"In Pursuit of the Real Deal"
A Longitudinal Study of VC Decision Making

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Abstract

This paper investigates actual Venture Capital (VC) decision making as it occurs over time in its natural decision environment. Our qualitative analysis is based on a comprehensive, longitudinal data set comprising 11 years of archival data from a European-based VC firm. During this time, the VC managed two funds, reviewed a total of 3,631 deals, and made 35 investments. By adopting this research methodology, we can overcome several limitations of post-hoc methods and experiments commonly used in this research stream, and also have the opportunity to tackle some fundamental, yet hitherto elusive research topics. For example, our findings reveal how the importance of decision-making criteria varies between different stages of the evaluation process. They also show how VC portfolio composition and VC management time serve as important, yet to-date largely neglected decision-making criteria. Implications for research and practice are outlined.

Keywords: Venture Capital, Decision-Making Criteria, Evaluation Stages, VC Fund Lifecycle.

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DOI: 10.1016/j.jbusvent.2009.07.002

1. Executive Summary

The VC decision-making process and the criteria used to evaluate potential deals continue to interest scholars after more than forty years of research (e.g., Hoban, 1976; Tyebjee and Bruno, 1984; MacMillan et al., 1985, 1987; Khan, 1987; Shepherd, 1999; Zacharakis and Meyer, 2000; Franke et al., 2006; 2008). Despite the impressive progress that has been made in understanding VC decision making, a close examination of the literature reveals that extant studies rely exclusively on *post-hoc research methods* or *experiments* (cf. Zopounidis, 1994; Muzyka et al., 1996). Yet, the sole reliance on these data collection methods is not completely unproblematic, as they are associated with several methodological limitations (such as recall or post-hoc rationalization biases in the case of post-hoc methods, cf. Shepherd and Zacharakis, 1999) and, as in the case of experimental studies, the validity and practicality of the results may be questioned as a result of the oversimplification of the context under study (Heckman and Smith, 1995). Moreover, these "standard" methods in VC decision making research may (implicitly) direct researchers towards those topics that can be more readily assessed using cross-sectional research designs – resulting in similar findings and guiding their attention away from the more dynamic aspects of VC decision making.

Viewed in this light, it is not so surprising that we still lack detailed knowledge on several important questions such as whether and how decision-making criteria change at different stages of the VC evaluation process, or whether and how they change over time as VCs learn about their business. In light of these observations, we considered it important to conduct a longitudinal research study that examines actual VC decision making as it occurs over time in its natural decision environment (Fried and Hisrich, 1988). To guide our research, we asked a set of three interrelated research questions that will allow us to overcome some of the raised methodological concerns and will permit several novel insights on VC decision making:

(1) Do the decision criteria identified and deemed important in post-hoc or experimental research match the criteria VCs employ when making actual investment decisions in the real world?

(2) Do the decision criteria actually employed by VCs differ between different stages of the VC decision making process (i.e., initial screening, due diligence etc.)?

(3) Do the decision criteria actually employed by VCs change over time (i.e., between Fund I and Fund II) as the VC learns about the investment business?

To address these questions, we collected and analyzed 11 years of comprehensive archival data from a European-based VC firm. Importantly, the firm's records show what the subject of the study *actually* did or decided at the time of the event, rather than asking them to recall a distant, often non-significant event. In total, the firm had received 3,631 deal proposals over the 11 year time frame, and made 35 investments. The data set was created by first reading emails and memos, both electronic and written, in the archived deal files as well as all of the entries in the firm's deal flow data base ("action log") which contained 7,284 passages of text. The data was analyzed using qualitative methods which involved an interpretative approach to the documents containing text related to the VC's views and decisions of the deals they had reviewed (Locke, 2001; Roberts, 1997; Strauss and Corbin, 1998).

To the best of our knowledge, this paper is the first to provide a longitudinal investigation of VC investment decision making. The qualitative analysis allowed a thorough and highly detailed examination of VC decision making over the entire life of two venture funds and uncovered several novel findings, amongst them the following:

- At the most basic level we find that the main decision criteria identified and deemed important in post-hoc or experimental research are employed by VCs when making *actual* investment decisions in the real world. However, we also find evidence of new sets of decision criteria as well as VC and entrepreneur actions not previously explored.
- There are considerable dynamics in the VC decision-making criteria over time. For example, our analysis reveals that the main reasons for rejecting a business proposal in the early stages

of the fund lifecycle are not the same as the main reasons for rejection later on in the life of the venture fund.

- VC-specific criteria play an ever increasing role in the decision making process over time.
- Both entrepreneurs and VCs are subject to "rejection" at any stage in the evaluation process.
- Unlike prior depictions of the VC process, the longitudinal analysis indicates that an initial rejection does not preclude a future reassessment and ultimate investment by the VC firm.

Our findings have a number of important implications for the literature in entrepreneurship, and for practice (VCs, entrepreneurs). In addition, they point to several interesting questions for future research.

2. Introduction

Each year thousands of entrepreneurs submit their business proposals to venture capitalists (VCs) in the hope that they will receive the desired capital and access to a network that many believe will enable them to realize their commercial and financial objectives in new business creation. Given that VCs are highly selective in their funding decisions, it is not surprising that a large number of studies seek to further our understanding of VC decision making (e.g., Wells, 1974; Hoban, 1976; Tyebjee and Bruno, 1984; MacMillan et al., 1985, 1987; Khan, 1987; Hall, 1989; Hisrich and Jankowicz, 1990; Hall and Hofer, 1993; Fried and Hisrich, 1994; Muzyka et al., 1996; Shepherd, 1999; Zacharakis and Meyer, 2000; Zacharakis and Shepherd, 2001, 2005; Franke et al., 2006, 2008).

This body of research offers important insights on the evaluation criteria employed by VCs. Overall, the literature indicates that VCs emphasize characteristics of (i) the company's management team, (ii) the market, (iii) the product or service, and (iv) the venture's financial potential when making investment decisions (e.g., Riquelme and Rickards, 1992; Muzyka et al., 1996; Zacharakis and Meyer, 2000). Although each of these broad categories of criteria have often been further broken down into more specific factors by researchers over the past forty years, there are several results that continually appear in VC decision making studies. In terms of the *management team*, studies indicate that VCs prefer investing in teams with industry experience and which can draw on a mixed educational background in terms of engineering and management expertise (Goslin and Barge, 1986; Dixon, 1991; Franke et al., 2008). In terms of the venture's target *market*, the prior literature suggests that VCs tend to prefer market opportunities of considerable size and with high growth rates, as these market characteristics provide the conditions for strong revenue growth and high levels of value creation (Tyebjee and Bruno, 1981; Bachher and Guild, 1996). With regard to the venture's *product* offering, prior research shows that VCs apply evaluation criteria such as the innovativeness of the offering, its competitive advantage, some proprietary protection of the product, and the level of need a potential customer has for the offering (e.g., Wells, 1974; Khan, 1987). Finally, in terms of the venture's *financial potential*, the extant literature

highlights the importance of criteria such as the expected rate of return and the expected risk associated with these returns (Poindexter, 1976; MacMillan et al., 1985; Gompers and Lerner, 1999). In return for financing an early-stage venture, VCs typically expect a "10 in 5", i.e., VCs look for a tenfold increase in investment value over a five-year time horizon, equaling an annual compound interest of 58% (Zider, 1998).

Yet, even though our understanding of VC decision making continues to progress, a close examination of the literature reveals that extant studies rely exclusively on *post-hoc research methods* or *experiments* (cf. Zopounidis, 1994; Muzyka et al., 1996; for a detailed overview see Table 1). For a number of reasons, the sole reliance on these methodological approaches is not completely unproblematic:

Studies applying post-hoc research methods are often vulnerable to errors and biases in self-reporting, as they typically rely on cross-sectional survey or interview data where VCs were asked to list and rank their own evaluation criteria. They thus depend on the accuracy of insight of VCs into their own decision processes and therefore may suffer from cognitive and perceptual limitations such as recall or post-hoc rationalization biases (Shepherd and Zacharakis, 1999). In fact, empirical results show that VCs possess only limited understanding of their own decision process, raising additional concerns regarding the validity of self-reported data (Zacharakis and Meyer, 1998; Shepherd, 1999). For example, respondents tend to report criteria which are believed to be desirable and also tend to overstate the number of criteria actually considered in the evaluation process.

Studies using experimental approaches overcome many of these shortcomings as they rely on data that is gathered in real-time from a VC (e.g., in a conjoint experiment). Beyond simply improving the validity of past research, these approaches provide researchers with the opportunity to study hitherto unaddressed aspects in VC decision making (Shepherd and Zacharakis, 1999). For instance, in the first known application of conjoint analysis in the area of VC decision making, Riquelme and Rickards (1992) investigated the decision making of 13 VCs and found that during deal screening VCs emphasize criteria such as entrepreneurial experience and the existence of a prototype. Most recently, Franke at al. (2006)

used conjoint analysis on data obtained from 51 VCs and uncovered significant similarity biases in VCs' evaluations of start-up teams.

