CORPORATE ENTREPRENEURSHIP AND VENTURING

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PREFACE

In the spring of 2002 the idea was born in discussions with Roy Thurik (Associate Editor of Small Business Economics) to make an edited volume on the theme of corporate entrepreneurship and venturing. Although it was originally planned to be a special issue for Small Business Economics it turned out to fit better in the International Studies in Entrepreneurship Series of Springer. At that time the tracks of a number of conferences were increasingly filled with interesting papers on the theme of corporate entrepreneurship and venturing. This theme has attracted a growing number of scholars as it addresses some of the challenges in the emerging field of strategic entrepreneurship, which can be positioned at the cross-road of strategy and entrepreneurship. This edited volume consists of a selection of papers from three relevant conferences. These are the Strategic Management Society and RENT conferences in the fall of 2001 and the Babson-Kauffman Entrepreneurship Research Conference in June 2002. At these three conferences, in particular in the tracks on intrapreneurship, corporate entrepreneurship, and venturing, I found over 30 papers that would fit the theme. Further selection on basis of two criteria (a substantial empirical section contributing in a significant way to existing literature and a focus on either entrepreneurial behavior within large firms or external corporate venturing, in particular corporate venture capital programs) resulted in ten invitations to authors to submit their paper to this volume. Nine papers were submitted and eight went through the review procedure. For each paper two reviews were made, one review by one of the eight invited authors and one by an outsider. On basis of the eight reviews, five were selected and were asked to rewrite and resubmit according to suggestions by myself as editor, largely on basis of the recommendations of the reviewers. In two cases a second round of rewriting was required and in the fall of 2004 the complete set of chapters were ready for publication.

A volume such as this is the result of the combined effort of many people. First, I want to thank David Audretsch as editor of the International Studies in Entrepreneurship Series for his contribution to the realization of this volume. Second, I want to thank my colleagues of the research program 'Strategizing for opportunities' at the Social Sciences Faculty of the Free University Amsterdam for the discussions about the various chapters in this book. In particular, I want to thank Katinka Bijlsma and Dick de Gilder for reviewing a number of the submitted papers. Thirdly, this volume benefited from my discussions about corporate entrepreneurship and its relationship to the emerging field of strategic entrepreneurship with Michael Hitt at Texas A & M University and my former colleague Wim Hulsink at Erasmus University. Fourthly, I am greatly indebted to the authors of the chapters in

this book. It has been a collective effort as authors were involved in the review process and made serious efforts to make linkages between the chapters. Thereby they contributed to the creation of a book consisting of related chapters addressing similar issues, instead of an edited volume consisting of largely independent chapters. Finally, I want to thanks Gert Stronkhorst for his English corrections in some chapters and his help in composing the final manuscript.

The common theme in this book is how and why corporate entrepreneurship and venturing can contribute to ways to balance exploitation and exploration in established companies. One stream of research focuses on the entrepreneurial culture in large companies and how they can create an environment in which intrapreneurs (entrepreneurs within large companies) can blossom. In this view entrepreneurial initiatives can emerge throughout the organization and this type of entrepreneurship has been labelled as 'dispersed corporate entrepreneurship'. Two related chapters fit into that stream of research. The other three chapters address the challenge of corporate venture capital programs. These programs have funds to invest in start-ups (external ventures) and the corporate parent want to benefit from the technology, new products or new competences developed in these start-ups. In this case they have separated the locus of entrepreneurship from the main line of business operations, which has been labelled 'focused corporate entrepreneurship'. In this 'focused corporate entrepreneurship' stream the issue is not so much the motivational factors and supportive culture to entrepreneurial initiatives, but the creation and development of linkage mechanisms between the start-ups and the parent company in order to create new combinations based on competences from both the start-up and the parent company. Although the challenges in these two streams of literature are different, they both address the strategic issue of balancing exploitation and exploration.

Tom Elfring
Amsterdam, November 2004

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DISPERSED AND FOCUSED CORPORATE ENTREPRENEURSHIP: WAYS TO BALANCE EXPLOITATION AND EXPLORATION

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INTRODUCTION

Corporate entrepreneurs face the challenge of recognizing opportunities and developing new businesses within existing organizations. Pursuing new business ventures is difficult in particular within large established firms when these ventures represent radical innovations that differ substantially from the existing businesses, routines and capabilities. Established firms find it difficult to recognize new business opportunities and when they do spot them they have a hard time obtaining the resources and approval to start a venture to develop the opportunities. In their pure forms entrepreneurship and organization are polar opposites (Peterson, 1981). It is difficult to blend the two in one firm, and Peterson (1981) observed more than 20 years ago that most mixtures appear to be relatively unstable. March (1991) captured these opposite forms when he discussed the difference between exploitation and exploration. He argued that exploitation in organizations is associated with refining and extending existing competences; it builds on current insights and has predictable returns. Exploration is associated with experimentation with new alternatives where the returns are very uncertain. The two forms require different organizational principles that are difficult to mix. However, organizations need both to survive (Volberda, 1998). The fundamental challenge facing corporate

entrepreneurship, as described by Dess et al. (2003), is 'managing the conflict between the new and the old and overcoming the inevitable tensions that such conflict produces for management'. The chapters in this book address that challenge by examining different ways to deal with the tensions involved.

In this book the field of corporate entrepreneurship involves the study of the sources of opportunities for existing firms and it is defined as the study of how and by whom opportunities to create future goods and services are discovered, evaluated and exploited (Shane and Venkataraman, 2000). It concerns the process whereby an individual or group of individuals, in the context of an existing firm, create innovative resource combinations. The common elements of entrepreneurial behavior in existing firms have to do with individuals who may discover and pursue opportunities in a corporate environment that is focused mainly on exploiting the existing resource combinations. Thus, realizing new combinations of resources that lead to innovative products, processes or new market entries on the one hand require individuals with a particular entrepreneurial behavior and on the other hand an organizational environment which not only tolerates but even supports these explorative activities. The debate about corporate entrepreneurship focuses on who is behaving as an entrepreneur and on how these intrapreneurs interact with their organizational environment in their pursuit of opportunities (Hitt et al., 1999). Intrapreneurs are defined here as entrepreneurs within large established organizations. In particular, we want to improve our understanding of the motivational and organizational forces that affect the actions and behavior of intrapreneurs.

Firms engage in corporate entrepreneurship because they see it as part of a strategy to gain competitive advantage. From a resource-based perspective corporate entrepreneurship is a vital way to develop, leverage and combine resources for competitive purposes (Floyd and Wooldridge, 1999), for instance in the creation of new products. These new combinations or innovations may boost a firm's competitive position and consequently have a positive impact on its growth and performance. Firms benefit from corporate entrepreneurship in particular because of its potential to develop new knowledge, which may be a continuous source of innovations (Zahra, Nielsen and Bogner, 1999). The role of corporate entrepreneurship in the growth, use and combination of knowledge resources makes it a key knowledge enabler (Von Krogh, Ichijo and Nonakan, 2000). A number of chapters in this book (Henderson and Leleux, *Corporate venture capital: Realizing resource combinations*; Maula, Autio, and Murray, *Corporate venture capitalists and independent venture capitalists: what do they know, who do they know, and should entrepreneurs care?*) focuses on the knowledge or resource-based perspective to examine how corporate

entrepreneurship may increase the competitive position of firms. There are a number of ways corporate entrepreneurship can make a positive contribution to the strategies firms employ to gain competitive advantage (Covin and Miles, 1999; Stopford and Baden-Fuller, 1994). In this book we focus on the ability of corporate entrepreneurship to support and facilitate a continuous stream of innovations (Hitt and Ireland, 2000). This type of corporate entrepreneurship is referred to by Covin and Miles (1999) as sustained regeneration, which is slightly different from strategic renewal or domain redefinition (Dess, et al, 2003).

In the last two decades there has been a growing number of studies examining ways to mix exploration and exploitation, ranging from 'bringing silicon valley inside' (Hamel, 1999) and creating an entrepreneurial mindset (McGrath and MacMillan, 2000) to internal corporate venturing (Block and MacMillan, 1993) and corporate venture funds (Chesborough, 2000). Entrepreneurship can be located within the firm, such as entrepreneurial initiatives (Wielemaker, et al., 2003) or internal ventures (Block and MacMillan, 1993), or largely outside the boundaries of the firm, as is the case with corporate venture capital funds. The issue is how the locus of entrepreneurship may result in different ways to address the exploitation/exploration challenge. The distinction between dispersed and focused corporate entrepreneurship (Birkenshaw, 1997) is relevant here. The former has to do with the realization of corporate entrepreneurship at various locations within the boundaries of the firm, while the latter refers to the separation of corporate entrepreneurial activities in special separated units. Dispersed corporate entrepreneurship assumes that entrepreneurial activities are distributed across the organization. Entrepreneurship is not restricted to a particular unit, such as new business development, but it is scattered over many parts of the organization. This approach is based on the assumption that each employee has the capacity for both managerial and entrepreneurial behavior (Birkenshaw, 1997). Managers and employees are able to combine multiple roles; they can in particular perform roles related to exploitation and exploration simultaneously. This issue of multiple roles has received relatively little attention (Dess, et al., 2003), but it is a promising avenue for research, as is shown by Wielemaker et al. (2003), who distinguish several managerial levels and specific roles in corporate entrepreneurship, and Floyd and Lane (2000), who examined ways to solve the conflicts associated with the exploitation/exploration dilemma. In this book Mair (*Entrepreneurial behavior in a large entrepreneurial firm: Exploring key drivers*) and Kelley, Neck, O'Connor, Paulsen (*Corporate entrepreneurship through radical innovations: Key organization and initiative level mechanisms*) offer a contribution to this discussion. They also address the effect particular types of organizational support have on the degree of entrepreneurial behavior

among individual employees. The authors of these two chapters shed light on some of the key elements of an entrepreneurial culture and on the way firms can create conditions that are favorable to entrepreneurial initiatives. As a result the meaning of the concept of dispersed corporate entrepreneurship is enriched by connecting it to the discussion on organizational form, in particular with regard to the way an 'organic' (Burns and Stalker, 1961) or 'integrative' (Kanter, 1985) design of the organization supports an entrepreneurial culture that would appear to provide an antecedent to entrepreneurial initiatives throughout the organization (Stopford and Baden-Fuller, 1994).

Dispersed corporate entrepreneurship often fails, however, because large companies do not offer favorable organizational conditions for entrepreneurial initiatives (Burgelman, 1983; Sharma and Chrisman, 1999). Innovative initiatives face difficulties being accepted in a hierarchical organization focused on exploitation. The administrative control system presents a hostile environment for uncertain and risky initiatives. Furthermore, the culture of large bureaucracies does not fit the needs of entrepreneurial individuals looking for creative ways to develop new businesses (Hitt and Ireland, 2000). Creating separate organizations, such as new business development of corporate venture capital funds, can shield entrepreneurial processes against the negative impact of the large parent organization. Drucker (1985) argues that the organization of innovative efforts needs to be separated from the rest of the organization. By their very nature these units are more 'organic' and by separating them they are not hampered by the hierarchical structure of the parent company. In their pursuit of new opportunities these entrepreneurial units benefit from being small and flexible. In a way large established firms mimic the advantages of small firms by dedicating separate units to entrepreneurship. Birkenshaw (1997) refers to this organizational form as focused corporate entrepreneurship.

Various organizational forms have been recognized to fit the notion of focused corporate entrepreneurship. In the ambidextrous organization (Tushman and O'Reilly, 1996) small and autonomous units are responsible for innovation, while they are part of a large company and therefore benefit from economies of scale and scope. Corporate venturing is the key example of focused corporate entrepreneurship and perceived as a potentially fruitful way to mix exploration and exploitation. Corporate ventures provide an environment more conducive to initiatives that are risky, uncertain and new in comparison with the core business. These ventures are separate units which on the one hand are designed to be consistent with the needs of new, high-risk and potentially high-growth activities, but which on the other hand try to benefit from the resources and knowledge of the large corporation.

There are two forms of corporate venturing: internal and external corporate venturing. In the former the locus of entrepreneurship lies within the boundaries of the firm, while in the latter it lies outside the firm. Recent discussions focus on the potential of corporate venture capital as a particular form of external venturing to satisfy exploration efforts and balance them with the needs for exploitation.

Corporate venture capital programs are designed to add value to small start-ups, which are expected to contribute to the growth potential of the large established parent company. Established companies are able to make minority equity investments in promising start-ups through corporate venture capital programs. This has the advantage that new entrepreneurship is almost completely insulated from negative bureaucratic decision-making or political fights over budgets. The practice of corporate venture capital has grown tremendously in the 1990s, due to the successes of companies like Intel, Adobe, and Cisco (Chesbrough, 2000). European companies as Nokia, Deutsche Telecom, and Siemens have also benefited from investments in corporate venture funds. There are many failures as well, however, and some studies found that corporate venture programs have difficulties in reaching their objectives (Gompers and Lerner, 1998; Bain and Co, 2001). These difficulties relate both to the strategy and to the structure of the corporate venture capital programs. In this book we mean to improve our understanding of corporate venture capital (CVC) programs as mechanisms that enable established corporations to engage in exploration. Three chapters in this book deal with CVC programs. Maula, Autio and Murray compare CVC practices to independent venture capitalist, and Weber and Weber compare CVC practices in Europe and the US. Both chapters shed light on the processes and roles involved in balancing exploration and exploitation requirements. Combining the resource-based theory (Henderson and Leleux, this volume) with insights from the network perspective (see also the paper by Maula et al.), our arguments highlight the value CVC programs add to the strategies of large corporations in their efforts to sustain or renew profitable growth.

This book aims is to improve our understanding of the location of entrepreneurial initiatives and ventures and their ability to create new combinations. We are interested in particular in the organizational forms, ranging from entrepreneurial initiatives that are located largely inside firms to start-ups that are financed by corporate venture capital funds and that have special access to a corporate knowledge pool, but that are located largely outside firms. With regard to the former, labeled dispersed corporate entrepreneurship, the key factors are motivation and organizational support affecting the degree of individual employees act as entrepreneurs. As far as the latter, referred to as focused corporate entrepreneurship, is concerned, the

issue is how large companies can incorporate the benefits of small entrepreneurial businesses without coming up with unstable solutions. These factors are examined in particular in relation to CVC programs. In the section on focused corporate entrepreneurship we investigate in what ways the strategies of CVC programs affect their performance and what value-added processes exist between portfolio companies and parent corporation with regard to the realization of new resource combinations.

This chapter is organized as follows. In section two the two chapters contributing to the notion of dispersed corporate entrepreneurship (Mair and Kelley, Neck, O'Connor and Paulson) are summarized, their contributions are related to recent work in that area, and emerging issues are discussed. Section three provides a summary of three chapters (Henderson and Leleux; Weber and Weber; Maula, Autio and Murray) and examines how their studies about corporate venture capital programs help us understand the field of focused corporate entrepreneurship. In addition, some relevant emerging issues are discussed. In section four a number of conclusions are presented.

