IESE Business School
University of Navarra

Working Paper
WP no 727
January, 2008

LIMITED PARTNERS' PERCEPTIONS OF THE CENTRAL EASTERN EUROPEAN VENTURE CAPITAL AND PRIVATE EQUITY MARKET

Alexander P. Groh

Heinrich Liechtenstein

Miguel A. Canela

IESE Business School – University of Navarra
Avda. Pearson, 21 – 08034 Barcelona, Spain. Tel.: (+34) 93 253 42 00 Fax: (+34) 93 253 43 43
Camino del Cerro del Águila, 3 (Ctra. de Castilla, km 5,180) – 28023 Madrid, Spain. Tel.: (+34) 91 357 08 09 Fax: (+34) 91 357 29 13

LIMITED PARTNERS' PERCEPTIONS OF THE CENTRAL EASTERN EUROPEAN VENTURE CAPITAL AND PRIVATE EQUITY MARKET

Alexander P. Groh[1]
Heinrich Liechtenstein[2]
Miguel A. Canela[3]

Abstract

Growth expectations and institutional settings in Central Eastern Europe are assumed to be favorable for the establishment of a vibrant Venture Capital and Private Equity market. Despite this, there is a lack of risk capital. We examine the obstacles to institutional investments in the region through a questionnaire addressed to (potential) Limited Partners worldwide. The respondents provide information about their perceptions of the region. The protection of property rights is the dominant concern, followed by social criteria, such as the belief in the management quality of local people, and the insufficient size and liquidity of the Central Eastern European capital markets. However, Limited Partners regard the growth expectations as attractive, and those with exposure in Central Eastern Europe are satisfied with the historical risk and return ratio, have a good knowledge of the region, are attracted by other emerging regions, and appreciate the region's entrepreneurial opportunities and the local General Partners. Overall, the region is ranked very favorably compared to other emerging regions, and especially with respect to its economic and entrepreneurial activity.

[1] Professor GSCM - Montpellier Business School
[2] Professor, Finance, IESE
[3] Professor, University of Barcelona

JEL classifications: F3, G23, G24, P2

Keywords: Venture Capital, Private Equity, CEE, International Asset Allocation, Institutional Investors.

LIMITED PARTNERS' PERCEPTIONS OF THE CENTRAL EASTERN EUROPEAN VENTURE CAPITAL AND PRIVATE EQUITY MARKET

1. Introduction

The Central Eastern European (CEE)[1] 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 recent years. Kolodko (2000) and Wagner and Hlouskova (2005) argue that the CEE countries are going through a catch-up period that might last for several decades. This view is typically based on the observation that per-capita GDP in the CEE countries is still below the level of the European Union member states, while the level of education in CEE countries is high, and institutional structures have been converging for some time, as Süppel (2003) highlights. Schöfer and Leitinger (2002) point out that growth estimates above the European average, coupled with policies aimed at promoting innovative enterprises, should lead to a strong demand for risk capital in the CEE countries. Hence, CEE should be highly attractive to institutional investors in Venture Capital and Private Equity (VC/PE) Limited Partnerships.

However, the supply of risk capital is rather low 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 (2004, 2005 and 2006), since then only a little more than €9 billion have been committed to VC/PE funds dedicated to CEE countries. This raises questions as to what obstacles face institutional investors prepared to invest in the VC/PE asset class in that region.

A large body of literature deals with issues concerning the evolution of vibrant local VC/PE markets, and with the parameters that determine institutional investors' decisions to allocate capital in economic regions. We contribute to the existing literature by directly incorporating these determinants into a questionnaire addressed to worldwide operating institutional investors as the dominant providers of risk capital. Consequently, we obtain a unique primary

[1] We define CEE countries as those Central Eastern European countries that recently gained accession to the European Union; namely Bulgaria, the Czech Republic, Hungary, Poland, Romania, Slovakia, Slovenia (2004); and the Baltic States, which include Estonia, Latvia, and Lithuania (2007).

data set to analyze the considerations and concerns of institutional investors when evaluating their VC/PE capital allocation opportunities in CEE. The questionnaire was sent electronically to 1,079 (potential) institutional investors in VC/PE Limited Partnerships in CEE (the Limited Partners – "LPs").

We can confirm that institutional investors regard the region as very favorably, on an equal ranking with India and slightly higher than China. Within CEE, LPs are most attracted by Poland, followed by the Czech Republic and Hungary. In the region, the institutional investors regard economic activity and the entrepreneurial opportunities as favorable but they are not satisfied with the local social environment and capital markets. However, the dominant concern when evaluating VC/PE allocation in CEE is the protection of property rights. Investors do not feel comfortable with the protection of their claims. The results are significant, and do not differ significantly among the sub-groups of institutional investors, such as, for example, Europeans and non-Europeans. Our results confirm previous findings on the importance of corporate governance rules, especially in emerging regions. It is not clear whether this perception is based on an accurate view of CEE property rights laws and the quality of their enforcement in the particular countries, or simply insufficient knowledge of a reality that could, in fact, be more favorable. In either case, policymakers should be aware that increasing investors' confidence could spur additional capital commitments and, hence, contribute to employment and growth.

Related literature so far discusses selections of several determinants for investments in CEE and provides evidence by regressions of VC/PE activity on proxies of these determinants. We are able, for the first time, to rank the appreciation of the particular parameters so far discussed in complementing research papers by directly addressing institutional investors as the main source of VC/PE funding.

The paper is structured as follows: First, we review related literature. Then, we describe the study design and the resulting sample. Next, we perform comprehensive analyses of the data. Each analysis is immediately followed by an interpretation of the findings. Finally, we conclude.

2. Literature Overview

There is already a large body of papers regarding the evolution of foreign direct investments and the activity of (foreign and domestic) institutional investors in CEE and other emerging regions. Köke (1999) focuses on investment criteria of portfolio managers; Chan-Lau (2004) on the criteria of pension funds; Kaminsky et al. (2001) on the determinants of mutual funds; and Resmini (2000), Barrell and Holland (2000), Konings (2001), and Yudaeva et al. (2003) investigate determinants and consequences of foreign direct investments. They all find plenty of different parameters that positively or negatively affect institutional investment decisions, sometimes contradicting among the different papers.

Another large body of research deals with our asset class in question and explores the determinants of VC/PE activity in particular economies: Black and Gilson (1998), and Michelacci and Suarez (2004) highlight the important role of the stock market for the VC/PE asset class. Kaplan and Schoar (2005) confirm this. Jeng and Wells (2000) explore the determinants of VC/PE funding for 21 countries and expand the work of Black and Gilson (1998). They find that IPOs are the strongest driving force of VC/PE investing. Surprisingly, GDP growth and market capitalization are not significant. Gompers and Lerner (2000)

emphasize that risk capital flourishes in countries with deep and liquid stock markets. The availability of debt financing is another key factor for start-ups entering the market, as emphasized by Greene (1998), and hence a determinant for a VC/PE market. Additionally, the maturity of the VC/PE market itself might attract investors. The maturity of a local VC/PE market is also reflected by the number of players and supporting institutions, such as law firms, investment banks, M&A boutiques, auditors and consultants. Sapienza et al. (1996) claim that the level of acceptance of the VC/PE market within a society, and the historical development of that market, both determine investor confidence. Balboa and Martí (2003) find that annual fundraising volume is 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 only if the deal flow is large enough, and if transaction volumes and expected payoffs exceed a certain amount that allows management fees to be covered.

La Porta et al. (1997 and 1998) prove that the legal environment strongly determines the size and extent of a country's capital market and local firm's abilities to receive outside funding. 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 and Johan (2007) highlight that the perceived importance of regulatory harmonization increases institutional investors' allocations to the asset class. Desai et al. (2006) investigate the influence of institutional settings in 33 European countries, in particular the issues of fairness and the protection of property rights, on the entry of enterprises into the markets. The number of new enterprises proxies the attractiveness for VC/PE allocations. Cumming et al. (2006a) find that the quality of a country's legal system is much more directly connected to facilitating VC/PE-backed exits than the size of a country's stock market. Cumming et al. (2006b) expand on this 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. Better laws facilitate deal-screening and deal-origination. They also facilitate investors' board representations and the use of desired types of securities. Lerner and Schoar (2004) analyze VC/PE transaction structures in developing countries and find that the choice of securities is driven by the legal and economic circumstances of the nation and of the investing VC/PE group. La Porta et al. (2002) find a 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.

Gompers and Lerner (1998) examine the forces that affected independent VC/PE fundraising in the United States. They conclude that factors such as regulatory changes affecting pension funds, overall economic growth, firm-specific performance and reputation all affect fundraising. They point out that there are more attractive opportunities for entrepreneurs if the economy is large and growing. Wilken (1979) argues that economic development facilitates entrepreneurship, as it provides a greater accumulation of capital for investments. Romain and van Pottelsberghe de la Potterie (2004) find that VC/PE activity is related to GDP growth.

Da Rin et al. (2005) argue 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.

Gompers and Lerner (1998) also stress that the capital gains tax rate influences VC/PE activity. Bruce (2000 and 2002), and Cullen and Gordon (2002) show that taxes affect the entry and exit of businesses. It can be concluded that this should be mirrored in VC/PE activity.