[[Please insert Table 1 about here]]

Yet, despite the ability of experimental studies to improve the validity of research and to offer entirely new insights on VC decision making, these approaches unfortunately suffer from their own limitations. While real-time methods collect information about the VC's evaluation as the evaluation is being made, the decision situation presented to the VC in an experiment is nonetheless one that, to a considerable extent, simplifies the VC decision task and context. In this vein, three main arguments suggest the potential limitations of findings derived from experimental VC research:

First, in their evaluation of start-ups VCs have to make complex decisions involving numerous aspects of venture proposals (MacMillan et al., 1987; Hall and Hofer, 1993); yet, in order to carry out experiments, researchers have to focus on a limited number of dimensions of the decision object (Louviere, 1988; Gustafsson, Hermann and Huber, 2007). This practice significantly reduces the complexity of the VC decision task and thus poses a potential threat to the external validity of the obtained findings (Heckman and Smith, 1995). In addition, researchers need to make judgment calls about which information to include in the presented cues, that is, the dimensions which are deemed most relevant in the particular decision task (Green and Srinivasan, 1978). These dimensions may, or may not, reflect the set of dimensions relevant in the actual VC decision. As Zacharakis and Meyer (2000. p. 342) observe: "(I)n reality, VCs would (1) have access to a multitude of possible information cues and (2) use interactive due diligence and other methods to clarify and access reliability of chosen cues. A common theme in the follow up interviews is that VCs prefer to reserve final judgment until they have a chance to meet with the lead entrepreneur."

Second, when conducting experiments researchers provide a controlled decision environment in which they seek to test their theoretical predictions (Louviere, 1988). While useful for testing some theoretical predictions, these experimentally created conditions often differ in many respects from the

naturally occurring decision context and thus may affect the external validity of the research (Brunswik, 1955; Cooksey, 1996; Heckman and Smith, 1995; Zacharakis and Meyer, 1998). For instance, when VC decision making is studied out of context, potential variations over time (e.g., criteria deemed important at different stages of the VC evaluation process) and contingent factors that may have an important influence on the actual VC decision (such as the fund's portfolio composition) will go unnoticed.

Third, experiments conducted with VCs are typically not incentive-compatible (cf. Smith, 1976), that is, VCs have to make hypothetical investment decisions which have no meaningful financial consequences. While this does not challenge the validity of experimental VC decision making research in general, for some research questions (e.g., "Which deal would you select as an investment?") incentive-compatibility is an important factor for deriving valid findings (Burmeister and Schade, 2007).

In summary, these arguments all suggest some more or less problematic limitations associated with extant research on VC decision making. In light of these concerns, it is quite surprising that, to the best of our knowledge, no research to-date has explored "actual" VC decision making as it occurs over time in its natural decision environment.[1] Notably, such research could help to overcome some of the limitations just discussed and offer much needed support for findings presented in the extant literature. Yet, beyond providing a litmus test for existing findings, our earlier discussion also suggests that a longitudinal research design has the potential to significantly improve our current understanding of VC decision making, because it gives scholars the opportunity to address some hitherto elusive yet fundamental research questions. For instance, while the VC decision making literature suggests that the importance of particular evaluation criteria may change between different stages of the VC evaluation process (Hisrich and Jankowicz, 1990; Hall and Hofer, 1993), we hardly possess any detailed evidence on this dynamic aspect of VC decision making. In addition, the importance attributed to some evaluation criteria may also change over time (e.g., over the life of a fund or between subsequent investment funds),

[1] Note, however, that there are some studies (e.g., Benoit, 1975; Hoban, 1976, Khan, 1986) in which researchers asked VCs to consider actual deals when providing answers to survey questions ("think of five deals that you have recently accepted…"). Nonetheless, these studies do not capture real decision-making by VCs and still suffer from recall biases as well as biases stemming from the selection of the deals by the VCs themselves.

as individual VCs gain experience (Sorenson and Stuart, 2001; Shepherd, Zacharakis, and Baron, 2003; Franke et al., 2008) that collectively contributes to and promotes learning within the firm (Fiol and Lyles, 1985; Levitt and March, 1988; Cohen and Levinthal, 1990; Huber, 1991; Simon, 1991).

Against the backdrop of these observations, we considered it important to conduct a longitudinal research study that examines actual VC decision making as it occurs over time (Fried and Hisrich, 1988). To guide our research, we asked a set of three interrelated research questions which will allow us to overcome some of the raised methodological concerns and will permit several novel insights on VC decision making:

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As is typical of exploratory research, we proceed by providing an overview of the qualitative research design used in this study. We present our findings in Section 4, and discuss the theoretical as well as practical implications of our results in Section 5. We conclude with recommendations for future research (Section 6).

3. Data & Method

To answer the research questions outlined above, we chose an exploratory research design which is recommended for investigating phenomena that are subtle and/or hardly understood (Eisenhardt, 1989;

Strauss and Corbin, 1998; Yin, 2003). Exploratory case study research designs have been usefully employed in a number of studies (e.g., Burgelman, 1983; Gersick, 1994; Lichtenstein et al., 2006; Steier and Greenwood, 1995, 2000). In particular, this type of research design permits a thorough understanding of the phenomena in question, which is of great importance for developing new knowledge on complex and dynamic phenomena such as VC decision making over the lifetime of a venture fund (Fried and Hisrich, 1988). By collecting and analyzing data in a single-case, longitudinal setting, the research design adopted in our study focuses on validity and accuracy rather than generalizability, and provides the basis for the development and testing of theory (Miles and Huberman, 1994; Strauss and Corbin, 1998; Yin, 2003). As this study seeks to explore the factors affecting VC decision-making over time, the use of archival data analysis is preferred over an interview approach because it allows for the collection and analysis of the different criteria and their respective frequencies over several time periods (in our case, a total of 11 years).

3.1. Empirical Setting

This study uses archival data from a European VC firm, unknown to the researchers prior to the study. The firm has multiple offices in Europe and is focused on investing in seed-, early- and late-stage companies from around the world within a specific high-tech, high growth industry. Based upon the available European fund data in VentureXpert, this firm ranks among the top performing (upper quartile) European-based VCs in terms of fund performance. Despite its success and the ability to attract limited partners for more than one fund, the firm remains relatively small, with fewer than ten VCs, their support staff, and the original founders still active in the day-to-day operations of the firm. The team is comprised of people from four different countries with each of the VCs in the firm holding a graduate degree and at least five years of relevant industry experience; the number of VCs in the firm had grown over the life of the firm in response to the increasing level of deal activity. At the time of data collection the firm had made a total of 35 portfolio investments, some of which had received subsequent funding via both internal rounds and new financing rounds, across two funds. The average acceptance rate of deals

submitted to the firm over the entire period was 1%, which is consistent with the industry averages reported in many other studies. All of the investments had been syndicated with other VC firms based in Europe and/or North America and the firm under study had acted as both the lead and co-investor, the roles divided almost equally across its portfolios. In the following, we will use the term "firm" to describe the VC firm, whereas the terms "company", "deal", and "proposal" all apply to the entrepreneurial ventures evaluated by the VC.

3.2. Data Collection Procedure

The data spans an 11-year period and includes information on deals that were submitted to the firm during the life of two venture funds. Although the same team of VCs was responsible for the management of both funds, which overlapped in time, the origination and screening phases of Fund II were not initiated until after the final portfolio company in Fund I had been selected.

The data set was created by first reading emails and memos in the archived deal files as well as all of the entries in the firm's deal flow data base ("action log") which contained 7,284 passages of text. The primary source of data was the firm's action log that the firm uses to track the progress, comments, and ultimate disposition of a potential deal throughout the evaluation process. Based upon semi-formal interviews with the VCs and administrative support staff of the firm, the firm's deal generation, evaluation and selection processes were discussed and described. Upon receipt of any proposal a deal file was created that contained all of the documents submitted by the company, emails related to the deal, and any supporting information such as industry reports and opinions from external experts. Although there was a file created for each deal, the variability across the deals (some files contained just the original submission document and a rejection letter while others included multiple versions of business plans, due diligence reports, multiple internal emails, etc.) precluded the use of these files as an effective deal tracking system. Thus, the firm had developed an internal action log that was used to record the "fundamental" information relevant to each deal. For instance, this log included information on the date the firm entered the proposal into the deal flow process, the source (direct or referral) of the proposal, the

stage of the company, the location of the company, and dated entries that recorded key comments, actions, and views of the deal as it progressed through the deal flow process. Furthermore, the action log recorded information on the final disposition of the deal (e.g., still under review or "Open", invest, or "Dead" [2]) and also captured the reasons that lead to the classification of the deals as Dead.

