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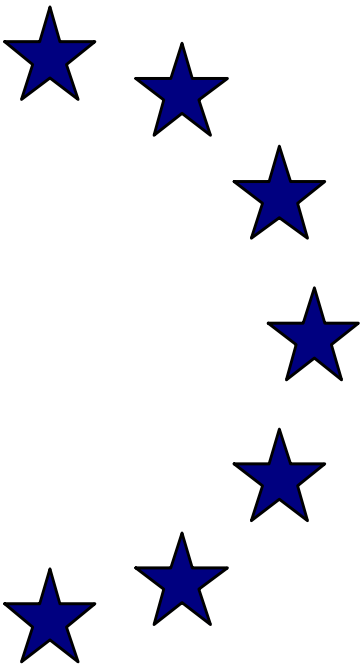

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Profitability of venture capital investment in Europe and the United States

by

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Directorate-General for Economic and Financial Affairs

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PROFITABILITY OF VENTURE CAPITAL INVESTMENT IN EUROPE AND THE UNITED STATES

Catarina Dantas Machado Rosa and Kristiina Raade

European Commission[1]

ABSTRACT

This paper examines the profitability of venture capital investment in Europe and the United states. It highlights the unfavourable profitability differential of European venture capital investment in comparison with the United States. The investment performance measures used are the internal rate of return (IRR) and investment multiples. The analysis covers aggregated industry returns and venture capital funds' returns aggregated by vintage year. It relies on the VentureXpert private equity and venture capital performance database, maintained by Thomson Venture Economics. It also considers developments in the private equity and venture capital markets in Europe and the United States.

Keywords: *venture capital, profitability, performance, IRR, Europe, United States*

JEL classification: G10, G24

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The views expressed in this paper are those of the authors only. No responsibility for them should be attributed to the European Commission. Sections of the text may be quoted provided that full credit is given to the source. This paper was finalised in September 2004, therefore reflecting the data available at that moment. Notwithstanding this, and, considering the available data on recent market developments, the validity of the main conclusions of and issues raised in the paper is not essentially affected. This paper was prepared as an information note by DG ECFIN for the Economic and Financial Committee (EFC). The EFC is composed of senior officials of EU Member States ministries of finance and central banks, of the Commission and the ECB. It prepares the ECOFIN Councils.

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EXECUTIVE SUMMARY

This paper examines the profitability of European venture capital investment and presents some comparative analysis of the returns generated by European and US venture capital funds.

The analysis is mainly based on the Thomson VentureXpert database maintained by Thomson Venture Economics, which is widely used by institutional investors for benchmarking venture capital and private equity investment.

On average, the overall profitability of European venture capital investment looks low. As of the end of 2003, the average internal rates of return (IRRs) for five and ten year investment horizons were 2.3% and 8.3%, respectively. The performance of early stage venture investment appears particularly disappointing with five and ten year investment horizon IRRs as low as -1.8% and 1.3%. For development stage venture investing the IRRs are better, but at 4.6% and 10.7% for five and ten year horizons, there is uncertainty about the sustained competitiveness of venture capital in relation to other alternative assets, such as hedge funds and real estate, on a risk adjusted basis.

The picture that emerges of the US market points to a much more profitable venture capital industry with the asset class showing IRRs of 22.8% and 25.4% for five and ten year investment horizons as of end 2003. In early stage venture investing the performance gap between the European and US funds is even more striking with US funds showing IRRs of 54.9% and 37.0% for five and ten year horizons. Also the returns produced by development stage investing appear clearly superior at 19.4% and 20.4% for five and ten year investment horizons as of end 2003.

The venture capital industry is not homogenous, however. There is great dispersion in the returns produced by individual funds, in particular in the US but also in Europe. By being able to invest in the very best funds, an institutional investor may achieve returns that far exceed averages. Conversely, an ill-advised choice of funds could result in very poor returns for the investor.

A comparison of the cash distributions paid to investors by European and US venture capital funds shows that US funds return cash sooner, indicating that their investments are not only more profitable, but also are realised earlier. For the fund investor this means that the investment is locked in illiquid assets for a shorter period of time.

The analysis suggests that US venture capital funds benefited more from the high asset prices during the technology investment boom than their European counterparts. This could be one element in the profitability differential in comparison with European funds. The venture capital performance gap recorded between Europe and the US could therefore progressively narrow as the effect of the technology boom becomes lesser in aggregated fund performance data.

The volume of funds raised for future European venture capital investment has declined since 2000 as shown by the figures in table 1 below. The low profitability of the industry could account for a part of the unfavourable development.

Finally, it should be noted that not all categories of European private equity investing produce returns that are inferior to those in the US. European buyout funds generated higher returns than their US counterparts for both five and ten year investment horizons as of end 2003. In line with the good performance of buyout investment, the volume of funds raised by buy-out funds appears relatively stable.

Table 1

Funds raised for venture capital and buy-out investment in Europe in 2001-2003 (€ bn)

European fund raising (purpose)	2001	2002	2003
Venture capital	15.0	8.5	6.0
• early stage venture investment	6.7	2.8	2.2
Buy-out investment	23.3	18.3	20.7
Total private equity*	40.0	27.5	27.0

*Includes venture capital, buyout investment and investment for which specialisation is not disclosed
Source: EVCA Yearbook produced by EVCA/Thomson Venture Economics/PricewaterhouseCoopers

1. INTRODUCTION AND SCOPE OF THE PAPER

The Brussels European Council of March 2003 invited "the Council and the Commission to work towards reducing barriers to the creation of a genuine European risk capital market, capable of supporting entrepreneurship, and examine *inter alia* obstacles for investment by institutional investors (pension funds) in venture capital markets". In November 2003, the Ecofin Council discussed the Commission Communication on the implementation of the Risk Capital Action Plan[2] and, among other things, emphasised "that Europe still has some way to go in maximising the potential of this sector and that a significant investment gap with the US persists"; the Ecofin Council also emphasised the examination of obstacles for venture capital investment by institutional investors.

The present paper analyses the profitability of venture capital investment in Europe and the United States. It aims to contribute to the policy discussion on barriers to venture capital investment by providing economic analysis to complement regulatory work. There is little in the way of academic research available on the level of returns of venture capital investment. The lack of information accessible through public sources could be the explanation. This paper relies on data collected and processed by Thomson Venture Economics, some of them already released by the European Private Equity and Venture Capital Association (EVCA) and the US National Venture Capital Association (NVCA). Some large pension funds have also been kind enough to provide their views on the market. The EIF has been particularly supportive.

The focus of the paper is on venture capital, the financing of companies at their early or development stage, rather than on the wider private equity market[3] including the financing of buy-outs of established companies. The European buy-out market can be considered to be working well, whereas the venture capital market is fragile.

The analysis examines venture capital from the point of view of institutional investors who allocate a part of their portfolios for investment in venture capital funds. The venture capital allocation would be part of an overall allocation for investment in alternative assets, including private equity at large, hedge funds and real estate, and established with a view of optimising overall investment returns within the framework of the relevant investment horizon (defined, for instance, by the maturity of a pension fund). The alternative asset classes are 'alternative' to the extent that their risk/return profile, liquidity and investment horizons are different from those of the traditional investments in bonds and stock exchange quoted shares. For investment in venture capital by institutional investors to be sustainable, it must generate returns that are consistent with its risk/return profile and investment horizon.

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[2] COM/654final of 4.11.2003

[3] **Private equity** provides equity capital to enterprises not quoted on a stock market. Private equity encompasses both investment in buyouts and venture capital.
Buyout investment refers to the acquisition of a company or business unit. It includes management buyouts (MBO), management buyins (MBI) and leveraged buyouts (LBO).
Venture capital is a subset of private equity and refers to equity investments made for the launch, early development, or expansion of a business.