Rigid labor market policies might negatively affect the attractiveness of a VC/PE market. Institutional investors could hesitate investing in countries with exaggerated labor market protection and immobility. 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.

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 the 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. Schertler (2003) emphasizes that the number of employees in the R&D field and the number of patents, as an approximation of human capital endowment, have a positive and highly significant influence on VC/PE activity. Furthermore, Romain and van Pottelsberghe de la Potterie (2004) find that the level of entrepreneurship interacts with the R&D capital stock, 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, and which should affect the level of acceptance of a risk capital culture. The acceptance of a risk capital culture in a society should also influence the funding activities of institutional investors.

Several papers focus on the evolvement of VC/PE in transition countries, and especially in CEE. Farag et al. (2004) focus on the VC/PE markets in Hungary, the Czech Republic, and Poland and compare them with the German market. With a sample of 68 GPs in the transition countries, they find several factors that hinder the CEE markets in catching up and reaching the chosen benchmark. They conclude that one clear, major obstacle is a lack of qualified people to manage the VC/PE backed enterprises, as the quality of management ranks highly as a reason for investment failure. This finding is also consistent with Bliss (1999), Karsai et al. (1998), and Chu and Hisrich (2001). Furthermore, debt financing remains limited, thus making it difficult to gain the desired returns by leveraging transactions. The authors suggest that legal and institutional improvements to protect lenders effectively can, therefore, lead to growth in the supply of risk capital. Johnson et al. (1999) emphasize the importance of property right protection in CEE, while they find access to banking finance does not present a problem. Klonowski (2005) defines 26 decision criteria for individual transactions in CEE economies, and identifies the most important ones through a survey of 200 GPs in various CEE countries.

All of the above-mentioned papers focus on the settings of several regional capital markets. Most of them run multivariate analyses on secondary data, some of them use surveys among General Partners. Our research approach differs: We directly assess the sources of VC/PE capital, the (potential) institutional investors on a worldwide scale, and collect, through a questionnaire, information about the parameters they evaluate when deciding on their VC/PE allocation in CEE. For the determination of the parameters we refer to the findings of the above-reviewed literature. As the second aspect, we directly ask the (potential) investors about their perceptions of the CEE region. Combining the findings of previous research and the unique primary data set we gathered, we are able to derive significant conclusions on the strengths and weaknesses of the region in attracting international capital.

3. Study Design

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) but, in short, it is divided in two parts. The first part contains some descriptive information on the respondent's institution in terms of its type, size, and allocation hurdle rates. Further, there are questions about the knowledge of the CEE region and the respondent's perception about CEE compared to other emerging regions. The second part comprehensively deals with the respondent's evaluation of the socio-economic criteria he or she considers for CEE asset allocation decisions and with his or her actual exposure there.

Some of the questions raised provide metric responses. However, the majority of the responses are ordinal, made via entries on a seven-point Likert scale. Other responses are categorical. The ordinal responses on the Likert scales range from "poor" to "excellent", or from "not at all attractive" to "very attractive," or from "not at all important" to "very important."

The survey was addressed via email to 1,079 Limited Partners worldwide. The geographic distribution of the addressees is as follows: 77% United States and Canada, 17% Europe, 5% Asia, and 1% others. The email addresses of the Limited Partners are collected from three commercial databases. It is not known what the entire population of LPs is in terms of numbers and funds under management, since a reliable or official list of institutional investors that qualify for VC/PE partnerships does not exist. Each of the three databases claims to cover the whole population of LPs, but, in matching them, we increase the number of players and, hence, gain a unique worldwide compendium of Limited Partners. Furthermore, we check several references and actively search for important and wellknown LPs manually in our repository. We deliberately attempt to cover as many LPs as possible. Nevertheless, matching the databases and the cross-checks might not secure a valid collection of LPs that, at least, represents the entire population. With regard to the geographical distribution of investors, for example, we have the following concern: Even though the United States, as an economic region and as the best-developed financial market, probably embodies the biggest (in terms of fund volumes), most sophisticated, and with 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 depository, none of the larger LPs should be missing, whether in the United States, Europe or Asia. The size of the LPs is important for our study, because, first, as described by Chemla (2005), only the larger ones will be able and willing to diversify into the emerging CEE market, and probably only from them would we receive a response. Second, the larger institutions are more important in terms of their market weight. Additionally, we expect the European LPs to be more interested in the CEE region (for reasons of proximity) and, correspondingly, we expect a higher response rate from them. Hence, we believe that an over-representation of the number of U.S. LPs in our depository of addresses will not harm our conclusions unless they respond in a different manner. However, we will address this issue and investigate our sample regarding differences in the allocation processes and different perceptions caused by geographic origins of the investors. We do not expect to receive many responses from Asian LPs, due to the existence of other emerging regions that would attract them more, for reasons of proximity.

3.2. Sample Size, Geographical Structure and Potential Bias

Of the 1,079 Limited Partners addressed we received 75 valid and valuable responses. This response rate of 7% is quite satisfying when compared to other studies that collect primary data about investors' behavior by means of a questionnaire. For instance, Lerner and Schoar (2005) collect data from 28 Private Equity funds, and 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 investor: United States and Canada, Western Europe, CEE, and rest of the world. The segments are presented in Table 1.

Table 1

Segmented Respondents (Type and Origin of Investors)

Type of Investor	Occurrence	Origin of Investor	Occurrence
Corporate Investors	4	USA and Canada	34
Government Agency	1	Western Europe	37
Banks	3	CEE	1
Pension Funds	8	Rest of the World	3
Insurance Companies	1		
Funds of Funds	29		
Endowments	2		
Others	26		
Not Available	1		

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, as expected, we received more answers from European LPs (49.3% of all the answers), as compared to their occurrence in our depository of 17%. This might bias the results of our study. At any rate the geographical distribution might not be the only cause of a selection bias. As discussed below, types of investors, fund sizes, or other criteria might also not be sufficiently representative. Unfortunately, since no comparable comprehensive repository of investor data exists that provides the necessary information to correct for a potential bias, as mentioned above, we are unable to address this issue. However, we assess the responses of sub-groups of investors, e.g. Europeans and non-Europeans separately in a subsequent section of this paper, and 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 worldwide population of (potential) Limited Partners, our findings are not biased.

3.3. Funds Under Management and VC/PE Commitments

Fifty-nine respondents provided information regarding the size of the managed funds, and from 68 we received their percentage allocation in the VC/PE asset class. Table 2 presents the distribution of the sample, segmented by size and by the worldwide percentage allocation in the VC/PE asset class.

Table 2

Segmented Respondents (Fund Size) and VC/PE Allocation

Fund Size	Occurrence	VC/PE Allocation	Occurrence
< €100m	9	< 30%	29
€100 – 999m	18	30% - 89%	8
€1,000 – 9,999m	23	90% - 100%	31
> €9,999m	9		

The fund sizes are relatively heterogeneous, while the worldwide commitments to the VC/PE asset class are not. A large number of the funds allocate 90% or more of their funds under management into the asset class. This leads us to investigate the relationship between the size of the fund and the percentage of VC/PE allocation. We assume that the percentage of a fund's allocation in the VC/PE capital market segment decreases with the size of the fund. The reason for this is that the smaller funds might be specialized VC/PE vehicles that receive their capital from already-diversified investors, and do not need to diversify among different asset classes. Therefore, we perform a Kruskal-Wallis test with the hypotheses H0: $\mu_i = \mu_k$, and H1: $\mu_i \neq \mu_k$ to test whether the percentage allocation of the funds differs with fund size. The results are reported in Table 3 (note that 58 respondents provided information on both determinants).

Table 3

Kruskal Wallis Test on the Commitment to the VC/PE Asset Class, Grouped by Size

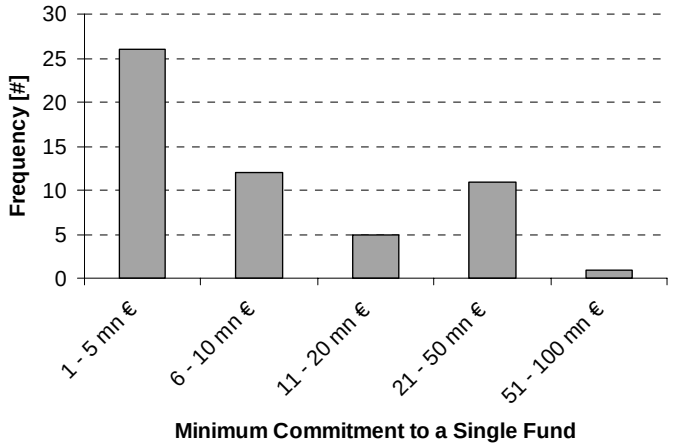
Funds under Management	N	Mean Rank	Mean % commitment to VC/PE		% committed to VC/PE
< €100m	9	24.06	41.844	Chi-Square	10.264
€100-999m	18	34.00	67.183	df	3
€1,000-9,999m	22	33.64	61.273	Asymp. Sig.	**.016**
> €9,999m	9	15.83	22.667		
Total	58		54.102		

We find a significant difference in the mean commitments of the funds grouped by fund size. Hence, H0 has to be rejected, but not in the expected way. The result is rather surprising and leads to the conclusion that the smallest and largest funds in our sample (with 41.8% respectively with 22.7% average VC/PE allocation in each group) have a smaller percentage allocation than the medium-sized funds (between €100 million and €9.9 billion, with average allocations of 67.2%, and 61.3% respectively). The medium-sized funds are the entities that are more specialized in VC/PE.