DISPERSED CORPORATE INTREPRENEURSHIP

The decision to locate entrepreneurship inside the firm affects the way exploitation and exploration are combined. In describing the organizational conditions involved in combining these two principles, authors studying entrepreneurial initiatives (Bower, 1970; Burgelman, 1983; Bartlett and Ghoshall, 1993; Birkenshaw, 1997; Wielemaker et al., 2003) use the following three categories: organizational form, managerial roles and entrepreneurial culture.

The organizational form must be able to accommodate a certain degree of experimentation in addition to its overall purpose of guiding the firm's core activities. The hierarchical form, for example, is considered to be suitable primarily for exploiting existing activities and provides a relatively hostile environment for initiatives exploring new territory. On the other end of the spectrum of possible organizational forms (Burns and Stalker, 1961) we find the network (Hedlund, 1994), which has a bias towards supporting exploration rather than exploitation. In the network form initiatives emerge from the knowledge base of the firm, which is used as a platform to create new innovative solutions that can be viewed as new knowledge combinations. In this organic form internal entrepreneurs are given greater freedom as well as organizational support in their initiatives. The hierarchy and the network represent the two ends of the spectrum, the challenge being to come up with the organizational design for a more balanced approach (Volberda, 1998). An example of a balanced form is the hypertext

organization (Nonaka and Takeuchi, 1995), where project teams dedicated to exploration tap in to the knowledge that is available in the business units of an established firm.

Kelley, Neck, O'Conner and Paulson (See chapter in this book) offer a contribution with regard to the design of a balanced form. Their study builds on earlier work on radical innovations (Leifer, et al., 2000) and provides a basis for dispersed corporate entrepreneurship. On the basis of an extensive qualitative investigation of ten large multinational firms they have established a number of mechanisms at both the levels of organization and new initiatives that facilitate simultaneous exploration and exploitation. Within large firms the recognition of opportunities appears to be closely linked to the presence of an entrepreneurial culture, which coexisted with an administrative system emphasizing the exploitation of existing resources. An entrepreneurial culture can be described by the degree to which it is open to new ideas (Russell, 1999), the way it encourages communication and information sharing (Kanter, 1989), and the extent to which it provides an environment that views innovation as critical to the competitive position of the firm. They found that an entrepreneurial culture is characterized by the presence of one element in particular: tolerance to risk and failure (Sitkin, 1992). Aversion of risk and fear of failure were seen as factors inhibiting corporate entrepreneurship. Senior management can help build an entrepreneurial culture by emphasizing stories about innovation achievements and cherishing successful intrapreneurs as 'heroes'. However, although success can be an inspiration, failures should not be ignored, as they are an importance source of learning. Sitkin (1992) distinguishes intelligent failures from ordinary failures by the way the organization manages to learn from failed initiatives. Intelligent failures require a certain willingness to discuss failed attempts. In addition to the role of senior management in setting and reinforcing an entrepreneurial culture, Kelley et al. found that managers need to be involved in initiatives pursuing radical innovations as well. This involvement has to be balanced. Too much attention from management may prevent the people involved in the initiatives from reporting delays or difficulties and too little involvement may result in a lack of resources. The role of coaching, as suggested by Kelley et al. can serve as an example of getting involved in a balanced way. In the next paragraph we discuss managerial roles and the contribution of coaching.

Dispersion of entrepreneurship throughout the organization requires a conscious effort to create and maintain an appropriate culture. Commitment from senior management to support entrepreneurial initiatives was identified (Kelley et al.) as an important contribution to an entrepreneurial culture. One way to show commitment is to develop a

coaching program in which venture champions can benefit from the experience of senior managers. In addition to their expertise, these part-time coaches bring with them their network of relations. Entrepreneurial ventures may benefit from these ties as they create linkages to relevant knowledge resources. This type of coaching helps the venture champions navigate in an uncertain world. This particular role of senior management is closely related to exploration as it is linked to the organizational capability for radical innovations. This aspect of senior management has not been recognized in previous studies on managerial roles associated with the exploration of new competencies (Bartlett and Ghoshal, 1994; Floyd and Lane, 2000). In their review of the roles of top management in relation to the exploration of competences in the renewal process Floyd and Lane (2000) distinguish the following three roles: ratifying, recognizing and directing. To these three, Kelley et al. add the role of coaching. In addition, the role of coaching is a part-time role and may be of importance because of its potential contribution to a balance between exploitation and exploration. In most cases managers have to be able to combine various roles and deal with exploitation and exploration simultaneously: on a day-to-day basis, they are involved in managing the company, while at the same time being responsible for finding new opportunities conducive to the firm's long-term competitive position.

In the literature on corporate entrepreneurship sets of managerial roles have been suggested for different managerial levels. Generally, three levels of management are distinguished, top management, middle management, and operating or front-line management (Burgelman, 1983; Floyd and Lane, 2000). For each of these three levels a different set of roles has been discussed. Each managerial level may be associated with a particular behavior that is expected from the managers. In the traditional top-down approach, it is the upper echelon that acts in an entrepreneurial fashion, leaving the actual implementation of the strategy to lower-level management. Corporate entrepreneurship is closely associated with strategy-making where bottom-up processes are vital (Bower, 1970; Burgelman, 1983; Bartlett and Ghoshal, 1993). In this view, operating management has an important role as the initiator of new ventures, being located close to technology and markets and therefore possessing the most up to date knowledge and insights regarding opportunities. Their role of experimenting and learning about the potential of new technologies or market opportunities has been stressed. In this perspective the role of middle management has changed from being an implementer and vertical integrator of information to championing some of the entrepreneurial initiatives from front-liners and acting as a horizontal integrator to synthesize the various initiatives, whereas the role of top-management is to offer direction and motivation in relatively broad terms. Bartlett and Ghoshal (1993) refer to that role as the creator of

purpose. Others add to that the role of judge (Bower, 1970), deciding which of the various proposed initiatives gets resources, and the role of providing retroactive legitimization (Burgelman, 1983) with regard to the choice as to which of the on-going initiatives should become part of the core business.

Senior management plays an important role in creating an environment supporting entrepreneurial initiatives. However, there appears to be a difference between objective measures of support and the support that is perceived by potential intrapreneurs (Hornsby, Kuratko and Zahra, 2002; Mair, this volume). Mair shows that within a single firm, with a similar culture and administrative systems, there are large differences in the support perceived by various managers. Although social cognitive theory has been used to explain this state of affairs, recent theoretical developments indicate that explanations for differences in the extent to which people act as entrepreneurs go beyond the notion of personal traits (Shook, Priem and McGee, 2003). In a number of studies (Shook et al., 2003; Boyd and Vozikis, 1994; Mair, this volume) the self-efficacy beliefs of potential entrepreneurs represent a good predictor of actual entrepreneurial behavior. Mair examines the phenomenon that within the same organizational context, some managers act as entrepreneurs and others do not. On the basis of data on 149 managers in a large European financial services company she demonstrates that the managers' perceived capability to perform specific tasks or in other words their self-efficacy beliefs, explains a substantial part of the differences in actual entrepreneurial behavior. The perceptions of support played an important role in the development of self-efficacy beliefs.

The concepts of perceived support and self-efficacy are of interest because they provide a connection between the micro and macro perspectives on entrepreneurial initiatives. The macro perspective focuses on the firm as the organizational context. The organizational form and culture are central to understanding the entrepreneurial initiatives in those firms. The micro view takes the individual as the primary unit of analysis and tries to explain entrepreneurial behavior within organizations on the basis of personal traits. Although the original personal traits approach was not successful in explaining variations in entrepreneurial initiatives (Gartner, 1988; Boyd and Vozikis, 1994), a modified approach that takes the effects of self-efficacy into account appeared to be promising with regard to improving our understanding of enterprising individuals (Shook et al., 2003). Mair has developed a model that aims at providing micro-foundations of entrepreneurial behavior in the corporate context. The model reconciles the micro and macro perspectives by using concepts such as perceived support and self-efficacy, which create an explicit connection between the potential intrapreneur and his/her perceptions and the organizational context. As a

result the paper advances our understanding of variations in entrepreneurial behavior within organizations.

Emerging issues in dispersed corporate entrepreneurship

Mair provides complementary reasons for the importance of the role of coaching by senior management as found in the Kelley et al. study. In particular, it improves our understanding of the reason coaching appears to be important: coaching may enhance entrepreneurial self-efficacy beliefs, because a coaching program help intrapreneurs "make sense" (Weick, 1979) of what it takes to perform entrepreneurial tasks. Thus top management commitment by developing coaching programs may help potential intrapreneurs to identify and reduce self-doubts, which is a critical element involved in entrepreneurial behavior (Chen et al., 1978). Mair argues that people can learn to improve their perceptions and that programs aimed at changing people's the behavior are an example of what a company's top management can do to stimulate entrepreneurial initiatives. Future studies can examine how coaching fits in with these behavioral change programs and to which extent it can help improve perceptions of self-efficacy and thereby have a positive effect on entrepreneurial behavior.

The way firms deal with entrepreneurial failures appears to be a challenging avenue for future study for two reasons. First, Kelley et al. show that tolerance for failures is an important aspect of an entrepreneurial culture. In most organizations failure prevention is a dominant tendency, because of an anti-failure bias (McGrath, 1999). There is a danger that this may lead to risk averse behavior and curtail the search for new opportunities. As a result, entrepreneurial projects with relatively uncertain outcomes are not initiated and potential intrapreneurs may leave the firm. To overcome this bias, management can play an important role by creating favorable conditions, such as commitment to an entrepreneurial strategy, support for internal ventures and the creation of favorable incentive mechanisms (Kelley et al., this volume; Bartlett and Ghoshal, 1993). Future studies may focus on these issues in more detail, addressing in particular why and how a particular set of policies can create an environment that not only attracts potential intrapreneurs, but also has a positive effect on the behavior of nascent intrapreneurs. The fear of failure and its organizational consequences may lead to a lower perception of support. Mair's study showed that lower perceptions of support may reduce self-efficacy beliefs, which in turn has negative consequences for actual entrepreneurial initiatives.

The second reason to pay closer attention to entrepreneurial failure has to do with failure management rather than the consequences of failure prevention. The challenge is to learn from failures. Firms may perceive entrepreneurial projects or internal ventures as competence-building exploration efforts involving some degree of trial-and-error learning. Failures are unavoidably associated with the learning process and the question is how firms can use their failures in a constructive manner and thus benefit from them (McGrath, 1995). Existing insights indicate there are a number of lessons to be learned. First, the role of openness and the possibility to speak up is important for the recognition of failures (Edmundson, 2003). Second, in order to interpret the magnitude and implications of an entrepreneurial failure it is crucial to be able to evaluate the development of a venture with its goals and underlying assumptions. Modest failures are relatively easy to interpret and therefore to learn from (Sitkin, 1992). Lastly, some form of action is required to link the knowledge derived from the failure to the existing knowledge base of the firm in order to create new combinations (McGrath, 1995). Although these insights into the educational value of failures are in themselves interesting, they need to be worked out in more detail. A promising approach may be to focus on the way the interaction between the individual intrapreneur and the organizational environment will affect the various aspects of the learning cycle.

Focused corporate entrepreneurship

A key issue concerning focused corporate entrepreneurship is the degree to which entrepreneurial initiatives are separated from an organization's ongoing operations and the way these initiatives benefit from and contribute to the parent organization. Results from previous studies indicate that some degree of separation is beneficial for entrepreneurial initiatives. Various corporate venturing designs can be distinguished, with varying degrees of separation (Thornhill and Amit, 2000; Block and MacMillan, 1993). It is not so much a matter of being separated or not, but rather one of establishing what the parent firm's objectives are and deciding to what extent keeping the entrepreneurial activities separated from the rest of the company may help further those objectives. There are a number of reasons why an established firm may want to devote resources to exploration through corporate venturing, ranging from assessing the potential of new technologies and developing new products to adding new profitable lines of business to its portfolio and strengthening the existing market position with new products. Some of these objectives have a strong financial background, which means

that entrepreneurial ventures are financed only when a certain rate of return is guaranteed. Others are much more strategic in nature, in the sense that they match the ambitions of the parent organization.

On the one hand separation is a strength, largely because it mimics the advantages of being small, on the other hand the disadvantage of being separated from the resources and competences of the parent organization. This disadvantage may be compensated with effective knowledge linking processes. An important challenge, addressed by two chapters in this book (Henderson and Leleux; Maula et al.) is to create effective knowledge linking processes. The study of the effects of spatial separation and a large degree of autonomy need to be combined with a process perspective focusing on the connections between the entrepreneurial unit and the parent organization. From a process perspective corporate venturing deals with the interactions between intrapreneurs and corporate managers with regard to the founding and fostering of entrepreneurial ventures (Venkataraman, MacMillan and McGrath, 1992). Founding processes have to do with recognizing opportunities, linking technology with market needs, learning and pushing, finding support and establishing selection processes. Fostering processes have to do with maintaining/championing political support and resources, surviving and monitoring. It is important to establish the right kind of connections, as some interaction processes may be more important than others. To assess the effect of spatial separation of entrepreneurial activities, the processes involving the founding and fostering of the entrepreneurial ventures have to be taken into account if we are to understand the advantages of certain types of separation.

Corporate venture capital programs can be seen as a particular case of separation. Three chapters address the organization and effectiveness of corporate venture capital. It can be characterized as an organizational form with a relatively high degree of separation between entrepreneurial initiatives and the parent organization. The authors have examined how these separate entities are able to contribute to the ambition of their parent organization with regard to corporate entrepreneurship. The articles add value to the discussion regarding the way large firms may benefit from these spatially separated entrepreneurial units. The debate concentrates on the type of benefits large firms can expect and on the way they can realize those benefits.

Weber and Weber examine the objectives and practices of CVC funds in Germany and compare them to the situation in the United States. They shed light on the developments of the strategic choices facing large companies with regard to the governance of their CVC units and contribute to the debate regarding the objectives of CVC funds. The situation in Germany can be described as one where financial objectives have become

increasingly important and at present tend to dominate the strategic objectives. This trend is partly the result of a combination of the way CVC funds are managed and an increasing emphasis on financial goals. The current situation in the US is a different one. A number of scholars stresses that the potential advantages of CVC funds can be found in the pursuit of strategic goals (in addition to Weber and Weber, see also Henderson and Leleux). Unlike their German counterparts, CVC funds in the United States not only tend to favor strategic objectives, but there are some indications that the performance of funds driven by strategic objectives is a better one in terms of valuations and deals. Weber and Weber find that CVC funds with mixed objectives show the worst performance. A clear choice between either financial or strategic objectives shows considerably better results, with funds managed on the basis of financial objectives showing the best performance of all.