The return of investment in venture capital funds is tied to the ability of the fund managers to identify and manage investments that make the best possible use of the funds entrusted to them by investors. The interests of institutional investors and fund managers are not perfectly aligned. The fund manager earns fees, typically 2%-2.5% per annum of funds under management, plus a share of realised profits (carried interest), typically set at 20%. The fund manager is able to charge regular fees from the beginning of the fund's life, whereas the investor only receives a return if and when the fund generates profits that exceed the fees paid to the fund manager.

Venture capital funds are typically set up with an intended life-time of 10-12 years, with the first half of the period usually dominated by investment activity and the latter by the sale, or more generally, the exiting of the investments. The return of a fund depends on the success of the underlying venture investments in potentially high-growth small and medium enterprises. The investments are illiquid assets, whose profitability it is not possible to conclusively determine before they have been sold. It follows that it is equally difficult to put a reliable figure on the profitability of a venture capital fund before it is well into the period of exiting investments. The measuring of the success of investments in venture capital funds thus presents many challenges. It is an area where considerable advances have been made during the past few years and which is still developing. However, certain industry standards now seem widely adopted. Likewise, the availability and quality of industry data is advancing.

Concerning the definitions used, throughout the paper the term 'European venture capital investment' means venture capital funds domiciled in Europe investing both domestically and cross-border within Europe and funds domiciled outside Europe but primarily investing in Europe. 'US venture capital investment' is defined analogously. 'Europe' and 'European' covers the EU, and other European countries with active venture capital markets of meaningful size. Given that the largest national venture capital markets are located in EU countries, for the purposes of the analysis 'Europe' and 'EU' can be taken as the same.

The analysis that follows starts by introducing the usual methods of measuring the profitability of investment in venture capital funds in section 2. Section 3 presents the profitability of European venture capital investment based on the previously discussed performance measures. It is followed by a comparison of the profitability of European and US venture capital industry in section 4. Section 5 contains some final remarks.

2. MEASURING THE PROFITABILITY OF VENTURE CAPITAL FUNDS

The measuring of the profitability of investments in venture capital funds is difficult, because of the nature of the asset. Apart from a few quoted private equity funds in Europe, there are no market quotations on which to rely. Instead, the fair value of a venture fund has to be determined through the valuation of its underlying investments.

The valuation of venture investments in growth companies involves considerable uncertainty. In order to generate elevated investment returns, venture capital investors assume a higher risk/return profile than investors in quoted equity. Venture funds are

thus looking to invest in companies that grow faster than stock exchange quoted companies on average. For the maximisation of profits, venture capital investors seek to time their investment in a company to coincide with a period of rapid growth of the company. The successful execution of this strategy depends, firstly, on the ability of the venture capitalist to make the investment as close to the beginning of the high-growth period as possible and, secondly, to sell the investment when the high-growth period comes to an end. This may mean investing in a company that has limited or no sales as yet and is strongly cash consuming. It follows that the value of the venture investment usually keeps going down until and unless there is reasonable certainty of the future cash-generation of the investee company. In practice, venture investments tend to lose value during the early years, but provided that the business of the investee company develops as planned, the losses turn into gains thereafter, sometimes spectacularly.

The 'J-curve' phenomenon described above means that the early loss of value of an investment in a venture capital fund does not necessarily give an indication of the profitability of the investment over time. For the same reason, comparing the profitability of a two year old fund to one that has been operating for, say, seven or eight years would not be meaningful. In order to avoid the distortions that a comparison of venture capital funds in different stages in their life-cycle would cause, funds are grouped according to their 'vintage year', usually defined as the year in which they commenced operations by making the first capital call.

The most commonly used methods for determining the profitability of venture capital and private equity investment are the internal rate of return (IRR) and investment multiples, such as the 'Total Value to Paid In Capital' ratio (TVPI).

2.1. INTERNAL RATE OF RETURN (IRR)

An IRR calculation of a venture capital fund takes account of both cash and non-cash movements in assets. Negative cash flows would include payments for investments and management fees. Positive flows would include all cash payments made by the fund to its investors whether resulting from exits from investments or dividends received from the investee companies, and the net asset value of the investments held by the fund.

The IRR of a fund may be calculated for different periods depending on the specific purpose of the return calculation or the benchmarks used by the investor itself. Typically, the following IRR calculations are applied:

- *Cumulative IRR since inception* calculates the return of a fund since its commencement of operations. Cumulative return since inception captures the total return that a fund has produced during its life up the reference point. It lends itself for the comparison of the performance of individual funds established in the same year with the assumption that all are similarly affected by the J-curve effect. It also permits the comparison of different fund vintages.

- *Investment horizon IRR* calculates the return generated by a fund during a past fixed period, typically over 1, 3, 5, 10 or 20 years up to the most recent date for which data is available, for instance 31.12.2003. Investment horizon returns permit the examination of venture capital returns against the backdrop of the prevailing economic conditions.

For an indication of the performance of a group of funds, the commonly used measure is the 'pooled average', which treats the relevant sample as one fund. Unless otherwise defined, the averages in this paper are pooled averages.

The 'vintage year IRR' is particularly useful for comparing the performance of a single fund with a group of similar funds. Comparing average pooled returns of different vintage years also provides an illustration of how groups of funds evolve and are affected by the economic conditions prevailing during the funds' life span.

2.2. INVESTMENT MULTIPLES

Investment multiples measure the profitability of a venture capital fund by calculating the return of the funds as a multiple of the original investment as follows:

TVPI = DPI + RVPI

- TVPI is the Total Value of the fund's investments over Paid In capital
- DPI is Distributions over Paid In capital and corresponds to the realised portion of the fund return calculated on the basis of cash-out/cash-in
- RVPI is the Residual Value of the fund assets over Paid In capital and corresponds to the unrealised portion of the return

Investment multiples are performance indicators that establish a distinction between the realised and unrealised portions of the total return of a venture capital fund or an investment in a venture capital fund. They do not take account of the time value of money.

2.3. QUALITY OF VENTURE CAPITAL PERFORMANCE DATA

Institutional investors in venture capital must be able to account for the profitability of the investment with reasonable accuracy. For asset allocation purposes, reliable indicators are needed for comparing profitability with other asset classes. Venture capital investments being private, i.e. unquoted, they cannot be marked to market. To overcome this, the industry has developed a number of methods to measure the profitability of venture capital funds. Whatever method adopted, and unless a fund has been fully liquidated, the measuring of the profitability of a venture capital fund involves the valuing of the investments held by the fund. These valuations have a significant impact in the calculations of IRRs and multiple indicators. The valuation of illiquid assets is difficult and, although in Europe venture capital industry standards

exist, it must be assumed that the reliability of valuations varies and that they inevitably have a subjective component, introduced by the fund manager's perceptions of the investment and market conditions. Only after a venture capital fund has been fully liquidated and all its cash flows are known, can its return be conclusively determined.

Thompson Venture Economics is a leading provider of market data on venture capital and private equity to institutional investors, funds and industry associations. Reflecting the private nature of venture capital and private equity investment, the Thomson VentureXpert database is compiled through direct contacts with individual venture capital funds, which submit information on capital commitments, cash-flow schedules and net asset values.

Currently the VentureXpert database for private equity funds, of which venture capital funds are a sub-group, covers 1705 US funds formed between 1969 and 2003 and 881 European funds formed between 1980 and 2003. In the European dataset, over three hundred UK funds account for a large share of the sample[4].

