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Assessment of the differences in venture capital funding in United States and Europe

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1. Introduction

In 1946 the first venture capital funds were born: American Research and Development Corporation and J.H. Whitney and Company. This marked the beginning of the modern venture capital financing in the form it still operates nowadays. The essence of this type of financing lies in collecting funds from institutional investors and worthy individuals and investing them in innovative start-ups with high potential. Most of the times the investors were operating in high technology sectors of the economy, particularly IT and biotechnology. Ever since venture capital was a particularly important source of financing for innovative start-ups in the United States. During the internet bubble, the American Venture Capital funds played a major role in financing the biggest dot com companies. In Europe, however, the venture capital was not able to achieve similar success and the policy makers were continuously striving to help channel more funds into this form of financing (Botazzi & Da Rin, 2000).

On June 10, 2010 the Economist published an article named: “Booming: Europe has become a more fertile place for technology companies. However its tech industries still have to show they can burst through old constraints.” In this article the author reflects on the differences between conditions in which technology start-ups operate and have access to the financing in Europe and compares them with their counterparts in the United States. By giving examples of recent successful European based innovative start-ups, as well as by citing prominent European venture capitalists (hereafter: VCs), the author suggests that although the European venture capital performance is still far behind the American venture capital industry, it shows considerable progress in the last years. The governments worked hard to reduce the bureaucratic obstacles in doing business and the Venture Capitalists got more experienced and therefore effective in targeting start-ups with considerable future potential.

This article has served as a motivation to study the differences between venture capital industries in United States and Europe. How did both industries evolve in the last 20 years and were European funds significantly underperforming comparing to the American VC funds? What are the recent trends in the industry? In order to answer this question I will perform a research in the form of a literature review of scientific articles in the field, supported by the available statistics. Existing scientific papers in this field usually analyze a specific characteristic of the venture capital industry. In this paper, however, I will research

whether there are discrepancies between US and Europe, by looking at the aggregate picture of the different aspects of the industry. This should result in a comprehensive study that can help understand the nature of the existing differences. In addition, as the European Venture Capital industry still hasn't achieved its professional maturity (Bassi and Jormakka, 2006), the results of this research can be used to extract conclusions that can be implemented in other developing regions. Venture Capital has proved to play crucial role in financing risky start-ups, in fostering GDP growth, trade volumes, innovation and job creation in the economy (Kortum & Lerner, 2000). That is why it will inevitably continue growing in popularity and in volumes in the near future around the globe (European Venture Capital Association). Despite of a severe damage caused by the dot com bubble burst and by the recent financial crisis (Block&Sandner, 2009), according to the latest reports published by the National Venture Capital Association, the performance indices started recovering in 2009 and in the first two quarters of 2010 they reached the levels of 2007.

Chapter 2 presents the major characteristics of the venture capital funding. In order to perform a qualitative comparative study, a good understanding of the specific characteristics of the industry is crucial. The second part of this chapter will shortly discuss the evolution of the venture capital industry in the United States and Europe. Here I will discuss the differences in the evolution of the investment levels in different stages of start-up activity.

In chapter 3 I will perform a comparative analysis of different aspects of VC funding between the two regions. Section 3.1 studies one of the most important aspects, in my opinion, of the venture capital industry – its performance and profitability. Section 3.2 discusses the differences in exit strategies between US and Europe.

As most comparative studies in this field were performed before 2009, the data used in these papers does not reflect the recent developments in the Venture Capital industry. For this reason I will refer in Chapter 4 to some recent publications by venture associations from both regions (National Venture Capital Association and the European Venture Capital Association) and to a global report published by Deloitte in 2009. This will allow understanding current challenges venture capitalists from both regions deal with.

I will summarize the results and write my conclusions in Chapter 6.

2. Major characteristics and the evolution of venture capital industry

2.1. Major characteristics of the venture capital funding

In this part I will shortly describe major characteristics of the Venture Capital Funding. In order to perform a qualitative comparative study, a good understanding of the specific characteristics of the venture capital phenomenon is crucial.

In many cases the innovative start-ups are founded by scientists, engineers, inventors, seeking profits by implementing the latest achievements of science and technology. As a source of initial capital of these firms, personal savings of the founder are usually used, but they are often not enough for the implementation of existing ideas. In such cases, they should apply to one or more specialized financial firms willing to provide "risk capital".

The specific characteristic of the venture funding is the fact that the means are supplied on a non-repayable, interest-free basis. The collateral is not required as it usually is the case in a bank loan agreement. Resources placed at the disposal of venture firms' are not subject to withdrawal during the term of the contract between the firm and the Venture Capital Fund. The profit is usually realized after several years of the activity of the start-up company by selling it to a larger firm or by listing it on a stock exchange (IPO). The magnitude of profit is determined by the difference between the market value of the stake of the company belonging to the venture capitalists and the amount invested in the project funds. The size of the stake can vary and, in some cases it can reach 80 percent. In fact, the Venture Capitalist becomes a co-owner of the company and the invested resources - contributions to the statutory fund, thus a part of the equity of the latter. An important condition for the venture financing of small firms is the focus on the fast expansion of the production capacity, because this is a crucial component for achieving an increase in the share price and being prepared for an eventual IPO or sale.

