44.902       | 2.478                             | 41.297        | 41.297       |
| 2         | 1.154               | 19.240        | 64.142       | 1.371                             | 22.845        | 64.142       |
| 3         | .869                | 14.491        | 78.632       |                                   |               |              |
| 4         | .686                | 11.429        | 90.061       |                                   |               |              |
| 5         | .372                | 6.192         | 96.253       |                                   |               |              |
| 6         | .225                | 3.747         | 100.000      |                                   |               |              |

*Table B11: Rotated Component Matrix for the Overall Index*

|                                              | Component |      |
|----------------------------------------------|-----------|------|
|                                              | 1         | 2    |
| Economic Activity                            | .501      | .112 |
| Capital Market                               | .843      | .115 |
| Taxation                                     | .019      | .871 |
| Investor Protection and Corporate Governance | .239      | .741 |
| Human and Social Environment                 | .835      | .186 |
| Entrepreneurial Opportunities                | .873      | .039 |

*Table B12: Determination of Weights for the Overall Index*

| Key Drivers                                  | Component loadings |       | Component weights |      | Overall weights |
|----------------------------------------------|--------------------|-------|-------------------|------|-----------------|
|                                              | 1                  | 2     | 1                 | 2    |                 |
| Economic Activity                            | .501               | .112  | .101              | .009 | .068            |
| Capital Market                               | .843               | .115  | .287              | .010 | .188            |
| Taxation                                     | .019               | .871  | .000              | .554 | .197            |
| Investor Protection and Corporate Governance | .239               | .741  | .023              | .401 | .158            |
| Social Environment                           | .835               | .186  | .281              | .025 | .190            |
| Entrepreneurial Opportunities                | .873               | .039  | .307              | .001 | .198            |
| Explained Variance                           | 2.478              | 1.370 | 1                 | 1    | 1               |
| Explained/Total Variance                     | .644               | .356  | Sum               |      | Sum             |

*Table B13: MSA Value and Bartlett's Test for the Economic Activity Construct*

|                                                  |                    |        |
|--------------------------------------------------|--------------------|--------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. |                    | .549   |
| Bartlett's Test of Sphericity                    | Approx. Chi-Square | 22.200 |
|                                                  | df                 | 6      |
|                                                  | Sig.               | .001   |

*Table B14: Total Variance Explained for the Economic Activity Construct*

| Component | Initial Eigenvalues |               |              | Rotation Sums of Squared Loadings |               |              |
|-----------|---------------------|---------------|--------------|-----------------------------------|---------------|--------------|
|           | Total               | % of Variance | Cumulative % | Total                             | % of Variance | Cumulative % |
| 1         | 1.892               | 47.289        | 47.289       | 1.715                             | 42.887        | 42.887       |
| 2         | 1.152               | 28.810        | 76.099       | 1.328                             | 33.212        | 76.099       |
| 3         | .697                | 17.414        | 93.513       |                                   |               |              |
| 4         | .259                | 6.487         | 100.000      |                                   |               |              |

*Table B15: Rotated Component Matrix for the Economic Activity Construct*

|                                                   | Component |       |
|---------------------------------------------------|-----------|-------|
|                                                   | 1         | 2     |
| Gross Domestic Product                            | .881      | .216  |
| General Price Level                               | -.141     | .878  |
| Working Force                                     | .556      | .693  |
| Foreign Direct Investment, Net Inflows [% of GDP] | .781      | -.175 |

*Table B16: Determination of Weights to Assess the Economic Activity Key Driver*

| Economic Activity                                 | Component loadings |       | Component weights |      | Overall weights |
|---------------------------------------------------|--------------------|-------|-------------------|------|-----------------|
|                                                   | 1                  | 2     | 1                 | 2    |                 |
| Gross Domestic Product                            | .881               | .216  | .453              | .035 | .270            |
| General Price Level                               | -.141              | .878  | .012              | .580 | .260            |
| Working Force                                     | .556               | .693  | .180              | .362 | .259            |
| Foreign Direct Investment, Net Inflows [% of GDP] | .781               | -.175 | .355              | .023 | .210            |
| Explained Variance                                | 1.715              | 1.328 | 1                 | 1    | 1               |
| Explained/Total Variance                          | .564               | .436  | Sum               |      | Sum             |

