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ALLOCATION DETERMINANTS OF INSTITUTIONAL INVESTMENTS IN VENTURE CAPITAL AND PRIVATE EQUITY LIMITED PARTNERSHIPS IN CENTRAL EASTERN EUROPE

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Abstract

Growth expectations and institutional settings in CEE are favorable for the establishment of a vibrant VC/PE market. However, there is lacking a supply 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 criteria for international asset allocation. The protection of property rights is the dominant concern, followed by the need to find local quality General Partners, and the quality of management and skills of local entrepreneurs. Furthermore, the expected deal flow plays an important role in the allocation process, while investors fear bribery and corruption. CEE is regarded as very attractive, especially in respect to economic and entrepreneurial activity. However, investors do not feel comfortable about the level of protection of their claims.

JEL classifications: F3, G23, G24, P2

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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 the past years. Kolodko (2000) and Wagner and Hlouskova (2005) argue that the CEE countries are going though a period of catching-up 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. Estimates of growth above the European average, and policies aimed at promoting innovative enterprises should lead to a strong demand for risk capital in the CEE countries and, hence, make them highly attractive to 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 opportunities for growth in the CEE countries, even if institutional investors are increasingly looking for new investment opportunities internationally. The first funds were raised shortly after the fall of communism. According to EVCA (2004, 2005, and 2006), since then only slightly more than €9 billion has been raised by VC/PE funds dedicated to CEE countries. This raises questions as to what obstacles face institutional investors wanting to invest in the VC/PE asset class in that region.

In this paper, we address these obstacles by means of a questionnaire sent out electronically to 1,079 (potential) investors in VC/PE Limited Partnerships in CEE (the Limited Partners – LPs). We perform several tests and regression analyses and show that the protection of property rights is the most important issue when evaluating international allocation in VC/PE Limited Partnerships, followed by the need to find quality local fund management teams (the General Partners – GPs), as well as the need to be convinced about the quality and skills of the local

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

entrepreneurial management teams. Furthermore, the expected deal flow plays an important role in the allocation process, given that the investors fear bribery and corruption. The results are strong, and do not differ meaningfully among the sub-groups of institutional investors, as, for example, Europeans and non-Europeans. We further find that institutional investors regard CEE as a very attractive region, on an equal ranking with India and a slightly higher one than China. Within CEE, LPs are most attracted by Poland, followed by the Czech Republic and Hungary. In CEE, the institutional investors regard economic activity and the entrepreneurial opportunities as favorable. There is, however, one very important finding, which is that they do not feel comfortable about their deepest wish, which is that of ensuring the protection of their claims.

The paper is structured as follows. We briefly review related literature and then describe the questionnaire. Next, we provide the description of our sample, and then we comprehensively perform the analyses based on non-parametric tests and logit regressions. Each analysis is immediately followed by an interpretation of the findings. Finally, we conclude.

2. Literature Overview

There exists 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. Another large body of research explores the determinants of VC/PE activity in particular economies: Black and Gilson (1998), and Michelacci and Suarez (2004) focus on the role of the stock market for the VC/PE asset class. Gompers and Lerner (1998) examine the forces that affected independent VC/PE fundraising in the US. Lerner and Schoar (2004) analyze VC/PE transaction structures in developing countries. Jeng and Wells (2000) explore the determinants of VC/PE funding for 21 countries, and expand on the work of Black and Gilson (1998). 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. Using a similar approach, 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.

Several papers focus on the evolvement of VC/PE in transition countries, and especially in CEE. Karsai et al. (1998) compare the operations of the Hungarian, Polish, and Slovakian markets with the UK VC/PE market, with respect to issues relating to screening and valuation. Similarly, 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. One clear, major obstacle is a lack of talented 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 the protection of property rights in CEE, while they find access to banking finance does not present a problem.

Klonowski (2005a) 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. Klonowski (2005b) describes the evolution of the Polish VC/PE market and thereby differentiates three different phases (development, expansion, and correction). He gives strength to the argument that Poland broadly followed a "normal Western Europe" VC/PE market cycle. Schöfer and Leitinger (2002) analyze the framework for VC/PE in various CEE countries. They conclude that the development of enterprises, and especially of technology start-ups, is restricted due to the lack in supply of risk capital. Therefore, they conclude, there is a strong demand for VC/PE in these countries.

All the papers mentioned above focus on the settings of several VC/PE markets using secondary data or results from surveys among GPs. Our research approach differs: We directly assess the sources of VC/PE capital, the (potential) institutional investors, and collect, through a questionnaire, information about their perceptions of the CEE region, and the parameters they use when deciding about international capital allocation. For the determination of the parameters we refer to the findings so far discussed in the literature. Combining the findings of previous research and the unique primary data set we have gathered, we are able to derive strong conclusions about the strengths and weaknesses of the CEE region in attracting international capital and on the asset allocation process of institutional investors.

3. Design of the Questionnaire

The questionnaire is divided into two parts. The first part contains the descriptive section and determines the respondent's institution in terms of type, size, and some allocation hurdle rates. It also includes some questions about knowledge of the CEE region and the respondent's perception of it and other emerging regions. The second part comprehensively deals with the socio-economic criteria that the respondent considers when taking decisions about international asset allocation for VC/PE investments.

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. To ensure that no important determinant is missed in our questionnaire, in parallel we ask the respondents to determine their most important asset allocation criteria using keywords. The analyses of these keywords ensure that no major topic is left out in our questionnaire.

4. Sample Size, Structure, and Descriptive Statistics

The survey was addressed via email to 1,079 Limited Partners worldwide. The geographic distribution of the addressees is as follows: 77% USA and Canada, 17% Europe, 5% Asia, and 1% others. The e-mail 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. Each of the three databases claims to cover the worldwide population of

LPs, however, in matching them, we increase the number of players. Furthermore, we check several references and actively search for important and well-known LPs manually. 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. Even though the USA, as an economic region and as the best developed financial market, probably embodies the largest, most sophisticated market with the largest number of LPs, other regions, notably Asia, seem to 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, be it in the USA, Europe or Asia. The size of the LPs is important for our study, because, 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. Additionally, we expect the LPs from the USA to be the most experienced, while the European ones would be more interested in the CEE region (for reasons of proximity), and therefore, we believe that an over-representation of US LPs in our depository of addressees will not harm our conclusions. We do not expect to receive many responses from LPs outside Europe and the USA, due to the existence of other emerging regions that would attract them more for reasons of proximity.

4.1. Sample Structure

From the 1,079 Limited Partners addressed we received 75 valid and valuable responses. 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) 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: USA 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	Frequency	Origin of Investor	Frequency
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, with a response rate of 49.3%, as compared to their occurrence in our depository of 17%. This might bias the results of our study for a second time. However, we will address this issue by assessing separately the response behavior for Europeans and non-Europeans.

4.2. Funds under Management and VC/PE Commitments

59 respondents provided information regarding the size of the managed funds and the corresponding currency, 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	Frequency	VC/PE Allocation	Frequency
< €100mn	9	< 30%	29
€100mn – 999mn	18	30% - 89%	8
€1,000mn–9,999mn	23	90% - 100%	31
> €9,999mn	9		

The fund sizes are relatively heterogeneous, while the worldwide commitments to the VC/PE asset class are not. A large portion of the funds allocates 90% or more of their funds under management into the asset class. This is a rather surprising result, and leads us to investigate the relation 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 funds 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.

