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VENTURE CAPITAL FINANCING IN EMERGING ECONOMIES

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Abstract: *The problem of how financing through venture capital functions in environments that significantly differ from mature and developed markets, begins to be an important issue for researchers. In this article we aim to analyze the venture capital practice in the emerging markets. Obtaining venture capital is different from applying for a loan, because venture capitalists are usually very selective in deciding where to invest. We analyze the venture capital financing process, and what the conditions are for a firm to be able to benefit from this type of financing in the emerging economies of the Central and Eastern European countries. The results obtained have implications also for the entrepreneurs and entrepreneurial ventures that seek venture capital financing in emerging economies.*

Keywords: emerging markets; CEE; venture capital market

JEL Classification: G32; M13

Introduction

Venture capital is a specialized form of financial intermediation which is centred on supporting innovative companies, by providing finance and also by providing monitoring and advice services. Venture capital firms are sophisticated investors, whose partners have extensive knowledge of the industry and often previous managerial experience. Their strong commitment to generate high returns in the medium term makes them active investors. As a new form of financing, venture capital has attracted the interest of researchers in the field of finance. The purpose of this paper is to analyze the use of venture capital financing in seven selected emerging countries from Central and Eastern Europe (Bulgaria, Estonia, Hungary, Latvia, Lithuania, Poland and Romania). Groh and Liechtenstein (2007) show that the CEE countries have a great unexploited potential and they are attractive for the venture capital investors, but they also highlight the strength and weakness of the region and offer solutions in order to increase this attractiveness.

Our paper is structured as follows: the first section is dedicated to an analysis of the literature in the field of venture capital, highlighting the impact of this strategy of financing on innovation,

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economic value creation, the entry of new enterprises on the market, employment, and company growth. Section two presents the key data regarding venture capital financing in seven selected Central and Eastern European countries and its evolution in the last years. Furthermore, in this last section we take into consideration the measures adopted by decision makers in CEE countries in order to improve the use of venture capital. The paper ends with the concluding remarks and future directions of the research.

1. Literature review

Kortum and Lerner (2000) provide a systematic assessment of the fact that venture capital promotes innovation, examining the relationship between venture capital financing and patenting. By analyzing firms of US manufacturing industries, they found that venture capital financing was associated with sectors that have higher contemporaneous patent production. Having more patent applications increases the chances of the company obtaining venture capital financing (Engel and Keilbach, 2007). To support this idea, Mann and Sager (2007) showed that companies that had more patents obtained more venture capital investments. They also found that venture capital backed companies with more patents obtained higher valuations, especially in earlier rounds.

On the other hand, Hirukawa and Ueda (2008) found no significant relationship between the use of venture capital and an industry's total factor productivity (TFP) growth, although they did find a positive relationship between venture capital and labour productivity. Chemmanur *et al.* (2011) also examined the relationship between the use of venture capital and TFP growth, and they found that companies financed by venture capital already had higher TFP growth in the years prior to obtaining venture capital. Moreover, they observed that obtaining venture capital financing was associated with continued higher TFP growth.

Other authors highlighted the relationship between venture capital and innovation, for example Hellmann and Puri (2000) showed that the firms more likely to obtain venture capital financing were the ones using innovation strategies. Also, they showed that venture capital backed companies brought their products on the market faster. This effect was more significant for innovator companies, where time to reaching the market is likely to be of greater strategic importance. Puri and Zarutskie (2011) found that venture capital investors fund companies with no initial revenues but only if they demonstrate stronger growth potential.

Lindsey (2008) examined the relationship between venture capital financing and the formation of strategic alliances. The author showed that companies that have a common venture capital investor

are more likely to form strategic alliances. Moreover, such alliance formation is associated with better exit performance.

Apart from the analysis of how venture capital impacts innovation it is important to examine how venture capital impacts the new value creation, such as new entry on the markets, employment, and company growth. Samila and Sorenson (2011) using panel data examined the relationship between venture capital financing and the number of start-ups, employment and income. As a result, they found a positive relationship between venture capital financing and all these variables across a variety of model specifications. Also, they showed that increases in venture capital investments determined the increase of new business creation. Following the same line of thinking Popov and Roosenboom (2008) found that higher levels of venture capital investment were associated with more entry on the market, especially in industries with high investments in research and development. Also, they demonstrated the existence of a positive correlation between venture capital, new entry on the market and employments growth.