*Table B17: MSA Value and Bartlett's Test for the Capital Market Construct*

|                                                  |                    |        |
|--------------------------------------------------|--------------------|--------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. |                    | .603   |
| Bartlett's Test of Sphericity                    | Approx. Chi-Square | 51.054 |
|                                                  | df                 | 10     |
|                                                  | Sig.               | .000   |

*Table B18: Total Variance Explained for the Capital Market Construct*

| Component | Initial Eigenvalues |               |              | Rotation Sums of Squared Loadings |               |              |
|-----------|---------------------|---------------|--------------|-----------------------------------|---------------|--------------|
|           | Total               | % of Variance | Cumulative % | Total                             | % of Variance | Cumulative % |
| 1         | 2.606               | 52.117        | 52.117       | 2.011                             | 40.226        | 40.226       |
| 2         | 1.153               | 23.064        | 75.181       | 1.748                             | 34.955        | 75.181       |
| 3         | .740                | 14.805        | 89.986       |                                   |               |              |
| 4         | .357                | 7.150         | 97.136       |                                   |               |              |
| 5         | .143                | 2.864         | 100.000      |                                   |               |              |

*Table B19: Rotated Component Matrix for the Capital Market Construct*

|                        | Component |       |
|------------------------|-----------|-------|
|                        | 1         | 2     |
| IPO                    | .948      | -.009 |
| Stock Market           | .522      | .607  |
| M&A Market Activity    | .068      | .733  |
| Credit and Debt Market | .108      | .871  |
| VC/PE Activity         | .908      | .289  |

*Table B20: Determination of Weights to Assess the Capital Market Key Driver*

| Capital Market           | Component loadings |       | Component weights |      | Overall weights |
|--------------------------|--------------------|-------|-------------------|------|-----------------|
|                          | 1                  | 2     | 1                 | 2    |                 |
| IPO                      | .948               | -.009 | .447              | .000 | .239            |
| Stock Market             | .522               | .607  | .135              | .211 | .170            |
| M&A Market Activity      | .068               | .733  | .002              | .308 | .144            |
| Credit and Debt Market   | .108               | .871  | .006              | .434 | .205            |
| VC/PE Activity           | .908               | .289  | .410              | .048 | .241            |
| Explained Variance       | 2.011              | 1.748 | 1                 | 1    | 1               |
| Explained/Total Variance | .535               | .465  | Sum               |      | Sum             |

*Table B21: MSA Value and Bartlett's Test for the Human and Social Environment Construct*

|                                                  |                    |        |
|--------------------------------------------------|--------------------|--------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. |                    | .604   |
| Bartlett's Test of Sphericity                    | Approx. Chi-Square | 24.907 |
|                                                  | df                 | 6      |

Sig.

.000

*Table B22: Total Variance Explained for the Human and Social Environment Construct*

| Component | Initial Eigenvalues |               |              | Rotation Sums of Squared Loadings |               |              |
|-----------|---------------------|---------------|--------------|-----------------------------------|---------------|--------------|
|           | Total               | % of Variance | Cumulative % | Total                             | % of Variance | Cumulative % |
| 1         | 2.045               | 51.131        | 51.131       | 2.045                             | 51.128        | 51.128       |
| 2         | 1.143               | 28.586        | 79.718       | 1.144                             | 28.590        | 79.718       |
| 3         | .525                | 13.118        | 92.835       |                                   |               |              |
| 4         | .287                | 7.165         | 100.000      |                                   |               |              |

*Table B23: Rotated Component Matrix for the Human and Social Environment Construct*

|                      | Component |       |
|----------------------|-----------|-------|
|                      | 1         | 2     |
| Education            | .145      | .923  |
| Labor Regulations    | .666      | -.517 |
| Bribing & Corruption | .893      | .117  |
| Crime                | .885      | .107  |

*Table B24: Determination of Weights for the Human and Social Environment Construct*

| Human and Social Environment | Component loadings |       | Component weights |      | Overall weights |
|------------------------------|--------------------|-------|-------------------|------|-----------------|
|                              | 1                  | 2     | 1                 | 2    |                 |
| Education                    | .145               | .923  | .010              | .745 | .274            |
| Labor Regulations            | .666               | -.517 | .217              | .233 | .223            |
| Bribing & Corruption         | .893               | .117  | .390              | .012 | .255            |
| Crime                        | -.885              | -.107 | .383              | .010 | .249            |
| Explained Variance           | 2.045              | 1.144 | 1                 | 1    | 1               |
| Explained/Total Variance     | .641               | .359  | Sum               | Sum  | Sum             |