The situation in Germany seems to be at odds with the increasingly accepted observation that established companies can create a competitive edge by creating CVC funds with a strategic objective and designing connections that enable portfolio companies to profit from the parent company's resources. Henderson and Leleux (this volume) and Maula, Autio and Murray (this volume) examine the contribution of CVC programs that are based on a strategic objective. They focus on ways corporate venture capitalists can establish connections that are beneficial to the portfolio companies in their need to get access to the resources of the established firm. These links with the parent company are valuable because of their potential to create resource combinations and transfers. In particular, the authors examine the way knowledge-based perspectives, social capital theory and a process approach may improve our understanding of the way CVC funds can provide added value to the portfolio companies. In the knowledge-based view knowledge is considered as the most important strategic asset (Grant, 1996) and it is important to find ways to provide portfolio companies with access to the parent company's assets and thus create new resource combinations. Although it is possible to realize these combinations without the assistance of corporate venture capitalists, they may also play an important role in developing combinative capabilities (Kogut and Zander, 1992). An increasing number of studies uses network ties and social capital to help explain the emergence and success of entrepreneurial ventures (Birley, 1985; Bruderl and Preisendorfer, 1992; Elfring and Hulsink, 2003), both for start-ups (Lee, Lee and Pennings, 2001) and for ventures within (Floyd and Wooldridge, 1999) or close to established firms. The network provides timely access to knowledge and resources, whereby the locus of innovation and entrepreneurship lies inside the network of relationships (Powell, Koput and Smith-Doerr, 1996). In addition to factors concerning

the resources and people one has access to, the processes in which these new combinations are realized appears to be a central perspective in understanding the success of CVC programs.

The key question addressed by Henderson and Leleux is how the CVC investment processes may increase the likelihood of realizing resource combinations and transfers. They examine six cases of CVC practices in the Telecom industry in Europe in detail. They found a number of obstacles that inhibited the ability to profit from the linkages by establishing resource combinations and transfers. Three parties are involved in the investment processes: the business units of the established company, the portfolio companies and the CVC unit. These three parties have to work together, the challenge facing them being that they have to do so in such a way that all three benefit. Henderson and Leleux distinguish three different types of obstacles. First, business unit managers in the established company failed to recognize the potential value of their resources to the portfolio company. This was the case in particular when the relevant business units of the parent company were not involved in the early stages of the investment process. Secondly, commitment and incentives in the parent company appeared to play an important role in the realization of resource combinations and transfers. Formal commitment on the part of the parent company was found to be beneficial to resource combinations. It was seen as a signal that the company was engaged in long-term corporate venture capital activities and therefore less vulnerable to short term cyclical considerations which in the past often resulted in the termination or reduction of the entrepreneurial efforts. The incentive structure supports the realization of resource combinations and transfers when the common interest of the business units and the portfolio companies is aligned in its design. Thirdly, the managers of the CVC unit act as a broker between the business units and the portfolio companies. According to Henderson and Leleux, their ability to perform that role increases when they have operational experience. A lack of a particular set of knowledge resources inhibits the transfer and recombination of resources.

Whereas Henderson and Leleux focused on the resources available in the established firms' business units and on the way those resources can be combined and transferred to the portfolio companies, Maula, Autio and Murray also looked at personal networks, paying particular attention to the role of social capital, making their study complimentary to the paper by Henderson and Leleux. It is also complementary with regard to the focus on the CVC managers and their contribution to the realization of resource combinations. Maula, Autio and Murray examine the value added by CVC managers both from the point of view of the resources they have at their disposal and the people they know. The key question addressed by Maula,

Autio and Murray is the type of support corporate venture capitalists provide to their portfolio companies in comparison to the support given by independent venture capitalists (VC). Theirs is one of the first systematic comparisons of the contribution of CVC and VC and they approach it by combining the resource-based theory with insights from social capital theory. CVC and VC not only provide capital, but a range of additional services to their portfolio companies as well. The ability of the two types of venture capitalists to support their ventures thus depends on the resources and knowledge they provide and their network of relevant ties. Maula, Autio and Murray examine the effect this has on the potential value they can add to their start-up ventures, on the basis of a sample of young US technology-based firms that have received capital from both CVC funds and VC's. They use the data from a survey among the CEO's of portfolio companies to test hypotheses with regard to nine types of added value provided by the venture capitalists. The results show that there are significant differences in the type of support provided to the portfolio companies: independent venture capitalists are relatively good in recruiting key employees and professionalizing the organization in the early stages. The authors call this 'enterprise nurturing'. The corporate venture capitalists provide different but complementary support, such as, providing technological support and building commercial capabilities, labeled by the authors as 'commerce building'.

Emerging issues in focused corporate entrepreneurship

One of the advantages of CVC programs is the separation of start-up ventures from their parent companies. But although the initiatives are not inhibited by rules, routines and bureaucracy of the parent, there is a downside to this advantage, in that in order to be able to grow and play a valid part in the parent company's strategic interests, the independent start-up has to be in some way connected to that parent. The corporate venture capitalists, the persons in charge of the CVC programs, play an important role in creating and developing these connections (Henderson and Leleux). Their job requires both human and social capital. With regard to human capital it has been shown that operational experience in the parent company helps them develop meaningful relationships. An important aspect of the social capital of corporate venture capitalists was their broker position in the network relative to the start-up. In addition, it was shown that corporate venture capitalists provide a different but complementary support to portfolio firms in comparison to independent venture capitalists (Malau et al.). However, their relationship with the parent company is fairly complex

and their position as a third party can easily give rise to differences in interpretation due to conflicts of interest. These may arise when the reasons the parent company has for establishing CVC programs are mixed (Weber and Weber). Future studies can examine whether companies have to choose between strategic or financial objectives, or whether some form of mixed objectives provide sufficient grounds for shaping a basis for a constructive contribution of CVC unit managers to both the portfolio companies and the parent firm.

The requirements facing CVC unit managers in terms of human and social capital to, first, support and coach portfolio start-ups and secondly, to create and develop connections to the parent are substantial. To date, very little research has been conducted with regard to the role and tasks of CVC unit managers. Future studies can build on the work in this book to deepen our understanding of the role CVC unit managers play by examining how and why their human and social capital may prove beneficial to both start-up and parent company, and in particular, how they can help individual portfolio firms survive and prosper as well as managing the collection of portfolio firms in such a way that the parent company benefits from this exploration effort. In these cases the benefits of CVC programs to the parent companies are related to the strategic objectives the parent company has in discovering and exploring new opportunities. Thus, future studies can examine ways in which CVC programs supporting a range of portfolio companies need to be linked to the parent companies in order to transfer or combine the exploration of new competences with the existing competence-base of the parent company.

CONCLUSIONS

The chapters in this book improved our insights in some of the key challenges in corporate entrepreneurship research. They have extended our knowledge on the motivational factors regarding intrapreneurs and the type of organizational support required to have entrepreneurial initiatives throughout the organization. The research agenda in the dispersed corporate entrepreneurship field focuses on the interplay between individual roles and organizational form in order to simultaneously realize exploitation and exploration. The chapters in the focused corporate entrepreneurship stream of research examine how and why CVC programs may satisfy the strategic objectives of large firms for exploration. The research agenda addresses the challenge for large firms to learn from the successes and failures of start-up companies financed and supported by the CVC units. This agenda is different from the one for dispersed corporate entrepreneurship due to the

separation of the entrepreneurial initiatives from its main business operations. Separation has replaced one set of issues by a new set of challenges related to the consequences of separation. The start-ups financed by the CVC units are largely independent of the influences from the parent. Freed from the constrains of the parent resulted in issues regarding the difficulties to connect the learning experiences and competence development in these start-ups to the parent. The key challenge is to create and maintain linking mechanisms between the start-ups and the parent company. These linkages are crucial not only for the start-ups to benefit from the complementary assets of the parent, but most importantly for the parent to be able to combine the competences developed in the start-ups with the existing resources of the parent.

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2

CORPORATE ENTREPRENEURSHIP THROUGH RADICAL INNOVATION: KEY ORGANIZATION AND INITIATIVE LEVEL MECHANISMS[1]

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INTRODUCTION

The literature addressing the role of corporate entrepreneurship in large established organizations points repeatedly to the need for a part of the organization to focus on future paths to growth (Kanter et al., 1991; Kanter, 1989; Prahalad and Hamel, 1994) by thinking outside the firm's current lines of business (Burgelman, 1984; Chesbrough, 2000). The definitions of corporate entrepreneurship are many and varied (Sharma and Chrisman, 1999), but Covin and Miles (1999) strongly advocate that innovation is central to the corporate entrepreneurship construct stating, "without innovation there is no corporate entrepreneurship" (p. 49). Through corporate entrepreneurship, a firm takes a proactive approach to product-market innovation through the pursuit of risky ventures (Miller, 1983; Slevin and Covin, 1990).

The existing corporate entrepreneurship literature fails to adequately account for the role of innovation (Covin and Miles, 1999). This paper addresses this gap with a specific emphasis on the role of radical innovation initiatives in corporate entrepreneurship. We define radical innovation as resulting in products with an entirely new set of performance features, process improvements of five times or greater, or a minimum 30% reduction in cost (Leifer et al., 2000, p. 5). Radical innovation frequently leverages advanced technology as its basis for advantage, which ultimately results in the creation of new businesses for the firm and, frequently, the creation of entirely new markets.

Firms failing to invest in radical or breakthrough innovation may achieve a certain degree of success, but limit their growth potential and put their long-term survival at risk (Tauber, 1974; Meyer and Roberts, 1986; Day, 1994). Conversely, by being first to recognize and exploit opportunities for radical innovation, firms can control the direction of the market to their benefit, gaining competitive advantage while placing pressure on its rivals (Tushman and Anderson, 1986; Block and MacMillan, 1993; Strebel, 1992; Morone, 1993; Utterback, 1994).

Our notion of radical innovation aligns with two of the four corporate entrepreneurship forms identified by Covin and Miles (1999) – organizational rejuvenation and domain redefinition. Organizational rejuvenation entails the alteration of process, structures, and capabilities; whereas, domain redefinition involves establishing first mover advantage in new product-market areas. Radical innovation results in domain redefinition, but organizational rejuvenation is a prerequisite, due to the major impacts felt, not only in technologies and markets, but in the organizational and resource requirements necessary to get it accomplished (Leifer, et. al., 2000). In order to build the capability to radically innovate, structures, processes, and capabilities must be developed. This aspect of radical innovation is the most challenging and is the focus of our paper.

While mature organizations can invigorate and reinvent their capabilities through corporate entrepreneurship, the challenges they face have been well documented (Block and MacMillan, 1993; Leifer, et al., 2000). Investments in radical innovation, when successful, have too often been infrequent and ad hoc, highly reliant on serendipity and the persistence of individuals (Leifer et al., 2000). They tend to occur, not because of organizational systems, but because of the diligent efforts of individuals, working in spite of these systems (Dougherty and Hardy, 1996).

If we are to advance our understanding of radical innovation as a key aspect of corporate entrepreneurship, we need to move beyond the perspective that it results only from independent thinking mavericks. Dougherty and Hardy (1996) suggest this challenge cannot be resolved by

just building individual skills, because this will create "foreign bodies in a system that values the routine" (p. 1147). Instead, they recommend firms take a more lasting approach to developing an organization-wide capability. For radical innovation initiatives to exist and thrive, organizations must view themselves as entrepreneurial systems (Russell, 1999).

Mair's paper in this volume distinguishes between a macro view, at the firm-level, and a micro-view at the individual level. She focuses at the micro-level, providing insights on the entrepreneurial behavior of managers. In this paper, we adopt a macro-level perspective. Dougherty and Hardy identify two levels of problems associated with commercializing innovation at the macro level: those that affect the organizational context and those impacting the projects themselves. Likewise, we distinguish between factors relating to the broader organizational environment for entrepreneurship, and those associated with initiatives to improve the commercialization of radical innovation projects.

We address the following questions through a multi-case analysis of ten large, U.S.-based multinational organizations: (1) What key organization-level factors impact the environment for radical innovation in established firms, and how do these act as enablers or inhibitors? (2) What initiative-level factors impact, positively or negatively, the management of radical innovation projects?

This paper proceeds as follows. We describe our research methodology and sample. Then, we identify the factors emerging from our multicase analysis addressing the two research questions. We discuss these factors within the context of the corporate entrepreneurship and innovation literature.

RESEARCH METHOD AND SAMPLE

A multidisciplinary team of researchers interviewed managers at different levels and with different relationships to the organizational and radical innovation systems. The team included nine researchers with strengths in entrepreneurship, strategy, marketing, finance, risk management, technology management, organizational behavior, and political science.[2]

The research sample comprises ten large multinational firms spanning a diversity of industries: Table 1 provides summary information on the companies and the interviewees.[3] Annual sales revenues for these companies range from just under $1 billion to just over $130 billion. These companies were screened for inclusion in the study based on their intention

to develop an organization-level capability for commercializing radical innovations.

In all cases but one there was an identified organizational system, process, and set of people associated with entrepreneurial activity in the organization, or the declared intent from senior leadership to initiate one in the very near term. The newness of this objective and the comprehensiveness of the systems varied among the ten companies. Of the ten cases, three such initiatives were less than one year old, four were between one and five years old and two were more than five years old. One firm had no such system in place per se, but was included in the sample as a benchmarking firm because it is well recognized as having a highly innovative culture. This variation enabled the research team to observe challenges at different levels of systems development.

Table 1. Summary Information on Companies and Interviewees

Company Business Description	**Age initiative at time of interviews**	**No. Interviews**	**Managerial level of interviewees**
Diversified industrial products manufacturer	0--just beginning	8	CTO and direct reports
Producer of industrial gases and chemicals	1 year	18	CTO, BU Leaders, Incubator Director and his direct reports
Paper making machinery products	0-Just beginning	8	CTO and direct reports
Chemical ingredients and science based products	5 years	10	Executive VP for Growth Initiatives, R&D Directors and staff reports to CTO
Diversified industrial products manufacturer	7 months	16	CTO, COO of R&D and RI Team Leaders
Computer systems and related goods	2 3/4 years	14	Exec. VP of Strategy, Exec. VP of Technology, RI staff and RI team leaders
Diversified industrial and consumer products manufacturer	8 years	13	CTO, BU Leaders, Incubator Director and his direct reports
Specialty paper and packaging manufacturer	2 years	9	President of New Ventures, his direct reports and Venture team members

Specialty packaging manufacturer	7 years	11	R&D Directors and direct reports, Members of Technology Board at Corporate Level, including VP-Strategy
Chemical and plastics manufacturer	3 years	11	Research Directors, Leadership of Radical Innovation group and his direct reports.

Data Collection and Analysis

The initial round of data collection involved day long, onsite visits to each company. The research team interviewed senior leaders, R&D managers, business unit managers, project leaders and other managers involved with corporate entrepreneurship activities. A total of 118 interviews were conducted, between eight and eighteen managers per company. One co-author of this paper was present during each of these interviews, and at least one of the remaining three co-authors was also present during each. As O'Conner et al. (forthcoming) stated, "Immersion in the data, through collection, initially, is a fundamental requirement for developing insights." Additionally, multiple observers during each interview contributed significantly to data interpretation (Eisenhardt, 1989). Follow up phone interviews were made when data needed expansion and/or clarification.

Interviews were semi-structured and one researcher led the questioning, but flexibility was maintained in order to probe issues arising during the interviews. Interview length varied but the average interview lasted one hour. Detailed notes were recorded during the interviews by one researcher while others recorded impressions and observations. Immediately following the interview, recorded notes (by the primary note taker) were reviewed by each member of the team present during the interview. Impressions and observations were added, and corrections or clarifications were made. In nine of the ten cases used in this analysis, tapes of the interviews were transcribed. Both the field notes and the transcribed interviews were used in the data analysis.