Other researches sustain these findings, for example Chemmanur *et al.* (2011) found a positive effect of venture capital on company productivity. Davila *et al.* (2003) and Engel and Keilbach (2007) also found a positive effect of venture capital on employment. So it can be observed that the specialized literature consistently finds a positive relationship between venture capital financing and other measures of economic value creation.

Puri and Zarutskie (2011) showed that venture capital backed companies grow faster at every stage of the investment cycle, both before and after the receipt of venture capital.

Winton and Yerramilli (2008) and Ueda (2004) compared venture capital financing with bank financing showing that venture capital investors have better ability to monitor the firm's activity, but on the other hand they demand higher returns. In contrast, banks are less skilled at monitoring, but demand lower returns from entrepreneurs because they themselves face lower funding cost by exposing themselves to liquidity shocks. Venture capital financing is optimal only if firms face highly risky and positively skewed project cash flows, with low probability of success, low liquidation value, and high returns if successful, and if they face highly volatile cash flows across two continuation strategies.

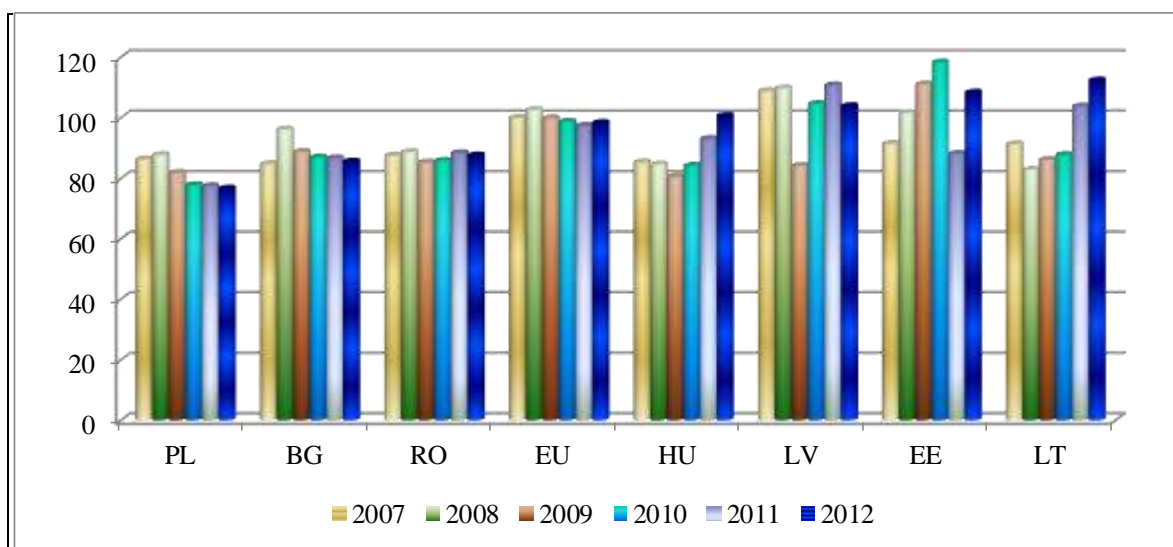
2. Venture capital in CEE countries: a comparison

In order to analyze the venture capital financing in the countries from Central and Eastern Europe we consider the SME Access to finance index (SMAF index) and especially the Sub-index on access to equity finance. This sub-index contains information regarding five indicators:

- Total venture capital investment calculated as a percentage of GDP (in thousands of euro);
- Number of SMEs that benefit from venture capital (reported to GDP);
- Total volumes invested by business angels as a percentage of GDP (in thousands of euro);
- Number of investments made by business angels as a percentage of GDP;
- Percent of firms feeling confident to access financing from equity investors or venture capital firms.