It is clear that the research universe for the performance figures for the European private equity industry is a sample, not a census. Also, not all funds in the sample provide information, but the data should be broadly representative of the distribution of committed capital. The European sample has grown dramatically in recent years, rising from 278 funds in 1996 with €20.6 billion of committed capital, to 881 funds with committed capital of €158.7 billion in 2003.

Whilst it would seem not likely that the information submitted by the participating venture capital funds on their profitability would be systematically distorted, especially not downwards, for unliquidated funds, return information is largely based on asset valuations that always have an element of subjectivity, as discussed above. It has also been suggested that failed funds could choose not to submit data, leading to 'survivor bias' in the dataset.

3. PROFITABILITY OF EUROPEAN VENTURE CAPITAL FUNDS

3.1. RETURN OF EUROPEAN VENTURE FUNDS PER VINTAGE YEAR

The analysis is based on the available European fund data for the period 1983-2003. It should be noted that coverage of the database has evolved since European data collection began in 1980. In the eighties, the data only covered the UK, France and Germany, the largest national venture capital markets in Europe. In line with the development of venture capital markets in other European countries, the coverage has

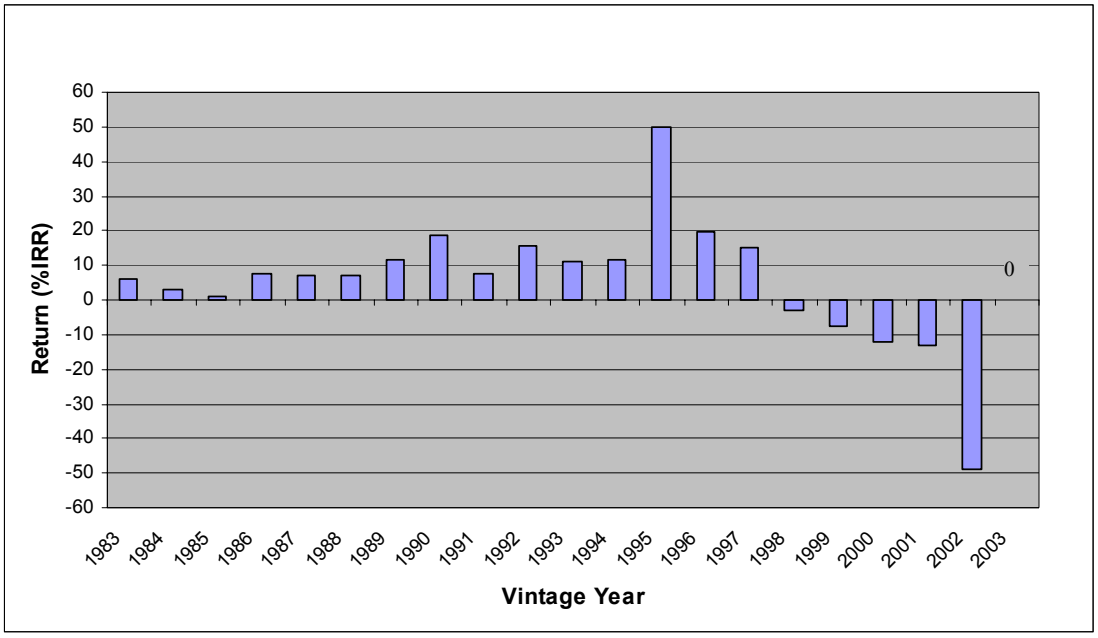
[4] The data from the VentureXpert database used in this paper was extracted in mid-April 2004. Because the database is constantly updated different figures could be obtained if the data extraction is performed in a different moment. Differences should only be meaningful if the time lapse between extractions exceeds a trimester. EVCA performance data used was released in the beginning of June 2004.

been progressively enlarged to take account of all significant EU national markets including the recently acceded Member States as well as Norway and Switzerland.

An overview of the profitability of the European venture capital industry since 1983 is given in chart 1 by showing the cumulative pooled IRR since inception of the European venture capital funds in the dataset by vintage year. (Years 1983, 1984, 1992 and 2003 include a low number of funds. The IRR figures for those years may not benefit from adequate diversification and could be overly influenced by the performance of just one fund, i.e. one management team.)

Chart 1

European venture capital funds established in 1983-2003
Cumulative pooled average IRR since inception by vintage year
as of 31.12.2003



Data source: Thomson Venture Economics

In chart 1, the negative IRRs recorded for the years 1998-2003 illustrate the J-curve phenomenon. On average, venture capital funds that started operations during the last five years have still not yielded a positive return to their investors. The strongly negative IRR of the 2002 vintage shows the nature of venture investing: Recently made investments in potentially high growth companies have not as yet proven themselves. The graduated returns of the 1998-2002 vintage funds mirror the evolution of the underlying investments, and give an indication of the length of time during which a fund investor should expect to have to book losses. The 2003 funds show a zero return, possibly because the value of their investments was not subject to significant adjustment during the short active life of the funds.

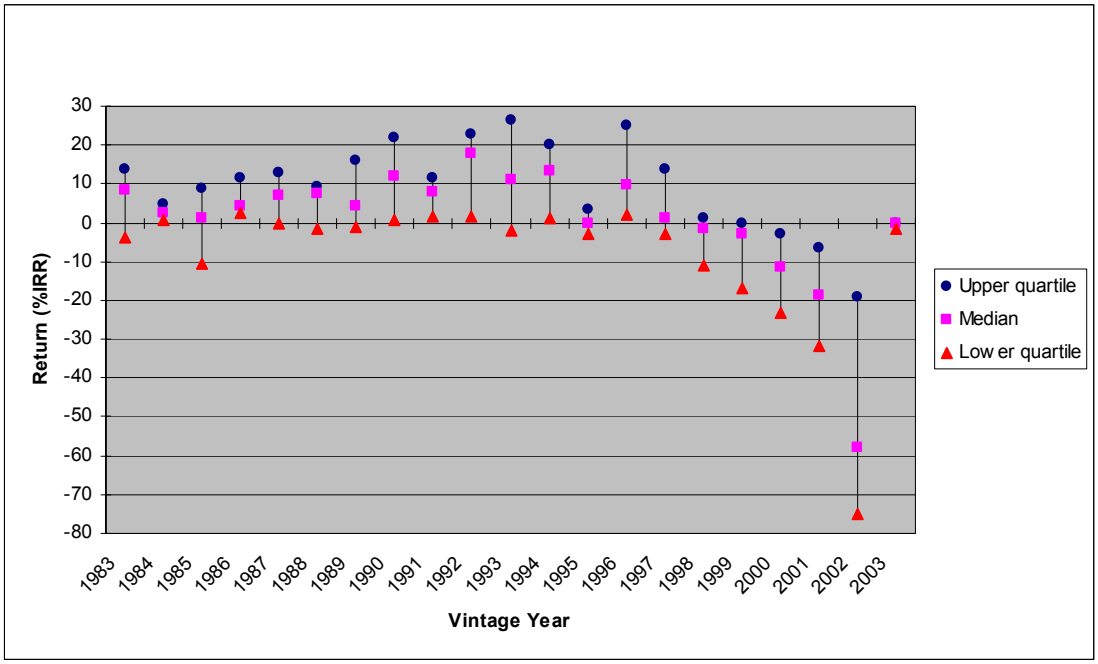
The very high average return of 49.9% shown for the funds that started operations in 1995 could be explained by the maturing of their investments at a time when particularly high prices were paid for technology assets during the run up to the peak of the technology boom. Another possible explanation could be that the 1995 vintage includes a number of funds that have been extraordinarily profitable to the extent to

substantially increase the vintage average. The maximum IRR reported for funds in the 1995 vintage was 200% as at the end of 2003.

