Investigating the characteristics of top performing venture capital funds in Europe and USA

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Abstract

Topic

The difference in performance between European and US venture capital (VC) funds is a topic of continuing debate. This difference has led to reduced allocations of funds raised for European venture from non-governmental sources, such as the traditional institutional investors, with the consequence that there is less finance available for investment into high-growth entrepreneurial companies in Europe.

Previous work by the author and others has shown that the performance difference may be due to structural and operational factors of the VC firms and the funds themselves and the wider environments in which they operate. However, the UK, continental Europe and US each have many VC funds which perform better than other funds in those countries. Through interviewing a purposive sample of VCs and other stakeholders in those countries, and analysing the structural and operational factors pertaining to the VC funds, the attempt is made to determine the characteristics of the better performing funds and whether these characteristics differ between VC firms operating in UK, continental Europe and the US.

Aim

The aim of this research is to ascertain through interviewing VC firm executives and other stakeholders in the VC markets in Europe and USA: (1) if there are any factors that are common to the better performing funds in those countries, (2) if the performance of the better performing funds in the sample in US is in fact greater than that in UK and continental Europe and (3) if there are differences in the characteristics of the better performing funds in Europe and the US. Potential factors may be structural, resulting from characteristics of the funds themselves such as size, sector focus and partner background, they may be operational such as the investment practices of the VC firms which manage the funds, or both. By comparing the characteristics of the better performing funds in Europe and US with those of the non top performing funds, and contrasting these between Europe and the US, further insights into the difference in performance between European and US funds may be achieved.

Methodology

Using a unique dataset established through thematic analysis of transcribed interviews with 64 separate VC firms from Europe and US, the factors relating to the better performing funds in the sample were extracted and a comparison made between the better performing funds in UK, continental Europe and the US. Better performing firms in the study were defined as those were their most recent fund had top-quartile performance as compared to their peers. These were compared to firms whose most recent fund did not have top quartile performance. Characteristics of firms which had consistent top quartile performance with all of their funds and those with outstanding performance of 50% per annum returns or more were also reviewed.

Interviews were also held with 40 related stakeholders from Europe and US, including limited partner investors in VC funds, entrepreneurs, advisors to the industry and corporate venturing investment

executives. The comments of these interviewees relating to the performance differential between European and US VC funds and the characteristics of better performing funds were also reviewed.

Results

For VC firms where the most recent fund was top quartile, more top performing firms used a home run, high risk, “1 in 10” approach to making investments than non top performing firms, with a focus on outlier performance which can lead to exceptional returns. Additionally, more top performing firms used a theme approach to investing than non top-performing firms; that is they researched potential areas for investment in new technologies rather than simply following the trend.

For top performing firms (most recent fund) there were some key differences between US, UK and continental European funds, including the following operational differences, more US firms adopted a theme approach to research future investment areas than UK and continental European firms. Additionally, more UK and continental European firms used a consensus / unanimous approach to investment decision making than US firms. A senior partner at some US firms may sometimes force decision making whereas consensus decision making may “kill” outlier, and potentially super high return, deals.

Nine VC funds, all of which were funds of US VC firms, exhibited outlier performance in terms of achieving a return of greater than 50% IRR on their funds. No UK or continental European firms had funds with outlier returns. These “outlier” VCs used the theme approach for new investment areas and the “1 in 10”, home run approach to investing.

Only two US firms (one San Francisco and one New York based) and one continental European firm (Swiss based, with operations in San Francisco) showed consistency of top-quartile performance between all their funds. There were no UK firms that showed this top-quartile consistency in the sample of firms reviewed for which performance data was available.

Newer European VC firms established in the past 10 years appear to exhibit several of the characteristics of the better performing funds noted in this study.

Contribution

There are only a relatively small number of studies that seek to explain the reasons for the relative underperformance of European VC funds compared to US funds. Differences in practices between European and US VC funds have been investigated in previous studies but these are not necessarily linked to fund performance. There are few studies that have employed qualitative interview techniques to investigate VC firm investment practices. In addition few studies have ascertained the views of non-practitioner experts in the context of VC fund performance.

By adopting the characteristics of the better performing funds where practicable, particularly those characteristics evident in the better performing US funds such as the theme approach to investing and more of an outlier, higher risk approach to investing, European VC performance could potentially be improved within the constraints in which the European funds operate. This in turn could lead to increased investment in the VC asset class and improved finance for young, innovative, potentially high-growth European companies.

1. **Introduction**

Venture capital is medium to long term finance that is invested by usually independent, professional fund managers in potentially high growth unquoted companies in return for equity stakes in those companies (Arundale, 2007; Lerner et al 2012). Venture capital helps companies grow quickly and successfully (Gompers and Lerner, 2001), is regarded as a key component both in the development of an entrepreneurial economy (Mason and Harrison, 2002) and in the innovation process (Powell et al., 2002). The supply of venture capital is an important component of the so-called "funding escalator" for business growth (Mason and Botelho, 2013). This commences with the initial equity finance often provided by the business founder and his team and possibly family and friends, moving on to crowd-funding and / or business angel finance and then VC funds which specialise in seed and start-up finance. As growth continues further early stage VC may be provided and then later-stage expansion or development finance and, at the top of the funding escalator, private equity finance and the public markets.

Venture capital is itself a subset of the private equity asset class which also includes investments in later stage companies, particularly management buyouts. Many private equity, and VC funds, are constituted as limited partnerships (Gilligan and Wright, 2014), whereby investors, such as pension funds, banks, insurance companies and endowment funds (the limited partners) commit capital to funds which are managed by VC fund managers (the general partners). The limited partners typically receive 80% of the gains made when investments made by the funds are realized in excess of their cost and the general partners receive 20% of the gains (the so-called carried interest). Investors choose to allocate a proportion of their assets to private equity funds as the returns, for the private equity asset class as a whole, have historically been superior to those achieved by more mainstream asset classes such as equities and fixed income bonds.

The returns made by VC funds, within the private equity asset class, have however been generally disappointing, on average, over the last few years. For example, the latest performance data published by Invest Europe (formerly the European Private Equity & Venture Capital Association) prepared by Thomson Reuters showed that the 10 year returns for VC funds were 5.03% for the US and just 0.84% for Europe to 31 December 2013 (EVCA 2014). This relatively poor performance has led to some limited partners withdrawing from the VC asset class, whilst maintaining their support for the much better performing private equity funds which focus on later stage deals, such as management buyouts, which have returned on average 9.64% for US and 10.46% for Europe (EVCA 2014). As a consequence of the overall poor performance of European VC funds, institutional funding, from non-governmental sources, into European based VC funds, in particular, has declined in recent years. This is concerning as the continued provision of funds to finance VC backed investments is essential if the ecosystem for high growth businesses is to be maintained, notwithstanding increased activity by alternative sources of finance in the early stages of the funding escalator such as crowd funding and business angels. The relatively poor performance of European VC funds has resulted in organisations such as Nesta (an innovation foundation in the UK) and the BVCA (the professional association for VC in the UK) commissioning research into the area (Lerner et al, 2011; Axelson and Martinovic, 2013; Marston et al, 2013). The BVCA has recently published an article on the current research (BVCA, 2017b) and, though returns are now starting to improve, is encouraging debate and discussion in the area.