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
< €100mn	9	24,06	41,844	Chi-Square	10,264
€100mn - 999mn	18	34,00	67,183	df	3
€1,000mn -9,999mn	22	33,64	61,273	Asymp. Sig.	**,016**
>€9,999mn	9	15,83	22,667		
Total	58		54,102		

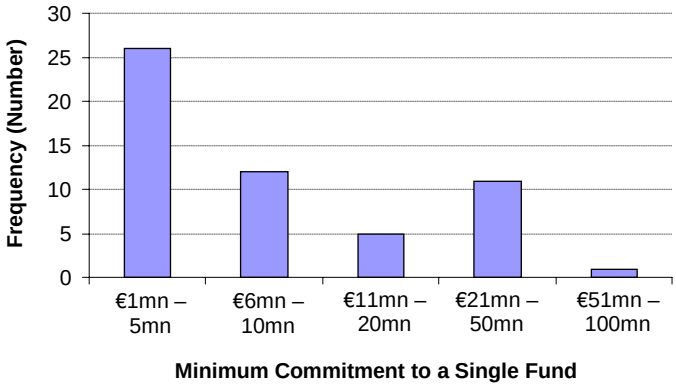
We find a significant difference in the mean commitments of the funds grouped by fund size. Hence, H0 has to be rejected, but not in the expected way. The result is rather surprising and leads to the conclusion that the smallest and largest funds in our sample (with 41.8% respectively with 22.7% average VC/PE allocation in each group) have a smaller percentage allocation than the medium-sized funds (between €100 million and €10 billion, with average allocations of 67.2%, and 61.3% respectively). Obviously, 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 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. This question is raised in a general context, without any geographical focus of the allocation.

Figure 1

Minimum Commitments to a Single Fund (55 Responses)

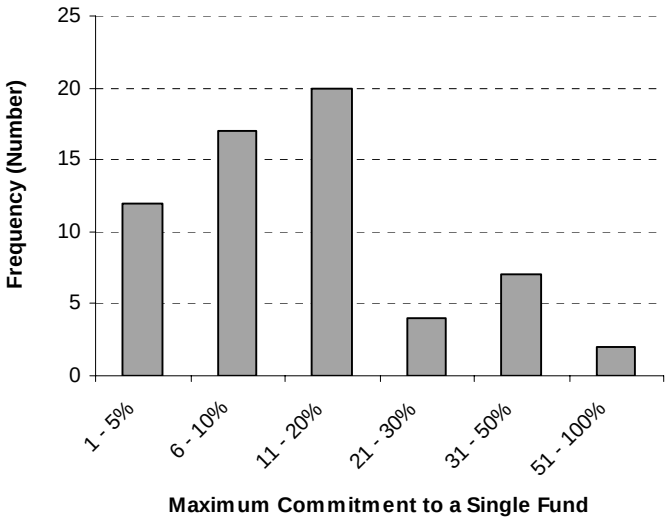


The information is provided by 55 respondents, with a mean minimum exposure of €13.5 million, a median of €10 million and a standard deviation of €16.1 million. The particularly large minimal exposures are named by large funds of fund investors that probably strive for diversification on subsequent levels.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

55 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 leading positions 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)



Regarding knowledge of the CEE region, the responses gave an expected picture of our questionnaire participants. On the seven-point Likert scale ranging from poor knowledge 1 to excellent knowledge 7, the one participant from within the CEE region estimates his/her own knowledge of CEE as 6. We received an average of 4.65 for the other European respondents, an average of 4.21 for the North Americans, and one of 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, signaling that well-informed investors regard the region as attractive.

Summarizing the descriptive statistics, it can be reported that we received 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 VC/PE exposure in the CEE region. The data is comprehensively analyzed in the subsequent sections of this paper.

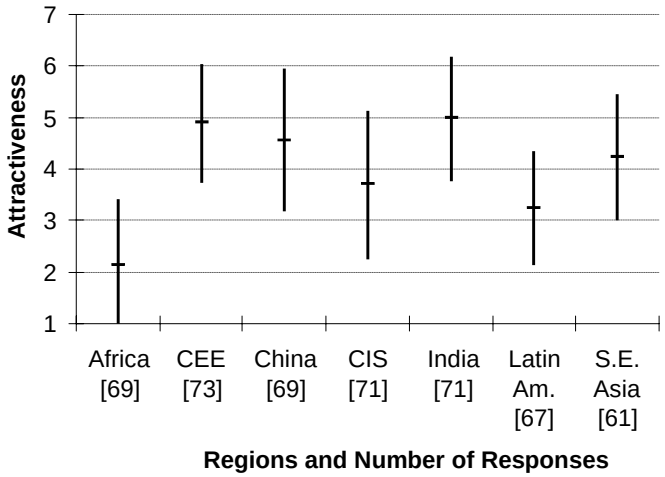
5. Analysis

5.1. Country Preferences

CEE is in competition with other emerging regions for attracting funding from investors. Hence, we are interested in investor preferences concerning different regions of growth in the world, differentiating between Africa, CEE, China, CIS (Commonwealth of Independent States – the former Soviet Union), India, Latin America, and South East 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 ranking of the attractiveness of the emerging economies for institutional VC/PE investors, 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

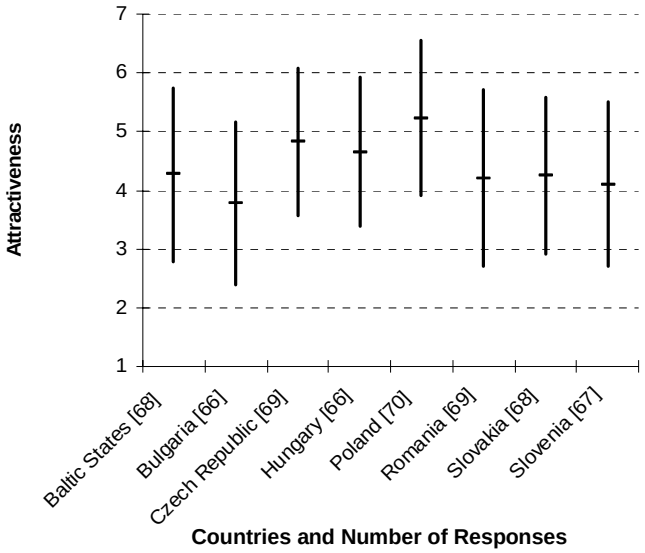
Ranks of Attractiveness of Different Emerging Regions

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

According to Table 4 we can define three tier groups: The first tier group consists of India, the CEE countries, and China, while China might also belong to the second tier group, together with South East Asia. 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 $\pm \sigma$-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. Performing one-tailed tests with the hypotheses H0: $\mu_i = \mu_k$, else H1: $\mu_i \leq \mu_k$ allows the definition of four tier groups: The top tier is Poland, while the Czech Republic and Hungary belong to the second tier group. The third tier group includes Romania, Slovakia, and Slovenia. Bulgaria constitutes the last tier, and the Baltic States belong either to the second or third tier group.

Table 5

Ranks of Attractiveness for Institutional Investors of Different CEE Countries

Country	Rank(s) based on two-tailed tests	Rank(s) based on one-tailed tests
Poland	1	1
Czech Republic	2 / 3	2 / 3
Hungary	2 / 3 / 4 / 5	2 / 3 / 4
Baltic States	3 / 4 / 5 / 6 / 7	3 / 4 / 5 / 6 /7
Romania	3 / 4 / 5 / 6 / 7	4 / 5 / 6 / 7
Slovakia	4 / 5 / 6 / 7	4 / 5 / 6 / 7
Slovenia	4 / 5 / 6 / 7 / 8	4 / 5 / 6 / 7
Bulgaria	7 / 8	8

5.2. Country Allocation Criteria

We refer to the findings of various research papers that deal with asset allocation processes of institutional investors, or investigate the necessary requirements for a vibrant local VC/PE market and culture, with the aim of determining the most important criteria for the country allocation process of institutional investors.

For instance, Gompers and Lerner (1998) 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.

Jeng and Wells (2000) stress that a main driving factor for a VC/PE market is the IPO activity, because it reflects the potential return for the VC/PE funds. Kaplan and Schoar (2005) confirm this finding. Black and Gilson (1998), and 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 in 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 whether or not the VC/PE market is accepted within a society, and the historical development of that market, 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 the management fees to be covered.