Regarding CEE exposure, we received responses from 59 LPs; 25 of which have no exposure in CEE; 23 funds have some exposure, less than €50 million; 4 have exposure ranging from €50 million to €100 million; while the remaining LPs have greater exposure. The minimum commitment to a single fund, required to satisfy cost/benefit ratios and internal hurdle rates of the LPs, is presented in Figure 1.

Figure 1

Minimum Commitments to a Single Fund (55 Responses)

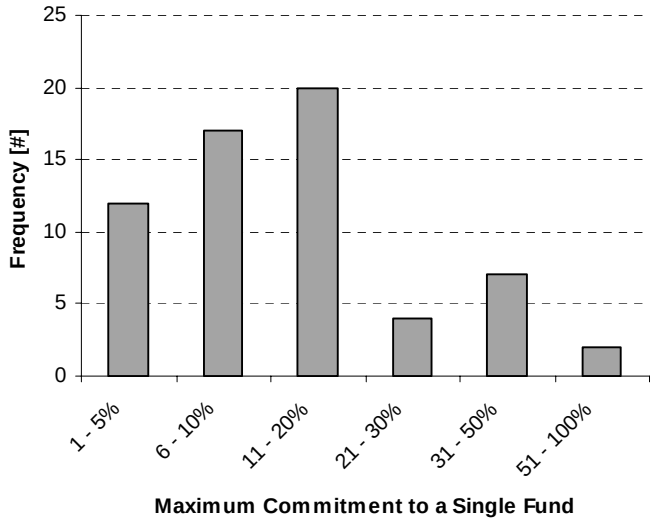


The information is provided by 55 respondents with a mean minimum exposure of €13.5 million, a median of €10 million and a standard deviation of €16.1 million. The particularly large minimal exposures are named by large funds-of-funds investors that probably strive for diversification on subsequent levels. More than two-thirds of the respondents name the minimum exposure in a single fund as being less than €11 million. Those investors better qualify for limited VC/PE partnerships in the CEE region, which are, with respect to the size of the market and typical transactions, smaller than those in Western Europe or North America.

Fifty-five LPs name their maximum commitment to a single fund in terms of the fund's stake, leading to an average of 18.6% and a median of 15% with a standard deviation of 17.2% points. Almost half of the respondents usually take minority stakes of the funds below 10%, while the others are prepared to take stakes above 10%. Two of the respondents would even subscribe for majorities. The clusters of the nominations are presented in Figure 2.

Figure 2

Maximum Commitment to a Single Fund in Terms of the Fund's Stake (62 Responses)



With regard to knowledge of the CEE region, the responses give an expected picture of our questionnaire participants. On the seven-point Likert scale, from "poor knowledge 1" to "excellent knowledge 7," the only participant from within the CEE region estimates his/her own knowledge of CEE as 6. We receive an average of 4.65 for the other European respondents, an average of 4.21 for the North Americans, and 3 for the rest of the world. In a subsequent question the participants are asked about the attractiveness of CEE for VC/PE allocations on the seven-point Likert scale. We find a significant ($p = 0.006$) Spearman's correlation coefficient of 0.33, indicating that well-informed investors regard the region as attractive.

Summarizing the descriptive statistics, it can be reported that we receive a diverse sample of (potential) investors in the VC/PE asset class in terms of size, type, relevant geographical origins, exposure in VC/PE, and thereof exposure in the CEE region. The data is comprehensively analyzed in the subsequent sections of this paper.

4. Analyses

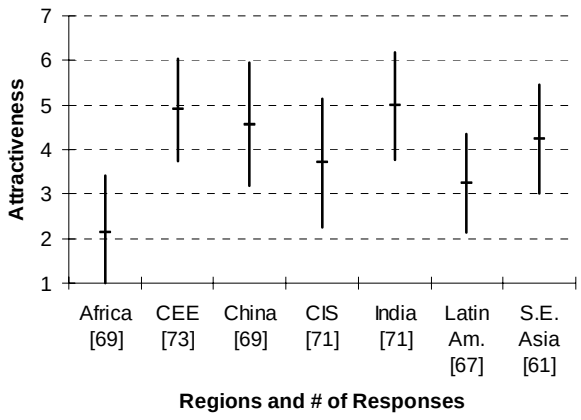
The analyses are performed with several different statistical tests, bivariate and multivariate logit regressions. Since the number of responses differs among sub-groups of questions, multivariate analyses do not lead to significant results in some of the cases. This is mainly due to reduced data within the multivariate regressions caused by incomplete sets of answers from the survey participants. In those cases, we determine significant parameters in bivariate analyses. Within our statistical tests we follow the approach of not having prior expectations regarding the location of central parameters and hence, define non-directional alternative hypotheses.

4.1. Preferences for Emerging Regions and Particular CEE Economies

CEE is in competition with other emerging regions for attracting funding from investors. Hence, we are interested in investor preferences concerning different growth regions in the world, differentiating between Africa, CEE, China, CIS (Commonwealth of Independent States – the former Soviet Union), India, Latin America, and Southeast Asia. The respondents specify their perceptions on a range from "not at all attractive 1" to "very attractive 7" on the seven-point Likert scale. The mean nominations, the $\pm \sigma$ percentile, and the number of responses concerning the attractiveness of the different emerging regions are presented in Figure 3.

Figure 3

Attractiveness of Different Emerging Regions (Fluctuating Numbers of Responses)



To obtain a clearer picture about the institutional VC/PE investors' ranking of the attractiveness of the emerging economies, we perform pair-wise Wilcoxon Signed Rank Tests. The H0 hypothesis in each case is: $\mu_i = \mu_k$, while the alternative H1 hypothesis is $\mu_i \neq \mu_k$. The test results are presented in Appendix 1. Unfortunately, the results still fail to provide a final ranking of the individual regions on a 0.05 significance level. Some ranks are tied. Table 4 presents the ranking according to the tests.

Table 4

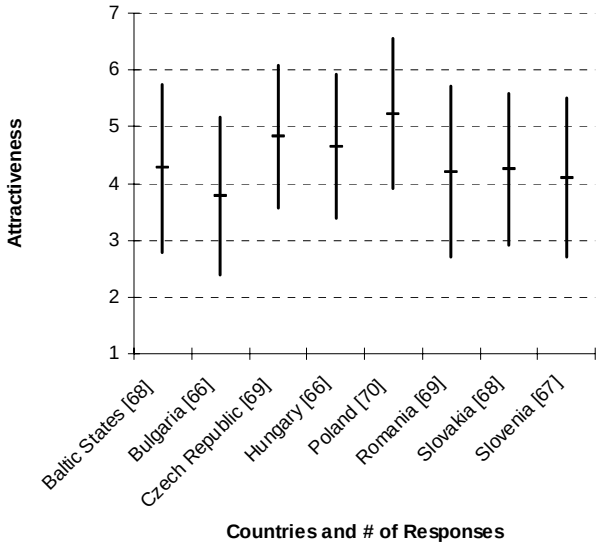
Ranks of Attractiveness of Different Emerging Regions

Region	Rank(s)
India	1 or 2
CEE	1 or 2 or 3
China	2 or 3 or 4
Southeast Asia	3 or 4
CIS	5
Latin America	6
Africa	7

Referring to Table 4, we can define three tier groups: The first tier group consists of India (that can rank either 1 or 2), the CEE countries (1, 2 or 3), and China, while China might also belong to the second tier group (either 2, 3 or 4, but always behind India), together with Southeast Asia (either 3 or 4, but always after CEE). CIS, Latin America, and Africa belong to the third tier group in the mentioned order of attractiveness. Similarly, we question the attractiveness of the individual CEE countries and present in Figure 4 the mean scores and the ± σ-percentiles.

Figure 4

Attractiveness of the Individual CEE Countries (Fluctuating Numbers of Responses)



Again, a clear ranking is not possible on the basis of the mean scores, and we perform pair-wise Wilcoxon Signed Rank Tests to test in each case if H0: $\mu_i = \mu_k$, else H1: $\mu_i \neq \mu_k$. The test results are presented in Appendix 2. Unfortunately, as before, the tests do not reveal a final ranking of all the CEE countries' attractiveness for VC/PE investors on a 0.05 significance level. However, Poland ranks clearly before all the other CEE states. Subsequent ranks are tied but we can build three tier groups. The top tier group is Poland and the Czech Republic. The second tier is Hungary, the Baltic States, Romania, and Slovakia. The last tier consists of Slovenia and Bulgaria. Thereby, Hungary could also belong to the first tier, and Slovenia to the second tier group. The possible individual ranks are presented in Table 5.