There are two types of small firms that attract special attention from the VC funds:

- Management buy-outs. The advantage of these companies is the quality of the information possessed by the current managers, which makes them capable of assessing the prospects of development of these enterprises.

- Spin-outs of bigger companies, founded by an employee or a group of employees that leave a company and start an independent firm.

The techniques used to mitigate the risk in financing a project are based on the evaluation of three factors: the technical feasibility of innovations, economic characteristics of the project (estimated volume of demand, the availability of substitute products, distribution channels, the likely future profitability, the aggregate demand for investment, the chances of being eligible for a bank loan at a later stage), personality and the business skills of the owner etc. Factors, considered very important in case of a traditional bank loan, such as the availability of own capital and its share in the equity of the start-up or the creditworthiness of the debtor play a secondary role in the case of venture capital financing. Davilla et al. (2003) have shown that the growth parameters of the firm prior to the funding do not play a significant role in the decision making of the venture capitalists as to whether the entrepreneurial firm should be financed or not.

2.2. Evolution of the venture capital industry

I will use the data from the Appendix 1 to compare the evolution of the venture capital industries in Europe and in the United States. The dataset on the investments level from Europe and US from the appendix 1(available at Eurostat) includes information on fourteen member countries of the European Union together with Switzerland, Norway and the United States. The data are presented as percentage of GDP (gross domestic product at market prices) and are broken down into two investment stages:

- Early stage (seed + start-up)
- Expansion and replacement (expansion and replacement capital)

According to Eurostat Quality Profile, data are provided by the European Private Equity and Venture Capital Association and are based on a survey of all private equity and venture capital companies. This survey covers 27 countries regarding fundraising. Hege, Palomino and Schwienbacher (2003) mention that the European Capital Venture Association (EVCA) holds the only comprehensive database on these matters.

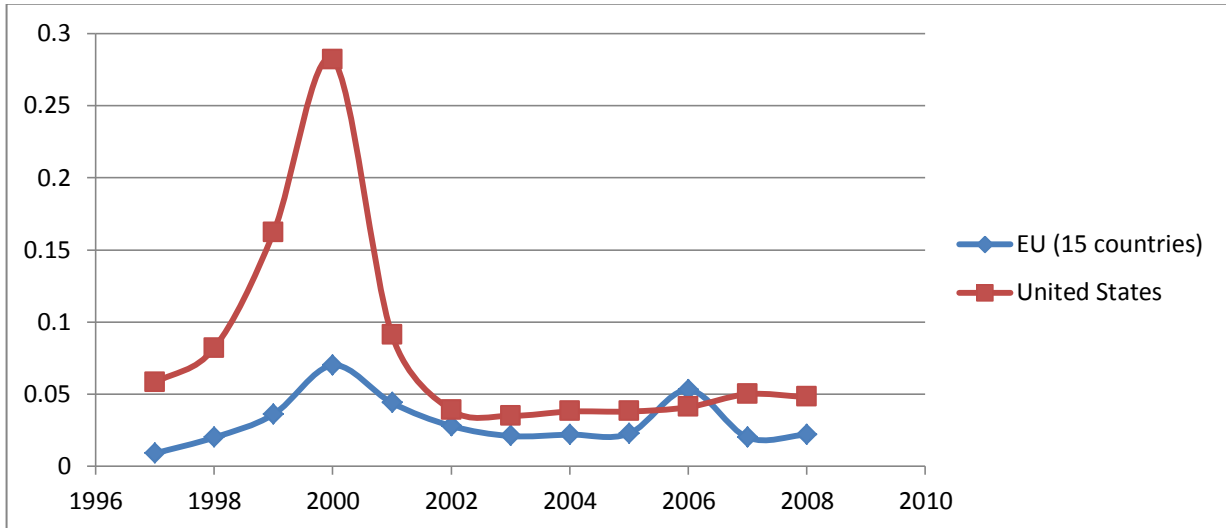
This data is collected from the Eurostat database and is available for the years 1997 to 2008. In the table 1 of the appendix 1 the levels of the investment in the early stage are presented.

It includes data collected from 21 European countries and the United States. In order to be able to compare the two regions, an average for 15 European countries is calculated. Table 2 presents investment data in the expansion and replacement stages of investments for the same years.