Issues related to the protection of property rights might also be major obstacles for the development of a VC/PE market. La Porta et al. (1997 and 1998) confirm that the legal environment greatly 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 paper and the actual quality of law enforcement in some countries. Desai et al. (2006) discuss that fairness and the protection of property rights significantly influence the growth and emergence of new enterprises. 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) 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 to invest 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 the most 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 the 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.

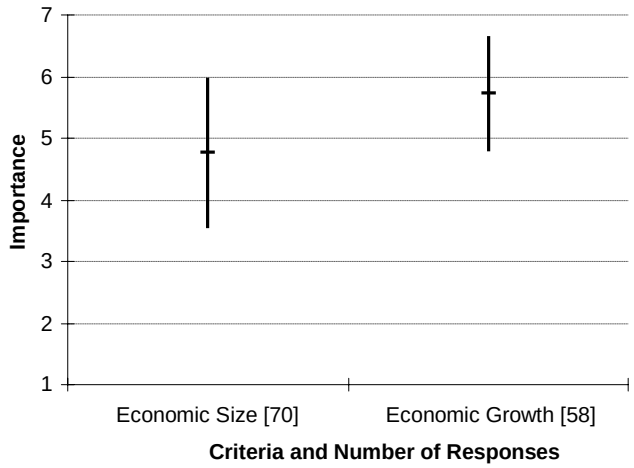
The questionnaire considers all these different issues, and groups them into six major categories: economic activity, capital market, taxation, investor protection, social environment, and entrepreneurial opportunities. The respondents are asked to evaluate the importance of the individual criteria for their decisions about international asset allocation on a seven-point Likert scale, ranging from not at all important 1 to very important 7. First, we perform analyses of the importance of the criteria within each category, and finally of all individual criteria to identify the most important for the institutional investors when deciding on international capital allocation. They results are described in the following sections.

5.2.1. The Importance of Economic Activity

Referring to the cited literature, we distinguish the parameters "economic growth" and "economic size" in our questionnaire to reveal the importance of the economic activity in a particular country for institutional investors' allocation decisions. Figure 5 presents the assessments of both criteria measured by the means and by the $\pm\sigma$-percentiles of the respondents' evaluations.

Figure 5

Importance of Economic Criteria (Fluctuating Numbers of Responses)



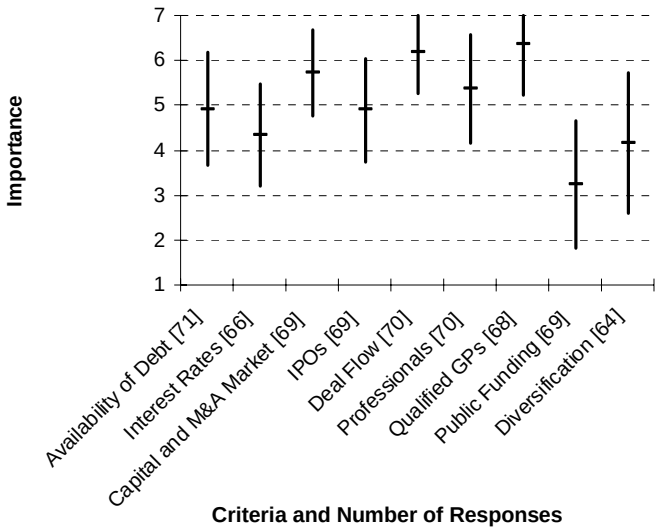
The graph reveals that economic growth is more important than size and the dispersion of the evaluation of growth is less than that of size. The result is confirmed by a Wilcoxon Signed Rank Test with the hypothesis H0: $\mu_1 = \mu_2$, and H1: $\mu_1 \neq \mu_2$. The test statistic is presented in Appendix 3 and strongly rejects H0. Hence, when they evaluate economic conditions as part of their process of international asset allocation, institutional investors regard growth as the most important parameter.

5.2.2. The Importance of the Capital Market

Again referring to the cited literature, we distinguish the following parameters to investigate the importance of a local capital market for the allocation process: availability of debt financing, interest rates, capital market and M&A market activity, IPO activity, expected deal flow, presence of professional institutions and supporters (law firms, investment banks, auditors, and consultants), presence of qualified GPs, availability of public funding and subsidies, and the expected diversification effected by committing capital to that local market. Figure 6 presents the means of the responses and the $\pm \sigma$-percentiles for each criterion.

Figure 6

Importance of Capital Market Criteria (Fluctuating Numbers of Responses).
Because the responses are truncated at level 7, the $+\sigma$ interval is also truncated at 7



The presence of qualified GPs and the expected deal flow are the most important selection criteria, with average nominations of 6.35 and 6.17 on the Likert scale. However, deal flow has the lowest dispersion of responses, i.e., LPs strongly agree on the importance of that criterion. As discussed above, we perform pair-wise Wilcoxon Signed Rank Tests with the hypothesis H0: $\mu_i = \mu_k$, and H1: $\mu_i \neq \mu_k$ to determine a ranking of the criteria. The test statistics are presented in Appendix 4 and the results in Table 6.

Table 6

Ranks of Importance of Criteria Regarding the Capital Market

Criteria	Rank(s)
Presence of qualified GPs	1 / 2
Expected deal flow	1 / 2
General capital and M&A market activity	3
Presence of professional institutions to support	4
Availability of debt finance in the target country	5 / 6
IPO market activity	5 / 6
Interest rates in the target country	7 / 8
Diversification effect	7 / 8
Availability of public funding and subsidies	9

The tests reveal that the quality of GPs and the deal flow expectations dominate over all other criteria. The capital market segment quoted, the M&A market, and IPO activity are nevertheless important allocation criteria for LPs, but not as dominant as expected. This in some ways contradicts existing literature that emphasizes the importance of the exit conditions for transactions by IPOs, as, for example, in Jeng and Wells (2000) and Kaplan and Schoar (2005). Interestingly, the debt market and the price of debt are not as meaningful as anticipated. One could argue that the price of (default-free) debt sets the minimum return requirements in a particular country, and hence plays a role in the allocation process. However, LPs obviously do not consider this criterion important in general. Later in this paper we will address this issue when we analyze the data by grouping investors into distinctive sub-segments. Furthermore, diversification does not play an important role for investors in the VC/PE market segment. LPs seem to be well diversified already, or aware that they manage money that is already well diversified.

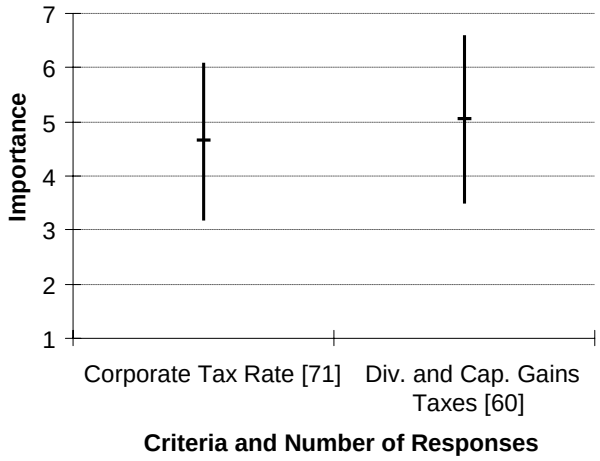
A clear finding, and one that might be unpleasant for policymakers, is that the availability of public funding and subsidies is not an important issue for the majority of the institutional investors when deciding on their VC/PE allocations. The (potential) investors regard this as the least important (mean = 3.23) of all the criteria we consider in the questionnaire. However, the criterion also has a large dispersion (standard deviation = 1.42), signaling that some of the investors obviously follow public activities. Summarizing this issue, and referring to Da Rin et al. (2005), it can be argued that private money does not, in the end, follow public money in the VC/PE market segment.