The number of entries in the action log ranged from a single line entry (three words) for those deals that were rejected immediately upon the initial screening to more than 40 entries (≈1500 words) in cases where a deal was subject to further evaluation and due diligence. Although the materials received from prospective companies varied considerably in detail and length (ranging from short introductory emails and one-page "teasers" to 176-page business plans), the VCs provided approximately the same amount of information regarding their initial assessment of each deal filed as Dead. Action log entries for deals that had made it beyond the screening phase into the evaluation and due diligence phases typically contained a synopsis of the VC's findings and views; a random sample of 350 deals was selected in order to compare the notes in the files to the comments entered in the action log and there was no evidence of gross omissions or any material rewording of comments, so the action log was deemed a reliable data source. In those instances when the firm requested additional information from the submitting company, the VC waited up to six months for the company to respond before categorizing the deal as Dead.

In total, the firm had received 3,631 deal proposals over the 11 years under study. The proposals originated from multiple sources: Unsolicited proposals were the primary source accounting for almost one-third of the proposals, with referrals from investment banks, consultants and other VCs collectively accounting for another third, and the final third coming from a variety of other sources. Deals that had been submitted to the firm more than one time had been listed under the original deal number in the action log; however, the dates and comments entered in the action log allowed for differentiation between each successive submission.

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[2] The term "DEAD" as opposed to rejected was a term that the firm consistently used in the action log to categorize deals that had been reviewed and, based upon reasons stated, were no longer in the deal flow process.

3.3. Data Analysis Procedure

The data was analyzed using qualitative methods (Locke, 2001; Roberts, 1997) which involved an interpretative approach to the documents containing text related to the VC's views and decisions of the deals they had reviewed. Those comments representing the firm's view or reasons, both explicit and implied, for categorizing the deals as Dead were collected along with information pertaining to the stage of the deal, the geographic region where the company was domiciled, the referral source of the deal, the date the deal was first received by the VC, and the date of the final disposition. Having access to all of the internal records and information related to each deal over the entire life of an investment fund facilitated the development of a "practical understanding" (Miles and Huberman, 1994, p. 8) of the firm's deal screening and evaluation process and the associated evaluation criteria.

Given that previous research on VC decision making had been conducted without regard for the actual VC decision making environment, the initial review of the data was not approached with an a priori list of specific criteria. However, knowing that virtually every previous study of VC decision making had reported reasons related to four broad categories (financial, market, management team, product/service), it was unrealistic not to expect them to be represented in this data set as well. As such, an initial framework consisting of these four general categories was used in order to facilitate the first fragmentation of the data. These four categories served only as a basis for the iterative process which involved going back and forth between the data, line by line, and the emergent data-specified grounded categories (Locke, 2001, p. 67) that were noted during each subsequent examination of the data – a procedure similar to the constant comparative method (Glaser and Strauss, 1967, Strauss and Corbin, 1998). This open coding process (Strauss and Corbin, 1998), and the creation of categories and the subsequent division, combination, or abolishment of the same, was maintained in successive examinations of the text. This process ultimately resulted in the development of a hierarchical organization of categories (Roberts, 1997), some of which consisted of multiple levels, which were then used to categorize the specific comments in the text (e.g., "Turn it down due to valuation", "No competitive advantage evident", "Management team lacks experience"). Each of the categories and sub-categories was given a unique code in order to enable further

statistical analysis. This process of hierarchical category development was completed for each of the resulting nine Level 1 categories (100 = Product, 200 = Market, 300 = Financial, 400 = Top management team, 500 = VC-specific, 600 = Other, 700 = No reason, 800 = Open, and 900 = Invest), of which six contained a total of 52 sub-categories across Levels 2 and 3. The final list of categories and sub-categories (together with their associated numerical codes) is presented in Table 2. A more detailed discussion of these categories will be provided in the following section.

[[Please insert Table 2 about here]]

Whenever possible, the original text was copied verbatim and the transcription ranged from excerpts as brief as a single phrase to complete paragraphs. The date that the comments were entered into the action log and any other available information was also recorded in order to retain the original context in which the comment was made. The majority of the text, even the shortest single-word comments, contained at least one word that could be grouped within one of the categories. Some of the text contained multiple reasons or relevant comments that required the use of more than one category in order to capture all of the information contained within the relevant text.

Great care was taken in assuring the reliability of the coding. Once the hierarchical categorization scheme had been developed, a random sample of excerpts from the data set was coded by a second person not involved in the study, but who had been trained in the scheme. The interrater agreement between the two raters was checked by computing Cohen's Unweighted Kappa (Cohen, 1960; Holsti, 1969). Having established a high level of reliability (K= .91) (Landis and Koch, 1977), all of text in the data set was then coded. In order to ensure reliabilty in this step of the analysis, each comment was coded more than one time. The resulting 4,942 reasons were then sorted into their respective categories across the three levels of the coding scheme; there were 1,092 deals which had been categorized as Dead for multiple reasons. Several sub-groupings of our data (reported below) were not originally envisioned, but were a result of the categorization process wherein these unforeseen results were noted. Additionally, in order to test for independence between the reasons and time, the occurrence of the stated reasons for deals being

categorized as Dead over time were compared. The chi-square statistics for multiple scenarios (using different time periods) were highly significant ($p<.001$), thus indicating that the timing of submission in the life of the firm and the stated reason(s) for classifying a deal as Dead are associated.

4. Findings

We present our findings in four sections: We begin by providing some general information on the investigated VC firm and its dealflow, and then explore the evaluation criteria actually employed by the VC (Research Question 1). Making use of the longitudinal nature of our data, we continue with a detailed analysis of the evaluation criteria used at different stages of the VC decision-making process (Research Question 2). We conclude our investigation with a detailed comparison of VC decision making in Fund I vs. Fund II, seeking to understand whether the VC firm demonstrates consistent behavior with respect to the relative importance of the evaluation criteria as it gains experience (Research Question 3).

4.1. General firm and dealflow characteristics

Over the 11-year timeframe investigated in this study, the VC firm had received and reviewed a total of 3,631 deal proposals, which corresponds to an average of 330 deal proposals per year. Yet, as one might expect, the number of proposals received over time increases as the newly founded VC firm became more widely known in the industry and among entrepreneurs. Table 3 provides a detailed overview on the yearly deal flow, as recorded in the VC firm's action log. Table 3 also indicates that between 0% and 3% of submitted deal proposals resulted in investments by the VC firm, with an average deal acceptance rate of 1%. The highest rates of deal acceptance (3%) were recorded in the start-up phase of the VC firm, that is, in years 2 and 3 of Fund I, which were preceded by a year with no investments at all (the firm's initial year in business). Deals that were ultimately categorized as Dead remained in the deal flow process (i.e., the time period from the firm's initial receipt of the deal documents until the deal was recorded as Dead in the action log) between 0 and 24 months, with an average of 1.8 months. Deals selected as portfolio companies were subject to evaluation for up to 28 months, with an average time of 7.8 months.

[[Please insert Table 3 about here]]

In order to provide a more complete picture of the firm's decision making, three other notable yet hitherto largely undocumented findings – multiple submission attempts, open door rejections and lost opportunities in the deal flow – merit being highlighted.

Open-door rejection. Throughout the data set there were comments that showed that "no" in the VC context is not always a definitive rejection. Although the overwhelming majority of deals rejected by the VC were given no indication of any potential future interest, there were comments in both the internal records and the letters of rejection to companies that provided evidence of the VC's willingness to reconsider the deal at a later time. In instances when the VC firm saw potential promise in a deal, they not only told the company why the deal was being rejected, but also provided very specific feedback with respect to the firm's interest, when the company should resubmit, and any necessary milestones to be achieved in order for the firm to pursue a subsequent evaluation. The VC's log provides several interesting illustrations of this issue:

> *"Interesting concept but too early stage,…should come back in second round."*
> *"Proof-of-concept in maybe about 9 months, company shall come back then."*
> *"Does not really fit our portfolio at the time, but stay in touch."*

Even though the firm had "left the door open" with many deals (n=146), there were only 22 instances where these companies submitted their proposals to the firm a second or third time; one of which was ultimately accepted as a portfolio deal. This low response rate may be due to a variety of factors not related to the VC firm's comments or request, and can only be captured through contacting the companies directly. This finding, while new to the literature, is not altogether remarkable when one considers the difficulty and time requirements associated with sourcing quality deal flow, the potential need to identify complementary skills or products to help existing portfolio companies, and the value of access to information about emerging companies and/or technologies.

Resubmissions over time. Prior research suggests that once a deal is rejected by a VC, there is little to no chance that this particular VC will review the deal again, let alone provide funding for it. While we already noted that there were 146 open door rejections, our longitudinal data allows us to track whether rejected deal proposals were resubmitted to the VC firm. Table 4 indicates the number of times the VC firm had received a deal.