*Table B25: MSA Value and Bartlett's Test for the Entrepreneurial Opportunities Construct*

|                                                  |                    |
|--------------------------------------------------|--------------------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | .624               |
| Bartlett's Test of Sphericity                    | Approx. Chi-Square |
|                                                  | 80.855             |
|                                                  | df                 |
|                                                  | 10                 |
|                                                  | Sig.               |
|                                                  | .000               |

*Table B26: Total Variance Explained for the Entrepreneurial Opportunities Construct*

| Component | Initial Eigenvalues |               |              | Rotation Sums of Squared Loadings |               |              |
|-----------|---------------------|---------------|--------------|-----------------------------------|---------------|--------------|
|           | Total               | % of Variance | Cumulative % | Total                             | % of Variance | Cumulative % |
| 1         | 2.988               | 59.754        | 59.754       | 2.421                             | 48.412        | 48.412       |
| 2         | 1.100               | 22.009        | 81.763       | 1.668                             | 33.351        | 81.763       |
| 3         | .486                | 9.727         | 91.490       |                                   |               |              |
| 4         | .372                | 7.431         | 98.921       |                                   |               |              |
| 5         | .054                | 1.079         | 100.000      |                                   |               |              |

*Table B27: Rotated Component Matrix for the Entrepreneurial Opportunities Construct*

|                           | Component |       |
|---------------------------|-----------|-------|
|                           | 1         | 2     |
| General Innovativeness    | .854      | .447  |
| R&D Expenditure           | .855      | .355  |
| Enterprise Restructuring  | .875      | -.132 |
| Enterprise Stock Activity | .019      | .907  |

|                             |      |      |
|-----------------------------|------|------|
| Burden: Starting a Business | .441 | .709 |
|-----------------------------|------|------|

*Table B28: Determination of the Weights for the Entrepreneurial Opportunities Construct*

| Entrepreneurial Opportunities | Component loadings |       | Component weights |      | Overall weights |
|-------------------------------|--------------------|-------|-------------------|------|-----------------|
|                               | 1                  | 2     | 1                 | 2    |                 |
| General Innovativeness        | .854               | .447  | .301              | .120 | .227            |
| R&D Expenditure               | .855               | .355  | .302              | .076 | .210            |
| Enterprise Restructuring      | .875               | -.132 | .316              | .010 | .191            |
| Enterprise Stock Activity     | .019               | .907  | .000              | .493 | .201            |
| Burden: Starting a Business   | .441               | .709  | .080              | .301 | .170            |
| Explained Variance            | 2.421              | 1.668 | 1                 | 1    | 1               |
| Explained/Total Variance      | .592               | .408  | Sum               |      | Sum             |

# Figures

Figure 1: Nominations of Importance of Criteria when Investing in Emerging Markets