For European venture funds established during 1983-1997, corresponding to vintages that should no longer be negatively affected by the J-curve phenomenon, the average return by vintage is consistently positive as of end 2003, ranging from 1.1% to 19.7%, excluding the extraordinarily profitable 1995 vintage. The average return figures, however, mask substantial performance variation between funds, as discussed below.

Chart 2

European venture capital funds established in 1983-2003
Dispersion of cumulative pooled average IRR since inception
by quartile and by vintage year
as of 31.12.2003



Data source: Thomson Venture Economics

Chart 2 above shows the dispersion of the cumulative return of European venture capital funds since inception for all vintages since 1983. Dispersion is illustrated by showing the cut-off points between the different profitability quartiles. The cut-off point of the upper quartile corresponds to the IRR of the least profitable fund among the 25.0% best performing funds in the relevant vintage sample. The cut-off point for the lower quartile corresponds to the IRR of the best performer of the 25% worst performing funds.

Taking as an example the funds that started operations in 1996, half of them had an IRR of 9.7% or less at the end of 2003, when the funds were 7-8 years old. The worst 25% of the funds had an IRR of 2.2% or less. The best 25% of the funds had an IRR of 25.0% or more.

The dispersion of the returns generated by funds in the same vintage underlines the importance of fund selection for institutional investors that allocate funds for venture

capital investment. Failed fund selection is likely to result in inferior investment returns.

3.2. INVESTMENT HORIZON RETURN OF EUROPEAN VENTURE FUNDS

Investment horizon returns capture the aggregated performance of all funds in the dataset that were active in the reference period. For instance, the five year investment horizon data as of 31.12.2003 would pool the returns (cash and value appreciation of assets) generated by all funds in the sample during 1999-2003. Some of them could have been recently established, whereas others could have been operating for longer than 10-15 years in which case the dataset would include their return for the most recent five years.[5]

Table 2 presents the pooled average IRRs of the European venture capital funds for a range of investment horizons as of the end of 2003 and broken down by the development stage of the investee companies. The table also contains data on private equity funds to position venture capital in the wider context of private equity at large. Chart 3 presents the data on venture capital in a graphic form.

Table 2

European venture capital and private equity investment
Pooled average IRR% for investment horizon of 1, 3, 5, 10 and 20 years
as of 31.12.2003

Stage/Horizon	1 Year 2003	3 Years 2001-2003	5 Years 1999-2003	10 Years 1994-2003	20 Years 1984-2003
Early stage	-13.1	-11.1	-1.8	1.3	1.9
Development	-7.2	-4.8	4.6	10.7	9.1
Balanced	-5.4	-10.2	4.2	12.3	9.0
Total venture	**-7.5**	**-9.0**	**2.3**	**8.3**	**7.2**
Buyouts	-1.6	1.0	9.6	12.7	12.2
Generalist	2.4	-10.7	7.8	14.6	9.1
All Private equity	**-0.6**	**-3.8**	**7.3**	**11.9**	**9.9**

Data source: EVCA/Thomson Venture Economics

The negative IRRs shown for the 1, 3 and 5 year horizons should be an illustration of the J-curve and a reflection of the proportionately higher weighting of funds of recent vintages in the datasets for shorter investment horizons. The declining IRRs for investment horizons beyond 10 years suggest that there are funds in the dataset that have failed to sell holdings in investee companies whose high growth period has come to an end. The return figures lead to the following conclusions:

- As a whole, the returns produced by European venture capital funds specialising in early stage (seed capital and start-up) investment have been disappointing. A

[5] For example, referring to table 2, an investor who had an equal proportionate holding in all venture capital funds that were operating in 1999-2003, would have achieved an IRR of 2.3%.

five year investment horizon IRR of -1.8% combined with a ten year horizon figure of 1.3% cannot be considered to meet the objectives of investors.

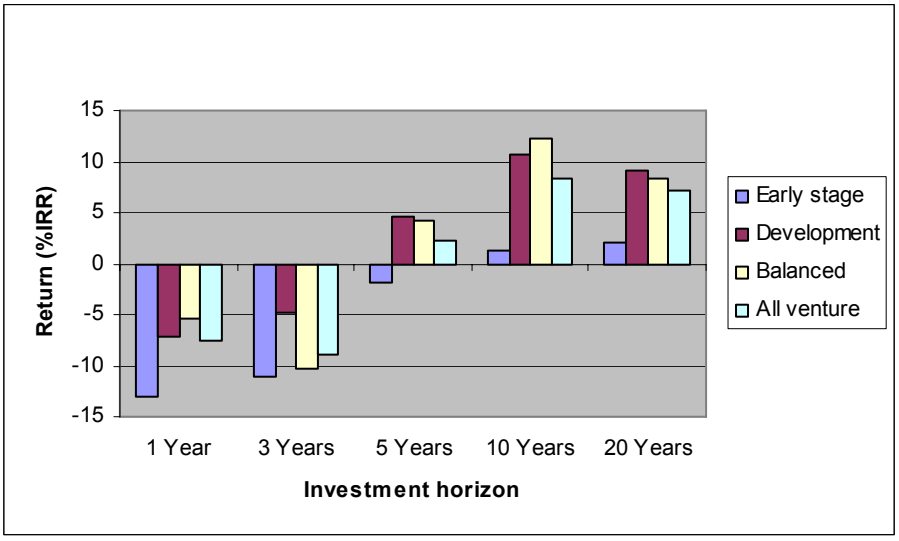
- Venture investment in development stage companies has shown substantially better results than early stage investment and for the 10 year investment horizon, corresponding to a sample in which recent funds are less prominent, shows a double digit return. However, taking into account the relatively high risk of this type of investing, the IRRs recorded do not appear competitive when compared to the more predictable buyout investing.

- Not surprisingly, investment in buyouts has produced the best returns. Buyout investment also appears more attractive than venture capital because of its shallower and narrower J-curve, in other words its lesser investment risk.

The difference in performance between venture capital and private equity may well be the main explanation for the recent trend for European investment activity to focus on less risky buyout investment rather than venture capital. In 2003, funds raised for buyout investment amounted to €20.7 billion or 76% of total funds raised for private equity, up from €18.3 billion (66%) in 2002 and €23.3 billion (58%) in 2001.

Chart 3

European venture capital investment
Pooled average IRR% for investment horizons of 1, 3, 5, 10 and 20 years
as of 31.12.2003



Data source: EVCA/Thomson Venture Economics

3.3. INVESTMENT MULTIPLES OF EUROPEAN VENTURE CAPITAL FUNDS

As discussed in 2.2, IRRs alone are not an adequate measure of the performance of venture capital funds. Investment multiples are complementary indicators that provide an indication of the pay-back period of investments by distinguishing the realised

return of the fund from the residual value of investments that have not been exited. Below, table 3 presents the pooled investment multiples for European venture capital funds formed during the period 1980-2003, as of end 2003, as well as for private equity funds at large for the sake of comparison. To help complete the picture, the analysis then continues with an examination of venture capital investment multiples by vintage from 1983 onwards, which data is presented in chart 4.