[[Please insert Table 4 about here]]

Two observations are particularly interesting: First, an astoundingly high number of proposals (n = 438) were submitted to the firm *more* than once. Second, the VC firm invested in approximately the same share of these resubmitted deals as in the original deals (1% in the second submission attempt, and 2% in the third submission attempt), despite having initially rejected the deals (Steier and Greenwood, 1995); the one exception being the successful fourth submission (7% acceptance rate), which is due to the fact that the deal that ultimately received funding was one of only 14 proposals sent to the firm four times.

Lost opportunities in the deal flow. Perhaps one of the most unexpected and instructive findings regarding VC decision making is that although this VC firm, like most others, had only invested in roughly 1% of the deals reviewed, the remaining 99% classified as Dead had not all been rejected by the firm. Rather, a relatively large share of all received deal proposals – about 10% of the 3,631 deals – were classified as Dead because the VC firm no longer had the opportunity to pursue them. These lost opportunities occurred throughout the evaluation process ranging from the first two months (screening phase) to as late as twenty months (due diligence phase) in the process.

There were many reasons for these lost opportunities, yet half of these cases were simply because the respective companies failed to respond to the request for additional data. Despite the VC's efforts to receive more information and maintain a dialogue with these companies, a surprisingly large number (n=192, or 5%) *never responded* to the VC. The following quotes from the action log illustrate this point:

"No response to request for more detailed revised business plan."

"No response since sending out confidentiality agreement."

"'Interesting but non-responsive company."

It is important to note that all of these deals had been sent to the VC firm unsolicited and the firm waited almost half a year, often sending additional requests in the interim, before categorizing the deal proposals as Dead. Without contacting these companies, it is not possible to know exactly why they failed to respond to the VC's signal of potential interest. Yet, judging from the comments regarding other deals that did not go forward, a few potential reasons for non-response could be (i) the requested information was unavailable or too difficult for the company to compile, (ii) the company received funding from another source, (iii) the company went bankrupt in the meantime, or (iv) that the company's management had changed their mind regarding the raising of external funding in general.

The remaining 5% of these "lost" deals can be attributed to decisions made by the company with respect to VC funding in general or, in some cases, with respect to the VC firm in the study:

"Dead Company decided to go with alternative VC deal."

"Company unwilling to accept certain Term Sheet conditions."

"Finance discussions with unknown competitors. Company might come back, no response (after 3 months)."

However, unlike the previous sub-group of lost opportunities, this second sub-group of companies had progressed through the evaluation phase and was often in the due diligence process, or even in the final stage of investment consideration. This distinction is important, because it implies that the VC firm had already expressed a genuine interest in the deal and that it had also expended a substantial investment of time and financial resources in their pursuit of these opportunities.

4.2. Decision-making criteria

Next, we analyze the decision-making criteria used by the VC. As can be seen in Table 2, the four major categories of criteria that have consistently been reported in the literature are present in this study. In particular, the table shows that a company's (i) product/service characteristics, (ii) target market characteristics, (iii) financial potential, and (iv) management team characteristics were cited as criteria

used by the VC firm when evaluating deals. The frequencies of these primary categories of criteria across the two funds are reported in Table 5.

[[Please insert Table 5 about here]]

Several results stand out and warrant a closer examination. First, Table 5 reveals that VC fund-related reasons – a set of VC decision-making criteria largely neglected in prior research – are the overall most important decision criteria with respect to rejecting a deal. This is a key new insight. In particular, the longitudinal data reveals that these reasons gain in importance over time, and we will discuss these dynamics in more detail below.

Second, we see that the typically referenced reasons for deal acceptance also appear to be important to VCs when they are screening-out deals. The characteristics of the company's product/service were considered to be one of the primary reasons for rejection over the decision-making phases of both funds. A good management team pursuing a potentially profitable idea may be enough to generate interest in an opportunity, but VCs earn their profits through cashing-out of portfolio companies in the financial and commercial markets where valuations are typically based upon the demonstrated quality of a product. Thus, if the VC does not see any merits or advantages of a particular product, they appear to reject it regardless of the other factors in the deal.

Third, the one finding that at first appears counter to the majority of previous research is the frequency of comments related to the characteristics of the management team (n=93). The reasons stated (e.g., *"Lack of management team experience", "Need of restructuring board and exchange CEO*") by the VCs do reflect the criteria reported in previous studies. However, the frequencies are substantially lower than one might expect given the high importance attributed to the management team in previous research (Bruno and Tyebjee, 1986; Khan, 1986; Poindexter, 1976; Robinson, 1987; Wells, 1974).[3] This seems to

[3] Two exceptions are Hall and Hofer (1993) and Muzyka et al. (1996). Hall and Hofer reported that the "criteria relating to the characteristics of the entrepreneur or founding management team did not play a major role in the proposal screening and proposal assessment stages of the venture evaluation process" (p. 39). Muzyka et al. (1996) also reported that although criteria related to the management team were generally rated as important, there was "disagreement about the relative importance of the top eight criteria, including the five management team criteria" (p. 283). Notably, the results of our study include deals that were rejected

be a result of prior research being primarily interested in the factors related to deal acceptance, whereas our study also captures the reasons for rejection. The few cases in the dataset may simply represent those where the management team is an obvious disqualifier such as *"CEO does not have the best reputation"* and therefore is considered a knock-out criterion. Additionally, the character and skills of the management may not come into play until the other criteria related to the product, market and financial potential are fully evaluated. When we asked VCs within this firm about the relative significance of the management team, one of them noted: "We have a list of experienced managers and you can always bring in a management team". This may explain the apparent increased emphasis on the product and market characteristics over those of the management.

In addition to these four sets of decision criteria reported in the literature, we also find two sets of criteria that, although somewhat intuitive in nature, have been largely neglected in prior research on VC decision making: VC portfolio composition and VC management time.

VC portfolio composition. Throughout the entire 11-year period there were deals that were rejected because the product focus, geography or company stage was not in line with the overall firm strategy. Yet, as the fund progressed into its latter phases, approximately 5% of the deals categorized as Dead were the result of constraints or conflicts imposed by the character of the existing portfolio. In the most general terms, the comments related to the portfolio simply stated that the deal *"does not fit our portfolio of current fund*" without reference to any specific reason. More specifically, the existence of deals deemed to *"compete(s) with the existing portfolio", "too early for the fund",* and *"(i)nteresting company but located in USA, portfolio concentration on companies located in Europe"* demonstrate that the composition and maturity of the portfolio further constrain and thus affect the decision-making process. These portfolio-related reasons were not limited to the firm under study as similar comments were also stated by other VC firms with whom the firm under study wished to syndicate *(e.g., "no interest due to portfolio balance", "Other VC was so far not interested for portfolio balance reasons").*

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at all phases of the decision-making process, not simply the screening phase where it had been previously shown that VCs may not focus on the management team.

These observations suggest that the impact of the portfolio on the decision-making process may be widespread across the industry.

There are positive aspects to this VC portfolio-specific factor as well. Comments from both funds provided evidence of times when the firm expressed interest in a deal because of the potential synergies with an existing portfolio company. Judged on its own merits, a company was not considered a viable opportunity as a standalone business. Yet, because of the possible synergies or value-add that the company could provide to one of the portfolio companies, the VC was willing to pursue the deal further. It is important to note that even though the character of the portfolio has been discussed in terms of syndication and managing overall portfolio risk (Bygrave, 1987; Lockett and Wright, 2001; Manigart, Lockett, Meuleman, Wright, Landstrom, Bruining, Desbrieres, and Hommel, 2006), there is little mention of this important issue in the VC decision making literature. For example, in their discussion of criteria found to be important in previous studies, Tyebjee and Bruno (1984, p. 1053) find that it "is interesting to note (…) that none of these criteria reflects how a perspective deal may correlate with one already in the venture capitalist's investment portfolio". Interestingly, on those few occasions when portfolio-related criteria have been included in a research study, the results have been quite inconclusive, with Tyebjee and Bruno (1984) reporting that 53% of the respondents did not evaluate the extent to which a potential deal offset the risk of the existing portfolio, and Muzyka et al. (1996) noting that the fit between a deal and the fund was rated as a "second-order" issue amongst VCs in Europe.

VC management time. Although the number of specifically stated cases is quite small (n=66), there were times when the VCs within the firm simply did not have the available time to adequately pursue a potential deal, even when the deal was acknowledged to be potentially viable. Examples in the firm's action log of instances when the VC availability was the critical decision factor include:

"Interesting but time constraints due to other due diligence."

"Rejected due to high activity on other deals at this time."

"Were too occupied with four own closings to participate."

Similarly, during these periods of increased activity, deals that were viewed as potentially time consuming were rejected despite any potential interest, whereas they may have been pursued and evaluated further at a time with less activity. The perceived need for active assistance and hands-on participation from the VC team was typically due to either the stage of the company (*"will need severe hands-on involvement (seed stage/start-up stage)*"), or the perceived ability of the management team (*it has high potential but this team, from my impression, is not capable to leverage it – very much hands-on work & stirring will be required"*), as opposed to market or financial reasons. These comments, which focus on both the characteristics of the company's management team and the VC's perception of the amount of time required to monitor or manage the deal, demonstrate that a combination of company and VC-specific factors may be judged in relation to each other in the decision-making process.