Whilst the overall performance of VC funds in Europe, in particular, and US has been disappointing compared to private equity funds there are nevertheless VC funds that perform well in UK, continental Europe and US. Through interviewing a purposive sample of VCs and other stakeholders in UK, continental Europe and US and analysing the structural and operational factors pertaining to the VC funds, an attempt is made in this current study to determine the characteristics of the better performing funds in those countries and to identify whether there are differences between the better performing VC firms operating in Europe and the US. Specifically, using a unique data set compiled from interviews with VC firm executives and other stakeholders in the VC markets in Europe and US from previous studies (Arundale, 2015 and 2016) an attempt is made to ascertain: (1) if there are any factors that are common to the better performing funds in those countries additional to those identified in previous studies, such as Lerner et al (2011), (2) if the performance of the better performing funds in the sample in US is in fact greater than that in UK and continental Europe and (3) if there are differences in the characteristics of the better performing funds in Europe and the US. Potential factors may be structural, resulting from characteristics of the funds themselves such as size, sector

focus and partner background, they may be operational such as the investment practices of the VC firms which manage the funds, or both. By comparing the characteristics of the better performing funds in Europe and US with those of the non top performing funds further insights into what constitutes a better performing fund may be achieved. By adopting the characteristics of better performing funds, VC funds may achieve improved performance leading to increased investment into the VC asset class and thereby continued funding for innovative, high growth companies.

Attracting increased investment into European VC funds is particularly important as, with the decline in support from the traditional institutional investors, the European VC industry has become more dependent on funds from government agencies, principally the European Investment Fund (EIF). As part of European Union initiatives to address the relative lack of venture capital in Europe compared to the US, with European VC funds substantially smaller than US funds (Lerner et al, 2011), the EIF has been providing much needed finance to VC funds in Europe (Aernoudt, 1999). VC funds in Europe have an average size of €61 million compared to $135 million in US; larger funds tend to perform better as there is then adequate capital to sustain entrepreneurial ventures through the various finance rounds as companies scale up (Aernoudt, 2017, quoting 2015 data from EVCA and NVCA). Funds raised from government agencies for allocation to European VC in 2015 were 20.6% of the total funds raised for VC, up from 7.9% in 2007, with €1.1bn of government funds being raised in 2015 compared to €0.6bn in 2007 (Invest Europe Research, 2016). This percentage allocation by government agencies may well be understated. In another presentation of their data Invest Europe quotes a figure of some 31% for the allocation by government agencies to European venture in 2015; this is after extrapolating unclassified amounts across categories of investor. The EIF itself backed 45% of funds raised by European VC firms in 2014 (36% in 2007) with 12% directly attributable to EIF (5% in 2007) (European Investment Fund, 2016). Continued support from the EIF for UK venture funds may be in question following the Brexit decision. It is therefore highly desirable for non-governmental institutional funding into VC to increase.

2. Literature review

There are many variables that can affect the performance of VC funds, including such areas as size of funds, strategy (investment stage, sector classification and geographic focus), timing and amount of VC financing provided, number of tranches of financing, capital inflow and vintage years, monitoring and control processes over portfolio companies, how VCs add value, syndication, skills / experience of the VC partners, valuation of unrealised investments, timing and type of exits, and the general economic environment. Many of these variables have been subject to academic investigation (for example see Kaplan and Schoar 2005; Lerner, Schoar and Wong 2005; Diller and Kaserer 2005; SVB Capital 2010; Ljungqvist and Richardson 2003; Gottshalg et al. 2003; Aigner et al. 2008; Lerner et al. 2011; Schwienbacher 2008; Phalippou and Gottschalg 2007),

In their study of UK and US VC funds, Lerner et al (2011) found that the better performing funds in US and UK had a number of characteristics. Continental Europe was not covered by Lerner et al's study. Lerner et al found that medium size funds, which they classify as between $84m and $365m in fund size, performed better than the smaller or larger funds outside of this range and that funds investing at the earlier stages of an investment performed better than funds investing at later stages for both UK and US funds. They found that more experienced fund managers achieved higher returns; here Lerner et al include experience in screening potential deals citing Gompers et al (2005), adding value to deals post investment (Gompers et al, 2010), having more extensive networks for sourcing deals and experience in finding co-investors and exit opportunities (Hochberg et al, 2007). Lerner et al found that experience was equally important for both US and UK funds but that the benefits of experience have become much less significant for more recent funds, that is funds of vintages later than 1997.

Lerner et al found that funds raised by fund managers whose previous funds had performed well were more likely to exhibit superior performance (Kaplan and Schoar 2005). This characteristic applied to US funds but not to UK funds although Lerner et al did not have the data for many of the UK firms with multiple funds, They found that this persistence of returns effect varied across time periods, being greatest during the period 1990-93 and lowest during the dotcom bubble period of 1998-2001, increasing again in the period 2002-05.

Lerner et al also found that fund managers located in the larger investor hubs of Silicon Valley,

Massachusetts, New York and London achieved higher IRRs than funds based elsewhere in the US and UK. Specifically they found that funds based in Silicon Valley or Massachusetts had significantly better returns than other US funds. The performance of the London funds was behind those in the US hubs but better than UK funds based outside London. They mention that the effect was most apparent in the period 1994 to 97, except that New York outperformed the other hubs in the US in the period 2002 to 05, and that for funds raised since 2005 the performance advantage of being located in Silicon Valley, Massachusetts or London was no longer significant.

Lerner et al did not, however, find any strong relationship between industry specialisation and fund performance. They did find a positive relationship between the number of partners in a firm and fund performance but this again has eroded over time.

Lerner et al state that the characteristics of better performing funds noted above only account for around 30-40% of the variation in returns across funds for both UK and US; the rest is unexplained and may be due to a combination of "unmeasured (or unmeasurable) factors and serendipity" (Lerner et al, 2011, p28). The current research investigates these possible unmeasured factors, enquiring whether there are any factors that are common to the better performing funds in the UK and US, and now also including continental Europe, that are additional to those identified in previous studies, such as Lerner et al (2011).

Lerner et al found that the best US funds outperformed the best UK funds by 89 percentage points for funds raised in the 1994 to 1997 period. They also found that the returns for the median performing US fund were 13 percentage points higher than for the UK. There was a higher variance of returns in US versus UK for the periods 1990-1993, 1998-2001 and 2002-2005, with the top performing US funds outperforming the top performing UK funds in all periods. In comparing the investment practices of UK, and also continental European, firms with those of US firms, Arundale (2015) found that US VC firms had a greater number of funds with top-quartile performance than European firms. The larger size of US funds may contribute to this difference in top performance between European and US VC funds. Lerner et al (2005) interpret that LPs who invest in larger funds tend to have higher performance IRRs on average, although this view is counteracted by later research which shows more of a concave relationship between fund size and returns (Lerner et al 2011). Kaplan and Schoar (2005) found that larger funds have significantly higher realised returns, but when funds become very large performance declines. US funds may also achieve better exits. Marston et al., 2013 conclude that UK funds take longer to achieve exits than US funds and have less profitable exits which would certainly impact on performance. Axelson and Martinovic (2013) show that Europe has a lower probability of exit via trade sales. They also comment on European VCs having less experience than the US and serial entrepreneurs being less common in Europe. Other differences that have been postulated as contributing to the gap in performance between European and US VC funds on average that may also contribute to the difference in performance between the top performing funds in Europe and US include the superior screening abilities of US VCs, the greater sophistication and better use of networks by US VCs and syndication used more effectively by US VCs (Hege et al, 2003 and 2009) and also the finding that European VCs are less "active" investors (Schweinbacher, 2008).