Data were analyzed through multicase analysis methods (Eisenhardt 1989; Yin, 1994). More specifically, an "extended" case methodology was employed in order to build on existing theory in the corporate entrepreneurship and innovation literatures (Burawoy, 1991; Danneels, 2002). Unlike traditional grounded theory methodology (Glaser and Strauss, 1967), the extended case methodology allowed us to first compare findings across companies and then compare findings to existing theoretical

frameworks in a manner that builds on current literature. Our research questions guided the data collection, the data revealed our basic framework, and then both the data and existing literature guided our interpretation.

The goal in analyzing qualitative data is analytic induction. Researchers categorize data in a way that it can be reduced to smaller more manageable units in order to analyze within and across cases to identify patterns and recognize emerging areas of divergence and convergence. To facilitate our analysis we used a computer aided text analysis (CATA) software program called NVivo. CATA is defined as "any technique involving the use of computer software for systematically and objectively identifying specified characteristics within text in order to draw inferences from text" (Kabanoff 1996, p. 507). Using NVivo to analyze the interview data allowed for a more systematic approach to the analysis that contributed to reduced coding error, increased objectivity and process, validity, and rigor (Wolfe, Gephart and Johnson, 1993).

Despite our attempts at rigorous analysis, the process of qualitative inquiry is by definition "fuzzy" and our sense of knowing comes from our presence in the field. Or as Van Maanen (1979) stated, we are "in vivo, close to the point of origin" (p. 520). The complexity of innovation systems only leads to heightened complexity in qualitative analysis and interpretation. The tension between what the literature says we should see and what we actually see is not always in alignment. As noted by den Hertog (2002), "learning by doing" is part of the analysis and understanding *how* conclusions are reached can be just as important as *what* conclusions are reached.

Our analysis is based on a process of broad-brush coding, recoding according to the research questions, and then iteratively examining the literature and codes for insights into the key elements forming our framework. Before coding the data, an initial set of broad-brush codes was developed based on the semi-structured interview protocol. This resulted in sixteen codes. To ensure the coding process exhibited reliability, two of the authors each coded transcripts from a different company, then discussed the meaning of the codes. They then coded the same transcripts, using one interview from each of two companies. Inter-rater reliability was calculated, with 68% agreement achieved. This is close to the 70% intercoder reliability suggested by Miles and Huberman (1994). The coders then discussed the areas of variance in the coding and fine-tuned code descriptions before coding the remaining transcripts. In most cases, the researcher responsible for coding a company's data was present during the interviews for that company.

As the coders began to recognize patterns in the data, they met with the other two authors, who had reviewed and analyzed field notes, to discuss key themes emerging from the research questions. At this time the

organization and initiative-level mechanisms presented in the following section started to emerge. From the coded data and field notes we were able to construct data matrices to facilitate within-case and cross-case analyses. Then, by iterating between literature and emerging subcodes within the key themes, the story began to unfold. Finally, we looked for quotes and stories in the transcript data to provide specific supporting and contrasting evidence.

We next discuss our research findings, which are also summarized in Table 2.

Table 2. Summary of Organization and Initiative-Level Enablers and Inhibitors

	Enablers	**Inhibitors**
Organization-Level		
Mainstream Culture	• Action-oriented culture of innovation (accountability). • Tolerance for risk and failure. • Reward structure for innovators. • Enhanced communication and knowledge sharing. • Leveraging "heroes" in the organization.	• "Lip service" given to radical innovation without accountability for results. • Fear of job loss when or if radical innovation project fails. • Stories of failed projects and employees circulating the organization. • Lack of urgency about need for radical innovation.
Business Unit Orientation	• Communication with aligned business units to ease transition and acquire support. • Leverage complementary assets of BUs.	• Business units feeling threatened by initiative. • Short-term performance mentality of business units creates resistance, or pressure on initiative to satisfy their current needs. • Satisfactory performance creates impression radical innovation is unnecessary.
Senior Management Involvement	• High level commitment and involvement to legitimize radical innovation efforts. • Need for experience and understanding about radical innovation. • Need to set clear objectives for innovators.	• Turnover in senior management may stall new initiatives (e.g. new CEO) • Inconsistency in decision-making and support.

	Enablers	Inhibitors
Initiative-Level		
Coaching	• Work with team to identify markets and connect projects to corporate strategy. • Link technical and market perspectives.	• Does not eliminate need for business skills within the project teams. • Designated coaches often lack entrepreneurship experience
Innovation Processes	• Guidance for idea generation, screening, and development. • Need for formal, yet highly adaptive processes.	• Rigid processes and traditional metrics that kill projects too early. • Lack of mechanisms for killing poorly-performing projects in a timely manner. • Inappropriate use of traditional tools to manage radical innovation.
Platforms & Domains	• Opportunity for entry into new technology and business domains. • Reduced risk of expanding into uncertain territories by producing learning that will benefit multiple applications. • Better focus and direction for radical innovation efforts.	• Challenge in managing across multiple businesses. • Difficulty justifying longer term investment without nearer-term benefits.

RESEARCH FINDINGS

Enablers and Inhibitors of Radical Innovation at the Organization Level

Structures for entrepreneurship have been discussed in the literature, the most common being the formation of new venture divisions (Burgelman, 1983, 1984; Souder, 1987; Jones and Butler, 1992; Chesbrough, 2000). We observed, however, neither consistency in how the organizations in our research sample structured their radical innovation initiatives, nor agreement about the most optimal approach for this activity. Rather, we observed a broad array of initiatives ranging from informal product development committees to formal systems with evaluation boards and dedicated program leaders, and from separate venturing divisions to distributed structures. As

Tushman and Nadler (1986) emphasize, there is likely no one best form for stimulating and commercializing innovation; it is more important for the organization to develop facilitating mechanisms.

Our data revealed three key elements emerging as enablers or inhibitors of entrepreneurial environments at the organization level: mainstream culture, business unit orientation, and senior management involvement.

Mainstream Culture

As organizations age, patterned behaviors become norms and values, creating shared expectations about how things get done. Corporate culture can serve as an informal governance system that guides activities in an organization with less dependence on more formal administrative methods (Teece and Pisano, 1994; Tushman and O'Reilly, 1996).

An entrepreneurial culture contains both a value system that views innovation, not only as appropriate and even expected, but critical to the company's competitive advantage, as well as a climate that fosters experimentation and open-mindedness to new ideas (Russell, 1999). On the other hand, the conformity and shared truce that emerge from an organization's culture can create preferences for maintaining an internal political equilibrium and preserving special interests, leading to a collective resistance to new initiatives that pose a threat (Nelson and Winter, 1982). Thus, the mainstream culture of an organization can either limit or support entrepreneurial activity.

One senior manager in our study summed up the important elements of a culture enabling entrepreneurship:

> 'Our culture is that we try to hold onto the values that we hold important. Some fundamental tenants: one is that innovation is important and people make it happen. We try to lower the barriers to communication around the company. We foster an environment where people can take risks. Of course performance matters, and if you mess up a lot, there will be questions. But if you've gone about it the right way, failure is accepted... Good ideas can come from anywhere. Through various programs, they can be done. It's reflective of the culture.'

A broader-level, more mainstream, entrepreneurial culture can be reinforced by specific behaviors and actions of senior management. In the above company, research directors set up formal mechanisms for cross company idea exchange within the research community, to ensure that cross fertilization and opportunity seeking were always taking place. To reinforce this mentality, participation in idea sharing activities were listed as evaluation criteria in R&D employees' performance reviews.

In contrast, another company's venturing program served as no more than a promotional tool, a "sort of a public relations thing...something [management] puts in their slides and says, yeah, we've got [the corporate venture division], but in fact nothing happens. You see, we're doing stuff but they still don't pay any attention to you." Another company manager stated, "If a group is going to do this, we need top management to make this a corporate goal and force people to cooperate with us. But we never got certification from top management."

Leaders also play a role in setting culture through objectives that focus the organization and guide innovators (Burgelman and Sayles, 1986; Tushman and Nadler, 1986; Hornsby, Kuratko and Zahra, 2002). In our research, we found problems with a lack of clearly articulated boundaries, or implied boundaries that did not accommodate entrepreneurial activities. One CEO had not articulated a strategy to guide innovators, despite the organization's top-down management style. As a result, innovators had little guidance for the type of projects they should be working on, but would see their projects routinely rejected because they were "not in a strategic fit area." This problem was exacerbated by the CEO's refusal to commit dedicated resources and people to entrepreneurial initiatives, while at the same time expressing frustration they were not moving faster. A manager in another company noted that, "My people will talk and say we've got some ideas, but we know they won't fly because we know what the boundaries are and you don't go out of the boundaries."

Tolerance of risk and failure is an important element of an entrepreneurial culture (Burgelman and Sayles, 1986; Tushman and Nadler, 1986; Sitkin, 1992; Gillett and Stekler, 1995; Hornsby, Kuratko and Zahra, 1999; Russell, 1999). As one manager pointed out, the costly and risky nature of radical innovation means companies have to commit huge resources to something that may not pan out.

Aversion to risk and fear of failure were common themes among companies citing inhibiting cultures. Fear of job loss could stem from downsizing practices common in US-based companies during economic downturns. But this fear was also fueled when employees in failed projects moved to "no mans land" or experienced uncertainty as to their next job. For example, one manager described how stories were circulated in the

organization about careers coming to a dead end because someone focused on something very innovative and lost their ability to rise in the company.

Stories like the one above are often used as tangible ways to express an organization's culture (Tushman and Nadler, 1986; Tushman and O'Reilly, 1996). Organization members at another company, for example, talked about failed attempts at innovative initiatives in the 60s, and an incubator in the 80s that was shut down. This, according to a manager, "gets put into the organization's memory." As a result, future innovation attempts are taken less seriously and perceived as the "next fad."

Heroes are another mechanism for articulating culture (Tushman and Nadler, 1986; Tushman and O'Reilly, 1996). In a few of the companies, heroes served as examples that radical innovation was rarely possible, that such drastic moves could only be taken by rare individuals willing to take high risks. In addition, where heroes were not rewarded there was little motivation to emulate them, as one manager emphasized: "not only is there a question of 'can,' there's a question of 'why' would anybody want to? Because I've never seen people like that get rewarded in the past. They're sort of outcasts."

One company on the other hand, holds its successful innovators up as role models and encourages others to emulate the "heroes" because of their positive impact on the organization. The company manager acknowledged, "Singling out people as heroes resonates well within our organization, recognizing them publicly."

A strong entrepreneurial culture encourages communication and information sharing among organization members (Burgelman and Sayles, 1986; Tushman and Nadler, 1986; Kanter, 1989; Russell, 1999). Where corporate cultures were seen as enabling entrepreneurship in our sample, resources (people and funds) were shared rather than defended, communication was widespread, even among geographically dispersed and functionally dissimilar units, and accountability for innovation at all levels compelled participation between functional and divisional work units and innovating teams.

A short-term performance mentality permeated some companies, however, and a sense of urgency for entrepreneurship failed to occupy their culture. As noted in one researcher's field notes after a site visit, "The company needs to turn up the heat in terms of creating a culture of intensity. They don't perceive the sense of urgency to change."

Business Unit Orientation

Whether and when entrepreneurial activity should occur apart from the mainstream organization has been debated repeatedly in the literature (Galbraith, 1982; Burgelman and Sayles, 1986, Kanter, 1989; Bower and Christensen, 1995; Spender and Kessler, 1995; Day et al., 2001). Entrepreneurship does not fall within the boundaries of one department, such as R&D, however, but requires the collective efforts of those across the organization (Dougherty, 1992; OECD, 1992). Too much isolation can cause the project to ignore the benefits that can be gained from the resources, experience, and range of skills a large company possesses (Burgelman and Sayles, 1986; Day et al., 2001, Leifer et al., 2000).

Our research generally revealed the need for business unit support because radical innovation requires complementary assets beyond what is reasonable to maintain within an innovating project or program. Teams therefore needed to be able to communicate with the units critical to their projects' eventual success. We observed, however, a paradox with regard to business unit orientation toward longer term entrepreneurial projects among half the companies we studied. When performance was less than satisfactory they were focusing their limited resources on current businesses and short term financial performance. Chasing "the next big idea," as one manager put it, was seen as inappropriate compared to solving the problems the business units were struggling with in the present. Another manager commented:

> '…the business units are very driven to be aligned with their current strategy and they very seldom have the luxury to go off in an area where it's not aligned…you have to prove the linkage and you're competing within the business unit for development and commercialization and go to market money. It's very difficult to do outside of that and try truly new category things. It could be done and I've done it and I've seen it done but it's much more difficult.'

On the other side of the paradox, when performance was satisfactory there was a tendency to perceive radical innovation as unnecessary, as another manager detailed:

> "One of the challenges that I find most is in businesses where they think they have a leadership position; they take a very strong position to not want to reinvent another wheel…" This could reveal

> reluctance toward cannibalizing well-performing current businesses, a threat commonly underlying resistance from the organizational mainstream (Bower and Christensen, 1995; Christensen, 1997). Yet we also observed recognition that, as one manager emphasized, "if there is something that can displace it, it will happen. And it would be better for us to displace ourselves than for someone else to displace us."

In companies with separate units devoted to radical innovation activities, we observed resistance from mainstream units threatened by activities they felt they should be working on. If, for example, an ad-hoc group was working on a radical innovation project and a business unit perceived the project to be in its domain, the business unit felt vulnerable. One company's tension resulted from its R&D lab's mandate to spend 10-15% of its time on new ideas, which it did not. There was a resulting tension over what innovators in a separate group were doing and what the lab realized it should be doing.

Where business unit resistance was high in companies with more formalized initiatives, we observed attempts to gain acceptance by targeting shorter-term wins. This was often coupled with a pull from the business units toward satisfying their needs. In addition, attempts were made to avoid stepping on business units' toes by working on projects that did not interfere with existing businesses. This was problematic, however, when organizational objectives for innovation demanded alignment with core businesses.

Senior Management Involvement

High level support by top management is central to building competitive advantage through entrepreneurship (Twiss, 1986; Maidique, 1988; OECD, 1992; Morone, 1993). Support by top management increases a project's visibility, signals the importance of the venture, and legitimizes the project (Spender and Kessler, 1995). This early legitimacy is especially important for costly, radical ventures that need significant resources and time to develop, and which are likely to face internal resistance (Day, 1994).

Senior management's role in corporate entrepreneurship, as the previous sections suggest, involves setting and reinforcing the culture and ensuring alignment with business units. But we also observed a need for involvement on the part of senior management. Senior management

involvement can encompass selecting key team members and setting goals, leaving the team to define and implement the details (Quinn, 1985; Kanter, 1989; Amabile, 1998; Simon and Houghton, 1999). They can play the role of champions and sponsors, protecting the project (Kanter, 1989; Morone, 1993; Simon and Houghton, 1999; Hornsby, Kuratko, and Zahra, 2002) and providing resources and expertise (Kanter, 1989; Garud and Van de Ven, 1992; Hornsby, Kuratko, and Zahra, 2002).

Strategically significant projects tend to be given more attention and priority by top management (Kanter, 1989; Bart, 1993). "The bigger ideas need a little more senior level involvement," confirmed one of our interviewees. Too much attention from management, however, may prevent the team from revealing delays, or admitting difficulties (Burgelman and Sayles, 1986). This could also be problematic if senior management attention is accompanied by unrealistic expectations, as one R&D manager noted during an interview: "Top management has a tendency to reach down everyday and pull the plant up and check if the roots are growing, and that doesn't always help."