4.3. Criteria at different stages of the VC decision-making process

The decision-making process observed in this VC firm largely resembles the process previously described in the literature (Wells, 1974; Hall, 1989; Tyebjee and Bruno, 1984; Riquelme and Rickards, 1992; Fried and Hisrich, 1994). Each deal received by the firm is subjected to an initial screening, with those deals considered interesting being evaluated further and, if interest remains, becoming the subject of an extensive due diligence. In successful cases, the VC and the company negotiate specific deal terms and, if agreed, the VC makes an investment in the company. VCs at this firm estimated that about 20% of business proposals made it past the screening phase, and about 10% received a preliminary investment recommendation, that is, an internal document sent by the "sponsoring" individual to the investment committee. These numbers also correspond to those frequently reported in the literature on VC decision making (e.g., Roberts, 1991), suggesting the importance of research on the criteria used for deal rejection. Upon closer analysis of the data we find that approximately 60% of deals received by the firm for the first time are rejected within two months and a total of 92% of deals are classified as Dead by the end of the sixth month. As depicted in Figure 1, two-thirds of the remaining eight percent of surviving deals are decided upon between six and twelve months, with only two percent of the original proposals remaining in the deal flow process for up to 24 months. This would indicate that less than ten percent of the deals

make it to the final phases of the evaluation process, which is not altogether surprising given the time, effort, and expense required of the VC when conducting in-depth due diligence on a deal.

[[Please insert Figure 1 about here]]

We then looked at the decision criteria associated with each of the aforementioned time periods. As indicated in Figure 1, during the first six months of the evaluation process criteria related to product characteristics were amongst the top three reasons for rejection. In the latter stages of the process, however, we find that criteria related to the financial valuation and deal structure as well as non-responsive firms dominated the top three reasons. Again, it should be noted that contrary to most prior findings (e.g., Wells, 1974; Poindexter, 1976; Zopounidis, 1994), the quality of the management team was not a primary criterion for rejection at any phase of the evaluation process.

We then grouped all of the deals according to the submission attempt (first through fourth) and calculated the time that each deal, by submission group, remained in the evaluation process. Although the percentage of deals eliminated at each time period is similar across the four different submission subgroups, the average time these deals spent in the evaluation process decreased with each successive submission – with the times ranging from 1.9 months for an initial submission to 1.3 months for a deal submitted four times. One finding that was not expected was that product-related reasons also featured amongst the top three reasons in deals submitted to the VC a second and third time, with VC-specific reasons only dominating the few deals that were submitted by companies a fourth time.

4.4. Fund to fund evaluation (Fund I vs. Fund II)

An implicit assumption in the literature is that VC decision making is consistent over time. Yet, as previously discussed, we find that the relative importance of selected criteria does not appear to remain the same from year to year. Previous studies have described a somewhat standardized VC decision making process (Tyebjee and Bruno, 1984, Fried and Hisrich, 1994) and a range of typical activities engaged in by VCs (Gorman and Sahlman, 1989, Gifford, 1997). So, just as many past studies have found

similar results across different VC firms, we would expect the results between two funds to be quite similar as well. However, despite many similarities in terms of the geographic location of the deals received, the referral sources of the deals, and the number of portfolio investments, we find some interesting differences between the two funds.

Frequency of reasons. While the overall incidence of deals being rejected on account of VC-specific reasons was approximately the same for both funds, the distribution across selected reasons in this category was quite different: First, the frequency of rejections based upon criteria related to the fund portfolio (e.g., not appropriate for fund at this time, too early for fund, no funds remaining for region) doubled in Fund II relative to Fund I, eight percent versus four percent respectively. Second, from the perspective of the VC being rejected by the company (e.g., not invited to participate, deal closed by another VC) we find that there is also a two-fold difference between funds, but in this instance it is Fund I (17%) that recorded a higher frequency than Fund II (8%). This greater occurrence of the VC being rejected by companies in Fund I may be attributable to the firm's lack of track record, lack of legitimacy within the highly networked VC industry, and low awareness amongst entrepreneurs, all of which stem from the newness of the firm (Stinchcombe, 1965; Singh, Tucker, and House, 1986; Hannan and Freeman, 1989; Baum and Oliver, 1996). Additionally, the percentage of open-door rejections more than doubled between Funds I (2%) and II (5%). This increased level of feedback to prospective Dead deals combined with the observation that the percentage of non-responsive companies decreased by fifty percent in Fund II further demonstrates a more proactive deal origination activity on the part of the VC during the second fund.

Average time in deal flow. Over the life of the first fund the deals ultimately categorized as Dead remained in the deal flow process an average of 2.5 months, whereas in Fund II Dead deals lasted, on average, only 1.6 months. An increase in the average number of deals per month between Funds I and II may lead one to assume that there will be instances when a deal is left waiting for review by a VC (Shepherd, Armstrong and Lévesque, 2005), but in this case the number of VCs in the firm also increased over the 11 years, so the deals to VC ratio remained relatively constant each year. This difference in

timing is quite evident when viewed in terms of the percentage of deals being eliminated in the early stage of the evaluation process, with approximately 54% of the deals classified as Dead after two months during Fund I compared to 66% in Fund II. Moreover, the time spent evaluating deals that ultimately received funding increased between the two funds, with portfolio companies in Fund I being accepted after an average of seven months while the evaluation of accepted deals in Fund II lasted an average of nine months. Thus, over time, the VCs in this study appear to require less time to identify a weakness in a deal, which may be a result of greater intuition gained from their deal evaluation experience (Khan, 1987; MacMillan et al., 1987; Zacharakis and Shepherd, 2001; Shepherd et al., 2003). This phenomenon is similar to the learning-curve, or repetition-based, performance improvements leading to reductions in labor costs and production times (Yelle 1979; Dutton, Thomas, and Butler 1984; Levitt and March, 1988; Huber, 1991).

The additional time spent evaluating high potential deals in the overall deal flow process may be a result of the VC gaining experience in deal evaluation and portfolio management within Fund I, which in turn allows the VC to spend additional time on pre-investment activities in Fund II (Tyebjee and Bruno, 1984; Gifford, 1997; Shepherd et al., 2005) and also helps the VC to avoid the costs associated with an investment in an unsuccessful venture (Riquelme and Rickards, 1992).

Initial incidence of criteria. When comparing the initial occurrence of the specific criteria across the two funds (when the VC first recorded a specific reason in the action log in each fund), we find that in all but three instances the first mention of each evaluation criterion occurs several months sooner in Fund II than in Fund I. This result is quite unexpected considering the similar character of the two funds. The three exceptions first occurring earlier in Fund I were all related to the quality or character of the company's management team, the category that ranked the lowest in terms of frequency over the eleven years of the study.

Perhaps most telling are the various criteria concerned with the investment focus of the firm. In addition to being cited much more frequently in Fund II, all of these criteria were mentioned within the first four months of Fund II, as opposed to an average first incidence of 12 months in Fund I. Part of this

dramatic difference may be explained by the previously discussed 12% increase in the percentage of deals being eliminated during the first two months of Fund II, which, when combined with the fact that that there were more deals in Fund II, results in an increase in the total number of reasons being mentioned in the earliest phase of the fund. However, a more plausible explanation for this more pronounced early identification of ill-fitting deals is the VC's increased experience, which also contributes to a more focused investment strategy (Robinson, 1987; Gupta and Sapienza, 1992) in subsequent funds. We also find that the first investment in Fund I occurred within the first 18 months compared to 30 months in Fund II – further evidence supporting the view that the VC's decision making had become more discerning over time.

5. Discussion

5.1. Summary of key findings

This paper reported the results of an in-depth, longitudinal study of VC decision-making across an 11-year period in one VC firm. One of the core strengths of a qualitative research approach is its rich and detailed analysis of the phenomenon under study, providing us with the opportunity to address several outstanding issues in the VC decision making literature. At the most basic level we find that the main decision criteria identified and deemed important in post-hoc or experimental research are employed by VCs when making *actual* investment decisions in the real world. However, we also find evidence of new sets of decision criteria as well as VC and entrepreneur actions not previously explored. The present study also allowed us to gain new insights on the decision criteria actually employed by VCs over time, in two distinct ways. We find differences in the apparent relevance of criteria at different stages of the VC decision making process within a single fund as well as within the same stages across two funds.

We summarize the major findings of our research in the following five bullet points, and will comment on their implications for entrepreneurship research and for practice below.

- There are considerable dynamics in the VC decision-making criteria over time due to fund-related and other factors (e.g., management time). We have seen that the main reasons for rejecting a

business proposal in the early stages of the fund lifecycle are not the same as the main reasons for rejection later on in the life of the venture fund.