5.2.3. The Importance of Taxes

We focus on the corporate tax rate and dividend and capital gains taxes, only in determining the importance of taxes in respect to the international allocation decisions of institutional investors. Despite many other taxes and tax policies that potentially influence the activities of LPs in individual countries, the ones mentioned are those that have the greatest impact on business, and those that are somewhat comparable across countries with different tax regimes. Corporate taxes are relevant on the transaction level, and dividend and capital gains taxes on the investor level. Figure 7 presents the means of the responses concerning their importance, and the $\pm \sigma$-percentiles for both taxes.

Figure 7

Importance of Taxes (Fluctuating Numbers of Responses)



We propose the hypothesis that both taxes are equally important, H0: $\mu_1 = \mu_2$, while the alternative is that the importance differs, H1: $\mu_1 \neq \mu_2$. The Wilkoxon Signed Rank test proves dominance of dividend and capital gains taxes. The test result is presented in Appendix 5. Investors are obviously more concerned about the taxes that affect them directly.

5.2.4. The Importance of the Protection of Property Rights

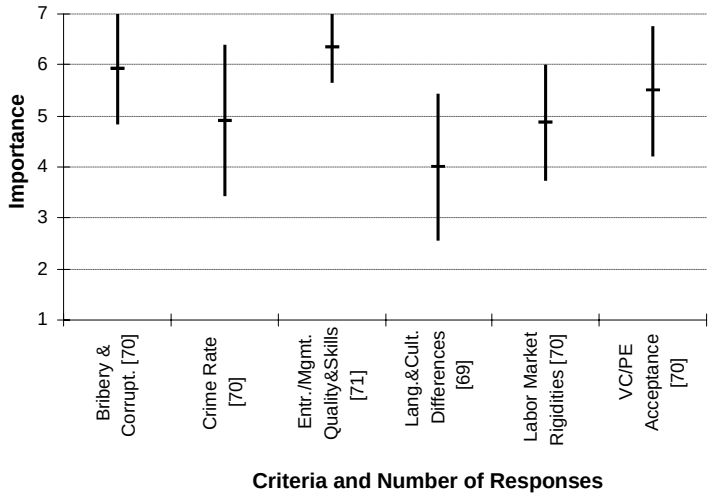
As property rights and protection for investors play such a dominant role in literature on investment determinants and practice, we directly raise the question about their importance in the international asset allocation process. The overwhelming result is a mean importance of 6.55. The answers range from 4 to 7 points only and, therefore, have the lowest dispersion of all the responses, with a standard deviation of 0.63. This reveals that LPs very much agree that their protection is the most important issue among all the selection criteria we consider in the questionnaire. We will describe the tests for the overall importance of particular criteria at a later stage in this paper.

5.2.5. The Importance of the Social Environment

We distinguish the following criteria as determinants that might influence the allocation decisions of institutional investors when considering the social environment of their VC/PE target countries: bribery and corruption, the crime rate, expected entrepreneurial management quality and skills, language and cultural differences, labor market rigidities, and acceptance of VC/PE. Figure 8 presents the mean nominations and the $\pm\sigma$-percentiles of the mentioned determinants.

Figure 8

Importance of the Social Environment (Fluctuating Numbers of Responses)



Again, Wilkoxon Signed Rank tests with the hypotheses H0: $\mu_i = \mu_k$, and H1: $\mu_i \neq \mu_k$ result in the ranking in Table 7. The test statistics are presented in Appendix 6.

Table 7

Ranks of Importance of Criteria Regarding the Social Environment

Criteria	**Rank(s)**
Expected entrepreneurial management quality and skills	1
Bribery and corruption	2
Acceptance of VC/PE	3
Crime rate	4 / 5
Labor market rigidities	4 / 5
Language and cultural differences	6

The tests reveal that the expected quality of management is the most important criteria when evaluating the social environment of a country for VC/PE allocations, followed by the issues of bribery and corruption, and the acceptance of the asset class in the country. The finding underpins the common sense approach found in VC/PE practice when referring to the character of the asset class as "people's business". Institutional investors allocate funds to particular countries if they are convinced about the quality and the skills of local management teams. This finding is also consistent with Farag et al. (2004), Bliss (1999), Karsai et al. (1998), and Chu and Hisrich (2001).

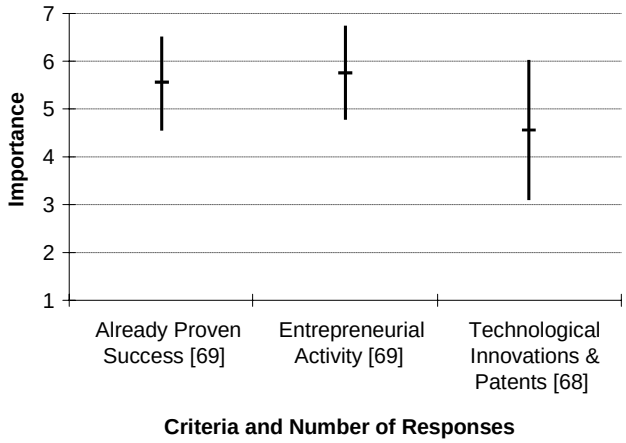
The crime rate, labor market rigidities and language and cultural differences clearly do not play an important role in their approach to country allocation.

5.2.6. The Importance of the Entrepreneurial Opportunities

For the discussion of the importance of entrepreneurial opportunities that might influence the decisions taken by institutional investors concerning international allocations, we identify the parameters: already proven success strategies, general entrepreneurial activity, and technological innovations and patents. Figure 9 presents the mean nominations and the $\pm\sigma$-percentiles of the investors' answers regarding these determinants.

Figure 9

Importance of Entrepreneurial Opportunities (Fluctuating Numbers of Responses)



The Wilkoxon Signed Rank tests, presented in Appendix 7, with the hypotheses H0: $\mu_i = \mu_k$, and H1: $\mu_i \neq \mu_k$ lead to a clear ranking, headed by the entrepreneurial activities, followed by already proven success and the criterion innovations and patents. LPs are obviously future-oriented investors that prefer to draw conclusions about future options from the current entrepreneurial spirit rather than from historic success, or just from the number of patents. Again, this highlights the focus of institutional investors on people and future potential, rather than on institutions and historic experience.

5.3. The Most Important Criteria

So far, we have investigated the importance of several criteria grouped into six categories. Now, we will address the five most important criteria of them all. The criteria with the highest average important scores are: protection of property and investor's rights (6.55), presence of qualified GPs (6.35), expected entrepreneurial management quality and skills (6.35), expected deal flow (6.17), and bribery and corruption (5.91). The Wilkoxon Signed Rank tests with the hypotheses H0: $\mu_i = \mu_k$, and H1: $\mu_i \neq \mu_k$ are described in Appendix 8 and lead to the results presented in Table 8.

Table 8

The Five Most Important Criteria for LPs' International VC/PE Allocation Decisions

Criteria	Rank(s)
Protection of property and investor's rights	1 / 2
Presence of qualified GPs	1 / 2 / 3 / 4
Expected entrepreneurial management quality and skills	2 / 3 / 4
Expected deal flow	2 / 3 / 4 / 5
Bribery and corruption	4 / 5

Table 8 reveals that the definition of particular ranks is impossible on a 0.05 significance level (the results do not change meaningfully by performing one-tailed tests). However, the protection of investors is clearly a dominant criterion. The investors' claims in the funds and, additionally, the claims of the funds in the target companies have to be secured. If institutional investors are not confident about that issue, they are reluctant to invest. Hence, issues relating to investor protection are the major obstacles for the development of a local VC/PE market.