The figures 1 and 2 represent charts that compare the investment levels in Europe (average for 15 European countries) and the United States. As can be depicted from these charts, the European venture capital in the terms of the investments as the percentage of GDP shows lower levels comparing to the American industry in all years of the available data (1997-2008). This holds for different stages of the investment, the early stage and the expansion and replacement stage. The only exception is year 2006, when European parameter is higher for the investments in the early stage of the start-ups. In the same year, the level of the investments in the expansion and replacement stages in Europe was very close to the American level, but still below it. The most important differences, however, are caused by the bull market in 1998 to 2000. American venture capitalists attracted and invested record levels of funds. The difference between the two regions is significant during these years. European levels of investment profited from the dotcom bubble as well, but in much lower degree. It is interesting to notice that, despite different scale of the figures, the shape of the graphs is almost identical. The correlation between the early stage investments in US and the expansion and replacement stage for the same region is very high (0.97) and much lower for Europe (0.79).

Worth mentioning is that the investment levels in later activity stages of the start-ups (figure 2) are significantly higher than early stage investments. This holds for both regions. In the record year 2000, American venture capital funds invested 0,28% of GDP in the early stage and 0,76% of GDP in the expansion and replacement stages. In Europe the levels of the investment in 2000 were 0,07 and 0,15% of GDP respectively.

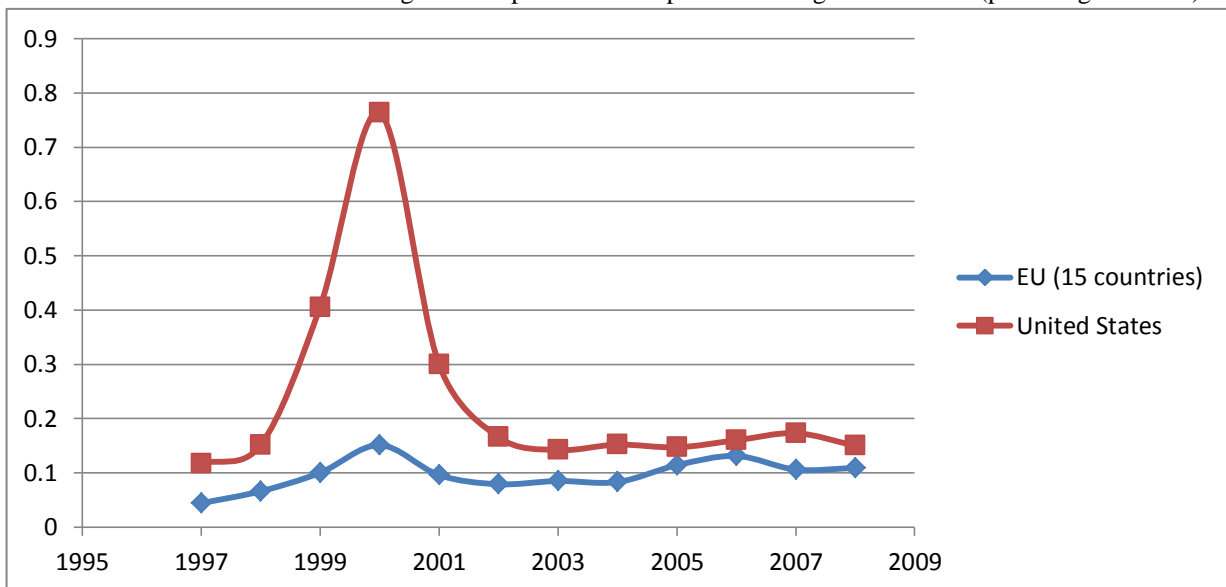
Figure 1. Early stage investments (percentage of GDP)



Source: Eurostat database

As mentioned above, the investments levels in 2006 show particularly interesting results. For early stage investments, this is a unique year when European venture capital funds invested relatively more compared to the American funds. (0,053% of GDP in Europe and 0,041% in the United States). A possible explanation of this effect could be the expansive characteristic of the year 2006, when all branches of the economy across Europe booked surprising growth results. This positive effect is visible in the figure 2 as well. The investment levels in the expansion and replacement stages of the start-up activity in Europe showed levels that were very close to the American data (0,131% of GDP in Europe and 0,173 in the United States)

Figure 2. Expansion and replacement stage investments (percentage of GDP)



Source: Eurostat database

The general conclusion that can be extracted from these figures is that, when looking at the last 15 years, the huge discrepancies between the two regions took place during the bull market of the late 90's. The collapse of the successful dotcom companies had a huge impact on the American venture capital industry where levels of investment dropped from 0,091% of GDP to 0,035% in the case of early stage investments and from 0,763% to 0,166% in the case of the expansion and replacement stages of investments. The European funds suffered less from these events and in 2006 almost achieved the record levels of investment booked in the record year 2000. In 2007 the difference grew insignificantly and in 2008 it minimized again. These results are consistent with the article mentioned in the introduction and suggest that the European Venture Capital industry is catching up. An eventual research question that arises when analyzing these data is what investment levels of venture capital as percentage of GDP are optimal for an economy. Is there a maximum level when venture capital investments are not effective anymore?