- VC-fund related reasons play a major role in deal rejection. In particular, they gain in importance over time as VCs construct their portfolios. The composition of a VC's portfolio can thus have a strong influence on both deal acceptance and rejection.
- Product/service-related criteria also play a key role in business proposal rejection. However, the management team does not appear to be a major factor compared to the other factors.
- To a considerable degree, VCs themselves are subject to rejection from companies in the process. In other words, VCs frequently lose promising investment opportunities.
- Unlike prior depictions of the VC process, an initial rejection does not preclude the potential for a future reassessment and ultimate investment by the VC firm.

When viewing the reasons for deal rejection over any extended period of time one should not ignore the potential impact of the macroeconomic environment on the decisions made by the VCs within the firm (Gompers and Lerner, 2004). The depiction of the results in Figure 2 do appear to indicate that the quality of the deals, and as a result the reasons for rejection, may be influenced by the wider economic environment. Specifically, the economic environment in North America and Western Europe in years six and seven of the observation period was characterized by a considerable increase in the amount of available VC funding as well as a large number of people developing business plans designed more to exploit the euphoric economic times than to establish businesses based upon a sound business model. Compared to earlier periods, it is thus not so surprising that Figure 2 indicates an increased incidence of concepts and products being characterized as "lacking differentiation" or "not compelling". Similarly, albeit to a lesser extent, it is during this same period that the number of deals being rejected as a result of the market being deemed "too crowded" also increased. Yet, while there appears to be an influence of the macro environment on the frequency of these reasons for deal rejection, the archival data does not provide

any evidence that would suggest that the firm adapted its decision process to the changing environmental conditions.

[[Please insert Figure 2 about here]]

While some of the aforementioned differences may be influenced by a combination of the characteristics of deals received and the fund's portfolio, not to mention additional stakeholders, we believe that the differences identified between the two funds, and to a lesser extent over time within a fund, may best be explained in terms of organizational learning. Viewed from the learning perspective offered by Levitt and March (1988, p. 320), "…organizations are seen as learning by encoding inferences from history into routines that guide behavior", the differences identified over time may be viewed as a response to the experiences gained in the initial years of the firm. Although there has been relatively little mention of organizational learning within the context of VC firms (Chan, Siegel and Thakor, 1990; Bergemann and Hege, 1998; Sorenson and Stuart, 2001), VC firms may have a higher capacity for learning than other firms given their organizational structure, investment strategies, and the nature of the VC environment (Fiol and Lyles, 1985; Grant, 1996).

In this vein, the observed changes over time may result from the VCs involved in the process performing their duties, reflecting on what they have done, and then either doing different things or conducting the same activities differently based on their reflection (Feldman, 2000). So, even if one acknowledges that "all learning takes place inside individual human heads" (Simon, 1991, p. 125), the linkage between the VCs and the firm's routines is extremely high as the organization is made up of one group that is focused on a common objective. Thus, even though the routines remained relatively constant over time, the behavioral changes with respect to timing and frequency of criteria may be a reflection of the interconnectedness of the close-knit team that makes up the firm, which enhances the firm's learning potential and organizational memory (Simon, 1991; Tsang, 1997) as well as organizational unlearning (Nystrom and Starbuck, 1984; Huber, 1991).

It is important to note, however, that while individual experience and organizational learning within the firm may offer plausible explanations for some of the differences identified within and between funds, there is no guarantee that the VC's decisions and the resulting firm performance were improved. To the contrary, individual experience does not necessarily guarantee an improvement in behavior or reliability (Levitt and March, 1988; Shepherd et al., 2003), which may be the result of an undersampling of failure (Levinthal and March, 1993; Denrell, 2003) that leads to increased confidence based upon those decisions that proved to be correct or successful rather than from a wider range of deals. Additionally, the impact on organizational performance as a result of learning, although commonly assumed to be positive, depends upon many contingencies (Lawrence and Lorsch, 1967; Fiol and Lyles, 1985; Grant, 1996) and does not always lead to overall improvements (Huber, 1991; Tsang, 1997; Dencker, Gruber and Shah, 2009).

5.2. Implications for entrepreneurship research

To the best of our knowledge, this paper is the first to provide a longitudinal investigation of VC investment decision making. We believe that several insights obtained from the analysis provide a contribution to the literature in entrepreneurship.

First, research on VC investment syndication (Bygrave, 1987, 1988; Lockett and Wright, 2001; Mäkelä and Maula, 2006; Manigart et al., 2006; Guler, 2007) has shown that positive investment decisions may be influenced by other VCs within the industry. Based upon many of the comments associated with the deals categorized as lost opportunities, our findings suggest that, in addition to other VCs, multiple stakeholders including the boards of directors of the companies seeking funding, external experts and the management teams of portfolio companies have an effect on Dead deal decisions as well. Thus, the influence of multiple stakeholders across a broader network (Ahlstrom and Bruton, 2006) should be considered throughout the decision making process, not just in the later deal structuring stage and subsequent post-investment activities.

Second, our findings extend prior conceptualizations of the VC decision-making process by showing that – for a variety of reasons – the importance of decision-making criteria can significantly change over the lifecycle of a fund. We saw that developing and managing a portfolio as well as times of increased deal-related activity can place important constraints on the resources of the VC firm such that there is less time to spend screening and evaluating new deals. Beyond these resource constraints affecting VC decision making, however, there are potential path dependencies that come into play over time, as VCs will take into account prior investment decision.

Third, our findings on the apparent lack of VC management time add to the existing literature studying VC time allocation. As such research has typically been concerned with the management of the fund's portfolio (Gorman and Sahlman, 1989; Jääskeläinen, Maula, and Seppä, 2006), our study provides evidence that both pre- and post-investment activities (Gifford, 1997; Shepherd et al., 2005) may influence the decisions of the VCs within a firm.

Fourth, VCs are assumed by many to be expert decision makers and VC firms are commonly judged by the performance of their portfolios, which only represents one percent of the deals reviewed, with little to no consideration for the other 99% that were not selected. That said, this study reveals that not all dead deals are the result of rejection by the VC, so researchers should be wary when collecting and interpreting data related to deal acceptance/rejection rates.

Fifth, there is a larger overriding question within the literature regarding the relative importance of the management team in VC decision making. While the literature typically views team quality as a key factor in the evaluation process, there is also evidence indicating that VCs often replace members of the management team and/or the founders before and after an investment is made (Bruton, Fried and Hisrich, 2000). For instance, during the exploratory interviews for this study one French VC stated that "most of our portfolio firms will have three CEOs, one for the early stage, one for the growth stage and then one who can sell the firm". The research on the dismissal or replacement of the CEO and other top management by VCs following an investment in the company (Fiet, 1997; Bruton et al., 1997, 2000) also calls into question the actual significance of the management in the eyes of the VC. Specifically, Bruton

et al. (1997) found that replacing the CEO had a very positive impact on the new venture, while Dixon (1991, p. 372) reported that, "(a)lthough the VCs evaluate the management team of the investee company very hard, 73% of the sample said that they had found it necessary to replace management at some point after investment had been made". If either of the aforementioned results is a reflection of the actions of the VC community as a whole, then additional research is required to address this apparent paradox with respect to the importance of the management team at various stages of the relationship with a VC firm.

5.3. Practical implications for entrepreneurs and VCs

Based upon this research, the most important, yet basic advice to entrepreneurs is to maintain communication with the VC if they have expressed interest in the deal. It is all too easy for a VC to reject a proposal, so when a VC takes the time to request information or provide feedback and encourages someone to come back, it is a sign that the deal is still being considered. The entrepreneur might thus even have some influence on the VC decision-making activity due to his social engagement with the VC firm (Guler, 2007). In this vein, Steier and Greenwood (1995) found that relationships with VCs can supersede business plans in securing VC investments. Hence, keeping in touch with the VC and building a relationship of trust could prove to be a valid strategy of securing VC financing. Further research is needed, however, to provide more detailed insights into this matter.

Our findings also indicate that entrepreneurs should spend time learning about the firms they send their proposals to in order to tailor their documents to the current phase of the fund and/or requirements of each firm. Two firms with similar investment strategies may view the same proposal quite differently simply by virtue of the fact that they are focused on different criteria based upon the lifecycle phase of each firm's fund. Even though the numbers are not exactly cause for celebration, the fact that many of the deals categorized as dead were the result of action by the company rather than rejection by the VC should provide evidence that the world of VC is both a buyer's and a seller's market, and that the probability of success may be greater than previously believed. Furthermore, entrepreneurs should also be aware that

there will be instances when he is basically at the right place at the wrong time: their business proposal is compelling, yet the VC firm does not have the available time to deal with it diligently.