Table 3

European venture capital and private equity investment
Cumulative investment multiples for funds formed in 1980-2003
as of 31.12.2003

Stage/Indicators	Number of funds	Multiples		
		DPI	RVPI	TVPI
Early stage	229	0.43	0.63	1.06
Development	191	0.79	0.69	1.48
Balanced	125	0.66	0.61	1.27
Total venture	**515**	**0.62**	**0.64**	**1.26**
Buyouts	292	0.65	0.68	1.33
Generalist	74	0.98	0.37	1.35
All private equity	**881**	**0.71**	**0.61**	**1.32**

Data source: EVCA/Thomson Venture Economics

The data suggests the following:

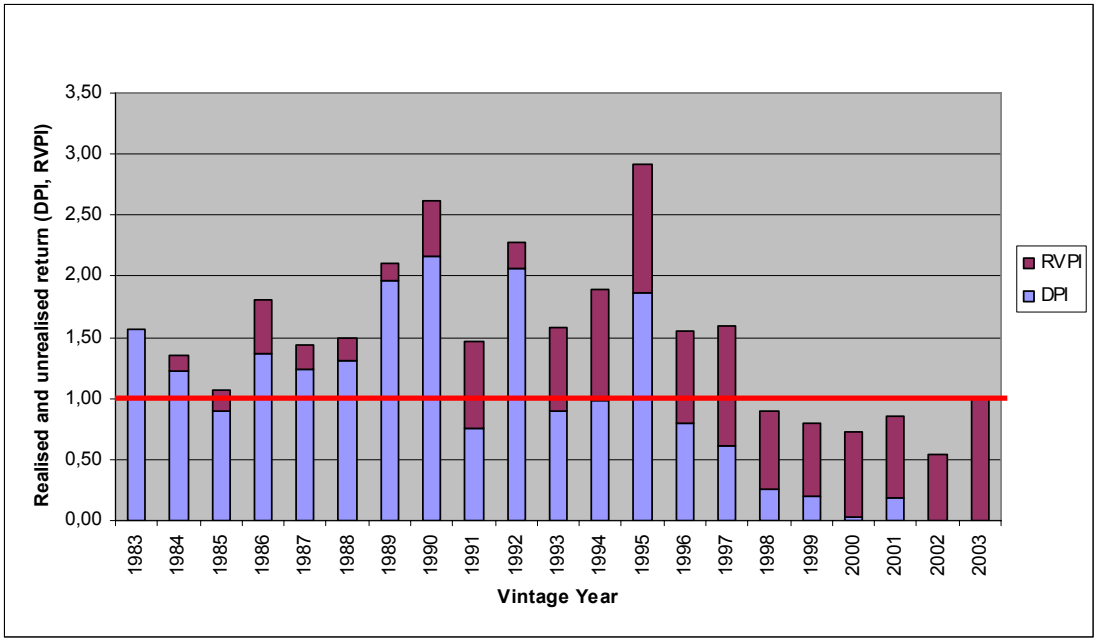
- On average, European venture capital funds formed since 1980 that focus on investment in early stage companies have only made distributions (DPI) to their investors that amount to 43% of the moneys paid into the funds. This appears a strikingly low figure for a sample that extends over a quarter of a century, and which should include a significant proportion of funds that have been fully liquidated. One contributing factor could be the high level of early stage investment during the bubble years combined with proportionately high failure rates when technology related asset values subsequently collapsed. Also the total value (TVPI) generated by early stage funds, which captures both distributions and the value of residual investments, amounts to only 106% of the moneys paid into the funds. The historical information on investment multiples reinforce the conclusions based on IRRs.

- Venture investment in development stage companies looks substantially better with 79% of the original cash paid in returned to investors and an estimated additional 69% worth of assets still held by the funds. As a subgroup of all private equity, it shows the best total value to cash paid in at 148%.

- Concerning buyouts, the investment multiples are higher than those of overall venture capital, but somewhat surprisingly below later stage venture investing.

Chart 4

European venture capital investment
Cumulative investment multiples for funds formed in 1983-2003
as of 31.12.2003



Data source: Thomson Venture Economics

The presentation of investment multiples by vintage gives an indication of the life span of European venture capital funds. From the year 1984 onwards, each vintage includes one or more funds that have not been fully liquidated. Put another way, the European sample includes funds that have operated up to 16-20 years without having managed to exit all their investments. The chart further suggests that it is usual for the time delay between the commencement of operations and the point at which the distributions to investors equal their paid in cash to be up to 10-12 years and longer.

Secondly, and more surprisingly, there are several vintages composed of funds that are 10 years old or older (1985, 1991, 1993 and 1994), whose aggregate cumulative distributions have been less than the cash paid into the funds by investors. It obviously does not follow that all funds in the vintage were weak performers, but underlines the effect of economic conditions and timing in successful investment in venture funds.

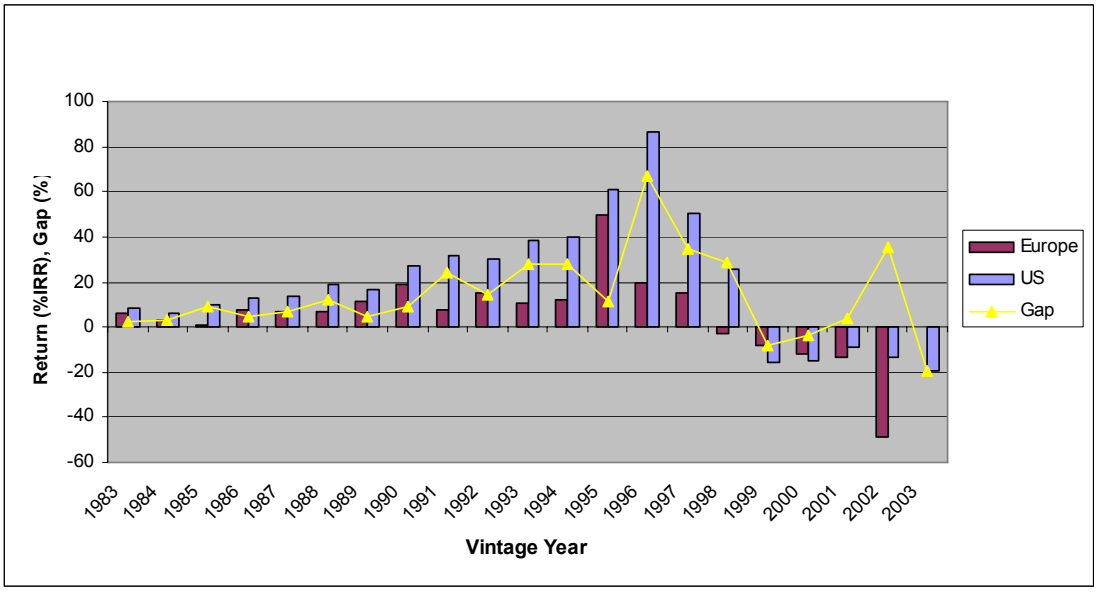
4. COMPARISON OF EUROPEAN AND US VENTURE CAPITAL FUNDS

4.1. EUROPEAN AND US IRRS BY VINTAGE YEAR

Chart 5 below presents the pooled average IRRs since inception by vintage year for European and US venture capital funds for funds that started operations since 1983.