As mentioned above, both graphs show that there were significant differences between the two regions only during the late 90's. In order to analyze more detailed the existence of the significant differences in the levels of investments between Europe and US during this period, in the next section I will refer to prominent papers in the field that each partly contributed to the understanding of the different aspects of VC funding in US and Europe.

3. Comparative analysis of different aspects of VC funding

3.1. Performance and profitability of the venture capital investments

As the measure of venture capital performance is usually expressed in terms of internal rate of return together with the type of exit the funds choose to execute. (Hege, Palomino, & Schwienbacher, 2003). Since the exit choices are analyzed in the paragraph 3.3 of this paper, I will focus on the internal rate of return for comparing the two regions. This index is also often used in comparative studies as it is widely used in most of the countries and is calculated using the same methodology. This allows performing accurate comparisons between different industries, as well as different regions or countries.

Research papers that analyze the performance of venture capital and the differences between United States and Europe, based on the data from the above mentioned period (1997-2003),

agree on the fact that European VC funds significantly underperformed comparing to the US funds (Hege, Palomino & Schweinbacher, 2003; Rosa & Rade, 2006). Hege et al. (2003). These articles show that the discrepancies were found in contracting behavior (staging frequency and syndication), which partly explains the differences between the regions. Another important finding was: American venture capitalists played a more active role in the life of the start-up. They collaborated close with the start-ups, had a narrow specialization in a specific field, invested approximately twice as much in the entrepreneurial firms and they made part of larger syndicates in contrast to the European VCs.

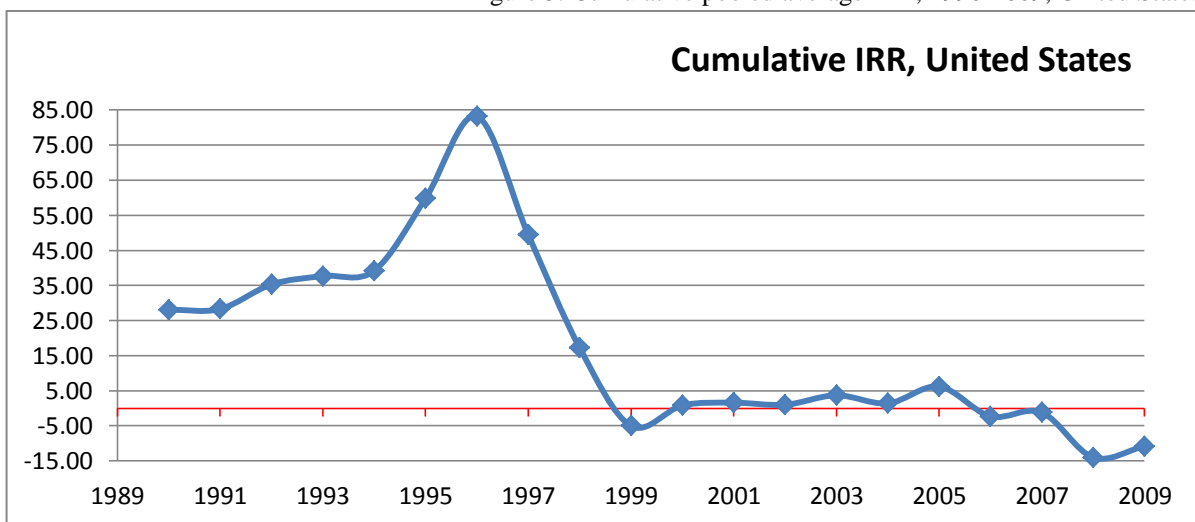
Lindstrom and Maula (2008) in their recent study find similar results in their study. They argue, however, that, a more sophisticated research yields interesting results. By using four different models they test whether the geographic position of the VC fund has a significant effect on the performance. If the location only is included in the model, the difference remains clear. If the model is controlled for the fund characteristics and investment behavior, the location effect on the internal rate of return becomes insignificant. The conclusion is that two VC funds with analogue characteristics, but located on different continents, have equal expected IRR. These results are striking for the existent beliefs in the field, as it is widely assumed that the main reason for the existing differences were particularly due to other factors, such as access of the American VCs to a larger market and the involvement of corporate venture capital on a larger scale.

An interesting observation, not described in other comparative studies, which supports the above described irrelevance of the location of the fund, is that the differences are much larger between funds founded between 1994 and 1999, and much smaller in companies established in a later period. This can be explained by the fact that the American VCs profited more from the bull market at the end of 90s and after the internet bubble these differences almost completely vanished. Funds that were founded in 2000 in both regions, at the end of 2005 still had a negative average return on investment.