Nevertheless, the presence of qualified GPs and the expected entrepreneurial management quality and skills follow closely, and emphasize once again the role of talented people for the asset class. If investors do not feel they can rely on people as the driving forces of the VC/PE business and of the target companies, they will not commit any capital. Following on from the role of people, the capital market conditions, expressed by the expected deal flow, materialize. It has to be emphasized here that the potential deal flow also depends on several other socio-economic and market factors, and it is difficult to regard it as a particular determinant. The deal flow, for instance, is certainly influenced by economic growth and size and by the presence of supporting institutions, such as investment banks, and M&A boutiques, among others.

Finally, and coinciding with their desire for protection, investors fear bribery and corruption as these interfere with the enforcement of their claims.

5.4. Applying These Criteria to CEE

To investigate investors' concerns about the CEE region we determine their ratings of the various proposed criteria. To do this, we ask them to evaluate the region according to the grouped criteria, namely the capital market, the social environment, investor protection, taxation, economic, and entrepreneurial conditions, on the seven-point Likert scale from not at all attractive 1 to very attractive 7. The results are presented in Figure 10.

Figure 10

Key Determinants in the CEE Region (Fluctuating Numbers of Responses)

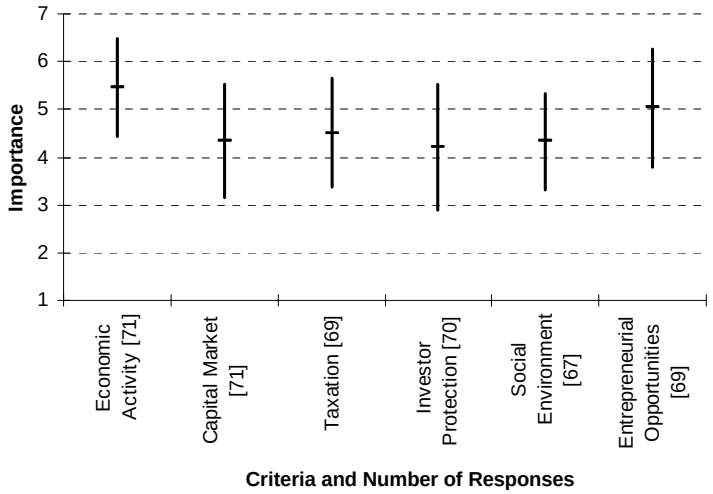


Figure 10 shows the means of the nominations and the $\pm\sigma$-percentiles regarding investors' satisfaction with the six key driving factors. Again, as no clear ranking across the key driving factors is possible, we perform the Wilkoxon Signed Rank tests with the hypotheses H0: $\mu_i = \mu_k$, and H1: $\mu_i \neq \mu_k$. The tests are documented in Appendix 9 and the results are presented in Table 9.

Table 9

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 / 4 / 5
Capital market	3 / 4 / 5 /6
Social environment	4 / 5 / 6
Investor protection	4 / 5 / 6

It becomes clear that while economic and entrepreneurial conditions are regarded as quite attractive, the most important investment obstacle, namely, the protection of property rights, is ranked poorly. The second and third most important criteria: 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 clearly 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. In either case, increasing investors' confidence regarding those issues could spur additional commitments.

5.5. Grouping Investors

Our heterogeneous sample of 75 LPs can be partitioned into several homogeneous sub-samples. The following categories can be assigned to the respondents: They either are or are not European, they either are or are not funds of funds, or they either can or cannot be grouped into entities that are focused on VC/PE investments, and hence specialized (with a high percentage of VC/PE exposure). All the criteria split the sample roughly fifty-fifty. The research question for the sub-samples is always as to whether there are any differences in their responses regarding the findings so far. 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 would have a better knowledge of CEE than non-Europeans due to the geographic proximity. Additionally, Europeans could follow other criteria in their international asset allocation process. To test this hypothesis and similar ones we perform Mann Whitney U tests, using H0: $\mu_i = \mu_k$, and H1: $\mu_i \neq \mu_k$. The descriptive statistics of the analyses with significant results and the corresponding tests are presented in Table 10.

Table 10

Descriptive Statistics of the Analyses with Significant Results

European		Max % in single fund	China	CIS	India	Growth prospects of the target country	Taxation in CEE	Baltic States
0	N	30	31	33	33	29	33	32
	Mean	22,733	4,19	4,12	4,67	5,45	4,88	4,72
	Std. deviation	17,7840	1,327	1,576	1,190	,827	1,139	1,397
1	N	33	37	37	37	28	35	35
	Mean	14,364	4,84	3,27	5,30	5,96	4,17	3,91
	Std. deviation	15,9390	1,385	1,146	1,175	,962	1,043	1,422
	Mann-Whitney U	296,500	421,500	421,500	444,000	258,500	368,500	388,000
	Z	-2,770	-1,920	-2,274	-2,019	-2,494	-2,679	-2,203
	Asymp. sig. (2-tailed)	,006	,055	**,023**	**,043**	**,013**	**,007**	**,028**

Table 10 presents the descriptive statistics for the analyses, where partitioning the sample into European (= 1) and non-European (= 0) LPs gives significant results, and the corresponding tests. 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 as less attractive. They also regard China as less attractive (based on a one-tailed test, H0: $\mu_1 = \mu_2$, and H1: $\mu_1 \leq \mu_2$). There seems to be some kind of "inverse relationship" between the proximity of a region and perceptions about it. The European and non-European investors likewise regard further away regions as more attractive. European investors focus more on expectations of growth in their international allocation process. In regard to the CEE, they evaluate taxation as worse than the non-Europeans. This could be due to a better understanding of the CEE tax regimes. Furthermore, within CEE, the Baltic States are regarded as less attractive than they are among non-Europeans. We do not find significant differences between European and non-European LPs regarding their estimated 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 the funds dedicated to VC/PE only, and other ones. We distinguish the funds dedicated to the VC/PE asset class from other ones 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 11 presents the descriptive statistics of the analyses with significant results and the corresponding tests.

Table 11

Descriptive Statistics of the Analyses with Significant Results

VC/PE Focused		Binary commit-ment to CEE	Max % in single fund	Latin America attrac-tiveness	Growth prospects of the target country	Availability of debt finance in the target country	Entrepreneu-rial manage-ment quali-ty/skills of local people	Accep-tance of VC/PE	Capital market in CEE	Taxation in CEE
0	N	36	36	35	31	37	37	37	37	35
	Mean	,42	16,556	3,60	5,90	4,59	6,19	5,14	4,70	4,83
	Std. deviation	,500	17,3575	1,063	,831	1,343	,701	1,456	1,244	1,071
1	N	29	23	28	22	29	29	28	29	29
	Mean	,66	21,565	2,82	5,41	5,38	6,52	5,86	4,07	4,17
	Std. deviation	,484	17,7478	1,020	1,008	,979	,688	,891	,998	1,167
	Mann-Whitney U	397,500	303,500	300,000	241,500	346,000	395,000	375,000	387,500	376,500
	Z	-1,899	-1,743	-2,755	-1,905	-2,538	-2,003	-1,955	-1,992	-1,849
	Asymp. sig. (2-tailed)	,058	,081	**,006**	,057	**,011**	**,045**	,051	**,046**	,065

Table 11 presents the descriptive statistics for the analyses, where splitting the sample into VC/PE specialized (= 1) and non-specialized (= 0) LPs produces significant results, and the corresponding tests. 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 further discussed below, are based on one-tailed tests with H0: $\mu_i = \mu_k$, and H1: $\mu_i \leq \mu_k$). 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. However, on the other hand, the greater commitment in the 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. In their regional due diligence process they do not consider growth opportunities as important, and therefore focus on the availability of debt finance, the expected entrepreneurial management quality and skills of people, and on the acceptance of the asset class in the target region. The greater importance given to debt might result from a larger exposure of these funds in later stage investments (such as buyouts and turnaround financing) where debt financing plays a larger role. This could

similarly be the case for societal acceptance, because later stage transactions are more often publicly debated, typically due to their size and the consequences of restructuring. The increased attention granted to managerial potential might result from greater experience on the level of individual transactions, where the requirement for excellent management teams often becomes obvious. Furthermore, the focused investors regard the capital market and the tax regime in CEE as less attractive than do the non-specialized investors. A possible explanation for this finding again lies in a deeper regional due diligence, especially in the tax regimes, that might not be very attractive in all facets. In summary, it can be argued that investors closer to the individual target investments have slightly different opinions in 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 perceptions of the region. To test these hypotheses we perform the Mann Whitney U tests once again, using H0: $\mu_i = \mu_k$, and H1: $\mu_i \neq \mu_k$. The descriptive statistics of the significant results and the corresponding tests are presented in Table 12.