Table 5

Ranks of Attractiveness for Institutional Investors of Different CEE Countries

Country	Possible Rank(s)
Poland	1
Czech Republic	2 or 3
Hungary	2 or 3 or 4 or 5
Baltic States	3 or 4 or 5 or 6 or 7
Romania	3 or 4 or 5 or 6 or 7
Slovakia	4 or 5 or 6 or 7
Slovenia	4 or 5 or 6 or 7 or 8
Bulgaria	7 or 8

4.2. Characteristics of Different Allocation Criteria in CEE

To investigate investors' concerns about the CEE region we determine their ratings of the criteria discussed in our literature review. Therefore, we briefly describe the individual criteria and ask them to evaluate the region on the seven-point Likert scale from "not at all attractive 1" to "very attractive 7," based on the following determinants: Capital market, social environment, investor protection, taxation, economic, and entrepreneurial conditions. The results are presented in Figure 5.

Figure 5

Key Determinants in CEE Region (Fluctuating Numbers of Responses)

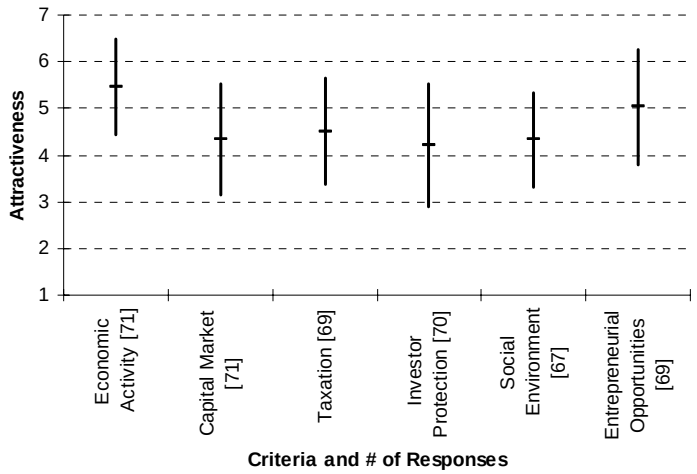


Figure 5 shows the means of the nominations and the ± σ-percentiles regarding investors' satisfaction with the six key driving factors. Again, as no clear ranking across the key driving factors is possible, we perform Wilkoxon Signed Rank tests with the hypotheses H0: $\mu_i = \mu_k$, and H1: $\mu_i \neq \mu_k$. The tests are documented in Appendix 3 and the results presented in Table 6.

Table 6

The Attractiveness of CEE Countries with Respect to Six Country Allocation Key Driving Factors

Criteria	Rank(s)
Economic Activity	1
Entrepreneurial Opportunities	2
Taxation	3 or 4 or 5
Capital Market	3 or 4 or 5 or6
Social Environment	4 or 5 or 6
Investor Protection	4 or 5 or 6

It becomes clear that, while economic and entrepreneurial conditions are regarded as quite favorable, a very important investment obstacle, as described by La Porta et al. (1997, 1998, and 2002), Glaeser et al. (2001), Djankov et al. (2003 and 2005), and Lerner and Schoar (2005), namely, the protection of property rights, is ranked poorly. Johnson et al. (1999) also emphasize this finding for the CEE region. Other important criteria discussed in the literature overview, such as the presence of qualified GPs and expected entrepreneurial management quality and skills, are largely determined by the social and capital market environment in these countries, and also receive the lowest rankings. Institutional investors miss a satisfying level of investor protection, entrepreneurial management skills, and capital market activity. Thereby, it is not relevant whether these perceptions are based on correct specifications of the proposed key driving factors, or on insufficient knowledge of a reality that could, in fact, be more favorable. Either way, increasing investor confidence regarding those issues could spur additional commitments.

4.3. Grouping Investors

Our heterogeneous sample of 75 LPs allows partitioning in several homogeneous sub-samples. The following categories can be assigned to the respondents: They are either European or not; they are either funds of funds or not; or they either can or cannot be grouped into entities that are focused on VC/PE investments, and hence specialized (with high percentage VC/PE exposure). All of the criteria split the sample roughly by half. The research question for the sub-samples is always whether there are any differences regarding their capital allocation processes or their perceptions. We obtain the required results by running Mann Whitney U tests. First, we distinguish European and non-European LPs.

It could be argued that European investors have a better knowledge of CEE than non-Europeans due to the geographic proximity. Additionally, Europeans could follow other criteria for their international asset allocation process. To test those and similar hypotheses we perform Mann Whitney U tests, using H0: $\mu_i = \mu_k$, and H1: $\mu_i \neq \mu_k$. The test statistics with significant results are presented in Table 7.

Table 7

Test Statistics with Significant Results

European		Max % in Single Fund	China	CIS	India	Taxation in CEE	Baltic States
0	N	30	31	33	33	33	32
	Mean	22.733	4.19	4.12	4.67	4.88	4.72
	Std. Deviation	17.7840	1.327	1.576	1.190	1.139	1.397
1	N	33	37	37	37	35	35
	Mean	14.364	4.84	3.27	5.30	4.17	3.91
	Std. Deviation	15.9390	1.385	1.146	1.175	1.043	1.422
	Mann-Whitney U	296.500	421.500	421.500	444.000	368.500	388.000
	Z	-2.770	-1.920	-2.274	-2.019	-2.679	-2.203
	Asymp. Sig. (2-tailed)	**.006**	.055	**.023**	**.043**	**.007**	**.028**

Table 7 presents the test statistics for the analyses, where partitioning the sample into European (= 1) and non-European (= 0) LPs gives significant results (also having tested for all the other possible parameters). The results reveal that non-European investors are prepared to maintain a higher maximum exposure in a fund. They regard the CIS region as more attractive than the Europeans, and India less attractive. They also regard China as less attractive (at a 0.055 significance level). There is some kind of "inverse relationship" between the proximity of a region and perceptions about it. The European and non-European investors likewise regard more distant regions as more attractive. They evaluate taxation in CEE as worse than the non-Europeans. This could be due to a better knowledge and understanding of the CEE tax regimes, or due to regulations that only non-Europeans can benefit from. Furthermore, they regard the Baltic States as less attractive than the non-Europeans. However, we do not find significant differences between European and non-European LPs regarding their evaluation of their own knowledge of CEE, or any other determinant than those mentioned. This allows us to conclude that institutional investors operating on an international level do not differ greatly across different regions of origin in their approaches to international capital allocation.

The following analyses deal with differences between a) those funds dedicated to VC/PE only, and b) the rest. We distinguish the funds dedicated to the VC/PE asset class from others on the basis of the percentage of fund allocation to VC/PE being higher than 90%. It could be argued that the focused funds are more experienced and more professional in their due diligence and allocation processes. Additionally, they might have better knowledge of the VC/PE markets and local conditions in different regions of the world. To test these and other hypotheses, we perform Mann Whitney U tests again, using H0: $\mu_i = \mu_k$, and H1: $\mu_i \neq \mu_k$. Table 8 presents the test statistics with significant results.

Table 8

Test Statistics with Significant Results

VC/PE Focused		Binary Commitment to CEE	Max % in Single Fund	Latin America Attractiveness	Capital market in CEE	Taxation in CEE
0	N	36	36	35	37	35
	Mean	.42	16.556	3.60	4.70	4.83
	Std. Deviation	.500	17.3575	1.063	1.244	1.071
1	N	29	23	28	29	29
	Mean	.66	21.565	2.82	4.07	4.17
	Std. Deviation	.484	17.7478	1.020	.998	1.167
	Mann-Whitney U	397.500	303.500	300.000	387.500	376.500
	Z	-1.899	-1.743	-2.755	-1.992	-1.849
	Asymp. Sig. (2-tailed)	.058	.081	**.006**	**.046**	.065

Table 8 presents the test statistics for the analyses, where splitting the sample into VC/PE specialized (= 1) and non-specialized (= 0) LPs leads to significant results (also having tested all the other parameters). The analyses reveal that funds dedicated to the VC/PE asset class more often have a commitment in the CEE region than other funds (this and some other results discussed further below, are based on expanded significance levels, up to 0.081). The finding can be interpreted twofold: On the one hand, specialized VC/PE investors might more comprehensively perform regional due diligence, and hence might be aware of several favorable conditions in CEE. On the other hand, the greater commitment in CEE could also be due to geographic diversification requirements for the specialized VC/PE funds. Both arguments seem plausible, but because the focused funds do not evaluate CEE (statistically significant) as more attractive than their non-focused peers, the latter argument seems to be the more likely.

However, the specialized funds are willing to subscribe larger maximum stakes in single funds and they regard Latin America as less attractive than the general funds do. Furthermore, the focused investors evaluate the capital market and the tax regime in CEE as less attractive than do the non-specialized investors. A possible explanation for this finding might be, as above, a deeper regional due diligence by the specialized investors, especially in the tax regimes, which might not be so attractive in all facets. In summary, it can be argued that investors closer to the individual target investments have slightly different opinions with regard to several allocation criteria and country perceptions.

The final distinction is made by separating funds-of-funds from other categories of investors. Funds-of-funds will, as indicated by the name, diversify among different funds. They delegate the management activities to lower levels and, therefore, have to rely more on the subsequent chain of agents than other investors who can allocate their capital more directly. As a result, they should differ in respect to their allocation profiles, and they might have different asset allocation criteria and regional perceptions. To test these hypotheses we perform Mann Whitney U tests once again, using H0: $\mu_i = \mu_k$, and H1: $\mu_i \neq \mu_k$. The test statistics with significant results are presented in Table 9 (again, we also tested all the other parameters).