Chart 5

European and US venture capital funds established in 1983-2003
Cumulative pooled average IRR since inception
by vintage year



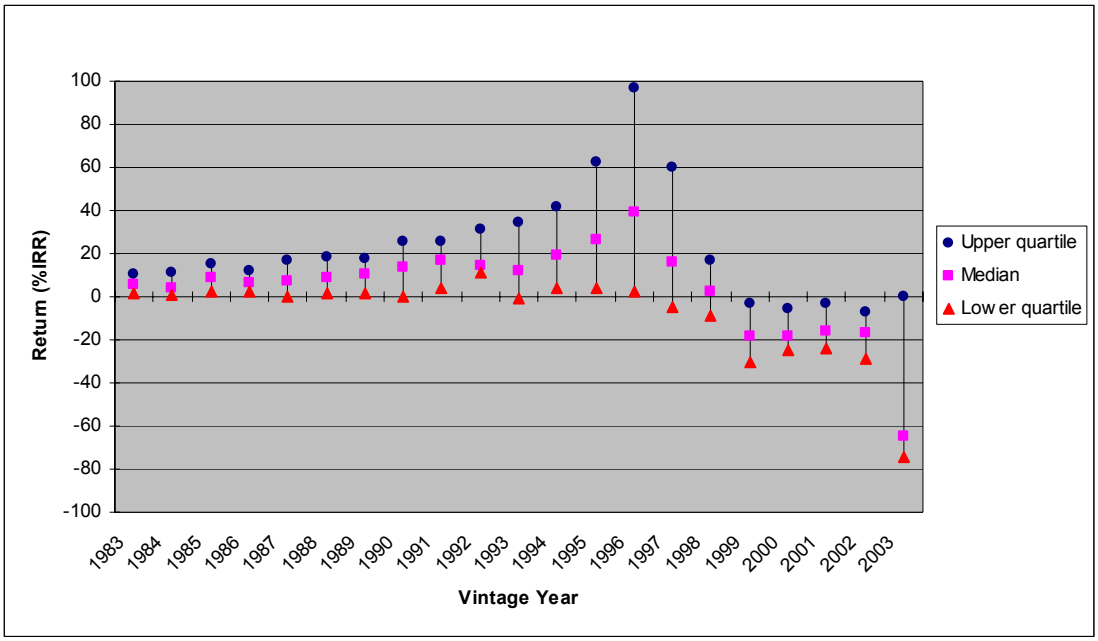
Data source: Thomson Venture Economics

US venture funds formed between 1983 and 1998 show consistently better returns than European funds that commenced operations during the same period. There is an unfavourable profitability differential between European and US funds for most of time period for which performance data is available. The vintage series 1999-2001 shows a better pattern, but as it contains a high proportion of unproven funds, the better relative performance of European funds may turn out to be unsustainable. It should also be noted that the samples for the two latest vintages are less reliable because of their smallness. For Europe, there are only 15 funds for 2002 and 3 funds for 2003, and for the US 13 and 6, respectively. The reducing number of new funds started in 2002 and 2003 should reflect the general contraction of the venture capital industry in the wake of the bursting of the technology bubble.

The performance gap between Europe and the US appears particularly pronounced for funds formed in the nineties, among which it varies between 8% (1990 vintage) and 67% (1996 vintage). The investment period of these funds coincided with the technology boom, which could explain the high average returns that US funds have since generated for their investors. Also European funds do not appear to have benefited from the technology boom the same way as US funds. It could be that it was very closely associated with US centres, such as the Silicon Valley, leaving European players at a disadvantage in accessing opportunities, whether for investments or exits.

Chart 6

US venture capital funds established in 1983-2003
Dispersion of cumulative pooled average IRR since inception
by quartile and by vintage year
as of 31.12.2003



Data source: Thomson Venture Economics

Chart 6 presents the dispersion of the cumulative return of US venture capital funds since inception for all vintages since 1983. The presentation is the same as for European venture funds in chart 2. As before, dispersion is illustrated by the cut-off points between the different profitability quartiles. For US funds, the average vintage group return dispersion measured in terms of the gap between upper quartile IRR figures and the corresponding lower quartile figures was 30.4% for the vintages 1983-2003. This is approximately double the equivalent European average of 17.4%. Particularly high return dispersions are shown for the 1995, 1996 and 1997 vintages, which should contain funds that generated extraordinary profits as a result of the technology boom.

A comparison of the European and US return dispersions shows the US funds as much more consistent performers in line with economic conditions. For the US funds, the consistent yearly increase in the top quartile performance vintage from the 1991 vintage to the 1996 vintage could be assumed to mirror the appreciation of the value of investments made in technology assets before the peaking of market values in 2000. Concerning European funds, the performance of the top quartile funds of the same vintage series shows no particular pattern (chart 2) reinforcing the impression that European funds were unable to fully exploit the US led technology boom.

4.2. INVESTMENT HORIZON RETURNS

Table 4 below provides a snapshot of the profitability of US venture capital funds measured by pooled cumulative IRRs for various investment horizons as of end 2003, and broken down by investment stage. The definitions for development stages are not identical in Europe and the US, but similar enough to permit a broad comparison of the profitability of European and US funds. In the same way as for European data in table 2, the table also contains buyout related data for a broader picture.

Table 4

US venture capital and private equity investment
Pooled average IRR% for investment horizon of 1, 3, 5, 10 and 20 years
as of 31.12.2003

Stage/Horizon	1 Year 2003	3 Years 2001-2003	5 Years 1999-2003	10 Years 1994-2003	20 Years 1984-2003
Early/Seed	-7.0	-23.3	54.9	37.0	19.1
Development	11.0	-13.9	19.4	20.4	13.3
Later stage	25.4	-18.8	3.5	17.0	13.8
Total venture	**8.1**	**-18.9**	**22.8**	**25.4**	**15.5**
Buyouts	24.1	-2.1	2.2	7.8	12.4
Mezzanine	5.7	1.1	5.6	7.3	9.6
All Private equity	**18.3**	**-7.0**	**6.8**	**12.7**	**13.6**

Data source: NVCA/Thomson Venture Economics

The IRR figures in table 4 lead to the following conclusions:

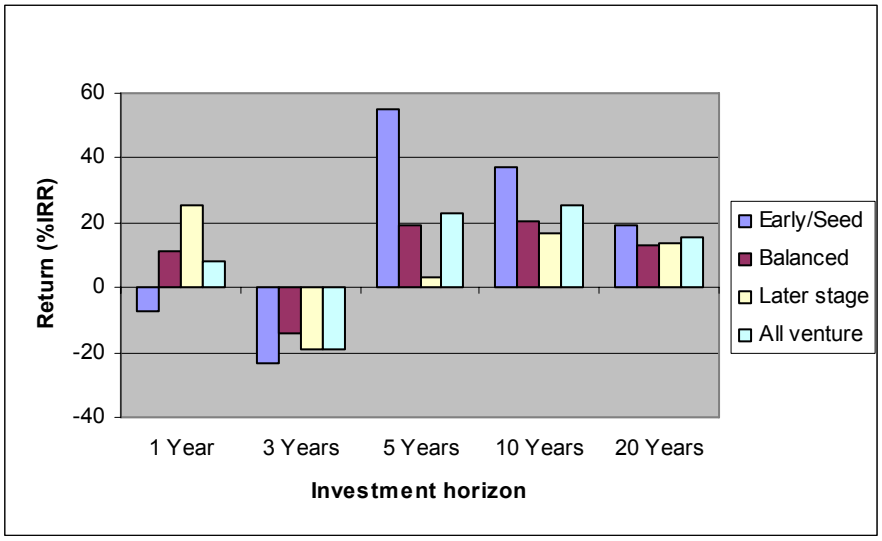
- Overall, US venture capital funds provide respectable returns to their investors. An investor who held an equal proportionate share in all US venture funds that started operations during 1994-2003 would have had a cumulative IRR of 25.4% at the end of 2003. The returns from funds investing in early stage companies are shown as particularly high at 54.9% for five year horizon and 37.0% for ten year horizon. It has to be assumed that these figures are influenced by the conditions during the technology boom when extraordinarily high exit prices could be achieved.