Table 12

Descriptive Statistics of the Analyses with Significant Results

Fund of funds		% committed to VC/PE	Min commitment to single fund	Risk/return ratio in CEE	Presence of qualified GPs	Acceptance of VC/PE
0	N	40	34	31	43	43
	Mean	34,573	10,559	4,90	6,07	5,21
	Std. deviation	39,6687	18,1412	1,399	1,316	1,337
1	N	27	26	20	25	27
	Mean	87,185	14,692	4,20	6,84	5,93
	Std. deviation	26,5751	12,1845	1,105	,374	1,035
	Mann-Whitney U	178,000	261,000	214,000	364,000	398,000
	Z	-4,854	-2,743	-1,901	-2,630	-2,274
	Asymp. sig. (2-tailed)	**,000**	**,006**	,057	**,009**	**,023**

The proposed differences are supported by the data. Firstly, the funds of funds do not greatly differ from the specialized funds we considered previously in the sample partition tests. They are characterized by a significant average commitment to the VC/PE asset class of 87.2% and a median of even 100%. This signals that the majority of the funds of funds are, at the same time, focused on VC/PE and hence, they are so-called 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 because they are less satisfied with the CEE

risk/return ratio (this result is based on a one-tailed test, H0: $\mu_1 = \mu_2$, and H1: $\mu_1 \leq \mu_2$). Also, they have an even greater focus on people, because they regard the presence of qualified GPs as well as societal acceptance of the asset class as more important than other investors. 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.

5.6. Investment Decision Determinants

One major distinction within our analyses is the actual decision to invest in CEE. Regardless of the size of the fund, its origins, its internal hurdle rates in respect to international allocation, and its minimum and maximum exposures, it is important to distinguish between the funds that have commitments in CEE and those that do not. The question of what determines the decision to allocate funds to CEE countries can be best addressed through logit regression, because this directly relates the binary dependent variable of the investment decision to several decision parameters. We assume that an investor's final decision to allocate funds for VC/PE investments in the CEE region is dependent on certain characteristics, as discussed in the previous part of the paper.

For a binary (0 – 1) variable Y and a vector of p explanatory variables **x** at values $\mathbf{X} = (x_1,\ldots,x_p)$, 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 is then:

$$\text{logit}\,[\pi(\mathbf{x})] = \log \frac{\pi(\mathbf{x})}{1-\pi(\mathbf{x})} = \beta_o + \beta_1 x_1 + \beta_2 x_2 + \ldots + \beta_p x_p \qquad (1)$$

The intercept parameter β_0 is usually 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. Exponentiating (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 the issue of whether or not a LP has exposure in the region. We define the hypotheses, present the statistical tests of the model, and conclude the findings:

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, and the H0 hypothesis is rejected.

Table 13

Logit Regression Results (R-rjudge, 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-rjudge	,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 question about investor's satisfaction with the historical performance in CEE countries, increases the odds to invest 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 a investment probability rate of 1.715/(1+1.715) = 63.2%. Obviously, 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 rational approach considering the findings on performance persistence in Grinblatt and Titman (1992), Elton et al. (1996), and especially those concerning the private equity capital market segment in 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 adequate knowledge invest in the CEE region.

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

Table 14

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. This strong result highlights the importance of efforts to be informed. 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 decisions about allocations 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 sufficient regional expertise. This result is also confirmed by Fernandes (2004) who

emphasizes the need for elaborate country selection strategies in order to outperform benchmarks.

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 also attracted by other emerging regions. There is a tendency for "emerging market investors".

The analysis is performed separately for the different emerging regions Africa, CEE, China, the Commonwealth of Independent States (CIS - the former Soviet Union), India, Latin America, and South East Asia to omit the problem of a reduced sample caused by the lack of responses from individual participants for all the regions. The H0 hypothesis has to be accepted for China, India, Latin America, and South East 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 about allocations to CEE.

Table 15

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. The analysis reveals that perceptions about the attractiveness of the CEE region have a significant influence on the decision about allocations to the CEE.

Table 16

Logit Regression Results (AttrCEE, Independent Variable Is the Judgment 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 have exposure in CEE. The analysis reveals that the perception of the attractiveness of the CIS region has a significant influence on the decision about allocations to the CEE.

Table 17

Logit Regression Results (AttrCIS, Independent Variable Is the Judgment 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		

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 determined also by 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 South East Asia. While the correlation with perceptions of Africa is difficult to explain, the similarities between the CEE and the CIS regions 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. However, this issue is not considered in our survey questions.

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 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 for entrepreneurial opportunities only. Hence, the H0 hypothesis is rejected for entrepreneurial opportunities, but it is accepted for all the other key driving factors.

Table 18

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 obviously decide to invest in CEE because of expected entrepreneurial opportunities. Investors in CEE are satisfied with entrepreneurial opportunities, but they are not sufficiently satisfied with the other key driving factors used in the model. This finding reveals the criteria for necessary improvements of the other driving factors to better attract international institutional capital for VC/PE funds.

Hypotheses No. 5:

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

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

The 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 19

Logit Regression Results (GPqual, Independent Variable Is the Judgment 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 GP 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, and the fact that the presence of qualified GPs is a very important country selection criteria, (as pointed out in chapter 5.2.2.), emphasize the fact that the funded teams in CEE must be regarded as very professional. This finding also highlights the characteristic of LPs to try to engage with the best 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 therefore are better able to forecast performance on follow-on funds. However, with our small sample of endowments and pensions funds, we are not able, unfortunately, to follow up on this issue.

6. Conclusions

The Central Eastern European countries offer a large range of opportunities to international 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 favorable. Nevertheless, the supply of risk capital from institutional investors is relatively poor in relation to the opportunities in these countries, and compared to other countries. This is surprising and presents the challenge of identifying the obstacles to more institutional investment in this region. With a questionnaire sent out to 1,079 (potential) limited partners based all over the world we address the investors' perceptions about the region. We ask for the determinants of their international asset allocation process, and link their institutional settings and exposure with their regional perceptions.

We find 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. Within those groups we identify the most important decision parameters. When evaluating economic activity in a particular country, the investors focus on growth, rather than on size. When assessing the capital market and VC/PE market conditions, LPs search for qualified GPs and are interested in the deal flow. The size and liquidity of a stock market, as well as the IPO activity, are of a second order, i.e., of even lower importance, a finding which contradicts previous literature. The relevant taxes for institutional investors are those that directly affect them, namely dividend and capital gains taxes. The protection of property rights stands out as the most important issue of all the aspects suggested as asset allocation determinants. Regarding the social environment, the expected entrepreneurial management quality and skills and the fear of bribery and corruption act as determinants in the decision-making process. Finally, the investors focus on entrepreneurial activity, and the entrepreneurial climate when taking decisions about country allocation. The availability of public funding and subsidiaries plays no role in allocation decisions and public money will not attract private money. Overall, the investors focus more on educated people and their potential than on any other criteria with the exception of protection for their claims.

When assessing CEE with consideration to these allocation determinants, the institutional investors regard economic activity and entrepreneurial opportunities in the region as favorable. There is, however, one very important finding, which is that they do not feel comfortable about one very significant desire, which is 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 that they are not comfortable with the current state.