Whilst investigating the difference in overall performance between UK and US VC funds, Lerner at al (2011) did not specifically investigate possible reasons for the difference in performance of the top performing funds in US compared to those in UK. The current research investigates if the performance of the better performing funds for the sample of VC firms studied in the US is in fact greater than that in UK and continental Europe and if there are differences in the characteristics of the better performing funds in Europe compared to those in the US that may contribute to the performance gap between European and US VC funds.

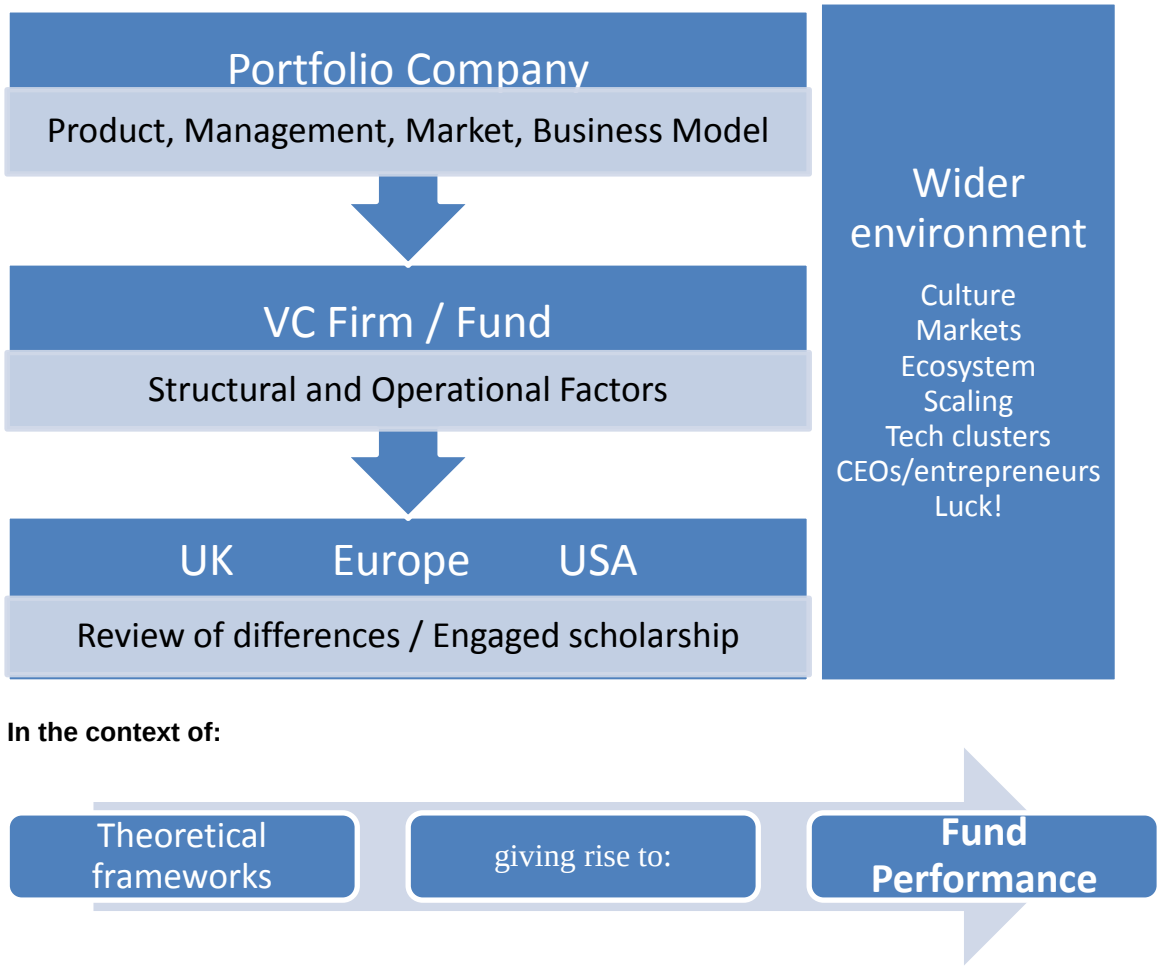
3. Conceptual framework

There is a general lack of theoretical justification provided in previous research studies which investigate the characteristics of better performing VC funds or indeed the performance difference between European and US VC funds. Whilst some research into individual aspects of the VC investment process is theory informed, theoretical discussion on performance of VC funds appears to have largely been limited to commentary on the contractual relationship between the VC and entrepreneur (for example Hege et al, 2009). Whilst agency theory and real options theory appear to be the most relevant theories applicable to the VC investment process there are other theories that

are relevant.

With so many different variables impacting on VC fund performance and the complexity of the interrelationships between the various stakeholders involved in the process (individual VCs, syndicates of VCs, entrepreneurs and management teams, wider networks, limited partner investors) a multi-theoretical framework is proposed for this research as depicted in Figure 1. The framework combines a theoretical and practical approach, embracing the concept of engaged scholarship (Van de Ven, 2007) which focuses on the relationship between theory and practice.

Figure 1: Conceptual framework



The conceptual framework is structured around the structural, operational and wider environmental factors in which VC funds operate. For example where there are differences between US and European investment practices and other areas in which the funds operate these could lead to greater information asymmetries in the European VC environment as compared to the US VC environment.

It could be that US VCs are better at dealing with the information asymmetries in these areas as is described in agency theory and as a result achieve better investment and consequently fund performance. There are other areas of difference though that extend beyond information asymmetries and agency theory. These include investment strategy and exits (real options theory), syndication (organisational and social network theories), adding value (resource-based and stewardship theories), cultural issues (institutional and human capital theories) and regulatory differences (institutional theory). In addition, prisoner's dilemma theory is an alternative to agency theory and models the social relationships between entrepreneur and VC which aids cooperation and hence mutual success and gain, that is an "upside" focus, compared to agency theory's more "downside" protection focus on

monitoring, control and ownership incentives.

4. Research methodology

Operating within the context of the critical realist philosophical framework (Bhaskar, 2011) the current study used a mixed methods approach (Creswell, 2014) with quantitative review of secondary data (VC fund performance data) and qualitative, semi-structured interviews using thematic analysis to identify emergent themes (Boyatzis,1998).