From the perspective of the VC firm, our findings suggest that VCs should evaluate their existing management capacity and develop strategies to accommodate for times when they experience increased deal flow, above average due diligence activity or number of deal closings, and hands-on management of the portfolio firms. While there has been limited research on how VC firms are organized and managed (Gorman and Sahlman, 1989), there is no evidence that VCs acknowledge or attempt to address any potential overcapacity in terms of management time, especially in the latter years of a fund. Every deal that a VC receives is the one that could potentially help them achieve their expected internal rate of return for the fund. Hence, rejecting deals that are viewed as interesting as a result of a lack of management time does not appear to be an effective strategy given the potential downside of missing a quality deal.

Along similar lines, it seems that VCs should reevaluate their policies and practices regarding the deals they have rejected, especially those they have expressed an interest in pending specific milestones. Because the market for quality deals is highly competitive, VCs should seek to strengthen their relationships with companies they believe are candidates for funding. Thereby, they may improve their own position relative to other VCs in the event that the company, or the entrepreneur in a different company, does return to the capital markets for funding.

5.4. Limitations

Despite its contributions, this study is limited by the fact that the data was obtained from a single VC firm. Thus, it is not possible to generalize the findings across the industry as a whole. The greatest limitation of this study is that we were not present during the actual deal evaluation process, as with an ethnographic study, and therefore were unable to observe the VCs comments or record any additional data that may further enhance our understanding of the entries in the action log. Additionally, it is unlikely that the VCs recorded all of their reasons, and in those cases with multiple reasons, the VC making the entry did not necessarily list them in rank order. However, the action log is maintained by the VC in order to

keep track of the deals and the people that they have seen. So, given its' role as both a tracking tool and a reference document shared across the firm, it is likely that that the staff in this VC firm entered information that was deemed most relevant.

Furthermore, unlike the majority of existing VC research the context of this study is a European VC firm. The patterns observed in this VC firm can contribute to our understanding of the preferences and actions of European-based firms, and also provide data that can be used to evaluate the potential similarities and differences with their US-based counterparts. Yet, while prior research has shown that the actions and decisions of European-based VCs are similar to US-based VCs (Dixon, 1991; Muzyka et al., 1996), we cannot fully rule out that the findings of this research might be influenced by location.

6. Conclusion and Outlook on Future Research

The research topic of VC decision making has intrigued scholars for four decades. Moving beyond currently used research methodologies, the present paper has investigated the actual decisions of VCs operating within their normal context and captured what was done at the time of the real decision rather than what is reported in response to a survey or interview, or what is recalled when VCs are asked to describe past deals. While the findings presented in this study provide a number of new insights into VC decision-making, many questions still remain unanswered.

In order to better understand the entire process of VC activity more longitudinal as well as case study research is required. The VC process is potentially much more dynamic than existing models suggest, so researchers should endeavor to gain direct access to VC firms in order to build data sets that encompass the entire life of a fund, or multiple funds, and ideally observe the dynamics of the VC environment within and across VC firms and companies. While the data used in this research limited the effects of hindsight bias and subjectivity of the respondent, it fails to fully capture the context and nuance of the decision-making process that only ethnographic studies of VC firms could provide. For instance, researchers could explore in much detail the role of experience in VC decision making, and improve our understanding of how different members of the VC's team collaborate in the decision-making activity.

Beyond the single-firm context, future studies could also build on the present research by investigating how VC activity differs between firms whose funds are among the top performers compared to those with low performance levels. Similarly, it seems to be worthwhile studying how institutional factors within the VC industry (e.g., participation in syndicates, duration of funds, structure of firms, contractual agreements with a firm's limited partners) bias the evaluation and selection process. In this vein, Guler (2007) showed that reinvestment decisions are influenced by the politics of the industry as well as selected institutional influences. It thus seems highly likely that this institutional process also affects initial investments.

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Table 1: Prior research on VC decision making

Study	Collection Method	Deal data	Sample (Location)	Research focus
Wells (1974)	Interviews	Actual deals (numbers per firm ranging from 0 to 490)	7 VC firms/10 VCs (US)	VC activities and the decision making process
Benoit (1975)	Survey, interviews	130 actual deals	22 VCs (France)	Factors related to VC investment decisions, comparisons between US and French VCs
Hoban (1976)	Archival analysis, questionnaire	50 actual deals	3 VC firms (US)	Identification of the variables that predict venture success
Tyebjee & Bruno (1984a)	Telephone survey, questionnaires	Study II - 90 actual deals	Study I - 46 VCs (US) Study II - 41 VC firms (US)	Study I - VC evaluation process Study II - Investment decision criteria
Khan (1986)	Questionnaire	104 actual deals	36 VC firms (US)	Entrepreneurial characteristics considered positively related to successful venture outcome
MacMillan et al. (1987)	Questionnaire	62 VCs - 2 actual ventures 5 VCs - 5 actual ventures	67 VCs (US)	Classes of screening criteria Classes of successful and unsuccessful ventures
Robinson (1987)	Mail survey	n/a	53 VC firms (US)	VC firm strategies and strategic assumptions
Bygrave (1988)	Venture Economics	1,501 actual deals	464 VC firms (US)	VC co-investment networks
Rea (1989)	Mail survey	89 actual deals	18 VCs (US)	Factors that affect VC-entrepreneur negotiations
Hisrich & Jankowicz (1990)	Interviews	30 actual deals	5 VCs (unknown)	The role of VC intuition in investment decision making
Dixon (1991)	Interviews	n/a	30 VCs (UK)	Factors considered when evaluating proposals
Riquelme & Rickards (1992)	Conjoint exp.	30 profiles 10 profiles	Step 1 - 6 VCs (unknown) Step 2 - 7 VCs (unknown)	Applicability of conjoint measures, confirming and ranking of criteria used to evaluate deals
Hall & Hofer (1993)	Interviews	16 (actual) protocols	4VCs (US)	Criteria used to make investment decisions
Muzyka et al. (1996)	Interviews, questionnaire	n/a	73 VCs (Europe)	Factors used when evaluating deals, groupings of VCs based upon decision criteria applied
Shepherd (1999)	Conjoint exp.	39 profiles	66 VCs (Australia)	VC assessment of new venture survival
Zacharakis & Meyer (2000)	Conjoint exp.	50 profiles	53 VCs (US)	The use of decision aids in VC decision making, assessment of a venture's success potential
Zacharakis & Shepherd (2001)	Conjoint exp.	50 profiles	53 VCs (US)	VC overconfidence in investment decision making and the factors that lead to it
Shepherd et al. (2003)	Questionnaire	39 profiles	66 VCs (Australia)	The impact of VC experience on decision making
Dimov et al. (2007)	VentureXpert	n/a	108 VC firms (US)	VC firm characteristics and investment selection
Franke et al. (2008)	Conjoint exp.	20 profiles	51 VCs (Europe)	VC evaluation of start-up teams

Table 2: Categories and associated coding scheme

100 **Product** (General)
- 110 Strategy/model
- 120 Perception/View
  - 121 No USP or differentiation/competitive positioning
  - 122 Not convincing/compelling
  - 123 Need proof of concept
  - 124 Single product
  - 125 Too basic
  - 126 Complexity
- 130 IP related issues

200 **Market** (General)
- 210 Existence and/or clarity of market
- 220 Character of market
  - 221 Too small or niche
  - 222 Too crowded or competitive
  - 223 Too fragmented
  - 224 Too large or mature
- 230 Acceptance (potential) of prod/svc
- 240 Regulations

300 **Financial** (General)
- 310 Exit
- 320 Revenue/return potential
- 330 Use of proceeds
- 340 Valuation

400 **Management team** (General)
- 410 Inexperience
- 420 Reputation
- 430 Lack of confidence
- 440 Key-man issue
- 450 No/incomplete management

500 **VC-Specific** (General)
- 510 Firm investment criteria related
  - 511 Out of firm investment focus - Product
  - 512 Out of firm investment focus - Stage
  - 513 Out of firm investment focus - Size
  - 514 Out of firm investment focus - Geography
  - 515 Not viewed as a VC deal in general
- 520 Fund/Portfolio related
  - 521 Competes with existing portfolio
  - 522 Not appropriate for portfolio at this time
  - 523 Too early for fund
  - 524 No funds remaining for region
  - 525 No time due to fund related activities
- 530 External source did not endorse (in general)
- 540 Deal structure
  - 541 Need lead investor
  - 542 Oversubscribed
  - 543 Existing investor interest/intent
  - 544 Lack of existing VC/institutional investors
- 550 VC Rejected/No opportunity
  - 551 No response
  - 552 Deal closed by other VC
  - 553 Not invited to participate
  - 554 Terms rejected
  - 555 Decided against all VC money
  - 556 Closed before fund operational

600 **Other**

700 **No reason stated**

800 **Pending** (Still in deal review process)

900 **Invest**

Table 3: Deals reviewed and investments per year

	Fund I						Fund II						Firm
	YR 1	YR 2	YR 3	YR 4	YR 5	YR 6	YR 1	YR 2	YR 3	YR 4	YR 5	YR 6	
Deals reviewed	44	180	181	294	320	105	269	534	438	428	434	404	3631
Investments made	0	5	6	2	5	0	1	2	4	4	2	4	35
Investment rate	0.00	0.03	0.03	0.01	0.02	0.00	0.004	0.004	0.01	0.01	0.005	0.01	1%