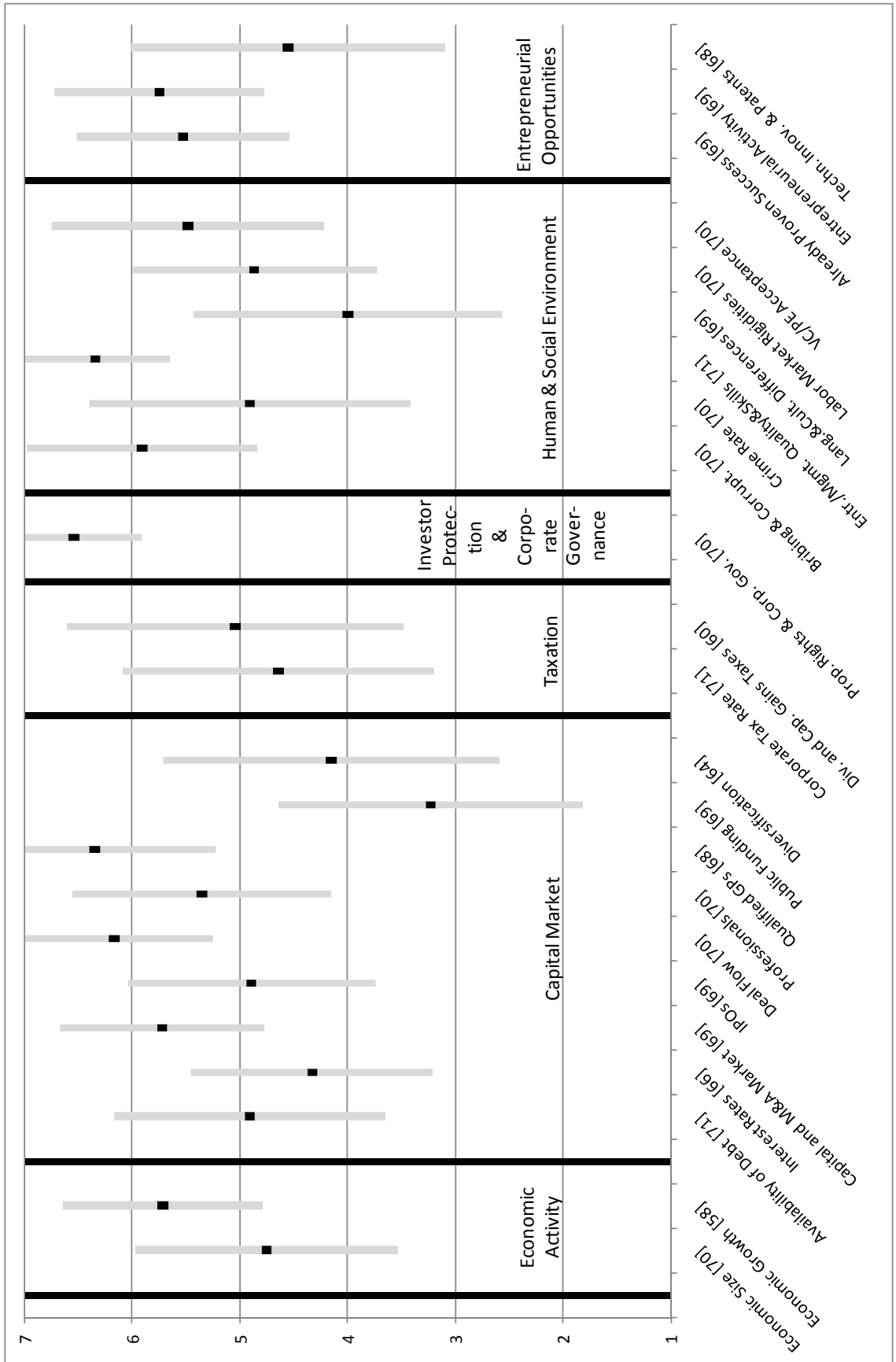


Figure 2: Attractiveness Ranking and its Robustness

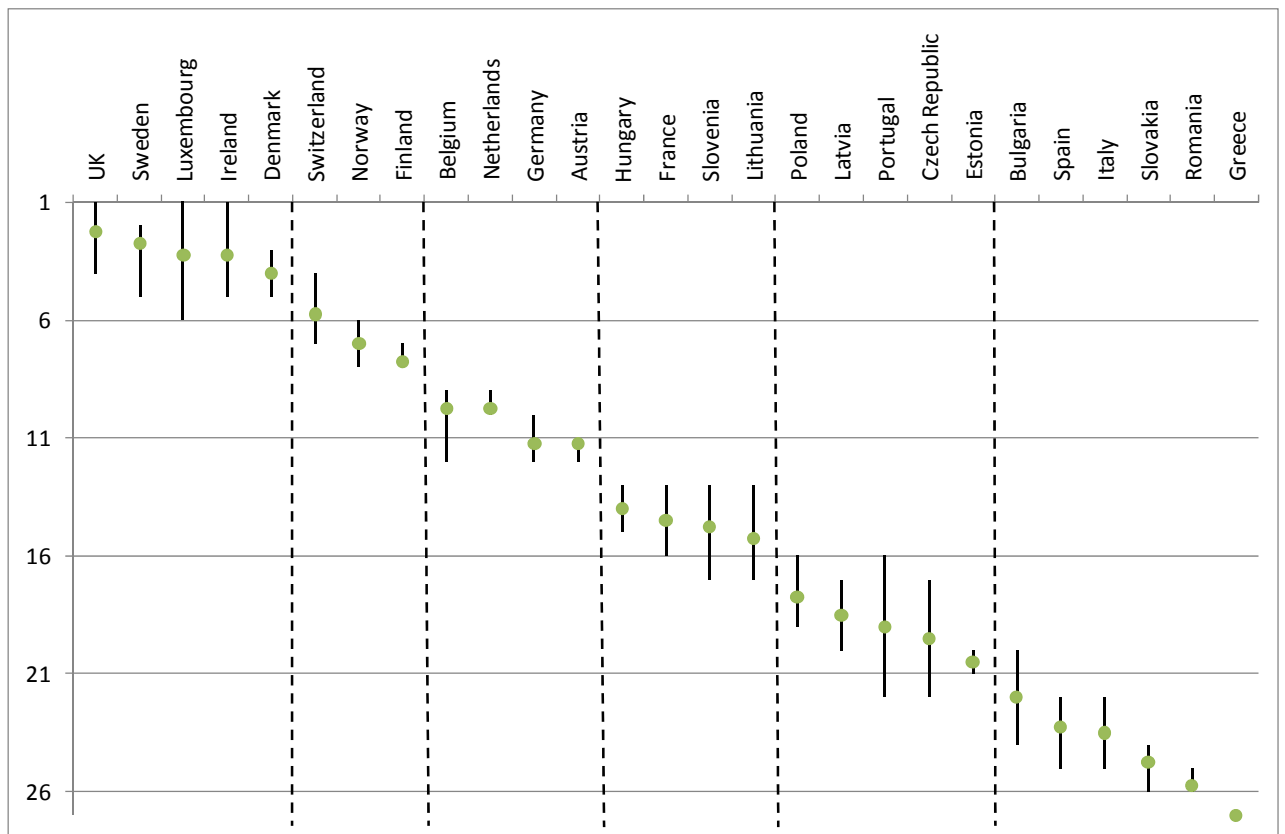


Figure 3: Averages of CEE