In addition to the analysis of the existing research body in this field, I will discuss the differences in the performance, based on the empirical data available on Thomson One Database. This database is widely used by the researchers and the professionals in the field, considered to be most complete and reliable. It includes a huge set of data and research tools for analyzing the private equity industry in general and the venture capital in particular.

In Figures 3 and 4 I present two charts that represent the evolution of the cumulative internal rate of return by vintage year for Europe and United States. Rosa&Rade (2006) use the same data (from 1983 till 2002) and explain why it is important to group the funds according to their vintage year, “defined as the year in which they commenced operations by making the first capital call”. The reason for that is the ‘J-curve’ phenomenon. Usually venture capitalists have losses in their first years of activity and relatively high profits in the later stage of their existence. That is why it is common in the research of the profitability of the venture capital funds to group the funds by their vintage year. Similar to Rosa&Rade (2006), I analyze the ‘cumulative pooled average internal rate of return’. This indicator is used to compare the performance of a group of funds, because it treats the relevant sample as one fund.

Figure 3. Cumulative pooled average IRR, 1990-2009, United States



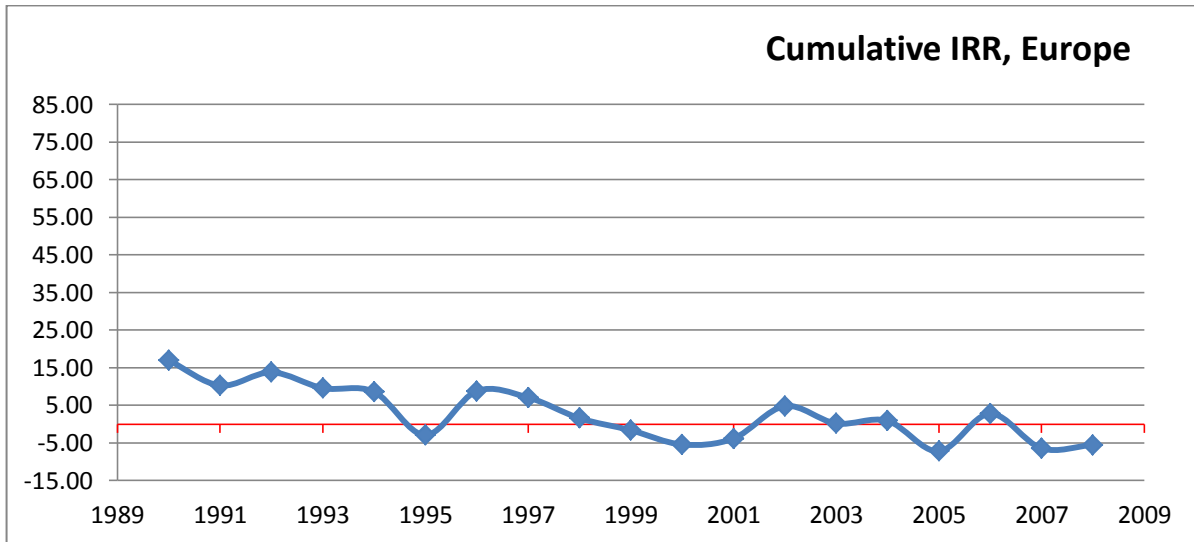
Source: Thomson One database, Thomson Reuters.

As in the case of the investment levels analyzed in chapter 2, the discrepancies between the two regions are very high only for the funds active in the late 90’s. In the United States, the funds that were formed in 1990 showed a cumulative average IRR of approximately 28 percent. It was increasing in the next years, with a significant jump made in 1995 and 1996, when it increased from 39 to 83 percent.

It is important to mention that the shape of the graph in figure 3 is similar to the shape of the level of investments (as percentage of GDP) presented in figures 1 and 2. In the case of the United States a significant growth of the IRR started in 1994 and reached its peak in 1996.

The investments level, however, starts a significant growth in 1998 and peaks in 2000. This is the confirmation of the ‘J-curve’ effect described above. The funds with the vintage year from 1994 to 1996 received huge returns on investments during the later dot com bubble.

Figure 4. Cumulative pooled average IRR, 1990-2008, Europe



Source: Thomson One database, Thomson Reuters.

European funds were significantly underperforming comparing to the American. This is consistent with Rodsa & Raade (2006) that document similar findings in their research of the IRR levels for both countries. The last available data in their research was collected in 2003, when the levels of IRR in both regions started to show signs of recovery. From the charts above, however, we can see that the IRR levels continued to drop down, with insignificant positive development of the index. As in the previous chapter, 2006 is worth analyzing. Again, the European funds performed better than the American ones, where 2006 showed negative results (2,8% in Europe and -2,6% in the United States).