Grouping the investors into different categories reveals that there are no meaningful differences in the asset allocation processes. Splitting Europeans and non-Europeans shows that there is clearly a tendency to favor more distant markets. Europeans have better perceptions of the distant markets of China and India, while the non-Europeans expect more from the Commonwealth of Independent States (the former Soviet Union). Other meaningful differences between Europeans and non-Europeans do not exist.

Logit regressions about the actual investment decision and several allocation determinants highlight that historical performance is a very strong indicator for current and probably future exposure of institutional investors in the region. Furthermore, investors need to have profound knowledge of the region. Institutional investors are reluctant to commit capital in CEE if they do not have regional knowledge and experience. Informational efforts could help to overcome this issue. The regressions further reveal that LPs with CEE exposure are also attracted by other emerging regions, signaling a tendency of “emerging market investors”. Additionally, the CEE investors appreciate the entrepreneurial opportunities there. They do not regard their claims in CEE as being well-protected. Finally, they only commit capital if they find quality fund management teams. This emphasizes once again the dominant issue of people accompanying the numerous principal/agent relations in that asset class.

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Appendix

Appendix 1: Wilcoxon Signed Rank Test on the Attractiveness of Different Emerging Regions

The ranks and the test statistics are presented for the tests comparing Africa with the other regions. For all the other tests we present the test statistics only, to save 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	South East 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	South East 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	South East 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	South East 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	South East 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): South East Asia vs. Latin America

	South East 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 Importance of Economic Determinants

Descriptive statistics

	N	Mean	Std. deviation	Minimum	Maximum	Percentiles		
						25th	50th (Median)	75th
General economic size, measured by the GDP	70	4,76	1,221	1	7	4,00	5,00	6,00
Growth prospects of the target country	58	5,72	,933	3	7	5,00	6,00	6,00

Ranks

		N	Mean rank	Sum of ranks
Growth prospects of the target country - General economic size, measured by the GDP	Negative ranks	5(a)	17,30	86,50
	Positive ranks	36(b)	21,51	774,50
	Ties	17(c)		
	Total	58		

(a) Growth prospects of the target country < General economic size, measured by the GDP.

(b) Growth prospects of the target country > General economic size, measured by the GDP.

(c) Growth prospects of the target country = General economic size, measured by the GDP.

Test statistics(b)

	Growth prospects of the target country - General economic size, measured by the GDP
Z	-4,584(a)
Asymp. sig. (2-tailed)	**,000**

(a) Based on negative ranks.

(b) Wilcoxon Signed Ranks Test.

Appendix 4: Wilcoxon Signed Rank Test on the Importance of Capital Market Determinants

Descriptive statistics

	N	Mean	Std. deviation	Minimum	Maximum	Percentiles		
						25th	50th (Median)	75th
Availability of debt finance in the target country	71	4,92	1,262	2	7	4,00	5,00	6,00
Interest rates in the target country	66	4,33	1,128	2	7	3,75	4,00	5,00
General capital market and M&A market activity	69	5,72	,953	3	7	5,00	6,00	6,00
IPO market activity	69	4,90	1,152	2	7	4,00	5,00	6,00
Expected deal flow	70	6,17	,916	4	7	6,00	6,00	7,00
Presence of professional institutions to support	70	5,36	1,204	2	7	5,00	5,50	6,00
Presence of qualified GPs	68	6,35	1,130	3	7	6,00	7,00	7,00
Availability of public funding and subsidies	69	3,23	1,416	1	7	2,00	4,00	4,00
Diversification effect/tracking the market portfolio	64	4,16	1,566	1	7	3,00	4,00	5,00

Test statistics(c): Availability of debt vs. other criteria

	Interest rates in the target country - Availability of debt finance in the target country	General capital market and M&A market activity - Availability of debt finance in the target country	IPO market activity - Availability of debt finance in the target country	Expected deal flow - Availability of debt finance in the target country	Presence of professional institutions to support - Availability of debt finance in the target country	Presence of qualified GPs - Availability of debt finance in the target country	Availability of public funding and subsidies - Availability of debt finance in the target country	Diversification effect/tracking the market portfolio - Availability of debt finance in the target country
Z	-4,358(a)	-4,699(b)	-,065(a)	-5,664(b)	-2,852(b)	-5,678(b)	-5,963(a)	-2,787(a)
Asymp. sig. (2 tailed)	**,000**	**,000**	,948	**,000**	**,004**	**,000**	**,000**	**,005**

(a) Based on positive ranks.

(b) Based on negative ranks.

(c) Wilcoxon Signed Ranks Test.

Appendix 4 (continued)

Test statistics(c): Interest rates in the target country vs. other criteria

	General capital market and M&A market activity - Interest rates in the target country	IPO market activity - Interest rates in the target country	Expected deal flow - Interest rates in the target country	Presence of professional institutions to support - Interest rates in the target country	Presence of qualified GPs - Interest rates in the target country	Availability of public funding and subsidies - Interest rates in the target country	Diversification effect/tracking the market portfolio - Interest rates in the target country
Z	-6,216(a)	-3,678(a)	-6,522(a)	-4,771(a)	-6,050(a)	-4,830(b)	-,499(b)
Asymp. sig. (2-tailed)	**,000**	**,000**	**,000**	**,000**	**,000**	**,000**	,617

(a) Based on negative ranks.

(b) Based on positive ranks.

(c) Wilcoxon Signed Ranks Test.

Test statistics(c): Capital and M&A market activity vs. other criteria

	IPO market activity - General capital market and M&A market activity	Expected deal flow - General capital market and M&A market activity	Presence of professional institutions to support - General capital market and M&A market activity	Presence of qualified GPs - General capital market and M&A market activity	Availability of public funding and subsidies - General capital market and M&A market activity	Diversification effect/tracking the market portfolio - General capital market and M&A market activity
Z	-5,115(a)	-4,026(b)	-1,979(a)	-3,245(b)	-6,789(a)	-5,238(a)
Asymp. sig. (2-tailed)	**,000**	**,000**	**,048**	**,001**	**,000**	**,000**

(a) Based on positive ranks.

(b) Based on negative ranks.

(c) Wilcoxon Signed Ranks Test.

Test statistics(c): IPO market activity vs. other criteria

	Expected deal flow - IPO market activity	Presence of professional institutions to support - IPO market activity	Presence of qualified GPs - IPO market activity	Availability of public funding and subsidies - IPO market activity	Diversification effect/tracking the market portfolio - IPO market activity
Z	-6,107(a)	-2,566(a)	-5,741(a)	-6,066(b)	-3,012(b)
Asymp. sig. (2-tailed)	**,000**	**,010**	**,000**	**,000**	**,003**

(a) Based on negative ranks.

(b) Based on positive ranks.

(c) Wilcoxon Signed Ranks Test.

Appendix 4 (continued)

Test statistics(c): Expected deal flow vs. other criteria

	Presence of professional institutions to support - Expected deal flow	Presence of qualified GPs - Expected deal flow	Availability of public funding and subsidies - Expected deal flow	Diversification effect/tracking the market portfolio - Expected deal flow
Z	-4,807(a)	-1,783(b)	-6,988(a)	-6,108(a)
Asymp. sig. (2-tailed)	**,000**	,075	**,000**	**,000**

(a) Based on positive ranks.
(b) Based on negative ranks.
(c) Wilcoxon Signed Ranks Test.

Test statistics(c): Presence of professional institutions vs. other criteria

	Presence of qualified GPs - Presence of professional institutions to support	Availability of public funding and subsidies - Presence of professional institutions to support	Diversification effect/tracking the market portfolio - Presence of professional institutions to support
Z	-4,998(a)	-6,774(b)	-4,169(b)
Asymp. sig. (2-tailed)	**,000**	**,000**	**,000**

(a) Based on negative ranks.
(b) Based on positive ranks.
(c) Wilcoxon Signed Ranks Test.