The equity finance sub-index is calculated using data from the European Venture Capital Association and the European Business Angel Network. Hungary, Latvia, Estonia and Lithuania are the strongest performing countries in the region with values of the index above 100, whereas Poland, Bulgaria and Romania have the least favourable equity finance environments. The value of the sub-index for European Union is 98, indicating a slight decline since 2007.

Figure 1 - SMAF Sub-index on access to equity finance, by country, 2007-2012



Source: processed data after European Commission, SMAF Index

From the seven countries examined only three have improved relative performance in the equity finance sub-index between 2007 and 2012 (Hungary, Estonia and Lithuania). The rest of the

analyzed CEE countries have registered a slightly decline of venture capital in the period 2007-2012 or have remained relatively stable.

Regarding the structure of the CEE private equity market, we have observed in our analysis that it was much more oriented towards venture in the CEE countries than in all of Europe when looking at the number of companies financed in 2014. So, 72% of the total number of companies received venture financing in CEE compared to only 58% across Europe. The CEE growth segment accounted for 15% of the total number of companies receiving private equity investment, compared to 23% in Europe overall. Finally, CEE buyouts accounted for 10% of all financed companies, compared to 17% in Europe as a whole.

Table 1 - Type of investment in CEE, 2013-2014 (in thousands euro)

	<i>2013</i>		<i>2014</i>	
	<i>Amount</i>	<i>No. of companies</i>	<i>Amount</i>	<i>No. of companies</i>
<i>STAGE FOCUS</i>				
<i>Seed</i>	4.154	37	8.314	45
<i>Start-up</i>	32.475	75	47.762	106
<i>Later-stage venture</i>	34.499	43	41.863	62
<i>Total venture</i>	71.128	154	97.939	210
Growth	259.305	49	232.385	45
Rescue/Turnaround	6.703	1	23.696	4
Replacement capital	24.669	6	22.107	2
Buyout	426.897	33	934.787	30
<i>TOTAL</i>	788.702	242	1.310.914	290

Source: processed by the authors after EVCA, 2015, p. 20

From table 1 we observe that growth investments in 2014 decreased by 10%. If we consider the amount invested, we observe a decrease from 259 million of euro (in 2013) to 232 million of euro in 2014. But, if we analyze the number of companies backed by venture capital, this fell 8% in 2014, and only 45 companies received growth financing compared to 49 companies in 2013. The average growth investment per company did not change significantly in 2014 compared to 2013, being maintained at around 5.2 and 5.3 millions of euro, respectively.

The buyout investments in the CEE region registered an increase of 120% in 2014 (from 427 million of euro in 2013 to 935 million of euro in 2014). But, although the investment amount increased significantly, the number of companies involved in buyout transactions registered a slight decline to 30 from 33. This means that the average equity investment per company increased significantly to 31 million of euro compared to 13 million of euro in 2013. But, we have to take into account that the two largest buyout transactions, in 2014 alone, accounted for over 500 million of

euro, so, if we exclude these two deals, the average for the remaining 28 buyout investments in 2014 was of 15 million of euro, similar to the average in 2013.

The CEE venture investment significantly increased in 2014, both in value and according to the number of companies financed. So, we observe that the value of investment rose by 38% to approximately 98 million of euro, increase supported by the fact that all venture sub-segments from the starting point through to later-stage capital investments increased in 2014. At the same time, the number of companies receiving venture financing grew strongly, setting yet another record of 210 companies financed across the region, surpassing the previous record of 154 companies in 2013. The number of companies backed also rose in all three venture sub-segments. However, the most notable rise in 2014 was among companies receiving start-up funding, with 106 companies financed – 31 more than in 2013.