Starting from that year the European funds had higher profitability. Both regions are characterized by negative internal rates of investments. However these levels are higher in the case of European venture capital funds. This can be explained by the fact that the global financial crisis that had its seeds in that period had a greater effect on the American economy. The problems faced by the corporate investors had dramatic effects on the venture capital industry. Again, this is consistent with the findings in the article mentioned in the introduction and suggests that the European Venture Capital industry is not significantly underperforming when compared to the American industry.

3.2. Exit strategies

Exits are one of the most important aspects of the activity of the Venture Capital funds. This is the most important part of the deal, as this should pay off all the investments made by the fund in all stages of the start-up investment. Without a good exit strategy, the fund cannot exist and ensure its profitability in the long term. Black and Gilson (1998) argue that the existence of a solid functioning IPO market that allows venture capitalists to execute an effective exit is decisive for a lucrative Venture Capital industry.

According to Cumming&Macintosh (2003), there are several exit possibilities for Venture Capital Funds:

1. Initial public offering (IPO): a new listing on a stock exchange.
2. Acquisition (merger): a sale to a firm larger than the one being acquired. Both the entrepreneur and the venture capital fund sell their stake in the firm in the case of an acquisition exit.
3. Secondary sale: a sale to another firm or another investor. The venture capital fund sells its share, but the entrepreneur does not sell his..
4. Buyback: The entrepreneur repurchases the stake held by the venture capital fund.
5. Write-off: a liquidation of the investment.

Schweinbacher (2005) is one of the few papers that put in perspective the differences between the two regions. He uses a unique self-collected dataset. The data is collected by sending out questionnaires to Venture Capitalist from Europe (Sweden, United Kingdom, the Netherlands Germany, France and Belgium) and United States. Although the response rate is low, a known phenomenon in questionnaire based studies, the sample size is big enough¹ to observe differences and similarities in exit strategies, stage financing, the use of convertible securities and the replacement of management. He shows that although there are a lot of similarities between the exit performance between the Venture Capitalists from the United States and Europe, there are a lot of differences as well. These differences are usually caused by the same characteristic of the European market: less liquid market for the human resources that go into the ventures and for the exit opportunities. This means that European Venture Capitalists need more time to find a prospective client to sell the business to and at

¹ 600 questionnaires were sent to Venture capitalists from each of the regions. 104 were received back from European VCs and 67 from American VCs.

the same time it is more difficult to replace key people in the company due to rigid regulations in the European labor market. Similar evidence was found by Brouwer and Hendrix (1998). It is however not totally relevant as they use the Netherlands as the approximation for the European market. They find significant differences in organizational and legal forms.

Another difference worth mentioning is whether venture capital fund is associated to a financial or non-financial corporation. Schweinbacher shows that there is statistically significant difference between Europe (26%) and United States (15%) This means that at the time the survey was done, the venture capitalists in Europe were still less independent comparing to their American counterparts. This could be explained by the relative difficulty to find private equity in Europe rather than in US, making venture capitalists more dependent on corporate investors.

An important characteristic of the American VC funds is the lucrative use of the convertible securities (mainly convertible preferred stock). By using these financial instruments, the negative effects of possible agency conflicts are diminished. Due to the seniority of the convertible securities over straight equity, usually held by the entrepreneur, the latter is motivated to put more effort in his performance.

There is lack of recent qualitative data and research in this field that would allow analyzing whether the differences between American funds and European funds diminished or increased in the last years. A better organization and efficiency of the American funds can explain why they were more successful during the late 90's. The conjuncture in which the European funds operate can be a possible barrier for the effectiveness of their activity and negatively influence their ability to react promptly when new investment opportunities arise.

4. Recent trends in Venture Capital

4.1. Analysis of the recent global trends in Venture Capital

In order to assess the recent developments in the VC industry, I will discuss some recent qualitative data available from different sources. One of these sources is the “Global Trends in Venture Capital” 2009 Global Report published by Deloitte. This report is titled ‘Global trends in venture capital’ and is based on a global survey where data were collected from 725

responses from general partners of venture capital firms with various assets under management, ranging from less than \$100 million to greater than \$1 billion. Forty four percent of the respondents come from the United States, twenty one percent from Europe, sixteen percent in Asia Pacific, ten percent in the Americas, seven percent in the United Kingdom and two percent in Israel.

The 2009 report is hardly influenced by the negative effects of the financial crisis. The industry is recovering, but was hardly affected by the recession. One of the most important negative effects is that the VC funds shift their investments towards later stages or invest more in their existing portfolio companies. This is explained by the fact that the market for IPOs was very weak during 2009.