- The pooled J-curve of the US venture capital firms appears to be significantly deeper and narrower than that of European funds. For US venture funds the three year time horizon IRR was -18.9% climbing to 22.8% for the five year horizon. The corresponding figures for European funds were -9.0% and 2.3%. This suggests that, on average, US venture capitalists support projects that are initially riskier than those of their European counterparts, but that the investee companies of the US venture capitalist turn around more quickly and more steeply.

- The returns generated by US private equity funds at large (including both venture capital and buy-out funds) are of the same magnitude as in Europe for the representative five and ten year time horizons. The high returns of US venture capital counterbalance the relatively better profitability of buyouts in the Europe.

Chart 7

US venture capital investment
Pooled average IRRs for investment horizons of 1, 3, 5, 10 and 20 years
as of 31.12.2003

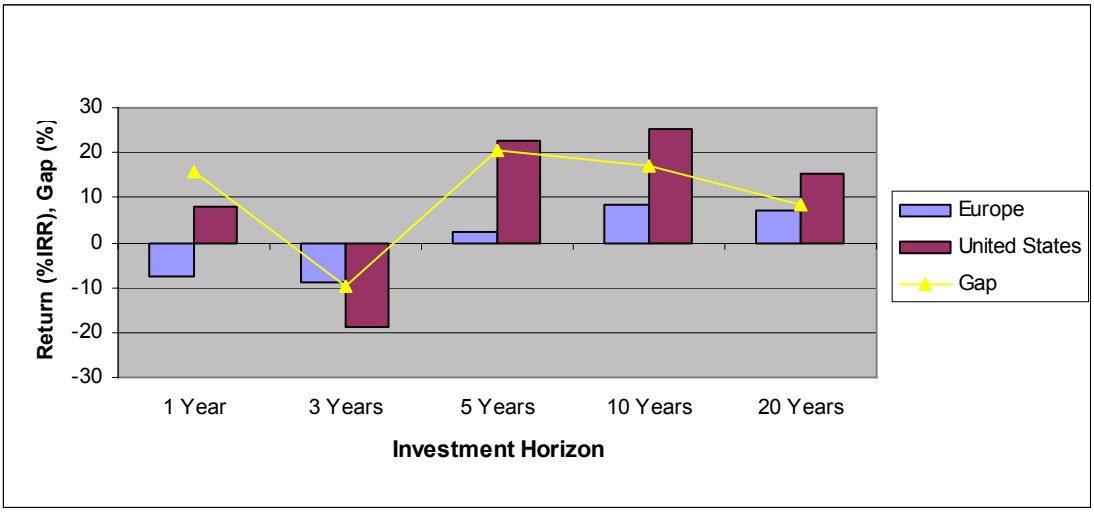


Data source: NVCA/Thomson Venture Economics

The presentation of the IRRs of US venture investment for different investment stages contained in chart 7 above, gives a vivid illustration of the strength of the returns of US early stage investing, which is in a strong contrast with the European pattern in chart 3.

Chart 8

European and US venture capital funds
Cumulative pooled IRRs for investment horizons of 1, 3, 5, 10 and 20 years
as of 31.12.2003



Data source: EVCA/NVCA/Thomson Venture Economics

Chart 8 above compares the performance of European and US venture funds by presenting pooled average IRRs over various investment horizons. In this presentation some of the fluctuations shown in the vintage year IRR comparison are smoothed out, but the results are equally striking. The US venture capital industry as a whole was

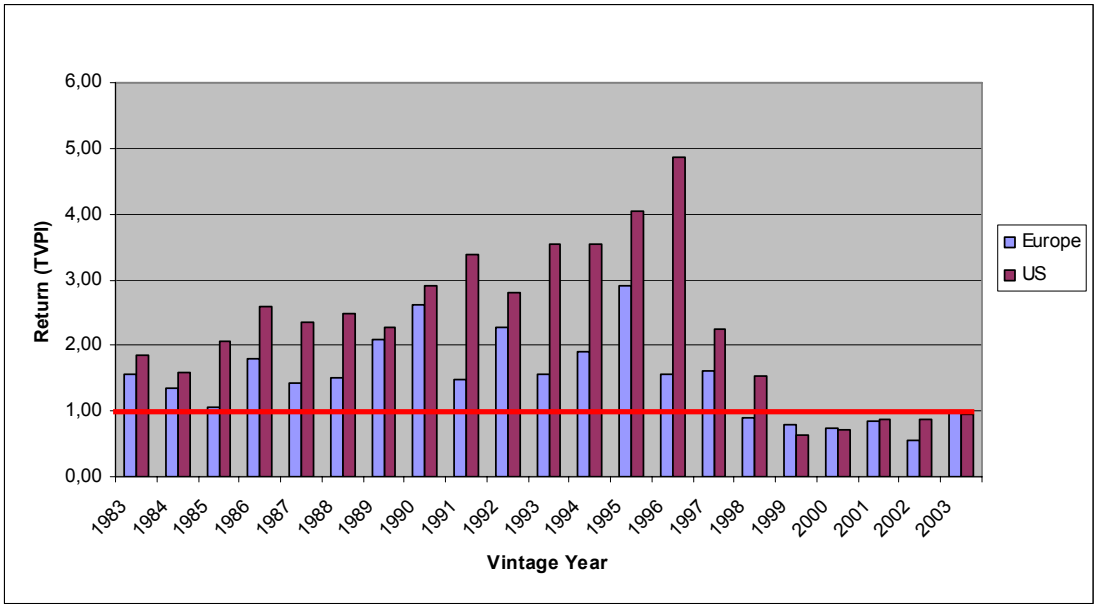
substantially more profitable than the European one during the 5 and 10 year periods up to the end of 2003 as the IRR gaps of 20.5% and 17.1%, respectively, show. Also on the basis of a 20 year investment horizon investors in US venture funds fared substantially better, exceeding the IRR of the European ones by 8.4%. The narrowing of the performance gap for the very long investment horizon reflects both the low weighting of the technology bubble in this dataset and the proportionately high share of low performance funds that have not been able to exit investments in a timely way at the end of their growth period.

4.3. REALISED VERSUS UNREALISED RETURNS

A comparison of the investment multiples of the European and US venture capital investment adds to the analysis by making the differences in the pattern of realised and unrealised gains visible.

Chart 9

European and US venture funds
Total value per paid in capital (TPVI) by vintage
as of 31.12.2003