Table 9

Test Statistics with Significant Results

Fund of Fund		% Committed to VC/PE	Minimum Commitment to Single Fund	Risk/Return Ratio in CEE
0	N	40	34	31
	Mean	34.573	10.559	4.90
	Std. Deviation	39.6687	18.1412	1.399
1	N	27	26	20
	Mean	87.185	14.692	4.20
	Std. Deviation	26.5751	12.1845	1.105
	Mann-Whitney U	178.000	261.000	214.000
	Z	-4.854	-2.743	-1.901
	Asymp. Sig. (2-tailed)	**.000**	**.006**	.057

The proposed differences are supported by the data. First, the funds-of-funds do not greatly differ from the specialized funds we considered in the previous sample partition test. They are characterized by an average commitment to the VC/PE asset class of 87.2% and a median of even 100% which are significantly different from the commitments of the non-funds of funds. This suggests that the majority of the funds-of-funds are, at the same time, focused on VC/PE and hence, in fact, VC/PE Funds-of-Funds. However, analyzing the data more closely reveals that 9 funds with 100% VC/PE exposure do not qualify themselves as funds of funds, and inversely, 5 funds identify themselves as funds-of-funds but each have a very low VC/PE exposure. Whatever the case may be, it can be argued that, once again, we identify a more specialized type of investor, and find that, while their funds under management are not significantly larger than those of their peers, they are looking for a higher level of commitment in general and, hence, raise the minimum commitment level. Furthermore, the funds-of-funds demand more of their investees, as reflected by less satisfaction with the CEE risk/return ratio (this result is based on a 0.57 significance level). This is probably due to the fact that, as mentioned before, funds-of-funds have to rely heavily on the agents in the subsequent chain of diversification.

Summarizing the results of partitioning the sample, we claim that there are only minor differences in the capital allocation strategies and perceptions of certain sub-groups of the institutional investors. The strategies and perceptions do not vary to such an extent that our results get meaningfully biased towards a particular sub-group in our sample. Hence, we propose that the results are representative for the whole population of limited partners.

4.4. CEE Investment Decision Determinants

One major distinction within our analyses can be made by the actual investment decision in CEE. We assume that an investor's final decision to allocate funds for VC/PE partnerships in the CEE region is dependent on certain characteristics. These characteristics can be best addressed by logit regressions that directly relate the binary dependent variable of the investment decision to several decision parameters:

For a binary variable Y and a vector of p explanatory variables **x** at values $\mathbf{X} = (x_1,...,x_p)$, let

$$\pi(\mathbf{x}) = P(Y = 1|\mathbf{X} = \mathbf{x}) = 1 - P(Y = 0|\mathbf{X} = \mathbf{x})$$

where P(...) measures the probability of an event. The logit regression model then is:

$$\text{logit}[\pi(\mathbf{x})] = \log\frac{\pi(\mathbf{x})}{1-\pi(\mathbf{x})} = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + ... + \beta_p x_p \quad (1)$$

The intercept parameter β_0 is not of particular interest, but can be interpreted as *log* odds if the explanatory variables are null. The parameter β_i refers to the effect of x_i on the *log* odds of Y = 1, controlling for the other x_j. Exponentiation (1) shows that $\exp(\beta_i)$ is the multiplicative effect on the odds of a 1-unit increase in x_i, at fixed levels of the other x_j.

Using logit regressions we comprehensively test several hypotheses, and below we focus on those with significant results only. The dependent variable in all of the following cases is whether or not an LP has exposure in the region. We define the hypotheses, present the statistical tests of the models, and conclude the findings. Unfortunately, as mentioned before, the number of valid responses to the particular groups of survey questions and the response behavior among the survey participants differs largely. As an undesirable consequence, the data set for multivariate logit regressions (where a complete matrix of regressors is required) is considerably reduced. Hence, we perform bivariate logit regressions in the cases with otherwise-reduced datasets, and a multivariate logit regression for the analysis of the driving socio-economic factors, where a satisfying matrix of regressors is available.

Hypotheses No. 1:

H0: LPs invest in CEE countries irrespective of their level of satisfaction about the historical performance in that region.

H1: LPs invest in CEE countries because they are satisfied with the historical performance and expect extrapolation.

The analysis is based on 47 observations, of which 33 LPs have exposure in CEE. It results in a significant parameter of investor satisfaction with historical risk and return ratios, the H0 hypothesis is rejected.

Table 10

Logit Regression Results (R-R-eval, Independent Variable is the Evaluation of the Historical Risk/Return Ratio in CEE)

	B	S.E.	Wald	Sig.	Exp(B)	Chi-square	Model-Sig.
R-R-eval	,539	,256	4,450	**,035**	1,715	5,009	**,025**
Constant	-1,529	1,140	1,800	,180	,217		

The exponential of the parameter β_1, $\exp(\beta_1)$, is the odds ratio of maintaining exposure in the CEE region. On the basis of these findings, it can be argued that an increase of one point in our Likert scale in the answer about investor satisfaction with the historical performance in CEE countries increases the odds of investment in the region. For an investor who is indifferent as to whether or not to invest, i.e., with a probability of 50% or an odds of 1, all else being equal, an increase of one point in the level of satisfaction with the historical performance, leads to a

new odds ratio of 1.715 and, hence, to an investment probability of 1.715/(1+1.715) = 63.2%. With this result we conclude that the historic performance greatly influences decisions about future allocations. This supports the findings in literature on the tendency of extrapolation of performance results, e.g., in Friend and Vickers (1965), or Lakonishok et al. (1994). However, this is a rationale approach considering the findings on performance persistence in Grinblatt and Titman (1992), Elton et al. (1996), and especially, and most notably, those that prove the strong performance persistence of good and poor GPs in the VC/PE capital market segment reported by Kaplan and Schoar (2005).

Hypotheses no. 2:

H0: LPs invest in the CEE region irrespective of their level of knowledge about the countries.

H1: Only LPs with sufficient knowledge invest in the CEE region.

The analysis is based on 65 observations, of which 32 LPs have exposure in CEE, and significant results show that, in fact, regional knowledge determines the investment decision. Hence, the H0 hypothesis is rejected.

Table 11

Logit Regression Results (Knowl, Independent Variable is the Knowledge about the CEE Region)

	B	S.E.	Wald	Sig.	Exp(B)	Chi-square	Model-Sig.
Knowl	,787	,225	12,292	**,000**	2,198	17,184	**,000**
Constant	-3,468	1,031	11,311	**,001**	,031		

The result proves a very strong correlation between informed investors and the decision to allocate, with an odds ratio of 2.198 per point on our Likert scale. The likelihood of investing in the region becomes, all else being equal, 2.198/(1+2.198) = 68.7% for an otherwise indifferent investor who increases his knowledge about the region by one point on our Likert scale. Limited Partners obviously do not naively diversify, but make allocation decisions based on regional knowledge. They do not follow a 1/n heuristic as discussed in Benartzi and Thaler (2001), and only invest if they have sufficiently regional expertise. This strong result is also confirmed by Fernandes (2004) who emphasizes the need for elaborate country selection strategies in order to outperform benchmarks. It also underscores the benefit of informational campaigns and research publications that can help emerging economies attract international institutional capital by the transfer of knowledge.

Hypotheses No. 3:

H0: Institutional investors invest in the CEE region irrespective of their perceptions of (other) emerging markets.

H1: Investors with exposure in CEE are attracted by the region itself and also by other emerging regions. There is a tendency for “emerging market investing.”

Once more, unfortunately, bivariate analyses have to be performed for the different emerging regions (Africa, CEE, China, CIS, India, Latin America, and Southeast Asia) to omit the problem of dealing with a much reduced data set caused by missing responses from individual

participants for some of the regions. The H0 hypothesis has to be accepted for China, India, Latin America, and Southeast Asia, and has to be rejected for Africa, CEE, and CIS.

In the case of Africa, we observe 64 responses, of which 33 investors have exposure in CEE. The analysis reveals that the perception of Africa has a significant influence on the decision of allocations to CEE.

Table 12

Logit Regression Results (AttrAfr, Independent Variable is the Evaluation of Africa's Attractiveness)

	B	S.E.	Wald	Sig.	Exp(B)	Chi-square	Model-Sig.
AttrAfr	,451	,227	3,965	**,046**	1,571	4,619	**,032**
Constant	-,888	,529	2,822	,093	,411		

In the case of CEE itself, we observe 68 responses, of which 35 investors have exposure in CEE. As expected, the analysis reveals that perceptions of the attractiveness of the CEE region have a strong influence on the decision of allocations to it.

Table 13

Logit Regression Results (AttrCEE, Independent Variable is the Evaluation of CEE's Attractiveness)

	B	S.E.	Wald	Sig.	Exp(B)	Chi-square	Sig.
AttrCEE	,610	,251	5,914	**,015**	1,841	6,942	**,008**
Constant	-2,976	1,276	5,434	**,020**	,051		

For the CIS region, we observe 66 responses, of which 35 investors with exposure in CEE. The analysis reveals that the perception of the attractiveness of the CIS region also has a significant influence on the decision of allocations to CEE.