However, the last news release of the National Venture Capital Association, dated 1st of July 2010, reports a positive development of industry indices. Especially venture-backed IPO's show promising results. With 17 IPO's in the second quarter of 2010, it is the highest level since the end of 2007. As the first quarter of 2010 showed a record number of IPO's as well, it can be a sign of a start of the recovery process. Nevertheless, according to Mark Heesen, the president of the NVCA, the post IPO performance must improve as well to "move toward a sustainable recovery".

According to the Quarterly Activity Indicator published by European Venture Capital Association in June 2010, the European venture capital investment activity in the first quarter of 2010 decreased slightly comparing to the last quarter of 2009 but still is in line with the positive trend, which started in the second quarter of 2009. The level of funds raised in the first quarter has a record level since the first quarter of 2008. This can be interpreted as a positive sign from investors and it can be inferred that they have optimistic expectations about the future.

Another important fact mentioned in the global trends report published by Deloitte in 2009 are the positive expectations of venture capitalists from all over the world about the future of China. Most of them expect a significant growth in the region and see it as being the most promising country for investing venture capital in the years to come. In general, Asia is seen as one of the important regions for investments in the coming years.

"When it comes to interest in Asia and India, UK respondents are the most enthusiastic, planning either to increase investment levels (67 percent and 58 percent, respectively) or

keep them at the same levels (33 percent and 42 percent, respectively). But, about nine out of 10 U.S. VCs are also increasing or maintaining their investments in Asia and India.”

These developments should come on the top of European venture capitalists list of priorities and strategic plans for the future. Spotting new possibilities on a global scale can help the European venture capital industry become one of the most profitable in the world and even repeat the success of the American industry in the late 90's.

5. Conclusion

In this paper I perform an analysis of the major differences of the venture capital industry in the United States and Europe. Different aspects of the venture capital funding are analyzed in order to find evidence of the significant discrepancies between the two regions.

Significant gaps in the performance are found in all areas of European venture capital performance compared to the American industry when looking at the dot com bubble years. In terms of IRR, American funds show significantly better results. It is shown that differences are much larger between funds founded between 1994 and 1999. However, the difference is insignificant in companies established in a later period. Starting with 2006, the European funds had even higher profitability.

In terms of exit strategies, there are differences between the two regions as well. One important characteristic in this sense is that American venture capitalists use very effectively the convertible securities. By using these financial instruments, the negative effects of possible agency conflicts are diminished. American venture capitalists play a more active role in the life of the start-up. They collaborate close with the start-ups, have a narrow specialization in a specific field, invest approximately twice as much in the entrepreneurial firms and they make part of larger syndicates in contrast to the European VCs. European venture capitalists are more dependent on corporate investors.

Again, the comparison of these differences was performed based on the data from the late 90's. Lack of qualitative data and research makes it difficult to analyze the dynamics of the differences between US and Europe.

The huge discrepancies between the two regions could be a result of the relatively late start of the development of the European VC industry compared to the American one. If we do not take into consideration the “golden” period of the end of the 90’s, the differences are not significant as they are reported when analyzing all years. The internet-bubble played a very important role in making American VC funds very successful and leaving Europe behind. However, in the post-bubble period we see that the variance between the performance indices from the two regions is not significant.

Table 1.

Venture capital investments by type of investment stage; Early stage investments(% of GDP)												
Region/Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
EU (15 countries)	0.009	0.02	0.036	0.07	0.044	0.028	0.021	0.022	0.0227	0.053	0.02	0.022
Belgium	0.014	0.061	0.089	0.105	0.038	0.041	0.014	0.016	0.02	0.012	0.032	0.029
Czech Republic	:	0.008	0.001	0.025	0.01	0.001	0.001	0	0	0	0	0
Denmark	0.002	0.008	0.019	0.02	0.085	0.074	0.05	0.084	0.052	0.015	0.047	0.037
Germany	0.01	0.024	0.05	0.08	0.055	0.026	0.014	0.016	0.014	0.011	0.018	0.019
Ireland	0.002	0.026	0.045	0.106	0.032	0.021	0.024	0.019	0.022	0.014	0.017	0.015
Greece	0.004	0.004	0.015	0.007	0.021	0.008	0.007	0.002	0	0.001	0	0
Spain	0.004	0.009	0.016	0.032	0.016	0.015	0.007	0.008	0.013	0.027	0.011	0.009
France	0.007	0.02	0.038	0.08	0.038	0.026	0.025	0.025	0.027	0.03	0.017	0.023
Italy	0.007	0.014	0.013	0.045	0.023	0.005	0.004	0.002	0.002	0.002	0.001	0.001
Hungary	:	0	0.004	0.003	0.026	0.003	0	0	0.004	0.005	0.002	0.002
Netherlands	0.045	0.047	0.089	0.089	0.041	0.043	0.007	0.008	0.002	0.012	0.021	0.038
Austria	0.002	0.006	0.007	0.029	0.02	0.013	0.013	0.007	0.012	0.003	0.006	0.004
Poland	:	0.025	0.012	0.022	0.012	0.005	0.001	0	0	0.001	0.001	0.005
Portugal	0.011	0.012	0.007	0.025	0.012	0.008	0.04	0.025	0.039	0.01	0.024	0.034
Romania	:	:	:	0.003	0.003	0.005	0	0	0.004	0.004	0	0.002
Slovakia	:	0.004	0.001	0	0.012	0.003	0	0.006	0.001	:	:	:
Finland	0.008	0.053	0.055	0.102	0.1	0.069	0.058	0.026	0.044	0.027	0.039	0.033
Sweden	0.002	0.011	0.1	0.085	0.095	0.094	0.062	0.081	0.05	0.057	0.086	0.05
United Kingdom	0.008	0.014	0.018	0.101	0.056	0.035	0.038	0.046	0.046	0.218	0.03	0.04
Norway	0.003	0.009	0.02	0.057	0.034	0.036	0.028	0.015	0.028	0.013	0.065	0.039
Switzerland	0.001	0.027	0.081	0.021	0.026	0.044	0.031	0.021	0.026	0.023	0.054	0.056
United States	0.058	0.082	0.162	0.282	0.091	0.039	0.035	0.038	0.038	0.041	0.05	0.048