Embracing engaged scholarship (Van de Ven, 2007) with the researcher's practical experience in the VC industry (gained during a working career with PwC), the approach taken in the research was to carry out interviews of around one hour's duration with 70 senior VC practitioners from 64 separate VC firms (24 from UK, 15 from continental Europe and 25 from US). The interviews covered the entire investment process from origination through execution and monitoring to exiting deals. The interviews took place between September 2012 and September 2014. Using a unique dataset established through thematic analysis of the transcribed interviews, carried out in 2015 and 2016, the factors relating to the better performing funds in the sample were extracted and a comparison made between the better performing funds in UK, continental Europe and the US. Better performing firms in the study were defined as those were their most recent fund had top-quartile performance as compared to their peers. These were compared to firms whose most recent fund did not have top quartile performance. Characteristics of firms which had consistent top quartile performance with all of their funds and those with outstanding performance returns of 50% per annum or more were also reviewed.

Top quartile performance was determined from data provided specifically on request to the researcher by an independent data provider (covering 26 firms of the 64 firms interviewed), data from published independent performance data providers (which provided data for just one additional firm) or, for firms where no independent data was available from VC firms' own views on their performance (22 firms). No data was available for 15 of the firms interviewed, either from independent sources or internally (this was because VC firms were unable, or unwilling, to predict the quartile performance of their funds, possibly in some cases in view of the relative early stage of a fund's life). Aigner et al (2008) comment that a many funds claim to be top quartile as it is their discretion as to which performance data they use and with which peer group they rank themselves. In order to remove such bias data from the independent data provider (Preqin) is also considered separately from self-reported data in this study. Harris et al (2014) have previously confirmed the reliability of Preqin data.

Interviews with 40 related stakeholders were also held (15 from UK, 4 from continental Europe and 21 from the US). These stakeholders included limited partner investors in venture capital funds, entrepreneurs, advisors to the industry, corporate venturing investment executives and others who are deeply involved in the industry. The comments of these interviewees relating to the characteristics of the better performing funds and the performance differential between European and US VC funds were analysed.

There are relatively few studies that have employed qualitative interview techniques to investigate VC fund performance and VC firm investment practices. The majority of the existing studies use quantitative techniques on large data sets applying regression analysis of variables and/or survey techniques involving questionnaires sent to a large number of participants for completion. Muzyka et al. (1996) refer to the VC community's negative attitude towards such surveys. Whilst not specific to venture capital, Meyer (2011) has criticised research in the area of entrepreneurship as becoming too method centred and focused on the manipulation of databases which results in researchers being distanced from actual entrepreneurs. This study engages with the real world of actual VCs and not merely databases of their activities and hence there is a focus on interviews with VCs and other stakeholders. Sanders, Lewis and Thornhill (2009) quoting Easterby-Smith et al (2008) and Jankowicz (2005) state that an interview will be the most advantageous approach to obtaining data when (1) there are a large number of questions to be answered, (2) where the questions are either complex or open-ended, (3) where the order and logic of questioning may need to be varied. Where (2) and (3) are present a semi-structured interview will be the most appropriate. These three factors are all present in the current study and a semi-structured interview process was therefore adopted.

The VCs and other stakeholders interviewed in the research formed a purposive sample drawn from

membership of professional VC associations and from the author's and others contacts in the industry. The sample size of VC firms (64 separate firms) and other stakeholders (40 individuals) utilises the concept of saturation and also allows for the assessment of variation between the distinct VC and other stakeholder groups in terms of geographical location and focus. Sanders, Lewis and Thornhill (2012) suggest that where the focus of a research question is wide ranging between 25 and 30 interviews should be undertaken. The VC firms were sourced from a cross-section of stage and sector specialisms. Firms invested across the broad spectrum of IT and lifesciences, sometimes specializing in one or both of these sectors and sometimes having a narrow focus on specific areas, such as digital media. As noted above, other stakeholders included limited partner investors, entrepreneurs, advisors and corporate venturing investment executives.

5. Findings

5.1 Background

In earlier research (Arundale, 2015 and 2016) a number of areas were identified where the investment practices of European VC firms differed from those of US firms for the sample of 64 VC firms studied. These included the adoption of a high risk, "1 in 10", home run investment strategy by many US firms included in the sample with some US firms pursuing outlier deals at the behest of a senior partner without necessarily the consensual approval of the partner team, the use of "entrepreneurially friendly" terms in the term sheets of US West Coast based VC firms compared to the more "investor friendly" terms favoured by many European and East Coast based US VCs, a "theme" approach to identifying hot areas for investment used by several US VCs, the benefit "brand name" VCs, particularly in Silicon Valley, obtain for deal sourcing and the greater local sector knowledge and deep networks of US VCs that aids in-house due diligence and targeted exits. There was also some evidence that US VCs may hold onto investments until more valuable exits can be achieved, contrary to previous research showing that US VCs exit earlier than European VCs (Dantas et al, 2006).

It is well known that US VC funds are on average larger than European funds and employ more partners in their teams, characteristics that were also borne by the funds included in the above study. US VC firms also had proportionately more partners with operational and, to a lesser extent, entrepreneurial backgrounds, than European firms which may well assist in the screening and value-adding capabilities of US VCs which could contribute to the performance difference.

With the exception of fund size the above areas had not been subject to much prior investigation and were not mentioned as possible reasons for the difference in performance between European and US funds or between better performing and other funds in earlier studies such as Lerner et al (2011). They are therefore considered here in reviewing the characteristics of the better performing funds included in the current study as possible factors to be considered additional to those identified by Lerner et al.

The findings from this study, which uses the unique dataset derived from the author's earlier work as described above, are now discussed. Firstly top performing funds are compared with non top performing funds. The characteristics of consistently top performing funds and those with outlier performance are also discussed. Secondly differences in the characteristics of top performing funds between UK, continental Europe and US are discussed. Finally the newer VC funds in Europe are reviewed to see if they have adopted characteristics in common with the better performing US funds.

5.2 Comparison of top performing funds with non top performing funds

The performance of the most recent fund of each of the 64 firms included in the study was determined from either independent data, where available, or from fund manager's own views on performance as discussed in section 4 above. Some 31 firms in the total sample of 64 firms interviewed had their most recent funds with top quartile performance (13 UK, 12 US, 6 continental Europe). Independent data were available for 16 of these funds; internal data was available for 15 funds. Other firms had their most recent fund not top performing (14 funds), had views on their funds' performance but did not have firm data on performance (4 funds) or the performance was not known (15 funds).

Top quartile firms (61%) (UK 8, US 7, E 4) were more likely to use a home run, high risk, "1 in 10"

approach to making investments than other firms in the sample which were not top performing (33%). This reflects the focus on outlier performance which can lead to exceptional returns. VCs tend to pursue either a home run, "1 in 10" investment strategy when they select deals for investment on the high-risk basis that at least one out of every ten investments they make will return the fund as a whole (Zider, 1998) or they pursue the less risky, and potentially lower return basis of achieving a 2x to 5x return on all their investments (growth strategy). This usually depends on whether they are investing at early stage or later stage. Engaging real options theory VCs can choose as to whether to invest in a high risk proposal or not. A higher risk strategy, such as the "1 in 10" approach can lead to higher returns by the performance of outlier investments.