Table 14

Logit Regression Results (AttrCIS, Independent Variable is the Evaluation of CIS' Attractiveness)

	B	S.E.	Wald	Sig.	Exp(B)	Chi-square	Model-Sig.
AttrCIS	,561	,209	7,181	**,007**	1,753	8,519	**,004**
Constant	-1,920	,796	5,810	**,016**	,147		

As expected, the decision to allocate funds to the CEE region is determined primarily by the evaluation of the attractiveness of the CEE region itself (odds ratio of 1.841); however, it is also correlated with the perceptions of Africa (odds ratio of 1.571) and the CIS region (odds ratio of 1.753). The decision about maintaining exposure in CEE is independent of perceptions of the other emerging regions, namely China, India, Latin America, and Southeast Asia. While thecorrelation with perceptions of Africa is harder to explain, the similarities between the CEE and the CIS region are clear. These two markets, geographically close, are considered to be similar in terms of being former communist countries that have evolved to open market economies with or without accession to the European Union. Probably, investors in CEE also maintain exposure in CIS. Unfortunately, this issue is not covered by our survey questions.

However, we prove that there is a tendency for "emerging market investing," i.e., investors that have exposure in CEE are also attracted by other emerging regions.

Hypotheses No. 4:

H0: Investors invest in the CEE region irrespective of their assessment of key socio-economic conditions in the region, such as economic activity, local capital markets, taxation, investor protection, the social environment, and entrepreneurial activities.

H1: Investors closely link their decision to invest in CEE to the selection criteria mentioned in H0.

The multivariate logit regression on the above-mentioned six parameters is based on 60 observations, of which 30 LPs have exposure in CEE. The results show a significant parameter of entrepreneurial opportunities only. Hence, the H0 hypothesis is rejected for entrepreneurial opportunities, but it is accepted for all the other key driving factors.

Table 15

Logit Regression Results (The Independent Variables are Evaluations of the: EcoAct – Economic Activity, CapMark – Capital Market, Taxation – Taxation, InvProt – Investor Protection, SocEnv – Social Environment, and EntrOpp – Entrepreneurial Opportunities)

	B	S.E.	Wald	Sig.	Exp(B)	Chi-square	Model-Sig.
EcoAct	-,036	,442	,007	,934	,964		
CapMark	-,651	,453	2,064	,151	,522		
Taxation	-,137	,376	,132	,716	,872		
InvProt	,438	,387	1,275	,259	1,549	18,528	**,005**
SocEnv	-,348	,453	,592	,442	,706		
EntrOpp	1,331	,411	10,473	**,001**	3,787		
Constant	-3,466	1,918	3,265	,071	,031		

The evaluation of the entrepreneurial opportunities very strongly determines the decision to allocate funds in the CEE region. All else being equal, an increase of 1 point on the Likert scale raises the probability of investing for an otherwise indifferent investor to 79.1%. LPs decide to invest in CEE because of expected entrepreneurial opportunities. However, there is no other parameter that finally determines the investment decision. Hence, investors are not sufficiently satisfied with the other key driving factors used in the model. This finding reveals possible room for improvement of the other driving forces in order to attract more international institutional capital for VC/PE funds.

Hypotheses No. 5:

H0: LPs invest in the region irrespective of perceptions they have about the quality of local fund management teams.

H1: LPs only invest if they are confident about the quality of the local fund management teams.

The bivariate logit regression is based on 62 observations. Of the respondents, 30 have exposure in CEE. The regression results show a significant parameter for the evaluation of quality of local GPs. Hence, the H0 hypothesis is rejected.

Table 16

Logit Regression Results (GPqual, Independent Variable is the Evaluation of the Quality of CEE Fund Management Teams)

	B	S.E.	Wald	Sig.	Exp(B)	Chi-square	Sig.
GPqual	1,082	,352	9,429	**,002**	2,950	13,787	**,000**
Constant	-4,808	1,585	9,208	,002	,008		

LPs that evaluate the quality of local CEE teams as good are more likely to invest. For indifferent investors, an increase in their evaluation of the quality of GPs by one point on the Likert scale, all else being equal, will raise the likelihood of investing to 2.950/(1+2.950) = 74.7%. The strong influence of this parameter emphasizes the fact that the funded teams in CEE must be regarded as very professional. This finding also highlights the desire of LPs to engage with top-tier GPs only. Kaplan and Schoar (2005) point out the existence of individual management teams who continue to perform strongly and that, therefore, searching for good teams is worthwhile. Lerner and Schoar (2004) show that LPs should optimally sort out poorly performing GPs and commit to good ones only. However, not all LPs screen the GPs sufficiently. Lerner et al. (2005) find that endowments and public pension funds are more sophisticated in their selection processes, and use their insider information, and are thus better able to forecast performance on follow-on funds. However, with our small sample of endowments and pension funds, we are unfortunately not able to follow up on this interesting issue.

5. Conclusions

The Central Eastern European countries offer a large range of opportunities to institutional investors. Expectations for economic growth for the coming decades are promising, and institutional as well as societal prerequisites in the European Union accession countries are, in theory, favorable. Nevertheless, the supply of risk capital is relatively poor in relation to the opportunities in this region compared to other countries. This is surprising and presents the challenge of identifying the obstacles to more institutional investment in Venture Capital and Private Equity funds in CEE. With a questionnaire sent out to 1,079 (potential) limited partners based all over the world we address investor perceptions about the region, and link their institutional settings and exposure with their regional perceptions. We prove that our sample sufficiently represents the population of limited partners, arguing that there are no (statistically significant) meaningful differences regarding their perceptions and allocation decision criteria.

We show that institutional investors regard CEE as a very attractive region, ranking equally with India, and slightly higher than China. Among CEE, Poland is the most attractive country, followed by the Czech Republic and Hungary. We group possible allocation determinants into six criteria: Economic activity, capital market, taxation, property rights protection, social environment and entrepreneurial activity, and prove that, when assessing CEE, the institutional investors regard economic activity and the entrepreneurial opportunities there as favorable. Conversely, and this is a very important finding, they do not feel comfortable about the most

prominent criteria discussed in literature, which is the protection of their claims. Thereby, it is of no relevance that investors might not be well-enough informed about the actual property rights protection legislature and enforcement possibilities in CEE. It is a fact, and this should alert policymakers, that they are not comfortable with the current situation, and hence, might refrain from investment. Simple means, such as greater transparency of property rights protection and informational campaigns might lead to an increase of risk capital supply.

Investors with exposure in CEE are satisfied with the historic performance of their allocated funds, have a good knowledge of the region, and are also attracted by other emerging Venture Capital and Private Equity markets. These investors appreciate the entrepreneurial opportunities and the quality of local fund management teams in CEE. However, they are, as well as the other investors without exposure in CEE, not satisfied with the protection of their property rights.

Our results add to the current literature on the importance of effective property rights protection in the competition for international institutional capital. They further contribute to more transparency of the asset allocation processes of institutional investors and to a better understanding of investment obstacles in CEE, and other emerging regions. Local policymakers should henceforth be able to detect weaknesses in their countries regarding the investor allocation criteria and to exploit this room for improvement to spur regional Venture Capital and Private Equity markets, and hence resources, for financing innovation, entrepreneurship, employment, and growth.

6. References

Armour, J. and D. Cumming (2006), "The legislative road to Silicon Valley," *Oxford Economic Papers*, Vol. 58, pp. 596–635.

Balboa, M. and J. Martí (2003), "An integrative approach to the determinants of private equity fundraising," SSRN working paper 493344.

Baughn, C. C. and K. E. Neupert (2003), "Culture and national conditions facilitating entrepreneurial start-ups," *Journal of International Entrepreneurship*, Vol. 1, pp. 313-330.

Barrel, R. and D. Holland (2000), "Foreign direct investment and enterprise restructuring in Central Europe," *Economics of Transition*, Vol. 8, No. 2, pp. 477-504.

Benartzi, S. and R. H. Thaler (2001), "Naive diversification strategies in defined contribution saving plans," *American Economic Review*, Vol. 91, pp. 79-98.

Black, B. and R. Gilson (1998), "Venture capital and the structure of capital markets: Banks versus stock markets," *Journal of Financial Economics*, Vol. 47, pp. 243-277.

Blanchard, O. J. (1997), "The medium run," Brookings Papers on Economic Activity, pp. 89-158.

Bliss, R. T. (1999), "A venture capital model for transitioning economies: the case of Poland," *Venture Capital*, Vol. 1, pp. 241-257.

Bruce, D. (2000), "Effects of the United States' tax system on transition into self-employment," *Labor Economics*, Vol. 7, pp. 545-574.

Bruce, D. (2002), "Taxes and entrepreneurial endurance: Evidence from the self-employed," *National Tax Journal*, Vol. 55, pp. 5-24.

Chan-Lau, J. A. (2004), "Pension funds and emerging markets," IMF working paper 04/181.

Chemla, G. (2005), "The determinants of investment in private equity and venture capital: evidence from American and Canadian pension funds," SSRN working paper 556421.