Test statistics(b): Presence of qualified GPs vs. other criteria

	Availability of public funding and subsidies - Presence of qualified GPs	Diversification effect/tracking the market portfolio - Presence of qualified GPs
Z	-6,784(a)	-5,594(a)
Asymp. sig. (2-tailed)	,000	,000

(a) Based on positive ranks.
(b) Wilcoxon Signed Ranks Test.

Test statistics(b): Availability of public funding vs. diversification effect

	Diversification effect/tracking the market portfolio - Availability of public funding and subsidies
Z	-3,440(a)
Asymp. sig. (2-tailed)	,001

(a) Based on negative ranks.
(b) Wilcoxon Signed Ranks Test.

Appendix 5: Wilcoxon Signed Rank Test on the Importance of Taxes

Descriptive statistics

	N	Mean	Std. deviation	Minimum	Maximum	Percentiles		
						25th	50th (Median)	75th
Corporate tax rates	71	4,65	1,455	1	7	4,00	5,00	6,00
Dividend and capital gains taxes	60	5,05	1,567	1	7	4,00	5,00	6,00

Test statistics(b): Corporate tax rates vs. dividend and capital gains taxes

	Dividend and capital gains taxes - Corporate tax rates
Z	-2,882(a)
Asymp. sig. (2-tailed)	**,004**

(a) Based on negative ranks.

(b) Wilcoxon Signed Ranks Test.

Appendix 6: Wilcoxon Signed Rank Test on the iImportance of the Social Environment

Descriptive statistics

	N	Mean	Std. deviation	Minimum	Maximum	Percentiles		
						25th	50th (Median)	75th
Bribery and corruption	70	5,91	1,073	1	7	5,00	6,00	7,00
Crime rate	70	4,91	1,491	1	7	4,00	5,00	6,00
Entrepreneurial management quality/skills of local people	71	6,35	,699	5	7	6,00	6,00	7,00
Language and cultural differences	69	4,00	1,435	1	7	3,00	4,00	5,00
Labor market conditions (possibility of hiring/firing people)	70	4,87	1,141	1	7	4,00	5,00	6,00
Acceptance of VC/PE	70	5,49	1,271	2	7	5,00	6,00	6,25

Test statistics(c): Bribery and corruption vs. others

	Crime rate - Bribery and corruption	Entrepreneurial management quality/skills of local people - Bribery and corruption	Language and cultural differences - Bribery and corruption	Labor market conditions (possibility of hiring/firing people) - Bribery and corruption	Acceptance of VC/PE - Bribery and corruption
Z	-5,186(a)	-3,045(b)	-6,504(a)	-5,473(a)	-2,629(a)
Asymp. sig. (2-tailed)	**,000**	**,002**	**,000**	**,000**	**,009**

(a) Based on positive ranks.

(b) Based on negative ranks.

(c) Wilcoxon Signed Ranks Test.

Test statistics(c): Crime rate vs. others

	Entrepreneurial management quality/skills of local people - Crime rate	Language and cultural differences - Crime rate	Labor market conditions (possibility of hiring/firing people) - Crime rate	Acceptance of VC/PE - Crime rate
Z	-5,973(a)	-4,221(b)	-,585(b)	-2,531(a)
Asymp. sig. (2-tailed)	**,000**	**,000**	,559	**,011**

(a) Based on negative ranks.

(b) Based on positive ranks.

(c) Wilcoxon Signed Ranks Test.

Appendix 6 (continued)

Test statistics(b): Entrepreneurial and management skills vs. others

	Language and cultural differences - Entrepreneurial management quality/skills of local people	Labor market conditions (possibility of hiring/firing people) - Entrepreneurial management quality/skills of local people	Acceptance of VC/PE - Entrepreneurial management quality/skills of local people
Z	-7,035(a)	-6,675(a)	-5,014(a)
Asymp. sig. (2-tailed)	**,000**	**,000**	**,000**

(a) Based on positive ranks.
(b) Wilcoxon Signed Ranks Test.

Test statistics(b): Language and cultural differences vs. others

	Labor market conditions (possibility of hiring/firing people) - Language and cultural differences	Acceptance of private equity - Language and cultural differences
Z	-4,644(a)	-5,702(a)
Asymp. sig. (2-tailed)	**,000**	**,000**

(a) Based on negative ranks.
(b) Wilcoxon Signed Ranks Test

Test statistics(b): Labor market rigidities vs. acceptance of VC/PE

	Acceptance of VC/PE - Labor market conditions (possibility of hiring/firing people)
Z	-3,496(a)
Asymp. sig. (2-tailed)	**,000**

(a) Based on negative ranks.
(b) Wilcoxon Signed Ranks Test.

Appendix 7: Wilcoxon Signed Rank Test on the Importance of the Entrepreneurial Opportunities

Descriptive statistics

	N	Mean	Std. deviation	Minimum	Maximum	Percentiles		
						25th	50th (Median)	75th
Already proven success strategies	69	5,54	,994	3	7	5,00	6,00	6,00
Entrepreneurial activity in the target country	69	5,75	,976	4	7	5,00	6,00	7,00
Technological innovations and patents	68	4,56	1,460	1	7	4,00	5,00	6,00

Test statistics(c): Already proven success strategies vs. other criteria

	Entrepreneurial activity in the target country - Already proven success strategies	Technological innovations and patents - Already proven success strategies
Z	-2,224(a)	-4,626(b)
Asymp. sig. (2-tailed)	**,026**	**,000**

(a) Based on negative ranks.

(b) Based on positive ranks.

(c) Wilcoxon Signed Ranks Test.

Test statistics(b): Entrepreneurial activity vs. technological innovations and patents

	Technological innovations and patents - Entrepreneurial activity in the target country
Z	-5,561(a)
Asymp. sig. (2-tailed)	**,000**

(a) Based on positive ranks.

(b) Wilcoxon Signed Ranks Test.

Appendix 8: Wilcoxon Signed Rank Test on the Five Most Important Criteria

Test statistics(c): Expected deal flow vs. others

	Presence of qualified GPs - Expected deal flow	Protection of property and investors' rights - Expected deal flow	Bribery and corruption - Expected deal flow	Entrepreneurial management quality/skills of local people - Expected deal flow
Z	-1,783(a)	-2,742(a)	-1,363(b)	-1,588(a)
Asymp. sig. (2-tailed)	,075	**,006**	,173	,112

(a) Based on negative ranks.
(b) Based on positive ranks.
(c) Wilcoxon Signed Ranks Test.

Test statistics(c): Presence of qualified GPs vs. others

	Protection of property and investors' rights - Presence of qualified GPs	Bribery and corruption - Presence of qualified GPs	Entrepreneurial management quality/skills of local people - Presence of qualified GPs
Z	-1,003(a)	-2,893(b)	-,341(b)
Asymp. sig. (2-tailed)	,316	**,004**	,733

(a) Based on negative ranks.
(b) Based on positive ranks.
(c) Wilcoxon Signed Ranks Test.

Test statistics(b): Protection of property and investors' rights vs. others

	Bribery and corruption - Protection of property and investors' rights	Entrepreneurial management quality/skills of local people - Protection of property and investors' rights
Z	-4,594(a)	-1,993(a)
Asymp. sig. (2-tailed)	**,000**	**,046**

(a) Based on positive ranks.
(b) Wilcoxon Signed Ranks Test.

Test statistics(b): Bribery and corruption vs. expected entrepreneurial management quality and skills

	Entrepreneurial management quality/skills of local people - Bribery and corruption
Z	-3,045(a)
Asymp. sig. (2-tailed)	**,002**

(a) Based on negative ranks.
(b) Wilcoxon Signed Ranks Test.

Appendix 9: Wilcoxon Signed Rank Test on the Attractiveness of the 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	Entrepreneu-rial 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 9 (continued)

Test statistics(b): Investor protection vs. other key driving factors

	Social environment - investor protection	Entrepreneu-rial 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.