Symptoms of a lack of support, on the other hand, were evident in four companies, where innovators exhibited frustration with senior management's lack of clear objectives, or the inconsistency they exhibited in decision making. Senior managers at one company met on an ad hoc basis to review specific high risk projects that had advanced far enough to require substantial resource decisions. An R&D manager commented, "I tend to walk out of those meetings like...what happened? There was no response. Did we get supported or didn't we get supported? Are they interested or not interested?"

In addition, we observed a need for experience and understanding about radical innovation on the part of senior management. This was clearly lacking in one company where senior management, in evaluating five early opportunities, allocated an equal, but paltry, amount of seed funding to each project so they could continue to the next phase. This lack of differential investment incensed the project team leaders and lessened the overall probably of success for the more feasible projects.

In contrast, senior managers in six companies exhibited high levels of involvement and experience. In one of these companies, for example, senior management made noteworthy time commitments to teams developing new technology platforms. Three senior leaders (Executive VP of R&D, Executive VP of Corporate Strategy, Director of Corporate Strategy) each spent an average of twenty hours per month with the teams. They used their extensive experience to coach the teams and, through their position and networks, they ensured team support and appropriate resource allocation. In their performance evaluation of operating units, they included

measures relating to participation in the development of these emerging platforms.

Enablers and Inhibitors of Radical Innovation at the Initiative Level

The decision to invest in and commercialize high risk innovation must be conducted under conditions of great uncertainty (Tushman and Nadler, 1986; Morone, 1993). At the outset, the market is ill-defined, and the required infrastructure for delivering a radically new product is not in place (Morone, 1993; Betz, 1993). It is difficult to predict or control, at various project stages, how technology development will proceed, how the competition will act, and the timing and acceptance characteristics of the market (Morone, 1993).

We identified three key initiative-level elements the companies recognized a need for, yet presented challenges in managing radical innovation: coaching provided to project teams, processes for evaluating the progress and prospects of the venture, and the use of platform and domain thinking to guide decisions.

Coaching

Despite little mention of the role of coaching in the corporate entrepreneurship or innovation literature, our research revealed a clear need for this function. All of the entrepreneurial activities in the organizations we studied operated within or in close conjunction with technical units, such as R&D or engineering. This, coupled with the technical origins of the ideas, led to a tendency for project teams to be staffed with deep technical expertise and a preference for solving technical problems, but without equal attention paid to connecting the projects to market issues.

One manager commented, "We're trying to move them [technical staff] into thinking about, not what's the next product or 'neat new thing' but really the business...some of them will always like to be the tinkerers and will come up with the next neat little widget and it will never define a large business opportunity." And as another manager acknowledged, "You need to have coaching. People have great ideas, but they don't have a clue how to begin to define what the business model might be."

In some companies, coaching was integrated into the evaluation roles, where the person or group providing resources also gave advice. In

others, the coaching role was more distinct, with deep and frequent involvement by the coaches. Specific managers were appointed coaching roles, and senior managers often played these roles themselves, thereby not only bringing their rich expertise to the project, but using their status and networks to create linkages to other parts of the organization. Coaches worked with project team members to move beyond finding ideas and developing technologies, to finding markets for what they have done, and developing the link to the company's strategy and the venture's eventual business case. They helped direct the team toward the critical business issues and prepared them to address the questions most important to those providing funding.

Yet there were challenges regarding coaching even when there were dedicated and experienced coaches. One company had strong business management people working with the technology-oriented teams to write business cases for their ideas. Yet they still found this a challenge, and articulated a need for more emphasis on multifunctional teams, indicating that actual involvement of marketing people on the teams themselves, not just coaching in these areas, is important.

Across all the companies we saw the coaching role in flux, even in the four that identified formal coaching roles. In one of these four companies, the managers involved in a corporate venturing group turned their attention toward hunting out and screening ideas, at the expense of guiding the venture teams in finding customers. The group's manager had to recruit part-time coaches from within the organization to fill this role. In the other six cases, organizations gave little thought to developing coaching competency, or it happened sporadically or informally. One common problem, and perhaps the most significant, across all the cases, was coaches lacking adequate business development experience.

Innovation Processes

Processes evolve from finding ways to do activities more efficiently. While this improves productivity and predictability, organization members may begin to follow processes simply because they are familiar and comfortable, not because they are effective for the particular activity in which they are applied (Sull, 1999). When uncertainty is high, as in the domain of commercializing radical innovation, deterministic systems and procedures designed to bring order out of chaos may, in fact, stamp out the chaos that is necessary for successful innovation (Cheng and Van de Ven, 1996).

Although nearly all the companies were establishing formal processes for managing radical innovation projects, we observed a clear tension across our sample between needing more processes to guide decision making and feeling these are too restrictive. One manager thought innovators should just "pick up the phone and get help and boot leg. If you try to show a process out of it you would go nuts." Likewise, a manager in another company commented, "We need guidelines, not process... The use of tools and processes wastes time." Similarly, most of the companies had governance or evaluation boards in place to help with decision making, but relied on instinct over clearly defined processes for actually pursuing the concept.

It is not yet clear in the literature whether and how much 'codified' process is necessary for innovation projects involving high uncertainty (Zollo and Winter, 2002). But we observed a need for some formal processes to displace individual opinions and informal estimations, which, according to one manager, did not produce a good sense of which technologies might be worthwhile. Yet where companies attempted to develop processes, these were in some cases ignored because they were too stringent, or viewed as no more than a general framework. In other cases, the processes had undergone frequent change, heightening frustration among innovators.

A somewhat surprising finding was the effort put into generating and screening novel ideas, at the expense of developing processes that could effectively move these ideas toward commercialization. In some companies, this focus on idea generation was needed as they put in place new innovation initiatives. Yet the organizations' struggles with processes beyond screening may reveal the lack of good tools for managing in highly uncertain domains. Stage gate, a technique used for product development (Cooper, 1990), was being used for project management in nearly all the companies. Several companies recognized that stage gate was less applicable to more uncertain projects, but were attempting to modify it.

Another challenge faced by all the companies was the lack of clear mechanisms for "killing" ideas. One manager commented that "Many people will say, one of the main reasons we're not very good at new things is because we will not kill anything." Any attention paid to killing ideas focused on weeding them out in the initial screening. While intended to conserve resources, it carried the risk of rejecting good prospects when they were most vulnerable—before they had a chance to reveal their potential. In many cases, where ideas made it through the initial screening but were later proven less promising, they received no further funding and were left to languish, nonetheless consuming time and resources at a low level.

But a general lack of discipline for killing projects was due to both inadequate process and wider organizational problems, such as a lack of

either a mechanism for recycling people once projects have disbanded or a reward system for killing projects, as the discussion on culture revealed. While one company would like project teams to indicate when projects were going nowhere, they let them drag on because people were afraid of losing their jobs. Another acknowledged the problem as resulting from innovators "falling in love with ideas and fabricating strategies to keep working on them." In addition, the absence of metrics to evaluate project progress contributed to the inability to kill projects.

Platform and Domain-Level Thinking

The creation of a new platform, according to Kim and Kogut (1996), requires new, broad-based skills, and enables the company to expand into future, but uncertain, markets. Platforms can lead to a wide variety of new product opportunities, they maintain, and are more effective in building future advantage than forecasting specific products. A platform, one of our interviewee explained, is "an agglomeration of different projects that are aligned to the same general end."

Nearly all of the companies in our sample identified, or intended to identify, emerging technology platforms in which the company would invest. These comprised emerging technology arenas that have the potential to impact the organizations' core businesses, or produce new businesses through multiple applications.

By proactively articulating specific platforms, says one manager, the organization has better focus and direction for its radical innovation activities, and a strong base for stretching outward from the organization's current strategic domain. In one case, a project leader was able to sell his project to senior management by emphasizing the ability to expand as a platform beyond the initial target customer. In this respect, other markets could be sought if the initial application failed and later applications of the technology could benefit from the learning gained with these initial efforts.

Platforms were typically identified by looking to the outside, where teams of technologists or strategists scan the industry and technical environment, determining which technologies could be strategically important to the organization's future. These tended to adopt an R&D focus, which created two related challenges: verifying their perception of market relevance for the emerging technologies and extracting early application concepts. The latter was in some cases accompanied by senior management impatience with the lack of tangible results, which could be perpetuated by the difficulty of measuring progress for such long term commitments that have fewer near-term applications. One company intends to measure

progress by the number of projects generated for its business units; fortunately, senior management also understands the need to protect the long term nature of these projects.

Another way companies in the sample focused their development activities was through business domains, representing an intersection between technologies and markets. Two companies, for example, formed domains from analyzing all the projects they had in development, and arranging them into business arenas. Switching from projects to domains enabled them to think about multiple applications and look at wider opportunities.

If the goal of corporate entrepreneurship is to be the engine of strategic renewal for the company (Schendel, 1990), independent initiatives operating in various corners of the organization will cause more fragmentation than purposive, directed, strategic growth. Both platforms and domains have the ability to positively impact corporate entrepreneurship by directing attention away from individual, high-risk projects, to maximizing the overall success of a platform or domain. But it also, as one manager put it, could lead to greater success because the firm has specific domain expertise.

DISCUSSION AND CONCLUSIONS

Underlying an organization's corporate entrepreneurship efforts are innovations that redefine or rejuvenate organizations and their market and competitive environments (Covin and Miles, 1999). The current challenge in advancing our understanding about corporate entrepreneurship lies in moving beyond conceptualizations of individual renegades, focusing instead on the organization as an entrepreneurial system with lasting capabilities for this activity (Dougherty and Hardy, 1996; Russell, 1999). Following Dougherty and Hardy's (1996) suggestion that problems with innovation are rooted at both the organization and project level, we identify key elements associated with both the organizational environment and with initiatives for advancing projects. We emphasize that it is neither enough to simply create an organizational environment with no means for advancing projects, nor to develop systems for managing projects without an appropriate organizational environment.

Business units will naturally resist attempts to integrate radical innovations into their current businesses, compelling researchers to attempt to identify appropriate structures for innovation activities and argue whether and when these should be conducted separately from the organizational

mainstream. Our research reveals less concern with finding one best structure or location for radical innovation activities. Instead, we see a need for maintaining connections with core business units important to the commercialization of the radical innovation projects, particularly when a key objective is to infuse the organization with new growth. To reinforce this link most effectively, we emphasize the importance of conscious efforts to create and maintain an appropriate culture. This challenge falls on senior management, who must additionally communicate and reinforce objectives, as well as exhibit the necessary commitment and involvement needed to legitimize the pursuit of radical innovation as an organization-wide mandate.

An interesting observation was made relative to the four companies citing enabling cultures. These four companies also identified high senior management commitment as well as fewer constraints from short-term business unit thinking. Innovation activities in these four companies were dispersed throughout the organization. The remaining companies either were struggling with getting programs started or were setting up systems separate and distinct from the organization's mainstream. This elicits one question for future research: are separate systems an appropriate remedy for poor organization-level factors? But it also suggests that senior management involvement, culture, and business unit orientation must likely integrate closely to address Dougherty and Hardy's (1996) call for an organizational capability for radical innovation.

The misalignment of expectations between innovators and business units, and the resultant tensions that follow, implies a need for unified governance across corporate entrepreneurship activities. If there is no clear corporate level strategy for long term growth and renewal via radical innovation, the direction, focus, and evaluation criteria applied to each project are dependent on individuals seeking to fulfill their own local objectives. This results, as we observe in our data, in projects being invested in at the outset by one set of evaluators with one set of criteria and objectives, and later allowed to fall off the radar screen by the business units tasked with commercializing developing opportunities. There needs to be clear responsibilities for radical innovation at multiple levels of the organization to avoid the previous problem. And this needs to be accompanied by senior management support and involvement so the innovators themselves do not have to struggle with attempts to gain credibility.

The corporate entrepreneurship literature has yet to develop sufficient understanding, at the program level, about how radical innovations are most effectively commercialized. Our insights have helped fill this gap by identifying some key initiative-level enablers and inhibitors. Our findings on the nature of coaching in the radical innovation sphere could develop

further through future research: for example, the expertise of coaches and the skills of team members, as well as the content and process of coaching.

Additionally, while our research reveals fewer problems with early-stage screening, there is a clear need for better process management techniques for radical innovation. The corporate entrepreneurship literature, however, has not produced effective tools beyond, for example, Cooper's stage gate, which was primarily developed for incremental product development. The challenge posed to the research community is in developing techniques that can balance accountability and flexibility in a way that moves projects forward, with allowance for termination or change of direction when appropriate, resulting in the most effective routing of resources toward productive outcomes.

Corporate entrepreneurship research needs to evolve our understanding of platforms and domains beyond theoretical conceptualizations to a better understanding about how to manage in these multiple application arenas. Critical issues identified in our research are how to show early results or progress within longer-term, resource-consuming big projects, and how to account for platform or domain-wide learning that benefits many applications over time.

While we focus our research on corporate entrepreneurship activities involving radical innovation, we recognize this is only one road to increasing the entrepreneurial ability of an established company. Radical innovative initiatives are designed to create significant market and product shifts and we recognize the difficulties of using radical innovation as the one path to corporate renewal.

In addition, the factors we identify in this research are by no means comprehensive. They represent factors the organizations in our research sample are struggling with, but identify as critically important to the advancement of their ability to commercialize radical innovations. We did not observe, for example, a compelling drive toward developing specific incentive programs for innovators. All of our companies motivated entrepreneurs through more traditional means such as promotions, recognition, and salary advances. Perhaps this factor, and others, will become more important as our companies reach a more mature state in their pursuit of corporate entrepreneurship through radical innovation activity.

NOTES

[1] An earlier version of this paper was presented at the 2002 Babson College/Kauffman Foundation Entrepreneurship Research Conference and was published in the conference proceedings: Frontiers of Entrepreneurship Research 2002.

[2] This work comes from the second phase of the Radical Innovation Research Program, which the Industrial Research Institute (IRI) has sponsored since 1995. The IRI is a professional organization of R&D managers of Fortune 1000 firms.

[3] The identities of the companies will be concealed in the discussion of specific managerial practices in accordance with confidentiality agreements between the organizations and the researchers.

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3

ENTREPRENEURIAL BEHAVIOR IN A LARGE TRADITIONAL FIRM: EXPLORING KEY DRIVERS

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INTRODUCTION

Entrepreneurial behavior—innovative use of resources to pursue opportunities—is widely seen as vital for "virtually all" sizes and types of organization (Dess, Lumpkin and McGee, 1999; Morris and Jones, 1999; Sharma and Chrisman, 1999). Over the last decade many large traditional companies have encouraged entrepreneurial behavior across hierarchical levels; a phenomenon that has attracted considerable interest in entrepreneurship and management research. While prior studies have to a large extent focused on contextual features to explain entrepreneurial behavior, little research has looked at the puzzling phenomenon of why some managers act entrepreneurially and others, being exposed to the same corporate context, do not. In other words, we still have a limited understanding of what "really" explains entrepreneurial behavior when controlling for incentive systems, resource allocation procedures and authority structures.