Chu, P. and R. D. Hisrich (2001), "Venture Capital in an economy in transition," *Venture Capital*, Vol. 3, pp. 169-182.

Cullen, J. B. and R. H. Gordon (2002), "Taxes and entrepreneurial activity: Theory and evidence for the U.S.," NBER working paper 9015.

Cumming, D., G. Flemming, and A. Schwienbacher (2006a), "Legality and venture capital exits," *Journal of Corporate Finance*, Vol. 12, pp. 214-245.

Cumming, D., D. Schmidt, and U. Walz (2006b), "Legality and venture governance around the world," SSRN working paper 537243.

Cumming, D. and S. Johan (2007, "Regulatory harmonization and the development of private equity markets," *Journal of Banking and Finance* (forthcoming).

Da Rin, M., G. Nicodano, and A. Sembelli (2005), "Public policy and the creation of active venture capital markets," European Central Bank working paper No. 430.

Desai, M., P. Gompers, and J. Lerner (2006), "Institutions and entrepreneurial firm dynamics: Evidence from Europe," Harvard NOM research paper 03-59.

Djankov, S., R. La Porta, F. López de Silanes, and A. Shleifer (2003), "Courts," *Quarterly Journal of Economics*, Vol. 118, pp. 453-517.

Djankov, S., R. La Porta, F. López de Silanes, and A. Shleifer (2005), "The law an economics of self-dealing," NBER working paper 11883.

EBRD (2005), "Transition Report 2005: Business in Transition," London.

Elton, E. J., M. Gruber, and C. J. Blake (1996), "The persistence of risk-adjusted mutual fund performance," *Journal of Business*, Vol. 69, pp. 133-157.

EVCA (2004), "EVCA yearbook 2004 – Annual survey of Pan-European private equity & venture capital activity," EVCA European Venture Capital Association, Brussels.

EVCA (2005), "EVCA yearbook 2005 – Annual survey of Pan-European private equity & venture capital activity," EVCA European Venture Capital Association, Brussels.

EVCA (2006), "EVCA yearbook 2006 – Annual survey of Pan-European private equity & venture capital activity," EVCA European Venture Capital Association, Brussels.

Farag, H., U. Hommel, P. Witt, and M. Wright (2004), "Contracting, monitoring, and exiting venture investments in transitioning economies: a comparative analysis of Eastern European and German markets," *Venture Capital*, October 2004, Vol. 6, No. 4, pp. 257-282.

Fernandes, N. (2004), "What level of portfolio disaggregation in emerging markets?," *Journal of Portfolio Management*, Vol. 31, pp. 41-49.

Friend, I. and D. Vickers (1965), "Portfolio selection and investment performance," *Journal of Finance*, Vol. 20, pp. 391-415.

Glaeser, E.L., S. Johnson, and A. Shleifer (2001), "Coase vs. the Coasians," *Quarterly Journal of Economics*, Vol. 116, pp. 853-899.

Gompers, P. and J. Lerner (1998), "What drives venture fundraising?," *Brooking Papers on Economic Activity*, Microeconomics, pp. 149-192.

Gompers, P. and J. Lerner (2000), "Money chasing deals? The impact of funds inflows on the valuation of private equity investments," *Journal of Financial Economics*, Vol. 55, pp. 281-325.

Greene, P.G. (1998), "Dimensions of perceived entrepreneurial obstacles," in P. Reynolds (ed.): "Frontiers of entrepreneurship research," Babson Park: Center for Entrepreneurial Studies, Babson College, pp. 48-49.

Grinblatt, M. and S. Titman (1992), "The persistence of mutual fund performance," *Journal of Finance*, Vol. 47, pp. 1977-1984.

Jeng, L. A. and Ph. C. Wells (2000), "The deteminants of venture capital funding: evidence across countries," *Journal of Corporate Finance*, Vol. 6, pp. 241-289.

Johnson, S. H., J. McMillan, and C. M. Woodruff (1999), "Property rights, finance and entrepreneurship," SSRN working paper 198409.

Kaminsky, G. L., R. K. Lyons, and S. L. Schmuckler (2001), "Mutual fund investment in emerging markets: An overview," *World Bank Economic Review*, Vol. 15, pp. 315-340.

Kaplan, S. N. and A. Schoar (2005), "Private equity performance: Returns, persistence, and capital flows," *Journal of Finance*, Vol. 60, pp. 1791-1823.

Karsai, J., M. Wright, Z. Dudzinski, and J. Morovic (1998), "Screening and valuing venture capital investmenst: evidence from Hungary, Poland and Slovakia," *Entrepreneurship & Regional Development*, Vol. 10, pp. 203-224.

Klonowski, D. (2005), "How do venture capitalists make investment decisions in Central and Eastern Europe?," Brandon University working paper.

Knack, S. and P. Keefer (1995), "Institutions and economic performance: Cross-country tests using alternative institutional measures," *Economics and Politics*, Vol. 7, pp. 207-228.

Köke, F. J. (1999), "Institutional Investment in Central and Eastern Europe: Investment criteria of Western portfolio managers," ZEW Discussion Paper no. 99-37.

Kolodko, G. W. (2000), "Globalisation and catching-up: From recession to growth in transition economies," IMF working paper 00/100.

Konings, J. (2001), "The effects of foreign direct investment on domestic firms," *Economics of Transition*, Vol. 9, No. 3, pp. 619-633.

Lakonishok, J., A. Shleifer, and R. W. Vishny (1994), "Contrarian investment, extrapolation and risk," *Journal of Finance*, Vol. 49, pp. 1541-1578.

La Porta, R., F. López de Silanes, A. Shleifer, and R. Vishny (1997), "Legal determinants of external finance," *Journal of Finance*, Vol. 52, pp. 1131-1150.

La Porta, R., F. López de Silanes, A. Shleifer, and R. Vishny (1998), "Law and financ," *Journal of Political Economy*, Vol. 106, pp. 1113-1155.

La Porta, R., F. López de Silanes, A. Shleifer, and R. Vishny (2002), "Investor protection and corporate valuation," *Journal of Finance*, Vol. 57, pp. 1147-1170.

Lazear, E. P. (1990), "Job security provisions and employment," *Quarterly Journal of Economics*, Vol. 105, pp. 699-726.

Lee, S. M. and S.J. Peterson (2000), "Culture, entrepreneurial orientation and global competitiveness," *Journal of World Business*, Vol. 35, pp. 401-416.

Lerner, J. and A. Schoar (2004), "The illiquidity puzzle: Theory and evidence from private equity," *Journal of Financial Economics*, Vol. 72, pp. 3-40.

Lerner, J. and A. Schoar (2005), "Does legal enforcement affect financial transactions? The contractual channel in private equity," *Quarterly Journal of Economics*, Vol. 120, pp. 223-246.

Lerner, J., A. Schoa, and W. Wong (2005), "Smart institutions, foolish choices? The limited partner performance puzzle," MIT working paper 4523-05.

Mauro, P. (1995), "Corruption and growth," *Quarterly Journal of Economics*, Vol. 110, pp. 681-712.

Megginson, W. (2004), "Toward a global model of venture capital?," *Journal of Applied Corporate Finance*, Vol. 16, pp. 89-107.

Michelacci, C. and J. Suárez (2004), "Business creation and the stock market," *Review of Economic Studies*, Vol. 71, pp. 459-481.

Resmini, L. (2000), "The determinants of foreign direct investment in CEECs," *Economics of Transition*, Vol. 8, No. 3, pp. 665-689.

Romain, A. and B. van Pottelsberghe de la Potterie (2004), "The determinants of venture capital: A panel analysis of 16 OECD countries," Université Libre de Bruxelles, working paper WP-CEB 04/015.

Sapienza, H., S. Manigart, and W. Vermeir (1996), "Venture capitalist governance and value added in four countries," *Journal of Business Venturing*, Vol. 11, pp. 439-469.

Schertler, A. (2003), "Driving forces of venture capital investments in Europe: A dynamic panel data analysis," European Integration, Financial Systems and Corporate Performance (EIFC) working paper No. 03-27, United Nations University.

Schöfer, P. and R. Leitinger (2002), "Framework for venture capital in the accession countries to the European Union," SSRN working paper 314412.

Süppel, R. (2003), "Comparing economic dynamics in the EU and CEE accession countries," European Central Bank working paper 267.

Svensson, J. (1998), "Investment, property rights and political instability: Theory and evidence," *European Economic Review*, Vol. 42, pp. 1317-1341.

Wagner, M. and J. Hlouskova (2005), "CEEC growth projections: Certainly necessary and necessarily uncertain," *Economics of Transition*, Vol. 13, No. 3, pp. 341-372.

Wilken, P. H. (1979), "Entrepreneurship: A comparative and historical Study," Norwood.

Yudaeva, K., K. Kozlov, N. Melentieva, and N. Ponomareva (2003), "Does foreign ownership matter?," *Economics of Transition*, Vol. 11, No. 3, pp. 383-409.

7. Appendix

Appendix 1

Wilcoxon Signed Rank Test on the Attractiveness of Different Emerging Regions

The ranks and test statistics are presented for the tests comparing Africa with the other regions. For all the other tests we present the test statistics only for the save of space.