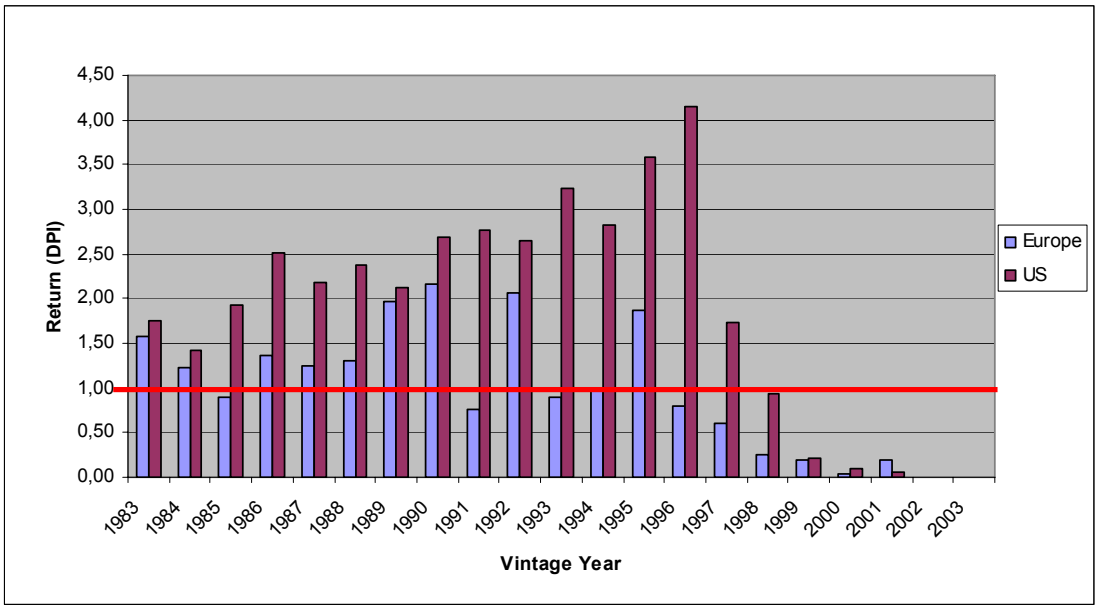


Data source: Thomson Venture Economics

The TVPIs (total value over paid in capital) given in chart 9 above show the US funds performing better than European ones in the same way as the analysis based on pooled average IRRs. While the TVPIs, which include both realised and unrealised investment gains, obviously paint a similar picture as vintage year IRRs, which also encompass all gains, a comparison of the realised gains of European and US funds reveal a high degree of difference. Chart 10 below shows the DPIs (distributions over paid in capital) for European and US venture funds by vintage.

Chart 10

European and US venture funds
Cumulative distributed value to paid in capital (DPI) by vintage
as of 31.12.2003



Data source: Thomson Venture Economics

Except for the two most recent vintages (for which zero average cash distributions are shown for both Europe and US), distributions to paid-in capital by US funds have been consistently higher than by European funds. US funds established in 1983-2003 returned cash profits back to their investors much earlier than European funds. The shorter pay-back periods mean that investors are locked in for a shorter period of time and the risks brought upon by illiquidity reduced.

Another observation to be taken from the chart is that in the US the DPI ratio, distributions to cash paid in, has been greater than 1 in all vintages in 1983-1998. On average, other than for the still immature vintages of 1999-2003, the cash returns realised by the fund investors have consistently exceeded the cash paid in by them.

In Europe this has not always been the case: Distant vintage groups of funds, like the 1991, 1993, 1994 vintages, have not yet been able to realise enough cash to pay back to investors the amounts disbursed with paid-in capital. Moreover, in Europe from 1996 onwards the DPI ratio was still below one at the end of 2003, suggesting that European funds of recent vintages generate profits slower than US funds of the same vintages.

The figures suggest that on average US venture funds realise their investments more quickly than the European ones. This could be caused by the shorter start-up and development periods of US investee companies. Another reason could be US venture capitalists' skill in identifying potential buyers for their investee companies; the vast majority of exits are through trade sales, i.e. the sale of the investee company to an established company. It could also be that established US companies are generally more open for investment in new technology and as such more likely to invest time in the possible acquisition of a venture backed company.

Whatever the reasons behind the average slow distribution rate of European venture funds, it could be a significant factor in discouraging investment in European venture capital funds by institutional investors.

4.4. PUBLIC MARKETS BASED BENCHMARKS IN EUROPE AND IN THE UNITED STATES

Previously this paper analysed the performance of European and US venture capital funds in relation to the profitability of the asset class as a whole. Benchmarking against public stock market indices offers a tool for asset allocation by providing a measure of the opportunity cost in the trade-off between investment opportunities in different asset classes when they are mutually exclusive. Benchmarking against public markets also allows the relatively higher risks of venture capital and private equity investing to be factored in through the setting of a target return as the performance of the chosen index plus a risk premium.

The benchmarking of venture capital and private equity investment to public markets provides an indication rather than an exact measure as it involves comparisons that are not like-to-like. It appears that investors and venture capitalists who benchmark against the public markets regard it as a performance check complementing IRR and investment multiple indicators.

Table 5

Public markets returns vs. venture capital and private equity investment
Investment horizon return IRR since inception for funds formed 1980-2003
as of 31.12.2003

Stage/Horizon	1 Year 2003	3 Years 2001-03	5 Years 1999-03	10 Years 1994-03	20 Years 1984-03
Europe					
Venture Capital	-7.5	-9.0	2.3	8.3	7.2
Private equity	-0.6	-3.8	7.3	11.9	9.9
MSCI World Small Cap*	44.0	5.3	8.3	n.a.	n.a.
United States					
Venture Capital	8.1	-18.9	22.8	25.4	15.5
Private equity	18.3	-7.0	6.8	12.7	13.6
S & P 500	26.4	-5.6	-2.0	9.1	12.9
NASDAQ	50.0	-6.7	-1.8	9.9	12.4

*Annualised historic returns based on local currency prices as of end 2003

Sources: EVCA/NVCA/Thomson Venture Economics; MSCI Barra; Standard & Poor's; Nasdaq

Table 5 above presents some IRR investment horizon returns for venture capital and private equity investment together with the percentage movement of certain public market indices. For comparisons with public markets, it is customary to use investment horizon IRRs. In accordance with the practice of EVCA, the performance

of European venture funds has been presented against the MSCI World SmallCap index[6].

Not surprisingly in light of the analysis presented earlier, as a whole, the performance of European venture capital and private equity funds does not compare favourably with the MSCI World SmallCap index. In contrast the performance of US funds is clearly competitive with public equity investing when measured against the five and ten year investment horizon up to the end of 2003.

Despite the clear shortcomings of the analysis comparing venture capital and private equity funds to public equity investment, they underline the competitiveness of the US funds. The return margin produced by US venture capital funds for five and ten year investment horizons over and above public markets appear to be sufficient to accommodate an appropriate risk premium, for which 300 basis points could be given as an indicative figure.

5. CONCLUDING REMARKS

On average, the profitability of the European venture capital industry appears not to fully meet the risk adjusted return requirements of institutional investors. Historically, the returns generated by funds specialising in investment in early stage companies appear particularly poor. An investor who held a proportionate share in all European early stage venture funds in the sample in the five years up to the end of 2003, would have booked a return of –1.8%. For a ten year period, the corresponding figure would have been 1.3%. Clearly, the underlying early stage investments were not made with low return expectations in mind, indicating that, on average, the business of the investee companies did not develop the way foreseen. This in turn means, again on average, that venture backed European early stage companies were unable to overcome the challenges they faced in commercialising innovation and new technology, despite of the management support that could have been expected to be provided by the venture capitalists.

The late expansion of European venture investment in technology could have been a contributing factor in the disappointing performance of early stage investing. A relatively high share of European early stage investment could have been made during the period leading to the bursting of the technology bubble. This would mean that high prices would have been paid for investments, which only matured after the values of technology assets had collapsed leading to low investment returns.

The low profitability of the European venture industry also raises the question of whether or not the current level asset allocation to venture capital by institutional investors will be maintained and how the right conditions can be created to improve confidence. The volume of funds raised for European venture capital investment in 2001-2003 shows a declining trend for venture capital at large (chart 1) and for early

[6] It should be noted that IRR returns are net returns to investors, whereas public market index returns are expressed in gross terms before trading costs.

stage venture investment as a sub-group. During the same period, fund-raising for buyouts was able to withstand downward pressures much better. The figures do not provide comfort even if it should be assumed that at least a part of the decline in fund raising for venture capital still reflects the aftermath of the bursting of the technology bubble. As the European institutional investors develop their capabilities in alternative investing, the likelihood of their expanding investment in the US on the expense of investment in Europe could increase. In medium term, the tendency of investors to favour their home markets could be a mitigating factor.

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