In this paper I integrate and extend traditional perspectives on the key drivers of entrepreneurial behavior within existing organizations. I go beyond traditional approaches that see entrepreneurial behavior as the outcome of either situational or individual specific characteristics and include insights from social cognitive theory. In a nutshell, I propose that

variance in entrepreneurial behavior *within* the same objective corporate context can be best explained at the individual level. I advance and empirically test the idea that managers' subjective interpretation of context; their emotional intelligence, i.e. their ability to regulate feelings and thoughts; and their self-efficacy beliefs, i.e., their perceived capability to behave entrepreneurially, account for differences in entrepreneurial behavior *within* the same company.

This paper offers a fresh look at entrepreneurship within a corporate context. Its main objectives are to enhance our understanding on the nature and antecedents of entrepreneurial behavior within established firms; to advance existing theory by introducing novel constructs from social psychology; and to generate valuable insights on how to stimulate entrepreneurial initiative within traditional companies. First, I offer a conceptualization of "day-to-day entrepreneurship" that is applicable to a wide range of entrepreneurial phenomena within established organizations. Second, while previous studies have typically adopted either a micro or a macro view mirroring the perpetual person versus situation debate, I reconcile both perspectives and introduce original variables as well as moderating effects. Finally I derive meaningful implications for managerial practice and illustrate how top management can foster the entrepreneurial spirit by shaping the playground for managers' actions.

The study explicitly focuses on middle managers. It is widely accepted that middle managers assume a central role in entrepreneurial processes within established organizations (see Hornsby, Kuratko and Zahra (2002) for a review). They not only seek and pursue opportunities; they also bring them to life (Kanter, 1982), and translate them into organizational outcomes (Burgelman, 1983). They actively promote ideas, build support, overcome resistance, and ensure that the innovative ideas are implemented and followed up (Howell and Higgins, 1990).

In the following sections I first provide an original working definition of entrepreneurial behavior in the context of a large established organization. Then I briefly review the two prevailing research traditions on the origins of entrepreneurial behavior and identify two sets of explanatory variables: managers' perception of supportive context and individual cognitive and emotional variables aimed at the regulation of thoughts and feelings. Subsequently I introduce social cognitive theory and propose entrepreneurial self-efficacy beliefs as an additional important antecedent. In a next step I describe the research design, report results, and summarize the main findings. I conclude by discussing theoretical and practical implications.

DEFINING ENTREPRENEURIAL BEHAVIOR IN THE CONTEXT OF A LARGE TRADITIONAL ORGANIZATION

Established definitions of entrepreneurial behavior within existing firms are typically restricted to discrete entrepreneurial events such as the creation of new organizations (Gartner, 1988), new ventures (Vesper, 1985), new entry (Lumpkin and Dess, 1996), or new product development (Von Hippel, Thomke and Sonnack, 1999). While important, narrowly defined notions of *grand entrepreneurship* remain inapplicable to various entrepreneurial phenomena occurring in large established firms. In this study I adopt a less heroic view and emphasize *day-to-day entrepreneurship* aimed at "getting things done in an entrepreneurial—innovative and unusual—way".

I define entrepreneurial behavior within an existing traditional organization as a set of activities and practices by which individuals at multiple levels autonomously generate and use innovative resource combinations to identify and pursue opportunities.

While innovation, autonomy and opportunities are defining elements of entrepreneurship in general (Lumpkin and Dess, 1996; Miller, 1983; Stevenson and Jarillo, 1990), entrepreneurial behavior within large traditional organizations is distinct. It includes a spectrum of activities ranging from independent/autonomous to integrative/cooperative behavior (Ghoshal and Bartlett, 1994). Within large traditional organizations "entrepreneurial managers" need to build on the uniqueness of their units and at the same time profit from similarities with other units. They continuously need to balance "exploration" of new resource combinations with "exploitation" of existing organizational capabilities. Opportunities to act entrepreneurially arise within and outside the organization. As such managers can become entrepreneurial, first, in the way they lead and guide their subordinates; second, in the way they build and organize their unit; and last but not least, in the way they meet challenges from customers and markets. It is the set of these activities—constituting entrepreneurial behavior—that is at the center of this study.

THEORETICAL FRAMEWORK AND HYPOTHESES

Identifying the origins of entrepreneurial behavior in a corporate context has attracted the attention of scholars in various fields of research. Two perspectives in particular have contributed to our current understanding

of what induces entrepreneurial behavior. One stream of research, labeled here as the *macro view*, focuses on the firm as the primary level of analysis and contests that "context triggers entrepreneurial behavior". The second stream of research, labeled as the *micro view*, centers on the individual and asserts, "personal characteristics determine entrepreneurial behavior". In the following sections I briefly review both research perspectives. This study aims at reconciling these views. I present and empirically test a model on the micro-foundations of entrepreneurial behavior that emphasizes managers' individual *perceptions* of supportive context and *individual-difference* variables related to their ability to regulate action, cognition, and emotions as important influencers of entrepreneurial behavior. In other words, my model suggests that variance in entrepreneurial behavior within the same organizational context can be best explained at the level of the individual manager.

The macro view

Research on the role of context in promoting entrepreneurial initiative within firms became increasingly popular in the 1980s and early 1990s (Kanter, 1985; Sathe, 1985; Schuler, 1986). The message conveyed by almost all studies is unequivocal: support is critical to induce entrepreneurial behavior in large traditional organizations (Ghoshal and Bartlett, 1994; Kuratko, Montagno and Hornsby, 1990). Supportive context is typically viewed as a multidimensional construct composed of three sub-dimensions: freedom to act (Lumpkin and Dess, 1996; Schollhammer, 1982), access to resources (Kanter, 1985), and socio-political support (Kuratko, Montagno and Hornsby, 1990). However, while the "ideal" contextual features identified by this stream of research might explain variance in entrepreneurial behavior between firms, they do not elucidate why, within the same organizational context, some managers act entrepreneurially and others do not. In other words, the fact that managers might perceive the same objective supportive context very differently is barely considered. Empirical and theoretical findings, however, suggest that the way individuals interpret and perceive their "playground" for action guides their (entrepreneurial) behavior and influences performance (Brazeal, 1993; Starbuck and Mezias, 1996). I explicitly consider the importance of managers' perceptions of their supportive context in stimulating entrepreneurial behavior and propose (see Figure 1 for the complete set of hypotheses):

> *Hypothesis 1*: Managers' perceptions of their supportive context have a positive effect on entrepreneurial behavior.

In particular, I propose a positive effect of managers' perceived freedom to act, their perceived socio-political support, and their perceived access to resources on entrepreneurial behavior.

The micro view

While it is widely accepted that individual characteristics matter in explaining behavior and performance (Stevenson and Jarillo, 1990), prior research has predominately focused on stable and innate personality traits—locus of control, need for achievement or risk-taking—to explain entrepreneurship (Brockhaus and Horwitz, 1986; Lee and Tsang, 2001; Stewart Jr. and Watson, 1998).

Recent studies in organizational behavior, however, emphasize malleable individual variables—dynamic in space and time—as key influencers of managers' behavior. In particular, cognitive and emotional variables to do with the recognition, regulation and expression of thoughts and feelings are seen as vital to understand the increasingly complex behavior in today's business organizations (Fox and Spector, 2000). Also, researchers in the field of entrepreneurship have shown a growing interest in the role of cognitive and emotional variables and processes (Baron, 1998; Krueger Jr., 2000).

Given the complex nature of entrepreneurial behavior, I confine my analysis to a set of individual variables associated with "emotional intelligence"—the ability to monitor one's own and others' feelings and emotions, to discriminate among them, and to use one's information to guide one's thinking and actions (Salovey and Mayer, 1990). Although systematic empirical research on emotional intelligence is still rare, two well-studied variables in particular have been frequently associated with the ability to regulate thoughts and feelings: self-monitoring and empathy. Subsequently I introduce these individual-difference variables and elucidate the link to entrepreneurial behavior.

People differ in the extent to which they monitor, i.e., observe and control their expressive behavior, self-presentation and non-verbal displays of emotion and affect (Snyder, 1979). *Self-monitoring* refers to the tendency to regulate one's own behavior to meet the demands of social situations. Being sensitive to strategic self-presentation, high self-monitors are willing and able to adapt and modify their behavior as they move from one situation

to another (Brehm, Kassin and Fein, 1999). Entrepreneurial activities in hierarchically organized firms involve a series of very different tasks. High self-monitors are more likely to adapt better to changing situations, and may also do better in switching between different tasks involved in entrepreneurial behavior.

Empathy in a broad sense refers to the reaction to the observed experience of others (Davis, 1983) and embraces a cognitive (accurate perceptions) and emotional (emotional reactivity) dimension. In the context of this paper empathy denotes the cognitive comprehension of others' internal thoughts and feelings and reflects the ability to adopt the perspective, or point of view, of other people, a basic requirement of all social behavior (Hass, 1984). Individuals with high levels of empathy are assumed to adopt and internalize new entrepreneurial approaches envisioned by top management more easily and more easily adopt the perspective of customers and employees. Finally, they are more likely to cooperate, an important component of entrepreneurial behavior within large organizations.

Based on the distinct characteristics of entrepreneurial behavior within established firms, I propose:

> *Hypothesis 2:* Managers' ability to monitor their own feelings and thoughts has a positive effect on entrepreneurial behavior.

The social cognitive view

Social cognitive theory has considerably contributed to our understanding of managerial effectiveness (Shipper and White, 1999). The notion that beliefs of personal efficacy are central to human agency has been widely accepted within management research (Bandura, 1997). Perceived self-efficacy refers to "beliefs in one's capabilities to mobilize the motivation, cognitive resources, and courses of action needed to meet given situational demands" (Wood and Bandura, 1989) and is conceived as central in examining behavioral self-regulation, i.e., the cognitive, individual determination of behavior (Wood and Bandura, 1989). Self-efficacy beliefs are assumed to enhance motivation and performance as they determine the level and magnitude of involvement and effort invested in a course of action. Thus they are seen as important variables to understand why individuals with a similar level of objective technical ability and/or exposure to the same organizational circumstances behave differently (Gist and Mitchell, 1992; Stajkovic and Luthans, 1998).

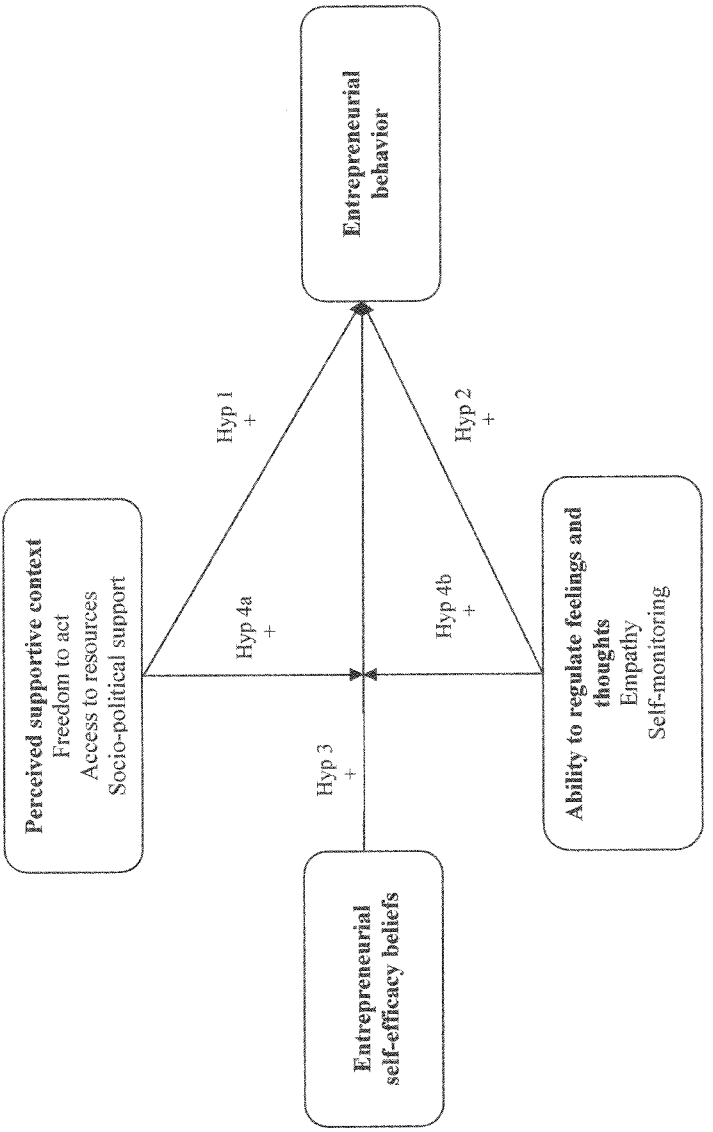

Figure 1. Model for empirical testing

Various authors have pointed out the relevance of self-efficacy theory in understanding entrepreneurial phenomena (Boyd and Vozikis, 1994; Chen, Greene and Crick, 1998; Krueger Jr. and Brazeal, 1994; Liles, 1974; Markman, Balkin and Baron, 2002); especially as entrepreneurship "rests heavily on a robust sense of efficacy to sustain one through the stress and discouragement inherent in innovative pursuits" (Bandura, 1997, p. 455). Based on a number of conceptual and empirical studies that suggest a positive relationship between entrepreneurial self-efficacy beliefs and entrepreneurial activities (Baum, 1994; Boyd and Vozikis, 1994; Chandler and Jansen, 1992), I propose:

> *Hypothesis 3:* Entrepreneurial self-efficacy beliefs have a positive effect on entrepreneurial behavior.

Introducing Moderating Effects

The basic claim of this paper is that perceptions of supportive context, individual cognitive and emotional characteristics, and entrepreneurial self-efficacy beliefs matter. However, their effect on entrepreneurial behavior might not be as straightforward or direct as suggested by the traditional literature. Previous research has suggested that personality characteristics don't exert an isolated effect but work in conjunction with others (Baum, Locke and Smith, 2001; Naffziger, 1995). In this paper I propose that emotional and cognitive variables and perceptions of support influence the link between entrepreneurial self-efficacy beliefs and actual behavior. Gist and Mitchell (1992) note that personal *and* contextual factors must be considered to successfully assess self-efficacy beliefs and their impact on behavior. While previous studies examined the mediating effect of self-efficacy beliefs in a variety of task domains (Mathieu, Martineau and Tannenbaum, 1993; Prussia, Anderson and Manz, 1998), limited empirical research has been conducted on how the effect of entrepreneurial self-efficacy beliefs is moderated through individual-difference and situational variables. A meta-anlysis by Staykowitch and Luthans (1998) shows that situational factors can produce disparities in the relationship between self-efficacy and behavior; and Bandura (1978) asserts that cognitive and emotional factors influence behavioral regulatory mechanisms. In this study I advance and empirically test the idea that perceptions of support and emotional and cognitive variables assume a moderating role in translating entrepreneurial self-efficacy into entrepreneurial behavior.