Table 2 - Type of investment by CEE country, 2013-2014 (in thousands euro)

	2014						
	Bulgaria	Estonia	Hungary	Latvia	Lithuania	Poland	Romania
<i>STAGE FOCUS</i>							
Seed	1.178	400	1.496	0	1.570	1.820	0
Start-up	758	763	22.174	1.760	4.952	9.722	1.825
Later-stage venture	397	3.239	8.477	1.547	3.224	10.472	3.478
Total venture	2.333	4.402	32.146	3.307	9.746	22.014	5.303
Growth	0	15.500	27.412	25.700	24.561	65.410	22.426
Rescue/Turnaround	0	0	0	0	0	0	1.060
Replacement capital	0	20.000	0	0	0	2.107	0
Buyout	0	0	110.375	4.970	4.537	161.388	49.182
TOTAL	2.333	39.902	169.933	33.977	38.845	250.920	77.971

	2013						
	Bulgaria	Estonia	Hungary	Latvia	Lithuania	Poland	Romania
<i>STAGE FOCUS</i>							
Seed	0	0	0	0	1.329	1.559	0
Start-up	4.718	2.954	8.421	600	2.468	4.946	0
Later-stage venture	380	3.225	8.290	500	5.500	9.127	2.984
Total venture	5.098	6.179	16.710	1.100	9.297	15.632	2.984
Growth	6.000	20.875	36.194	2.200	7.157	150.412	10.075
Rescue/Turnaround	0	0	0	0	0	0	0
Replacement capital	0	0	0	0	0	8.214	9.455
Buyout	0	500	3.360	12.000	6.076	205.775	47.835
TOTAL	11.098	27.554	56.265	15.300	22.530	380.033	70.349

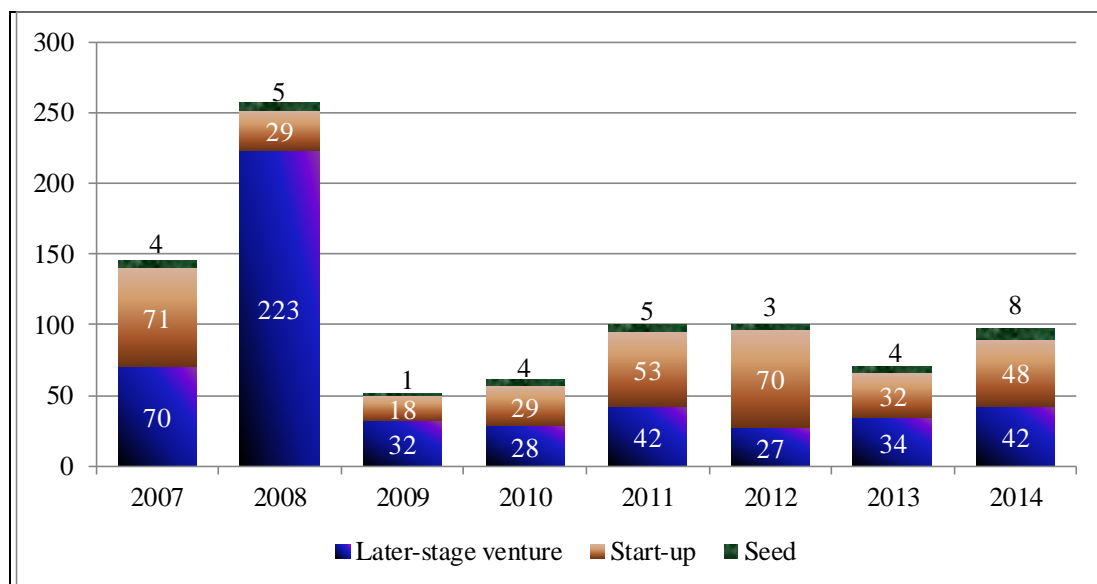
Source: processed by the authors after EVCA, 2015.

When analyzing the situation by country we observe that the increase in buyout activity in 2014 was sustained by a small number of sizeable buyout transactions in Hungary (see table 2). Also, although it registered a decrease of 22% in the buyout activity in 2014, Poland was still the largest buyout market from the analyzed CEE countries, reflecting its position as the biggest economy in the region.

Also, Poland remained the largest CEE market for growth investments and it alone accounted for 28% of growth capital investment in the entire region in 2014, though investments in value terms fell sharply by 57% to 65 million of euro. However, growth investments grew notably in other CEE countries in 2014, with Latvia, Lithuania and Romania, taking a significantly larger slice of the overall segment.