Table 4: Deals reviewed, grouped by submission attempt

	First submission	Second submission	Third submission	Fourth submission	Totals
Deals reviewed	3,091	438	88	14	3,631
Investments made	29	3	2	1	35
Resubmit rate		0.14	0.20	0.16	
Investment rate	0.01	0.01	0.02	0.07	

Figure 1: Time in the deal flow process

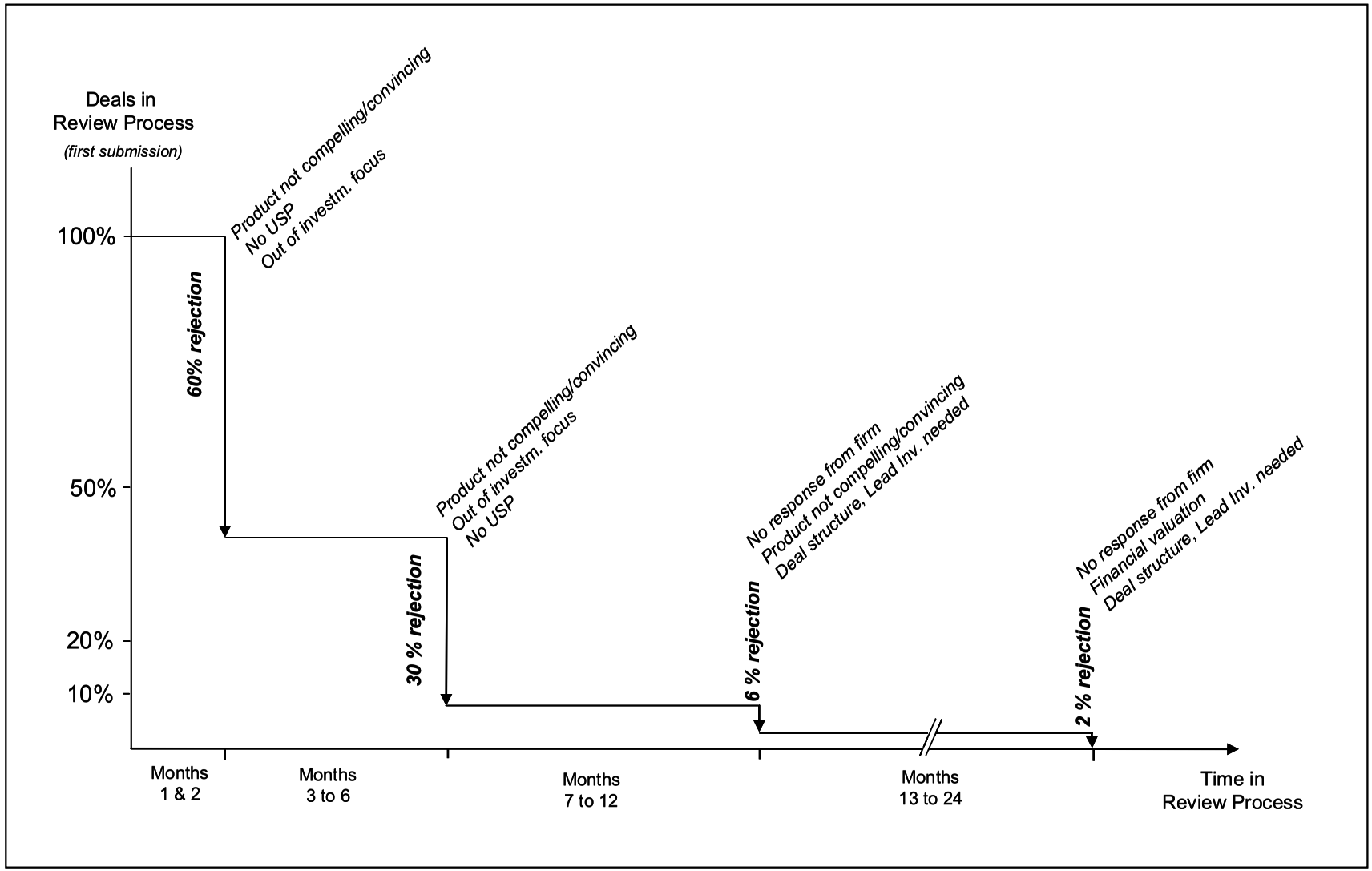

Table 5: Summary of reasons, grouped by year of submission (Percentages)

	Prod/Serv	Market	Finance	TMT	VC	Other	None	Pending	Invest
	100s	200s	300s	400s	500s	600	700s	800s	900s
Fund I - Year 1	0.25	0.05	0.13	0.07	0.27	0.09	0.14	0.00	0.00
Fund I - Year 2	0.24	0.06	0.15	0.03	0.43	0.02	0.04	0.00	0.04
Fund I - Year 3	0.21	0.09	0.13	0.03	0.36	0.05	0.11	0.00	0.01
Fund I - Year 4	0.29	0.14	0.13	0.01	0.33	0.02	0.08	0.00	0.01
Fund I - Year 5	0.28	0.20	0.11	0.03	0.29	0.00	0.07	0.00	0.01
Fund I - Year 6	0.44	0.11	0.09	0.01	0.23	0.01	0.11	0.00	0.00
Fund II - Year 1	0.39	0.16	0.09	0.02	0.26	0.02	0.07	0.00	0.01
Fund II - Year 2	0.37	0.14	0.09	0.02	0.26	0.05	0.07	0.00	0.00
Fund II - Year 3	0.31	0.11	0.07	0.01	0.29	0.03	0.17	0.00	0.01
Fund II - Year 4	0.21	0.08	0.06	0.02	0.38	0.07	0.18	0.00	0.00
Fund II - Year 5	0.28	0.07	0.05	0.02	0.46	0.04	0.08	0.00	0.01
Fund II - Year 6	0.23	0.07	0.03	0.02	0.46	0.06	0.11	0.02	0.00
Fund I Average	0.28	0.13	0.13	0.02	0.32	0.02	0.08	0.00	0.01
Fund II Average	0.30	0.10	0.06	0.02	0.35	0.05	0.11	0.00	0.01
Firm Average	0.30	0.11	0.09	0.02	0.35	0.04	0.10	0.00	0.01
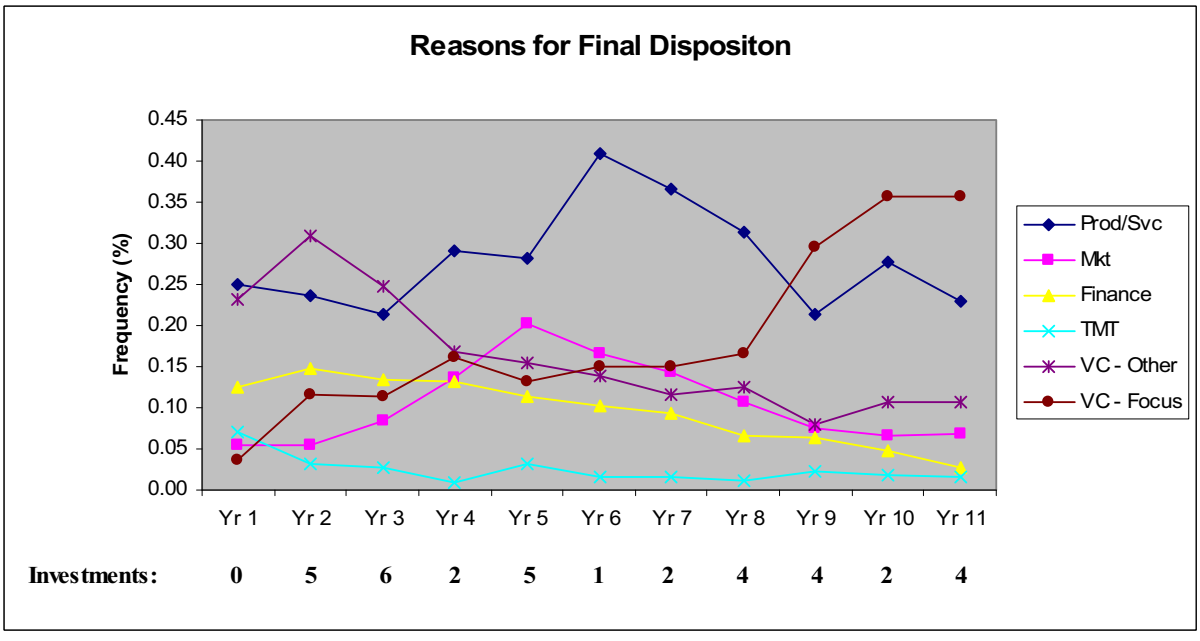
Figure 2: Summary of reasons for proposal rejection (percentages) and investments by year