In addition, more top performing firms (39%) (US 7, UK 3, E 1) said that they used a theme approach to investing than the other firms in the sample (17%); that is they researched potential areas for investment in new technologies rather than simply following the trend. The propensity and ability of VCs to predict future investment trends does not appear to have been subject to empirical research, although Mason (2007) mentions that the sharing of information through VC networks can provide knowledge about likely technological trends to help VCs decide their investment focus. By fully researching potential themes for investment VCs can reduce the information asymmetries surrounding their investment decisions. 23 firms in the sample commented on the use of a theme approach; 17 of these were top performing, that is they had at least one fund that was in the top quartile compared to their peers. Only one firm which used a theme approach was not top performing. Four firms stated that they specifically did not use a theme approach, or "pretended to do it" in the case of one UK VC, and for one firm there was no performance data available. Of the 17 firms that were top performing some 11 of these were US firms, 4 were UK firms and 2 were continental European firms. This is consistent with the view that more US VCs use a theme approach to investing than European VCs.

There was no apparent difference between the performance of different sizes of funds in the sample studied nor the stages at which they were investing. However the sample sizes of the various size and stage categories were relatively small and meaningful conclusions may not be drawn here. Lerner et al (2011) had previously found that medium size funds, those between $84m and $365m in fund size, performed better than smaller or larger funds outside of that range and that funds investing at earlier stages of an investment performed better than funds investing at later stages.

5.2.1 Consistent top performance

Only two US firms (a San Francisco based VC and a New York based VC) and one continental European firm (a Swiss based VC interviewed at its operation in San Francisco) showed consistency of top-quartile performance across all their funds. There were no UK firms that showed this top-quartile consistency. Harris et al (2014) confirmed a persistence in the performance of US VC funds but did not investigate UK VC funds. Previously Lerner et al (2011) had noted a consistency in performance of US funds but not UK funds.

A UK LP commented about the lack of consistency in the performance of European funds:

"*You can always find European funds that perform as well as some of the US funds but what I never managed to find was consistency of performance in European funds compared to the best US funds. So we had portfolios of US funds which would consistently turn in 30% plus IRR from the same management team and we never had a European fund that did it more than… well, a venture fund, I think I'd struggle to name any one that had done it twice, to be honest".* (UK LP)
This LP indicated that successful performance of UK funds was due to luck:

"*If there were UK managers who had serially successful funds, I'd say it wasn't luck, it was the skill of the managers, but there have been too few serially successful funds".* (UK LP).

Consistent themes for the three top-performing funds in the study were that they all engaged the "1 in 10", home run, high risk approach to investing and used the theme approach for new investment areas as described above. The theme approach was specifically referred to by the New York based VC and implied by the Swiss VC *("focus on game changers"*) and the US West Coast VC ("*looking for*

something that is really significant in this day and age").

In addition these three firms with consistent top performance exhibited a number of characteristics which it has been shown are more prevalent with US VC funds than with European funds (Arundale, 2015 and 2016). They all had partners with operational and / or entrepreneurial backgrounds, in addition to those with financial and / or consulting backgrounds and had more than one partner involved on deals both pre and post investment. Whilst most VC firms have a lead partner responsible for deals from sourcing a deal through to exit, other partners were often involved at the due diligence or post-investment stages or indeed throughout the deal, sharing expertise on deals as and when required though optimal use of available human capital. The three firms also benefited from their relatively high profile and track record for sourcing deals. The brand strength of some leading VC firms, particularly those based in Silicon Valley, aids quality deal flow and optimal exits often through relationships with big corporates:

"*I certainly think a company like Facebook has had wide-ranging global impact on the brand".* (US Silicon Valley VC)

All three VCs used entrepreneurially friendly terms in their term sheets. "Entrepreneurial friendly" terms means that the valuations offered by the VCs are more attractive to entrepreneurs, often due to the competition involved in doing deals which is particularly evident in Silicon Valley, and onerous terms such as multiple liquidation preferences are not included in the offer letter. In contrast "investor friendly" terms may include lower valuations, multiple liquidation preferences, full ratchets and cumulative dividend streams.

The two US firms also carried out their due diligence on deals largely in-house. The Swiss VC did involve accounting firms and law firms to do more in-depth diligence on all investments once a term sheet had been signed.

5.2.2 Firms with outlier performance

Only 9 VC funds, all of which were funds of US VC firms, exhibited outlier performance in terms of achieving a return of greater than 50% IRR on at least one of their funds, when measured using independent performance data. No UK or continental European firms had funds with outlier returns. The 9 outlier performing US VCs returns ranged from 29.6% to 188.4% with multiples from 1.23 to 19.62.

The 9 funds with outlier performance related to 6 US VC firms as follows: 3 West Coast VCs (one with two funds), two East Coast VCs (two funds each) and a mid-Atlantic VC.

Once again, several of these "outlier" VCs had a "1 in 10", home run approach to investing (4 VCs) and used a theme approach for new investment areas (3 VCs). In addition they had partners with operational and / or entrepreneurial backgrounds (all 6 VCs), the high profile of the firms aided sourcing of deals (3 VCs), they used entrepreneurially friendly terms (4 VCs) and due diligence on investments was carried out largely in-house (all 6 VCs).

"We only invest in areas where we have the expertise in house. If we can't diligence it because it's not an area we know and understand we are not going to be helpful to the company". (US VC)

Four of the VCs had a consensus approach to approving investments. However, at one of the Silicon Valley based VCs the sponsoring partner approves the investment. At another Silicon Valley VC a senior partner can "lay across the tracks" to push a deal through which can lead to very risky investments being made which may lead to outlier returns (or substantial losses).

Of the nine funds that achieved outlier returns of greater than 50% IRR six funds had vintage years from 1993 to 1997, that is prior to the dot com bubble period of 1999 to 2001. Two funds had vintage

years of 2004 and 2010, respectively, that is after the dot com period. Funds formed in the dot com period are likely to have inferior performance as is evident from performance data on this period published by independent data providers. Four of these top performing funds continue to exhibit top quartile performance in their most recent funds, all of which are from the 2011 vintage year. The mid Atlantic based VC had only fourth quartile performance for its 2011 fund and there was no performance data available for one of the Silicon Valley VCs for its most recent fund.

The outlier performance of such super performing funds is often due to the outstanding performance of one or two investments in the fund which provide the stellar return for the fund as a whole. Indeed, two LPs interviewed mentioned that the better performance of the US VC funds was due to outliers:

"*The big outliers were in the US, the maximum performance, I think we found, was 720% IRR as opposed to European 260% IRR".* (UK LP)

Investee companies of the nine funds considered here include such highly successful companies as Facebook. It could be argued that the difference in performance between funds is due, at least in part, to the outlier performance of certain very successful investments. This could be subject to further investigation in terms of the proportion of the overall return of a highly successful fund that is due to outlier performance of one or two investments and the characteristics of the outlier investments themselves. Areas to be investigated could include whether an outlier investment results from a diversion away from the usual consensus approach to investment approval, whether the outlier performance was due to the investee company's management team capabilities in rapidly growing the business and / or due to the guidance and value add provided by the VC or whether it is due to luck.