Hungary and Poland led the region in venture investment, accounting for a combined 55% of total CEE venture investment amount in 2014. Hungary's venture investment value grew most strongly with a 92% year-on-year increase from 17 million of euro to 32 million of euro in 2014. Venture investment in Poland grew by 41% from 16 million of euro to 22 million of euro and helped contribute to the marked rise in the region as a whole. Lithuania was the next largest CEE venture capital market in 2014, venture investment in this country being relatively stable when compared to 2013.

In figure 2 we observe that the increasing trend of venture capital investments in CEE was interrupted by the recent financial crisis, and the region was not able to reach the value obtained in 2008 in the last six years. Start-up investments registered an improvement in 2012, almost reaching the value from 2007.

Figure 2 - CEE venture capital investments by stage, 2007- 2014 (in millions euro)

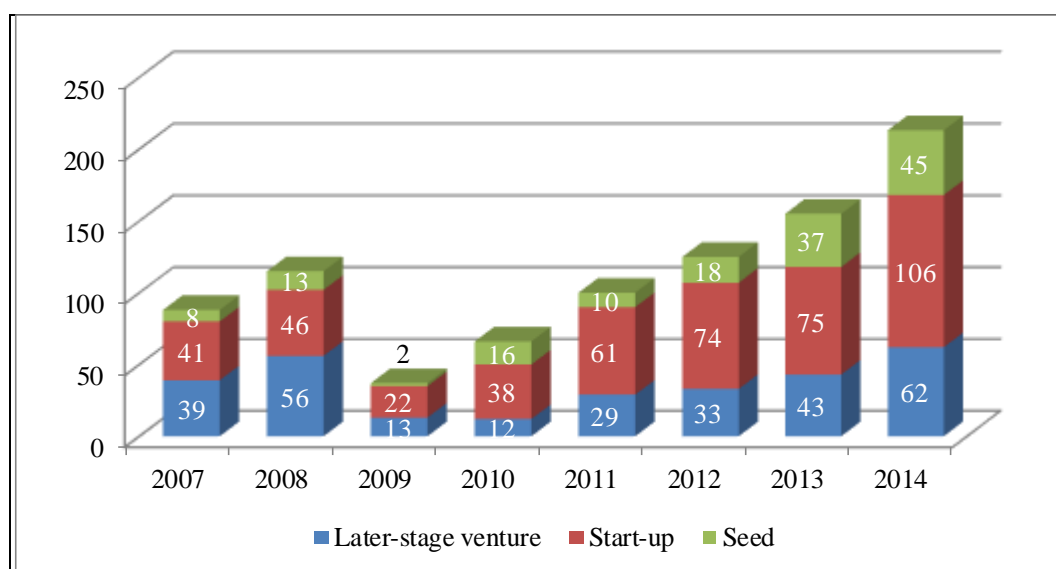
Source: processed by the authors after EVCA, 2015, p. 29

We also observe that the early-stage funding (combining seed and start-up) comprised the majority of CEE venture capital financing in 2014 with 57% of the year's total investment value. The structure of the venture capital investment market in the CEE region is similar to Europe overall, where early-stage investments comprised 55% of the total European venture market in 2014.

But when we analyze venture capital investments in CEE in the last years according to the number of companies the situation is different, we observe an important decline in 2009, and after that the effects of the recent crisis started being felt in CEE countries, but after that the trend showed an increase, in 2012 surpassing the overall number of companies from 2008. The biggest increase was registered for seed investment, from 2 companies in 2009 to 45 companies in 2014, start-up from 22 to 106 companies and later stage venture, from 12 to 62 companies (see figure 3).