Table 2.

Descriptive statistics early stage				
	Correlation	Average	Covar	Median
EU(15)	0.718496238	0.030641667	0.000829503	0.02235
United States		0.080333333		0.049

Table 3.

Venture capital investments by type of investment stage; Expansion and replacement investments(% of GDP)												
geo\time	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
EU (15 countries)	0.044	0.066	0.1	0.151	0.096	0.079	0.085	0.083	0.114	0.131	0.106	0.109
Belgium	0.066	0.043	0.173	0.106	0.08	0.046	0.031	0.062	0.019	0.155	0.101	0.075
Czech Republic	:	0.006	0.048	0.172	0.029	0.036	0.001	0.01	0.006	0.001	0.013	0.014
Denmark	0.013	0.017	0.033	0.091	0.094	0.052	0.057	0.06	0.352	0.068	0.046	0.051
Germany	0	0.047	0.084	0.11	0.077	0.037	0.019	0.033	0.043	0.033	0.035	0.05
Ireland	0.047	0.023	0.043	0.101	0.077	0.06	0.033	0.022	0.042	0.039	0.042	0.014
Greece	0.009	0.012	0.036	0.135	0.048	0.021	0.007	0.001	0.001	0.006	0.008	0.011
Spain	0.035	0.03	0.084	0.097	0.134	0.086	0.116	0.146	0.075	0.099	0.109	0.094
France	0.044	0.054	0.09	0.148	0.053	0.056	0.089	0.077	0.071	0.082	0.072	0.102
Italy	0.032	0.043	0.042	0.089	0.07	0.078	0.054	0.039	0.044	0.076	0.021	0.045
Hungary	:	0.083	0.012	0.056	0.018	0.021	0.028	0.116	0.049	0.035	0.009	0.03
Netherlands	0.091	0.182	0.222	0.284	0.191	0.159	0.093	0.077	0.154	0.089	0.092	0.084
Austria	0.003	0.013	0.031	0.043	0.041	0.046	0.032	0.045	0.039	0.033	0.032	0.023
Poland	:	0.041	0.099	0.086	0.057	0.042	0.043	0.047	0.042	0.008	0.024	0.059
Portugal	0.052	0.034	0.038	0.088	0.048	0.038	0.039	0.083	0.103	0.038	0.049	0.034
Romania	:	:	:	0.04	0.048	0.03	0.113	0	0.014	0.067	0.065	0.034
Slovakia	:	0.006	0.008	0.007	0.025	0.008	0.009	0.006	0.001	:	:	:
Finland	0.075	0.045	0.081	0.088	0.053	0.135	0.142	0.048	0.052	0.085	0.178	0.086
Sweden	0.037	0.044	0.086	0.126	0.307	0.161	0.087	0.155	0.242	0.243	0.188	0.252
United Kingdom	0.122	0.146	0.18	0.287	0.128	0.132	0.21	0.177	0.308	0.395	0.309	0.304
Norway	0.111	0.113	0.133	0.103	0.11	0.058	0.096	0.081	0.108	0.077	0.08	0.087
Switzerland	0.017	0.03	0.068	0.051	0.032	0.049	0.021	0.021	0.084	0.106	0.094	0.135
United States	0.117	0.151	0.405	0.763	0.3	0.166	0.142	0.152	0.147	0.16	0.173	0.15

Table 4.

Descriptive statistics expansion and replacement stage				
	Correlation	Average	Covar	Median
EU(15)	0.611545701	0.097	0.002975917	0.098
United States		0.2355		0.156

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