Eight of the non VC stakeholders in the earlier study (Arundale, 2016) mentioned luck as an ingredient of their success with investments. Korteweg and Sorensen (2014) comment that VC performance is "mostly due to luck". Other stakeholders interviewed also commented on luck:

"I would say an awful lot of it is luck. That they happened to find Google, Yahoo, Pinterest, Facebook, right? Very, very early on, right? Once you're lucky, twice you're good. But I think a lot of that is just a matter of placing a lot of big, risky bets". (US Entrepreneur)

US VCs in the sample achieved more outlier returns than European VCs but this could be a result of the particular investment practices adopted by US VCs, such as the "1 in 10", home run approach to investing and the theme approach to spotting new investment trends as discussed here, rather than pure random luck at investing. Indeed, Gompers et al (2006) argue that a major component of success in both entrepreneurship and venture capital can be attributed to skill (as opposed to luck).

5.3 Differences between top performing firms in Europe and US

European VC funds have consistently performed worse than US VC funds. This gap in performance has narrowed since the collapse of the dot.com/ internet era of 1999 to 2001 but there is still a significant difference in performance between Europe and US. As reported in the June 2016 edition of the ICAEW's Corporate Financier magazine, US VC funds returned 21.5% in 2014, 18.0% over three years and 10.3% over 10 years (Cambridge Associates US Venture Capital Index) whereas UK VC funds returned 14.5% in 2014, 10.9% over three years and 4.6% over 10 years (BVCA Performance Measurement Survey, 2015). For the most recent data issued by the BVCA in July 2017 for the year 2016 (BVCA 2017a) UK VC funds returned 12.4% over 3 years, 11.0% over 5 years and 6.1% over 10 years. In comparison, Cambridge Associates data showed returns of 11.8% over 3 years, 14.0% over 5 years and 9.4% over 10 years. The UK appears to lead the US on the 3 year returns; however UK data does not include pre-1996 funds which were negatively performing at -3.2%. If these were included the 3 years returns would fall. This data illustrate that European VC funds continue to underperform US VC funds on an overall basis.

5.3.1 Confirmation of more better top performing funds in US

For 26 of the firms included in the current study, where fund performance data was provided specifically on request to the researcher by an independent data provider, 15 firms had their most recent fund with top quartile performance (US 7, UK 5, E 3), 19 firms had at least one of their funds with top quartile performance (US 11, UK 5, E 3) and 12 firms had two or more funds with top quartile performance (US 7, UK 2, E 3). There were more better performing US firms than UK or continental European firms in the sample.

When firms were asked about their own views on their performance, of the 61 firms who responded, 46% said that their most recent fund had top-quartile performance (US 60%, UK 32%, E 43%), 64% said that one of their funds had top-quartile performance (US 84%, UK 45%, E 57%) and 33% said two or more funds had top-quartile performance (US 48%, UK 27%, E 14%). Overall more US VCs stated that their funds' performance was top quartile which is consistent with the better performance of US funds shown by the independent source.

Additionally the performance of the top quartile European VCs from the independent data was lower than that of the top performing US VCs. Overall the top quartile European VC returns ranged from IRR of 13.8% to 21.4% with multiples from 1.28 to 2.16. The returns for the most recent funds of the US VCs ranged from 23.0% to 42.4% with multiples from 1.23 to 1.51, excluding the US mid Atlantic VC whose most recent fund (fund #4) had a return of -34% (this return is not so meaningful as the fund was only formed in 2011). Also from the independent data there were more US funds than European funds that had at least one of their funds with top quartile performance (US 11, UK 5, E 3) and more US funds that had two or more funds with top quartile performance (US 7, UK 2, E 3).

Whilst some US LPs who were interviewed in this study had little experience of investing in European VC funds, 6 of the 7 LPs interviewed confirmed a performance difference between European and US VC funds (US 2, UK 3, E 1) with European returns being worse than US returns overall. This is consistent with the difference in performance noted from the data above.

"*I think probably the top deciles of VCs in the US would outperform the top deciles of VCs in Europe".* (US LP)

"The European portion of (our) venture portfolio was so small it was really unfair to compare the two. But, yes, I think as a rule the US has done better than Europe". (US LP)

UK LPs had more experience of investing in US VC funds and confirmed the performance difference:

"*We have incredibly high performing US venture experience. In Europe we have some okay performing and in both the US and Europe we've got some dreadful performing. The US is quite a broad spectrum from super high performing to super terrible. And Europe is a spectrum from terribly okay to super bad performing if that makes sense". (UK LP)*

5.3.2 Operational differences between top performing firms in Europe and US

The difference in performance between the top performing firms in Europe and US may be due to operational differences, namely the investment practices adopted by the firms. For top performing firms (most recent fund) in the sample there were differences between US, UK and continental European funds in connection with the theme approach to investing, the investment approval process and the terms of investment. Each of these areas is now discussed below. The performance data was taken from both independent and internal sources.

Theme approach

More top performing US firms adopted a theme approach to research future investment areas than UK and continental European firms (US 7/12, UK 3/13, E 1/6). Leading US VCs aim to spot investment trends early. A UK VC commented that:

"*The majority of the quality venture firms actually know how to spot a trend, spot it early, and then find who are the companies worth backing; or who are the entrepreneurs in their stable worth backing into*

that trend". (UK VC)

This VC went on to say that Europe doesn't have "enough of that" and either the European VCs think that venture is about finding something "buried in a lab" or they look at trends that happened a year or two ago and try to continue the previous trend. A theme approach clearly takes resource which is more available in US firms with their relatively larger funds and teams. One US VC interviewed brings enormous resource to play in researching themes, resource that is simply not usually available to European VCs:

"About 10 times per year partners decide where to put resource to try and identify an investment thesis, whatever it takes, and present to everyone in the group a thesis with respect to is there an investable idea behind that?" (US VC)

The wider adoption of a theme approach by US VCs in the study was consistent with the interviews with non VC stakeholders. A US LP commented on how US VCs "network like crazy" using their extensive networks to establish themes. The US VCs that he deals with (based on the East coast) do not carry out market research or use consulting firms such as McKinsey to establish themes:

"*They are just sort of are out there talking to a lot of people, synthesise a lot of information, hear a lot of good ideas and a lot of bad ideas and over time I think they've just developed judgment".* The well-known VCs in his geographic area for example *"just understood social networking earlier than anybody else did and they made a series of interesting bets and they've played out incredibly well".*

A UK advisor commented on UK VCs indeed having fewer resources to spare on theme research and with US VCs having more of a "top-down" approach to investing compared to more of a follower approach in Europe:

"*That's traditional of US VCs. Something in Europe people don't do nearly as much. I think partly because they have smaller funds and therefore they have fewer resources to spare on this kind of exercise. So I think it's a question of resources, probably goes back to the question of your level of energy and aggression and I guess commercial acumen. In Europe it tends to be I think more let's try to pick an angle we think is less, you know perhaps less traded on than some others"*

Whilst some UK VCs do say that they follow a theme-based approach to investment trends it was clear from the interviews that they do not do this to the same extent of the US VCs. This is partly due to a lack of human capital resources to carry out the necessary research and partly due to the less use of, and less availability of, social networks of entrepreneurs, technologists, large technology corporates and other stakeholders to share information on new technology trends. Hochberg and Ljungquist, (2007) found that better-networked VC firms achieved significantly better fund performance.