Theoretical support for linking perceptions of supportive context and cognitive and emotional variables on one hand and entrepreneurial self-

efficacy beliefs on the other goes back to the main sources of self-efficacy as identified by the literature. Traditional literature on self-efficacy has identified four primary information cues that foster self-efficacy beliefs, namely, enactive mastery (repeated performance accomplishment), vicarious experience (modeling), verbal persuasion (convincing), and psychological state (physiological and emotional arousal) (Wood and Bandura, 1989). Building on this theoretical thrust I illustrate the effect of perceived supportive context and of emotional and cognitive variables on self-efficacy beliefs, and consequently present hypotheses for a moderating effect.

Perceived freedom to act interacts with self-efficacy beliefs as it facilitates the internalization of behavioral goals through enactive mastery of entrepreneurial tasks. *Perceived socio-political support* positively affects self-efficacy beliefs via two important information cues, namely, verbal persuasion and vicarious experience. Managers who perceive their formal and informal network as supportive are more encouraged in their actions as they get more verbal and non-verbal feedback from members of their network. In addition, they are more inclined to adopt efficient behavioral patterns through vicarious experience, i.e., learning from other members in the network. And finally, managers' *perceptions of access to resources* create a sense of control over environmental contingencies and therefore enhance perceived self-efficacy (Gist and Mitchell, 1992). Recent empirical findings by Paglis and Green, (2002) furthermore show that support, access to resources and autonomy are significantly related to self-efficacy in the context of leading change. Accordingly I propose:

> *Hypothesis 4a*: Managers' perceptions of supportive context moderate the effect of entrepreneurial self-efficacy beliefs on entrepreneurial behavior.

The empirical results of Paglis and Green (2002) also point towards the importance of individual-difference variables in determining self-efficacy beliefs. In the context of this paper the following mechanisms illustrate the relationship between two emotional and cognitive variables and entrepreneurial self/efficacy beliefs.

Self-monitoring influences self-efficacy beliefs through its impact on two information cues: high self-monitors are sensitive to outcomes of their own behavior (enactive mastery) and behavior of others (vicarious learning). Empathy and perspective taking encourages individual control over the course of action as it facilitates vicarious experience and verbal persuasion—two main information cues informing perceived self-efficacy. Overall, knowing and recognizing their feelings and thoughts, managers are better able to control their emotions, their cognition, and, last but not least, their

actions. Being sensitive to their own and others' inner workings, managers are particularly concerned about their ability to effectively perform specific tasks. Accordingly I propose:

> *Hypothesis 4b:* Managers' ability to monitor their own feelings and thoughts moderates the effect of entrepreneurial self-efficacy beliefs on entrepreneurial behavior.

In sum, to provide a comprehensive model for investigation, I first consider the effect of micro and macro variables as suggested by the traditional literature; second, I introduce entrepreneurial self-efficacy beliefs; and third, I consider how individual-difference variables and perceptions of support moderate the relationship between self-efficacy and actual behavior. Figure 1 summarizes the model for empirical investigation and illustrates the complete set of hypotheses.

METHODS

I chose a one-company research design and developed context-specific measurement instruments to attentively capture the phenomenon. Focusing on one company also allowed me to reduce "noise" by holding constant several important determinants of entrepreneurial behavior at the firm level, such as incentive systems, corporate culture, official information flows.

Setting and Sample

Faced with increasingly demanding customers, intensified competition from abroad and non-financial institutions together with new and cheaper methods of distribution, in 1997 ABN Amro—a large Dutch financial service company—launched a project to promote entrepreneurial behavior, and accordingly reshuffled its operations in the Netherlands. It split the domestic market into approximately 207 micro markets and appointed a middle manager for each of these newly created independent units (areas). These 207 middle managers, who were expected to act entrepreneurially, i.e., to explore and exploit opportunities by the innovative use of resources, are at the center of this study. The data collection process included two phases. In a first step I conducted forty semi-structured interviews (with

middle managers, their bosses and subordinates) to operationalize entrepreneurial behavior and develop an adequate measurement instrument. In a second step I conducted a survey to assess managers' entrepreneurial behavior, their entrepreneurial self-efficacy beliefs, individual differences related to their ability to control thoughts and feelings, and their perceptions of supportive context. Hundred-and-fifty managers answered the questionnaire (response rate of 72%).

To evaluate non-response biases I compared regional distribution, size, and performance of the units in the "returned" sample with the ones in the "not-returned" sample. No significant differences were found. As suggested by the relevant literature, I eliminated social desirability effects as much as possible by clarifying introductions and accurate phrasing of questions (Rossi, Wright and Anderson, 1983).

The sample of managers who returned the questionnaire exhibited the following characteristics: Four percent of all middle managers in the return sample were female, and 71% of all respondents were less than 50 years old. The educational level was quite high: 77.3% had completed higher education (39% held university degrees). These results are consistent with the distribution in the overall population of middle managers working for ABN Amro in the Netherlands. On average, managers in the sample had been with the company for 22 years and were responsible for 59 employees. Depending on the size of unit, the latter number ranged between 14 and 217 employees.

Measures

Dependent variable. I built on interviews with middle (area) managers, subordinates, bosses and internal/external experts to develop indicators forming a context-specific instrument to measure entrepreneurial behavior.

Following the distinct steps suggested by the literature on scale development (Rossi, Wright and Anderson, 1983), I generated different items and pre-tested the scale with a sample of middle managers. The final scale included questions about the extent to which middle managers engaged in particular entrepreneurial activities (1 "no extent", to 7 "to a great extent"). The eight items constituting the final scale (see Appendix) capture the main defining elements of entrepreneurial activity in large traditional organizations, i.e., innovation, autonomy and opportunity. They are targeted at activities related to the renewing of organizational processes and structure, to guiding employees, and last but not least, to proactively approaching

customers and markets. In other words, the items reflect the spectrum of activities associated with entrepreneurial management within an established organization. The final scale demonstrated highly satisfactory internal reliability (Cronbach alpha = 0.78).

Independent variables. I followed Bandura's original approach (Bandura, 1977; Prussia, Anderson and Manz, 1998) to assess *entrepreneurial self-efficacy beliefs* and asked respondents to indicate their level of confidence in their ability to perform specified entrepreneurial tasks on a scale ranging from 'not confident at all' (0) to 'totally confident' (10). Seven indicators reflecting self-efficacy beliefs with respect to entrepreneurial tasks were extracted (Cronbach alpha = 0.84).

To capture and measure the various dimensions of *perceived supportive context*, I developed context specific indicators for perceived freedom to act (autonomy), and perceived access to resources. The freedom to act scale included 4 items (Cronbach alpha = 0.72), and the access to resources scale consisted of 3 items (Cronbach alpha = 0.66). Furthermore I adapted an existing scale developed by (Spreitzer, 1992) to assess perceived socio-political support (Cronbach alpha = 0.70).

I adapted existing scales for self-monitoring (Lennox and Wolfe, 1984) and empathy (perspective taking) (Davis, 1980) to measure *cognitive and emotional variables*. Both scales demonstrated sufficient reliability (Cronbach alpha = 0.80 and 0.79 respectively). All measures are based on seven-point Likert-type scales, with the exception of entrepreneurial self-efficacy beliefs, which, following the suggestion of the literature, is based on a ten-point scale (Lee and Bobko, 1994). See the Appendix for a complete list of the items.

Control variables. Literature in organizational behavior has extensively argued that managerial behavior is determined by demographic and unit-specific characteristics. I controlled for the demographic characteristics of the managers as well as for the organizational and competitive characteristics of their units. Demographic characteristics reflect gender, age, level of education, and professional background. I used dummy variables for all of these: gender (male / female), age (above / below 50), education (high: university or higher vocational education / secondary or primary school), and professional background (similar position as middle managers in same geographical location / another position within the domestic division). To control for unit-specific characteristics I included variables reflecting the particular region where the unit is located, the size of the unit, the level of wealth, and the level of competition in the unit. I used dummy variables to indicate the geographical location of the unit (south / north), the number of full time employees as a proxy for the size of the unit, the average prices of houses as an indicator for the level of wealth in the

unit, and the ratio of ABN Amro bank branches divided by the total number of bank branches in the unit as an estimate for the level of competition.

DATA ANALYSIS AND RESULTS

I conducted ordinary least square regression analysis (OLS) to test the hypotheses on the origins of entrepreneurial behavior. I used interactions to test the moderating effects put forward in hypotheses 4a and 4b. To check for the presence of common method variance, a potential threat to validity, I used Harman's one-factor test (Podsakoff and Organ, 1986). The results suggest no significant problem in my data. The final sample consisted of 149 managers. One manager had to be excluded from the final sample as information on some variables was not available. The descriptive statistics (means and standard deviations), Pearson correlation matrix and Cronbach alphas for all variables indicate acceptable levels and are summarized in Table 1.

Table 2 summarizes the models explaining entrepreneurial behavior within established organizations. All models are significant. Model 1 reflects traditional research approaches viewing entrepreneurial behavior as the outcome of both individual-difference and situation-specific variables. It explains 18% of the estimated variance. The results partly support hypotheses 1 and 2. Perceived access to resources and socio-political support both exert a positive and significant effect ($p < 0.05$) on entrepreneurial behavior. And self-monitoring shows a highly significant and positive influence ($p < 0.01$). Model 2 takes into account the influence of entrepreneurial self-efficacy (hypothesis 3). It accounts for an additional 8% of explained variance beyond the micro and macro antecedents. The effect of access to resources and socio-political support ($p < 0.05$) as well as of self-monitoring ($p < 0.1$) remain robust; and—as predicted—entrepreneurial self-efficacy beliefs significantly and positively ($p < 0.01$) affect entrepreneurial behavior. Model 3 considers the moderating effect of perceived support and cognitive and emotional variables on the relationship between self-efficacy and entrepreneurial behavior. It significantly adds explanatory power ($R^2 = 0.32$) and the results partly support hypotheses 4a and 4b. The interaction of perceived freedom to act and self-monitoring with self-efficacy had a positive and significant influence ($p < 0.05$), while the interaction between empathy and self-efficacy exerted a negative and significant effect on entrepreneurial behavior ($p < 0.10$). In addition, the direct effects of perceived access to resources ($p < 0.05$) and entrepreneurial

Table 1. Means, standard deviations, reliabilities, and intercorrelations for variables assessed in this study.

Variables	Means	Standard deviations	Reli-abilities	1	2	3	4	5	6	7	8	9	10	11	12
1 Entrepr. behavior	4.57	0.84	0.78												
2 Self-efficacy	7.43	0.97	0.84	0.43**											
3 Freedom to act	4.96	0.90	0.72	0.17*	0.32**										
4 Resources	3.40	1.07	0.66	0.28**	0.24**	0.45**									
5 Soc political	3.83	1.04	0.70	0.18*	0.03	0.13	0.20*								
6 Self-monitoring	4.85	0.77	0.80	0.29**	0.44**	-0.04	0.05	-0.10							
7 Perspective taking	4.57	0.90	0.79	0.13	0.17*	0.10	0.15	0.11	0.30**						
8 Size	58.87	45.42	n.a.	0.04	0.06	0.05	-0.10	-0.10	0.02	0.004					
9 Ratio	0.20	0.05	n.a.	-0.03	0.03	-0.02	-0.07	-0.06	0.06	0.12	0.12				
10 Region	0.29	0.46	n.a.	-0.01	0.11	-0.09	0.10	-0.13	0.04	-0.16	-0.07	-0.16			
11 Gender	3.05	0.75	n.a.	0.01	-0.17*	-0.01	0.08	0.08	0.01	0.25**	0.17*	0.001	-0.08		
12 Age	0.29	0.46	n.a.	0.10	-0.17*	-0.002	0.11	0.04	-0.03	0.25**	0.15	0.02	0.04	0.82**	
13 Education	0.77	0.42	n.a.	-0.11	-0.14	-0.13	-0.15	-0.13	-0.20*	-0.13	0.14	-0.04	0.10	-0.20*	-0.07

[a] N=149

*p < 0.10; ** p < 0.05; *** p < 0.001.

Table 2. Results of Multiple Regression[a b]

Variables	Model 1 Entrepreneurial behavior	Model 2 Entrepreneurial behavior	Model 3 Entrepreneurial behavior	Model 4 Entrepreneurial behavior
Perceived freedom to act	0.07	-0.03	-0.03	-0.05
Perceived access to Resources	0.20**	0.18**	0.20**	0.20**
Perceived socio-political support	0.16**	0.15**	0.11	0.11
Self-monitoring	0.30***	0.15*	0.12	0.13
Empathy	-0.01	-0.01	-0.01	-0.05
Entrepreneurial self-efficacy		0.33***	0.44***	0.47***
Entrep. self-efficacy x perc. freedom to act			0.23**	0.21**
Entrep. self-efficacy x perc. socio-political support			-0.02	-0.02
Entrep. self-efficacy x perc. access to resources			-0.01	0.003
Entrepreneurial self-efficacy x empathy			-0.17*	-0.16*
Entrepreneurial self-efficacy x self-monitoring			0.24**	0.23**
Size				0.03
Competitiveness				-0.02
Region				-0.07
Gender (1 = male)				-0.02
Age (>50)				0.13
Education (1 = higher education)				0.01
F	6.35***	8.20***	5.94***	4.01***
F change	7.34***	14.45***	2.65**	0.64
R^2	0.18	0.26	0.32	0.34
Adjusted R^2	0.15	0.23	0.27	0.26

[a] N = 149 [b] Values are standardized estimates * p < .10; ** p < .05; *** p < .01

self-efficacy beliefs ($p < 0.01$) remain robust. Finally, the inclusion of

demographic and situation-specific control variables in model 4 does not significantly increase the amount of variance explained, nor does it affect the robustness of the earlier results.

DISCUSSION AND CONCLUSION

Drawing from interdisciplinary literature I developed and empirically tested a model on the micro-foundations of entrepreneurial behavior within a large traditional organization. Data on 149 middle managers striving to become more "entrepreneurial" revealed that the way managers perceive their supportive organizational context, notably support from colleagues, peers and bosses as well as access to resources, significantly influences entrepreneurial behavior. This suggests, first, that managers create their "playground for action" in their own minds; and second, that it is these subjective interpretations of supportive context that determine entrepreneurial behavior. The results of the data analysis also support claims that individual-difference variables matter. They reveal that self-monitoring managers, i.e., managers who are able to monitor their own expressive behavior and self-presentation are more likely to act entrepreneurially. Finally, the findings corroborate earlier studies that portrayed entrepreneurial self-efficacy beliefs as a powerful predictor of actual entrepreneurial behavior. Advancing previous research, this paper furthermore demonstrates how the interaction with perceived freedom to act and managers'ability to regulate feelings and thoughts moderates the relationship between self-efficacy beliefs and behavior. Perceived freedom to act and self-monitoring exert a reinforcing influence, while empathy demonstrates a weakening effect. The latter effect is not surprising, as empathy represents a variable that is directed towards others, while self-monitoring stands for a self-directed variable.