Key Driver Scores vs. EU-15 (EU-15 = 100)

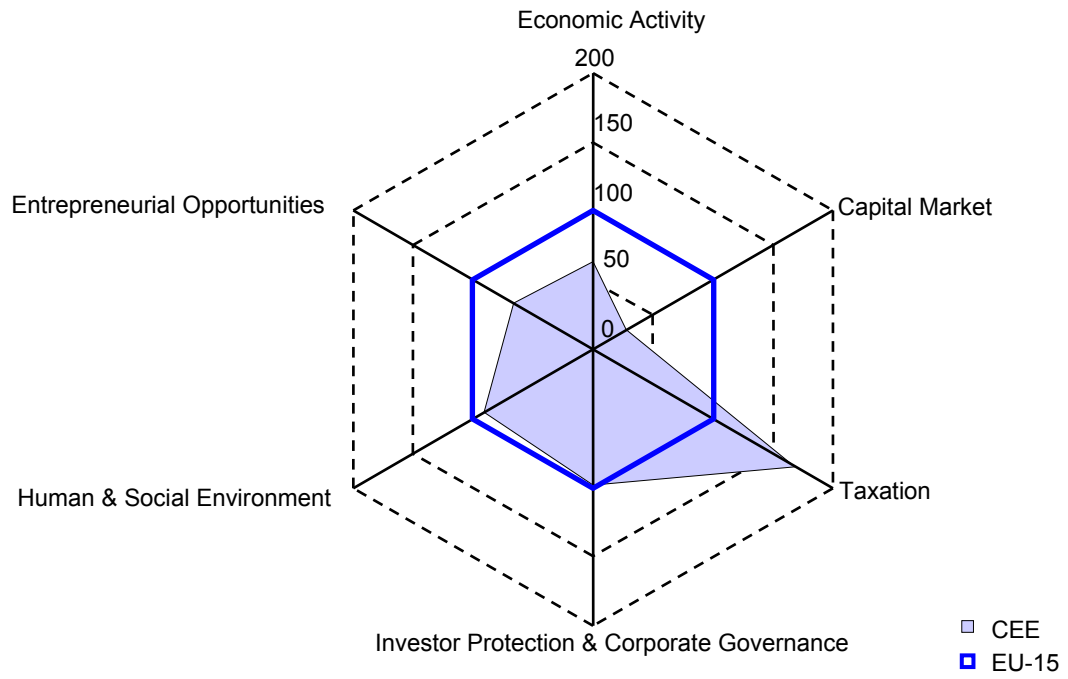


Figure 4: Averages of CEE Scores vs. EU-15 (EU-15 = 100) on a Lower Index Level