Investment approval process

In addition to more top performing US VCs adopting a theme approach to investing compared to European VCs, more UK and continental European firms used a consensus / unanimous approach to investment decision making than US firms (UK 11/13, US 7/12, E 5/6). Whilst many US VCs in the sample reached investment decisions unanimously or by consensus, a senior partner could force a decision at 4 of the US VCs:

"*What we found was that consensus would kill the outliers. Anybody who feels strongly about something can make it happen".* (US VC)

This approach can mean that US VCs are more likely to decide to back very high risk propositions which can potentially lead to outstanding returns.

Two of the LPs interviewed mentioned that they prefer the core team, who have the largest share of the carried interest in a fund, or indeed a senior "rainmaker" to have the decision rights:

"*When you get back to the successful firms it's been our experience the more concentrated the GP decision making, obviously it has to be a good person, an experienced person that you're*

concentrating on, but if you find that special person and then they have kind of concentrated authority or responsibility in the firm then your odds of success go way up". (US LP).

In fact, one US LP said that they will only invest in VC firms where the decision making for investments (and exits) is concentrated with the founding partners who have experience and "scar tissue".

Terms of investment

The use of entrepreneurially friendly terms was more prevalent for US (8/12) and UK (8/13) than continental European firms (3/6).

"If you look at a venture deal structure, it's probably the most lenient here and it gets kind of more onerous as you go east". (US Silicon Valley VC)

Nine of the non VC interviewees agreed with this concept of the difference between entrepreneurially friendly and investor friendly terms. Of these six commented on the difference between US and Europe, with the US being seen to be entrepreneurially friendly and Europe, including UK, being seen to be investor friendly (2 VC related, 1 advisor, 3 CVCs). Europe is perhaps more cautious because of historic poor performance:

"The history and the track record of the industry in Europe is things go wrong most of the time and when it goes right it doesn't go very far. It's actually quite rational to think maybe I should be a bit careful here". (UK advisor),

and so the use of more investor friendly terms in Europe may be entirely rational in order to protect the downside investment risk.

Other areas

Interestingly, there was no meaningful difference between Europe and US top performing firms in the "1 in 10", home run approach to investing (UK 8/13, US 7/12, E 4/6) or in the number of firms where partners came from an operational and / or entrepreneurial background (UK 11/13, US 11/12, E 6/6).

Nor was there any particular focus of the 19 firms which had funds in the top quartile in terms of size of fund, stage of fund and sector focus; funds operated in a number of different categories. Lerner et al (2011) and Marston et al (2013) found that fund characteristics such as the size, stage and sector focus of funds do not explain the magnitude of the difference in performance between UK and US funds. Nevertheless, the relatively larger size of US funds than European funds would better permit US VCs to fund entrepreneurial businesses through to exit.

As noted in section 5.2 above the common characteristics of top performing European funds with those of top performing US funds are the "1 in 10", home run approach to investing, the operational and / or entrepreneurial backgrounds of the investment partners and partners working together on deals. So perhaps it is the areas where US top performing funds appear to differ from European top performing funds that is contributing to the better top performance of US funds in the sample, namely the theme approach to investing and senior partners "railroading" potential outlier deals through the approval process.

5.4 Characteristics of more recent European VC firms

It is sometimes claimed that European VCs perform worse than US VCs because the US has more experience as they have been investing in venture capital for longer:

"The US started much earlier with venture and also in a time when there was some massive opportunities and also a bit of luck involved as well" (European LP).

It could be that Europe is starting to "catch up" on the US:

"I think Europe is definitely catching up now". (European LP)

Newer European VC firms, that is those firms included in the sample which had been established in the last 10 years, from 2008 onwards, were investigated to see if they had indeed "caught up" in that they exhibit characteristics of better performing funds. There were 5 UK VCs and one continental European VC included in the sample which had been formed in the past 10 years.

"These are the new kids on the block and they are so different and they're driving a lot of this business". (UK corporate VC)

These new UK firms engaged a "1 in 10", home run approach to investing, with the exception of one firm who commented that they do not necessarily look for home runs but do look for companies where they can make a difference by helping to build the firms "*almost like we would be starting those firms ourselves".* The firms had some partners with operating and / or entrepreneurial backgrounds and partners worked together on deals, with the exception of one VC which only has one partner who is active on a day to day basis, and they generally included entrepreneurially friendly terms in their term sheets. The firms either approved deals on a unanimous (3 firms) or consensus basis (2 firms). These newer firms carried out their due diligence largely in-house.

A difference from the wider sample of higher performing firms was that a theme approach to spotting new investment trends was not evident amongst these newer VCs; in fact one firm said that, whilst they focus on various technology sectors, they do this as followers:

"When there becomes more of a groundswell of investors who want to do stuff in that space because they tell me that they think it's getting an interesting area, I follow them. I don't profess to understand what's going to be bigger". (UK VC)

However, two of the firms commented that they do focus on "world-class, unique" technology in one case or "groundbreaking technology" in the case of the other VC which would appear to indicate that they are investing towards the forefront of a trend. It could be that the newer UK VCs which had relatively small fund sizes, ranging from just £10m to £70m, and consequently fewer staff than larger VCs simply do not have the human capital and resource to be able to thoroughly research and investigate potential future areas for investment.

A feature of these newer UK firms is their sector focus. Instead of including a fairly broad range of technology sectors in their portfolio they tend to focus on specific sectors within IT such as cloud computing and software as a service, web / mobile technology or hardware. Stage focus was also a feature as the firms all invested at seed or early stages.

As the firms are relatively young they do not have the strong brand names of some of the Silicon Valley VCs included in the sample interviewed, though certainly one of them has a relatively high profile in part due to the profile of one of the partners in particular. As noted above these 5 firms have considerably smaller funds than the average of firms in the overall sample and may therefore have difficulty in following through with further rounds of finance in order to help their portfolio companies achieve scale (Coutu,2014):

"There's a massive inefficiency in the UK because you haven't got scale of funds; you're forever having to look to raise another round of funds and then another round of funds and at each break point for the next fundraising, there are valuation disputes, there are allocation disputes, it's just hugely inefficient, a huge drain on management time". (UK Limited Partner)

''In Europe you just don't find large enough VCs that could really bring you all the way up", (European VC related interviewee) that is to scale.

It is not possible to judge whether these newer UK firms are well performing or not as it is too early in the life of their funds and no independent performance data was available.