Ranks:

		N	Mean Rank	Sum of Ranks
CEE - Africa	Negative Ranks	1	5,00	5,00
	Positive Ranks	65	33,94	2206,00
	Ties	3		
	Total	69		
China - Africa	Negative Ranks	5	18,70	93,50
	Positive Ranks	59	33,67	1986,50
	Ties	2		
	Total	66		
CIS - Africa	Negative Ranks	6	25,00	150,00
	Positive Ranks	52	30,02	1561,00
	Ties	9		
	Total	67		
India - Africa	Negative Ranks	3	5,50	16,50
	Positive Ranks	63	34,83	2194,50
	Ties	2		
	Total	68		
Latin America - Africa	Negative Ranks	4	25,13	100,50
	Positive Ranks	44	24,44	1075,50
	Ties	16		
	Total	64		
South East Asia - Africa	Negative Ranks	3	18,50	55,50
	Positive Ranks	52	28,55	1484,50
	Ties	3		
	Total	58		

Test Statistics(b): Africa vs. other Emerging Economies

	CEE - Africa	China - Africa	CIS - Africa	India - Africa	Latin America - Africa	Southeast Asia - Africa
Z	-7,081(a)	-6,377(a)	-5,521(a)	-6,998(a)	-5,086(a)	-6,038(a)
Asymp. Sig. (2-tailed)	**,000**	**,000**	**,000**	**,000**	**,000**	**,000**

a Based on negative ranks.

b Wilcoxon Signed Ranks Test.

Appendix 1 (continued)

Test Statistics(c): CEE vs. other Emerging Economies

	China - CEE	CIS - CEE	India - CEE	Latin America - CEE	Southeast Asia - CEE
Z	-1,404(a)	-5,196(a)	-,650(b)	-6,321(a)	-3,158(a)
Asymp. Sig. (2-tailed)	,160	**,000**	,516	**,000**	**,002**

a Based on positive ranks.

b Based on negative ranks.

c Wilcoxon Signed Ranks Test.

Test Statistics(c): China vs. other Emerging Economies

	CIS - China	India - China	Latin America - China	Southeast Asia - China
Z	-3,503(a)	-2,697(b)	-5,170(a)	-1,718(a)
Asymp. Sig. (2-tailed)	**,000**	**,007**	**,000**	,086

a Based on positive ranks.

b Based on negative ranks.

c Wilcoxon Signed Ranks Test.

Test Statistics(c): CIS vs. other Emerging Economies

	India - CIS	Latin America - CIS	Southeast Asia - CIS
Z	-4,781(a)	-2,205(b)	-1,960(a)
Asymp. Sig. (2-tailed)	**,000**	**,027**	**,050**

a Based on negative ranks.

b Based on positive ranks.

c Wilcoxon Signed Ranks Test.

Test Statistics(b): India vs. other Emerging Economies

	Latin America - India	Southeast Asia - India
Z	-6,314(a)	-3,973(a)
Asymp. Sig. (2-tailed)	**,000**	**,000**

a Based on positive ranks.

b Wilcoxon Signed Ranks Test.

Test Statistics(b): Southeast Asia vs. Latin America

	Southeast Asia – Latin America
Z	-4,402(a)
Asymp. Sig. (2-tailed)	**,000**

a Based on negative ranks.

b Wilcoxon Signed Ranks Test.

Appendix 2

Wilcoxon Signed Rank Test on the Attractiveness of the Individual CEE Countries

Test Statistics(c): Baltic States vs. other CEE Countries

	Bulgaria - Baltic States	Czech Republic - Baltic States	Hungary - Baltic States	Poland - Baltic States	Romania - Baltic States	Slovakia - Baltic States	Slovenia - Baltic States
Z	-3,206(a)	-2,884(b)	-1,580(b)	-4,439(b)	-,375(a)	-,345(a)	-1,340(a)
Asymp. Sig. (2-tailed)	**,001**	**,004**	,114	**,000**	,708	,730	,180

a Based on positive ranks.

b Based on negative ranks.

c Wilcoxon Signed Ranks Test.

Test Statistics(b): Bulgaria vs. other CEE Countries

	Czech Republic - Bulgaria	Hungary - Bulgaria	Poland - Bulgaria	Romania - Bulgaria	Slovakia - Bulgaria	Slovenia - Bulgaria
Z	-4,793(a)	-3,801(a)	-5,745(a)	-3,048(a)	-2,750(a)	-1,658(a)
Asymp. Sig. (2-tailed)	**,000**	**,000**	**,000**	**,002**	**,006**	,097

a Based on negative ranks.

b Wilcoxon Signed Ranks Test.

Test Statistics(c): Czech Republic vs. other CEE Countries

	Hungary - Czech Republic	Poland - Czech Republic	Romania - Czech Republic	Slovakia - Czech Republic	Slovenia - Czech Republic
Z	-1,392(a)	-2,960(b)	-2,658(a)	-3,590(a)	-3,690(a)
Asymp. Sig. (2-tailed)	,164	**,003**	**,008**	**,000**	**,000**

a Based on positive ranks.

b Based on negative ranks.

c Wilcoxon Signed Ranks Test.

Test Statistics(c): Hungary vs. other CEE Countries

	Poland - Hungary	Romania - Hungary	Slovakia - Hungary	Slovenia - Hungary
Z	-3,774(a)	-1,794(b)	-2,524(b)	-3,081(b)
Asymp. Sig. (2-tailed)	**,000**	,073	**,012**	**,002**

a Based on negative ranks.

b Based on positive ranks.

c Wilcoxon Signed Ranks Test.

Test Statistics(b): Poland vs. other CEE Countries

	Romania - Poland	Slovakia - Poland	Slovenia - Poland
Z	-5,171(a)	-5,228(a)	-5,162(a)
Asymp. Sig. (2-tailed)	**,000**	**,000**	**,000**

a Based on positive ranks.

b Wilcoxon Signed Ranks Test.

Appendix 2 (continued)

Test Statistics(c): Romania vs. other CEE Countries

	Slovakia - Romania	Slovenia - Romania
Z	-,117(a)	-,520(b)
Asymp. Sig. (2-tailed)	,907	,603

a Based on negative ranks.

b Based on positive ranks.

c Wilcoxon Signed Ranks Test.

Test Statistics(b): Slovakia vs. Slovenia

	Slovenia - Slovakia
Z	-1,227(a)
Asymp. Sig. (2-tailed)	,220

a Based on positive ranks.

b Wilcoxon Signed Ranks Test.

Appendix 3

Wilcoxon Signed Rank Test on the Perception of Six Socio-Economic Key Drivers in the CEE Region

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum	Percentiles		
						25th	50th (Median)	75th
Economic activity	71	5,46	1,026	3	7	5,00	6,00	6,00
Capital market	71	4,34	1,195	2	7	4,00	4,00	5,00
Taxation	69	4,51	1,133	2	7	4,00	4,00	5,00
Investor protection	70	4,21	1,318	1	7	3,00	4,00	5,00
Social environment	67	4,33	1,006	2	6	4,00	4,00	5,00
Entrepreneurial opportunities	69	5,03	1,236	3	7	4,00	5,00	6,00

Test Statistics(b): Economic activity vs. other key drivers

	Capital market - Economic activity	Taxation - Economic activity	Investor protection - Economic activity	Social environment - Economic activity	Entrepreneurial opportunities - Economic activity
Z	-6,052(a)	-5,631(a)	-5,971(a)	-6,092(a)	-3,481(a)
Asymp. Sig. (2-tailed)	**,000**	**,000**	**,000**	**,000**	**,000**

a Based on positive ranks.

b Wilcoxon Signed Ranks Test.

Test Statistics(c): Capital market vs. other key drivers

	Taxation - Capital market	Investor protection - Capital market	Social environment - Capital market	Entrepreneurial opportunities - Capital market
Z	-1,336(a)	-,894(b)	-,204(b)	-4,737(a)
Asymp. Sig. (2-tailed)	,182	,371	,838	**,000**

a Based on negative ranks.

b Based on positive ranks.

c Wilcoxon Signed Ranks Test.

Test Statistics(c): Taxation vs. other key drivers

	Investor protection - Taxation	Social environment - Taxation	Entrepreneurial opportunities - Taxation
Z	-2,098(a)	-1,341(a)	-3,026(b)
Asymp. Sig. (2-tailed)	**,036**	,180	**,002**

a Based on positive ranks.

b Based on negative ranks.

c Wilcoxon Signed Ranks Test.

Appendix 3 (continued)

Test Statistics(b): Investor Protection vs. Other Key Drivers

	Social environment - Investor protection	Entrepreneurial opportunities - Investor protection
Z	-,869(a)	-4,245(a)
Asymp. Sig. (2-tailed)	,385	**,000**

a Based on negative ranks.

b Wilcoxon Signed Ranks Test.

Test Statistics(b): Social Environment vs. Entrepreneurial opportunities

	Entrepreneurial opportunities - Social environment
Z	-4,621(a)
Asymp. Sig. (2-tailed)	**,000**

a Based on negative ranks.

b Wilcoxon Signed Ranks Test.