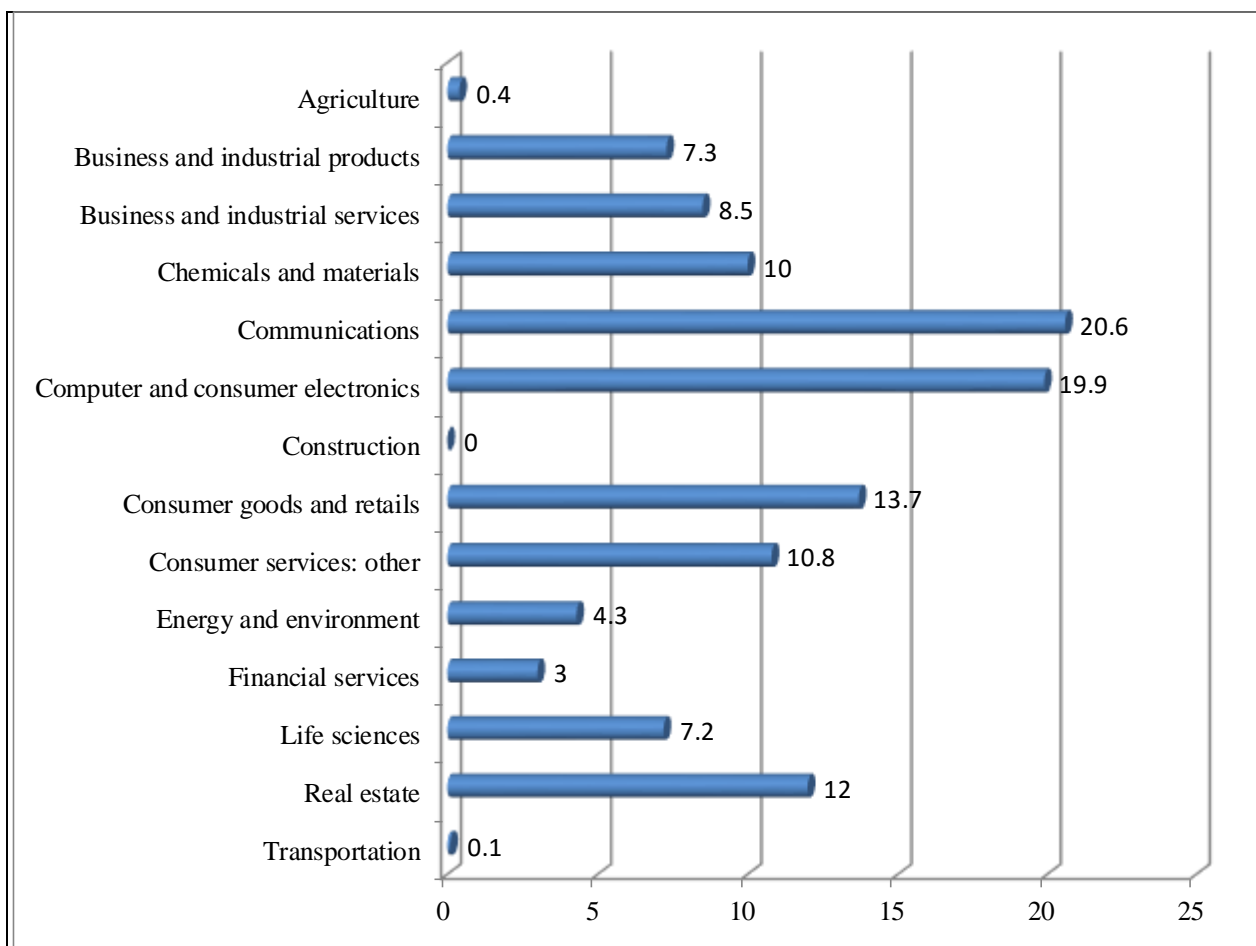
According to the number of companies, CEE also followed the European trend with 72% of all venture-backed companies financed by early-stage venture investments compared to 75% across Europe. When comparing in depth particular sub-segments of the venture capital market, it could be noticed that the CEE was also similar to Europe as a whole, with start-up financing being the most prominent. In CEE it accounted for 49% of total venture capital investment value in 2014 and 50% of venture companies financed, compared to 52% of investment value and 60% of companies in all of European venture.