There was just one continental European VC firm included in the sample of firms interviewed that had

been established in the last 10 years, since 2008, a French VC. Like the newer UK firms this VC had a small fund size (euro 38m), focused on seed or early stage investments in a specific sector (internet), had partners with operating backgrounds and included entrepreneurially friendly terms in their term sheets. However unlike the newer UK VCs this French VC did not pursue a "1 in 10" home run investment strategy, looking for more of a 2 to 4 times return on its investments. In fact they commented that they specifically avoid "binary projects", that is either a homerun or the need to "shut down an investment and sell rapidly to a Google or Facebook", in other words their investee companies do not appear to have global ambition, at least to start with:

"*We try to invest in companies with progressive ambition, meaning that if I try to describe this ambition it could be, you know, being a French leader which would lead to a maybe 2-4x multiple. And then becoming maybe a European leader which could get you to an 8-10x multiple, you know, that kind of scenario".* (French VC)

Levie (2014) found that there has been an "ambition gap" between the UK and US post-recession which suggests that UK firms have lower levels of growth expectation, perhaps similar to that pertaining in France as noted above.

The French VC went on to comment:

"Probably the big, big difference with Silicon Valley VCs is that if you invest in something very risky, in the US you may end up getting some Twitters or Facebooks shares because you have developed the best product, because you have a nice team. In Europe that kind of scenario does not really exist".

This French VC does hold off-site meetings to think about its investment strategy in terms of a theme approach but finds it "*impossible to implement any strategy really for a VC. What you can do is react to good projects and decide to back good projects".*

The VC has a good international reputation. A US East Coast VC stated that its founder is "probably the best VC in France with a great track record".

Overall the newer UK VCs included in the sample, and a newer European VC, exhibit many of the characteristics of the better performing funds, with the notable exception of engaging a theme approach to investing, which is particularly a characteristic of US VCs at least for the sample included in this study.

6. Conclusion

The aim of this paper was to ascertain, for the sample of VC firms and funds studied, if there are any factors that are common to the better performing funds in UK, continental Europe and US, if the performance of the better performing funds in the sample in US is in fact greater than that in UK and continental Europe and if there are differences in the characteristics of the better performing funds in Europe and the US.

The study has shown that there do appear to be notable differences between the better performing funds and the lesser performing funds. These include the use of a home run, high risk,"1 in 10" approach to making investments and engaging a theme based approach to spotting future investment trends by the top performing firms. Some consistently better performing firms have more than one partner working on deals and they benefit from the high profile and track record for sourcing deals that results from high performance. These findings contribute to the literature in that these characteristics of top performing funds are additional to those identified in previous research, namely size of fund, stage focus, fund manager experience, location in a technology hub and number of partners in VC firm (Lerner et al, 2011).

There were more better performing US firms than UK or continental European firms in the sample. There were evident differences in the characteristics of the better performing firms in Europe and US, which contribute to the literature on VC fund performance as these areas have not been subject to prior investigation, notably the theme approach to researching future investment areas by US VCs

and investment approvals being forced in some cases by a senior partner which encourages outlier deals. Such areas could help to explain some of the difference in overall performance between European and US VCs funds, additional to areas developed in previous studies such as Lerner et al (2011) and Marston et al (2013), though Lerner et al and Marston et al only researched UK and not wider European funds.

Only US VCs had funds which exhibited outlier performance in terms of achieving a return of greater than 50% IRR. No UK or continental European firms in the sample of VC firms studied for which independent performance data was available had funds with outlier returns. These "outlier" VCs exhibited the characteristics of the overall better performing funds in the sample in terms of a "1 in 10", home run approach to investing and a theme approach for new investment areas. They also benefited from their high profile for sourcing deals and a collaborative approach to working together on deals. Outlier performance may be due to investing in companies that happen to generate stellar returns, such as Facebook.

US VC firms have greater resources of human capital to work on deals and may be better at optimising the use of human capital so that knowledge and talents are shared around at due diligence pre investment and monitoring and value add post investment to the overall benefit of deals and overall fund returns. Real options techniques are pertinent to the decision as to whether or not to invest in higher risk deals. US VCs in the sample studied exhibit a greater propensity for risk in terms of their home run approach to investing and they appear to seek to reduce information asymmetries by thoroughly exploring possible new investment areas and effectively utilising social networks with large technology companies, entrepreneurs, corporate VCs and other stakeholders.

It is notable that the newer UK firms, those formed in the last 10 years, exhibit many of the characteristics of the better performing US funds with the exception of the theme approach to spotting new investment trends which was more prevalent amongst US firms. It will be interesting to see if these new firms exhibit high fund performance when performance data becomes available. However, they do have smaller fund sizes (£10m to £70m) than US firms and so may not have the ability to follow through with further rounds of finance on their investments. Lerner et al (2011) show that it is the mid-sized funds that achieve the best performance ($84m - $365m).

Whilst it is not unequivocally possible to link the observed differences in the characteristics of better performing funds in Europe and US in this study to the difference in performance between European and US funds, it is clear that for the sample of VCs investigated US funds do exhibit a clear supremacy of performance overall. The different characteristics may well contribute to this difference, along with various cultural and economic differences to which reference was made by the interviewees in the earlier studies (Arundale, 2015 and 2016) of which the more open ecosystem in the US and a willingness to share talents and information, in contrast to a more proprietary culture in Europe, are particularly noteworthy.

This study has worked with a unique dataset developed from a sample of 64 separate VC funds in Europe and US and a sample of 40 additional stakeholders, which is satisfactory for qualitative purposes. However it does mean that the findings from this study cannot be extrapolated to the full population of VCs and related stakeholders. The key findings from this research, particularly the theme approach to investing, could be investigated on a larger scale using quantitative, statistical regression analysis techniques in order to assess their applicability to the full population of VCs. It is also intended to explore how traditional VC firms in the UK have changed their approach in the time since the interviews that form the dataset for this study were carried out in 2013 and 2014, and also whether limited partner investor attitudes towards European venture have shifted (BVCA 2017b)

With specific regard to the UK, whilst there remains a significant difference in performance between UK and US VC funds, there are many excellent features about the venture capital sector in the UK. These include generally adequate finance for early stage investment due largely to VC being heavily

supplemented with business angel and crowdfunding finance, there are many accelerators and a higher number of interesting companies coming through for series A and B investment. The formation of the British Business Bank, much technological innovation from the universities, centres of excellence in artificial intelligence, fintech and other areas and more people studying entrepreneurship and joining entrepreneurial companies are also welcome features of the current UK environment.

However, in order to ensure a continued supply of finance for high growth innovative companies (the potential "unicorns" of the future) it is essential that investor appetite for the UK, and continental European, VC asset class improves. This is particularly important for the UK with the possible cessation of funding from the European Investment Fund following the Brexit decision. If European funds were to adopt more of the characteristics of the better performing US VC funds, as detailed in this study, notably the theme approach to researching exciting, future investment trends, partners with operational and entrepreneurial experience with whom budding entrepreneurs can relate, and a less risk averse approach to approving deals so that potential outlier deals are not washed out of the system, then European VC returns will continue to improve and funds will flow into the asset class.

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