Figure 3 - CEE venture capital investments by stage, 2007 - 2014 (no. of companies)



Source: processed by the authors after EVCA CEE Statistics 2014, p. 31

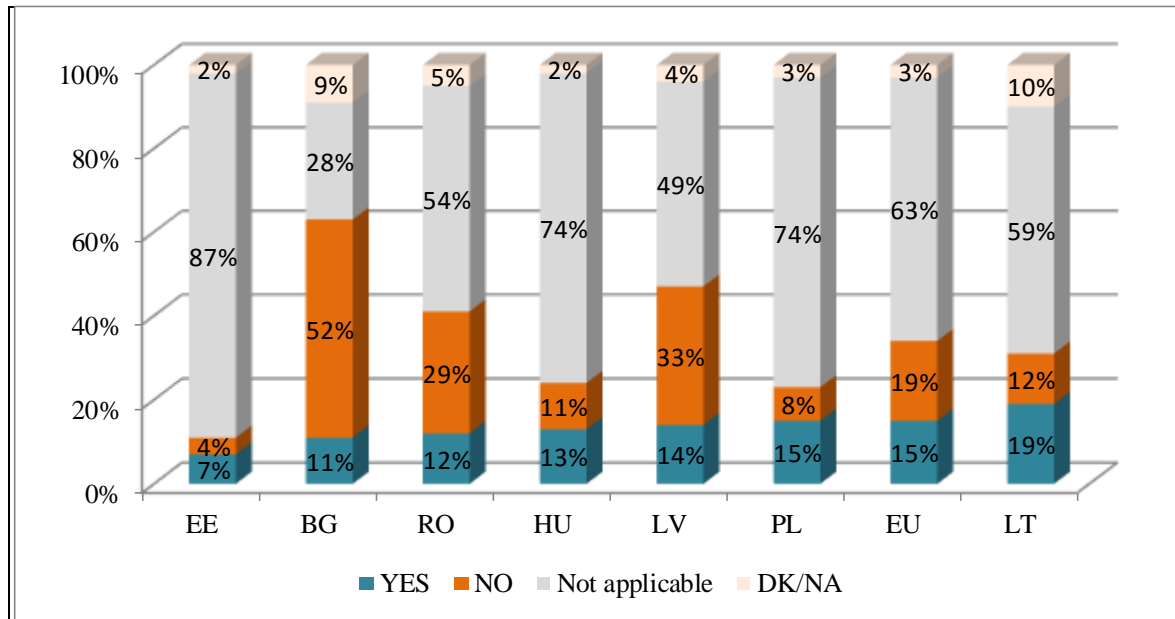
When analyzing the number of companies that received venture capital investment in CEE in 2014, Hungary took the lead with 66 companies financed comprising 31% of the total number of companies across the region. Poland came in second with 54 companies backed by venture capital (26% of the regional total) and Lithuania third with 39 companies (19% of the CEE total). Together, these three leading countries accounted for 76% of all CEE companies financed by venture capital in 2014.

Figure 4 - Venture capital investment by sector, 2014 (amount in millions euro)

Source: processed by the authors after EVCA, 2015, p. 32

The sectoral split of CEE venture capital investments in 2014 was similar to 2013. Communications, computer and consumer electronics, and consumer goods and retail were the three most invested sectors in CEE, representing 55% of the total value of venture investments in 2014, compared with 63% in 2013 (see figure 4). The same three sectors led the field according to the number of companies backed, representing 52% of the total in 2014 compared to 60% in 2013. Other sectors that showed notable increases of venture capital investment levels in 2014 compared to 2013 were business and industrial products and services, with a combined value of 16 million euro of venture investment in 2014 among 33 companies, as well as life sciences, with a notable 21 companies obtaining venture financing in 2014. Investments in the energy and environment sector, historically one of the largest venture investment sectors in CEE, remained at a relatively low level. It accounted for just over 4 million euro invested representing 4% of the CEE total. The sectors with the smallest values of venture investments were constructions, transportation, agriculture and financial services.

Figure 5 - Managers' confidence in talking about financing with equity investors/venture capital firms



Source: processed by the authors after SAFE 2013, p. 86

From figure 5 we observe that firms in Lithuania were the most confident in talking to equity investors and venture capital firms about finance, being above the EU average. The next most confident were Poland (15%) and Latvia (14%). Also, the managers from Bulgaria (52%), Latvia (33%) and Romania (29%) were notably less confident than others in talking to equity investors about obtaining finance. In Estonia (87%) and Poland (74%) almost a third of the managers said that this type of financing was not applicable. Also, in all other analyzed countries, except Bulgaria (28%), half of the managers said that this type of financing was not applicable. These results were obtained because a bigger part of the enterprises from the CEE used bank financing, and venture capital was used in a small proportion (as we have observed in the analysis above).

In the following table we put together an analysis the situation of venture capital financing on the market of each considered CEE countries and the reforms adopted in order to improve venture capital financing in that country.

Table 3 - Venture capital financing in CEE countries and the reforms adopted

<i>Country</i>	<i>Venture capital situation</i>
Bulgaria	<ul style="list-style-type: none"> - venture capital investments have sustained the entrepreneurial activity especially for information and communications technology sectors - venture capital investments are still used in a very small proportion - the enterprises have only few alternative financing instruments on the market.
Estonia	<ul style="list-style-type: none"> - the Baltic Innovation Fund is encouraging cross-border investment - specialized funds are used in order to sustain private equity and high risk projects (including start-up firms) - some associations that contribute to the development of capital were established - market: the EstVCA - Estonian Private Equity and Venture Capital Association and the Cluster Finance Estonia.
Hungary	<ul style="list-style-type: none"> - venture capital financing has increased in the recent years - venture capital financing only comes from the JEREMIE scheme.
Latvia	<ul style="list-style-type: none"> - the Baltic innovation funds is working to improve the availability of equity financing - there are used three financial intermediaries and three new risk capital funds to sustain development of venture capital market. - a new pilot project for a business accelerator was established (European Commission, 2014).
Lithuania	<ul style="list-style-type: none"> - the venture capital financing has improved significantly in the last years (LTVCA) - the JEREMIE scheme is providing risk capital through a variety of instruments.
Poland	<ul style="list-style-type: none"> - equity finance is still underdeveloped (European Central Bank, 2014). - the Polish Growth Fund of Funds was established with the purpose of stimulating venture capital investments and mezzanine funds. - The National Capital Fund is another organism established for sustaining venture capital financing especially in the start-up phase for the innovative SMEs (European Commission, 2014).
Romania	<ul style="list-style-type: none"> - risk capital market is still underdeveloped, venture capital investment registering a constant decline since 2007 - the investments in new enterprises are very low fact that affects the growth of innovative companies - in 2012, Romania was the fourth worst performer out of all EU Member States in terms of total venture capital investment (European Commission, 2014).

Source: processed by the authors

Conclusions

The analysis in this paper showed that venture capital financing is still underdeveloped in the emerging economies of Central and Eastern Europe. The sectors attracting investments from risk capital were the most innovative ones: communications, computer and consumer electronics and consumer goods and retail. We have also observed an improvement of venture capital financing in the region in 2014 compared to 2007, but the amounts of investments are still very small compared to the developed countries from European Union. The investors have observed the potential of the countries from CEE in using venture capital, but there are still some weaknesses of the region that have limited venture capital investments.

A big problem with using this type of financing is the confidence of the firm. Therefore, our analysis showed that managers from the CEE economies do not have the confidence to talk about the financing aspect with equity or venture capital investors. The countries in the region have adopted a series of reforms in order to improve venture capital financing, such as: the establishment of the Baltic Innovation Fund, the Estonian Private Equity and Venture Capital Association, the Polish Growth Fund of Funds. But these organisms are still at the beginning of their activity, and their establishment has not determined big improvements yet. We have to wait and see if in a couple of years they will achieve the purpose they were established for. We also have to be reminded of the lag that exists between CEE countries and the developed countries from Europe regarding the development of the venture capital market.

In other future research we propose to extend our analysis to all European Union countries, and maybe to observe which are the economic and financial factors that sustain the development of the venture capital market and to what extent they can be applied to the emerging markets from Central and Eastern Europe.

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