Contribution

This study offers various contributions to the existing literature. It advances our understanding on entrepreneurial phenomena in a corporate context in a number of aspects. First, in contrast to previous studies, which predominantly look at companies in a high technology or rapidly changing environment, this study is based on a large established organization

operating in a traditional industry. Rather than focusing on discrete entrepreneurial events, it emphasizes "day-to-day entrepreneurship", denoting "entrepreneurial ways of getting things done". Second, the study takes a fresh look at the antecedents of entrepreneurial behavior. Prior empirical findings show that situational and individual variables, such as demographics or traits, are relatively poor predictors and explain only a small part of variance in entrepreneurial behavior (Krueger Jr., Reilly and Carsrud, 2000). This paper represents a first step towards reconciling the two traditional views on key antecedents of entrepreneurship, and advances them by introducing novel constructs. I argued that variance in entrepreneurial behavior within one firm can be explained at the level of individual managers, by focusing on their perceptions of context and variables closely associated with the concept of emotional intelligence. While it recognizes the importance of contextual features, this paper stresses that individual managers might perceive the same objective context very differently. These findings contribute to the existing knowledge on the puzzling question of why within the same company some managers act entrepreneurially and others don't. And third, the paper advances research on the relationship between self-efficacy beliefs and actual behavior in an entrepreneurial context. The concept of self-efficacy is not new in the entrepreneurship literature. However, previous studies mainly used general scales to assess self-efficacy and considered the effect on concrete entrepreneurial events such as new venture or business creation (Chen, Greene and Crick, 1998; Markman, Balkin and Baron, 2002). Broadening the concept of entrepreneurial behavior and developing context-specific measurement instruments, this study is more applicable to understand entrepreneurial phenomena within established traditional firms. In addition, the paper considers the moderating effect, which has been largely neglected in empirical studies. I proposed and empirically showed that individual-difference and perceptions of support moderate the effect between self-efficacy and actual behavior.

Nevertheless, a few *limitations* should be pointed out. First, the study and the development of context specific measures are based on a one-company study. Thus its external validity is difficult to establish and further research is needed to derive generalizations on entrepreneurial behavior in traditional organizations. Second, to examine the micro-foundations of entrepreneurial behavior, I concentrated on perceptual data. Several problems of self-reported data, such as common method bias, consistency motif and social desirability, have been pointed out. Although this study particularly focuses on perceptions, I reduced potential biases through careful design of questionnaire items, "scale reordering" (measuring dependent variables first), "scale trimming" (eliminating items that overlap

with other measures), and use of different scale formats (Podsakoff and Organ, 1986). As suggested by the literature, I conducted Harman's one-factor test to control for common method variance (Podsakoff and Organ, 1986). A third limitation of this study consists in the reciprocal nature of the relationships between constructs. Entrepreneurial self-efficacy beliefs, for example, can be perceived as both an antecedent and a consequence of entrepreneurial behavior (Wood and Bandura, 1989). Finally, the cross-sectional nature of the survey data impedes insights on time related issues, and causal effects cannot be assessed.

The study provides meaningful *insights for managerial practice*. It corroborates earlier findings suggesting that managers interpret, and give subjective meaning to objective organizational context, and therefore "construct" their own behavioral context (Dutton, 1993; Weick, 1979). Perceptions, however, are learned and learnable (Krueger Jr. and Brazeal, 1994), and top management can facilitate change towards entrepreneurial behavior by influencing this "sense-making" process. Findings also reveal that entrepreneurial self-efficacy beliefs provide an explanation for why some managers act entrepreneurially, and others, in the same objective organizational context, do not: it is not because these managers lack necessary skills but because they do not belief in their ability to perform entrepreneurial tasks. Thus, identification and removal of such "self-doubts" are critical to enact entrepreneurial behavior (Chen, Greene and Crick, 1998). Previous research showed that favorable self-efficacy beliefs are readily teachable and that these amplified perceptions of self-efficacy persist over time (Gist, 1987). Top management can deliberately influence the primary sources of entrepreneurial self-efficacy beliefs by, for example, structuring behavioral change programs—self-leadership or empowerment programs—in a way that initial objectives are easily attainable and executed successfully. This allows managers more easily to accomplish behavioral goals, which in turn reinforces self-efficacy beliefs (Beer, 1980).

APPENDIX

Scales and items

Entrepreneurial behavior

1. Promoting entrepreneurial behavior of employees with initiatives that went beyond the ones suggested by head-office
2. Proactively approach new customers
3. Encouraging employees to come up with their own solutions to problems.
4. Initiating marketing campaigns in addition to the ones promoted by head-office
5. Actively investigating new market opportunities within the rayon
6. Encouraging your employees to develop new ideas on how to do business
7. Developing tailor-made bonus systems to honor commercial efforts of employees within your rayon
8. Reorganizing the customer complaints process

Entrepreneurial self-efficacy beliefs

1. I am very good in developing new strategies for my rayon
2. When faced with changes in the business environment, I am confident in my ability to change processes and procedures within my rayon
3. I am self-assured in my abilities to be a people-manager
4. It is easy for me to motivate my subordinates to get things done
5. I am confident to provide a stimulating place to work for my employees
6. When I try to change the behavior of an employee, I am confident to succeed
7. When I set commercial plans for the rayon, I am certain to make them work

Perceptions of supportive context

Perceived freedom to act

1. I have enough freedom in my rayon to do business in "my" way
2. How I organize my rayon is pretty much left to me
3. I can manage my rayon in an autonomous manner
4. I am autonomous in managing employees in my rayon

Perceived socio-political support

1. I have the support I need from colleagues at the regional office to do my job well
2. I have the support I need from colleagues at head office to do my job well

Perceived access to resources

1. When I need additional financial and material resources I can get them
2. When I need additional human resources and manpower I can usually get them
3. It is easy to receive means and instruments for realizing original (new) projects within my rayon

Ability to regulate feelings and thoughts

Self-monitoring

1. I have the ability to control the way I come across to people, depending on the impression I wish to give them
2. When I feel that the image I am portraying isn't working, I can readily change it to something that does
3. I have found that I can adjust my behavior to meet the requirements of any situation I find myself in
4. I am often able to read people's true emotions correctly through their eyes
5. In conversations, I am sensitive to even the slightest change in the facial expression of the person I'm talking to
6. My powers of intuition are quite good when it comes to understanding other's emotions and motives

Empathy (perspective taking)

1. Before criticizing somebody, I try to imagine how I would feel if I were in their place
2. I sometimes try to understand my colleagues better by imagining how things look from their perspective
3. I believe that there are two sides to every question and try to look at them both
4. I try to look at everybody's side of a disagreement before I make a decision
5. When I am upset at someone, I usually try to "put myself in his/her shoes" for a while

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4

CORPORATE VENTURE CAPITAL: REALIZING RESOURCE COMBINATIONS AND TRANSFERS

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INTRODUCTION

This paper examines the mechanisms by which corporate venture capital (CVC) programs may realize resource combinations and transfers with their start-up investments that may lead to improved CVC performance.[1] Corporate venture capital (CVC) programs, through which large, established companies make minority equity investments in promising start-up enterprises, have long been recognized as strategic activities in either sustaining or renewing profitable growth in large corporations. These programs typically involve two potentially value adding roles in addition to acting as independent venture capitalists: combining resources of the corporation and venture; and/or transferring resources between the two entities. Yet, many corporations have still been very frustrated by their corporate venture capital programs. Indeed, a recent Bain study showed corporate venturing as one of the least applied and least satisfying strategic programs used (Bain, 2001). Furthermore, investments made by corporate venture capital funds have been, on average, not as successful as those made by independent venture capital funds; they pay too much and are short lived. (Gompers and Lerner, 1998).

Researchers in the last two cycles of corporate venture capital programs (e.g. the seventies and eighties) have provided numerous reasons

why corporate venture capital programs might not have been fully effective. First, a well-defined mission for the corporate venture capital activity may not have been provided (Fast, 1978; Siegel, Siegel and MacMillan, 1988). Top management often seeks to accomplish multiple potentially incompatible objectives, such as gaining access to emerging, potentially disruptive technologies, leveraging the resources of the corporation, accessing the resources of the venture, spinning off internally developed start-ups, providing incubation services and finally, riding the venture capital wave by generating attractive financial returns. Second, the commitment to corporate venturing was often limited, disappearing as soon as the executive champion was reassigned (Hardymon, DiNino and Salter, 1983; Rind, 1982; Sykes, 1990). Third, middle managers may resist corporate efforts to establish a venture capital fund, as they would prefer funds to be allocated to their internal development programs. Finally, corporations have frequently been reluctant to compensate their venture managers through "carried interest" provisions, i.e. direct equity stakes in the ventures, fearing (1) that they might need to make huge payments if their investments were successful, (2) that it might create a double culture in the company resulting in disruptive envy, and (3) that it may elevate revenue expectations for all in the company (Block and Ornati, 1987). As a result, corporations have often been unable to attract top people to their venture funds, leading to even less commitment to the activity (Hardymon, DiNino and Salter, 1983; Rind, 1982; Sykes, 1990).

Despite these alleged limitations, recent research has found that corporate venture capital programs that focused on ventures related to their base businesses were likely to have more initial public offerings and higher valuations than independent venture capitalists with a similar sized portfolio (Gompers and Lerner, 1998; Maula and Murray, 2000). Furthermore, by surveying start-up venture CEOs, Maula (2001) found that resource combinations and transfers such as access to production related resources, distribution resources, and knowledge were the main drivers of their perceived value-add.[2] Indeed, Henderson and Leleux (2003) found that CVC ventures that had formed relationships with the business units were more likely to be liquidated than those that had not.[3] Thus, we have at least some evidence of the link between resource combinations and transfers and CVC performance. However, many questions still remain concerning the dynamics of <u>how</u> these CVCs and venture investments realize resource combinations and transfers along the venture investment process of search, due diligence, negotiation and venture management.

The purpose of the paper is, therefore, to provide propositions by which CVC programs may be more likely to stimulate resource combinations and transfers leading to higher CVC performance. We are

thus narrowing the focus of the paper to only those mechanisms along the CVC investment processes of search, due diligence, negotiation/approval and management that increase the likelihood of realizing resource combinations or transfers. Clearly, some venture investments are intended to hedge substitute technologies and/or create competing business units, not to leverage existing ones (e.g. Voice Over IP for incumbent telecom operators); others may include internal ventures that are intended to be spun off (e.g. Lucent's New Venture Group, Xerox Technology Ventures, British Telecom's Brightstar) or may be planned to create an ecosystem to drive industry standards (e.g. Intel64 Fund, Sun Java Fund etc.) (See for example, Henderson and Leleux (2002), Chesbrough, (2002) for typologies of corporate venture capital investments.) While there may be overlap on the process steps for these various types of corporate venture capital investments, they likely require different mechanisms to ensure venture success. We intend to focus only on those that increase the likelihood of resource transfers and combinations, which we also believe, based on some initial data analysis, are the fundamental drivers behind CVC performance. We, thus, first introduce the theoretical background, the resource-based view, explain how it has been applied to related areas, strategic alliances and internal corporate venturing and illustrate how the theory could be enhanced by exploring resource combinations and transfers in corporate venture capital programs. We then introduce our research methods and describe the telecom industry in which the field study was carried out. In the following section, we build on the clinical studies to introduce a series of nine propositions for realizing resource combinations and transfers along the CVC investment process of search, due diligence, negotiations/approval and venture management. In so doing, we highlight the key constructs that may be instrumental in leading to higher CVC performance. In the last section, we conclude by discussing the contributions to resource-based theory, making implications for management, and exploring the limitations and potential for further research on the subject.

THEORETICAL BACKGROUND

The underlying perspective for this study is the resource-based view of the firm, which views firm resources as the primary determinant of competitive advantage of the firm (Barney, 1991). In the resourced-based view, there has been two branches of inquiry: an exploration of how valuable resources may be created and developed (Dierickx and Cool, 1989; Amit and Shoemaker, 1993; Teece et al, 1997, Galunic and Rodan, 1998) and an

examination which and why unique resources are valuable (i.e. scarcity based rents) (Wernerfelt, 1984; Barney, 1991). Our interest concerns the former branch.

One way to create new value is through innovation or searching out new resources or ways to combine them. Indeed, Schumpeter (1934) argued that entrepreneurship is a critical force in generating innovations that could alter existing industries or spawn new ones. He also considered the source: recognizing the value in underlying parts of diverse systems and determining that these parts could be combined or re-combined in new ways. As Nelson and Winter (1982) argued, innovation "consists to a substantial extent of a recombination of conceptual and physical materials that were previously in existence (p.30)." While Schumpeter (1934) applied his arguments to the creation of new firms, this line of thinking has also been directly supported by research on topics similar to corporate venture capital: internal corporate venturing and strategic alliances.

Most researchers have agreed that new ventures whether internal or external benefit from their corporate parents or alliance partners through resource combinations and transfers. For example, the venture's technology and product know-how can be combined with the corporation's assets in purchasing, manufacturing, distribution, marketing and sales (Burgelman and Sayles, 1986; Caves and Porter, 1977; Zahra and George, 1999 for internal ventures and Mitchell and Singh, 1992; Alvarez and Barney, 2001; Elfring and Hulsink, 2001 and De Meyer, 1999 for alliances). Furthermore, transfer of knowledge occurs as well through the learning of markets, competition, relationship building, research etc. (Backholm, 2000; Shrader and Simon, 1997 for internal ventures and Badaracco, 1991; Elfring and Hulsink, 2001; Doz, 1996 and Hamel, 1991 for alliances).

While there is certainly evidence of the potential for value creation in combining and transferring resources between new firms and large corporations, it is still not clear how this potential value creation will in fact be realized (Madhok and Tallman 1998). Indeed, the empirical evidence for internal corporate venture success (compared to independent ventures) has been mixed (see e.g. Shrader and Simon, 1997). Similar equivocal conclusions were found for the alliance—new venture performance link (see e.g. Das et al., 1998 for alliances). Thus, obstacles must exist that hinder this resource combination and transfer potential. Burgelman (1983) and McGrath et al. (1994) document what mechanisms would need to be in place for internal ventures to realize competitive advantage, rents and ultimately higher performance. Similarly, Madhok and Tallman (1998) discuss obstacle removing mechanisms in resource combining alliances as does Doz (1996) in resource transfer or learning alliances. However, these obstacles were documented only between the alliances or internal ventures and their

corporate partners. A potentially crucial moderating role such as business development for alliances has not been adequately researched in its potential obstacle removing effect. We thus contribute to resource based view by exploring resource combinations and transfers where three rather than two main parties are involved. Indeed, because of this third party many of the obstacles in combining or transferring resources may be mitigated. The under-researched area of corporate venture capital provides a unique context to explore resource combinations and transfers with a key moderator or broker in place: the corporate venture capital investment manager. Since this broker role and the CVC venture investment processes intended to realize resource combinations and transfers role have not been adequately addressed in the literature we resorted to a grounded research design.

RESEARCH METHODS

Despite concerns for external validity and generalizability, grounded, case-based research was chosen over pure deductive reasoning in order to gain greater insight into a phenomenon that has not been completely understood yet: how corporate venture capital programs may stimulate resource combinations and transfers leading to higher CVC performance (Yin, 1989; Eisenhardt, 1989). In such situations, a grounded theory building approach is more likely to generate in-depth and relevant insights on the phenomenon than relying on past research (Glaser and Strauss, 1967; Eisenhardt and Brown, 1997).

Case setting: The fast paced network related industries including telecommunications, cable, wireless and satellite network operations are the setting for this study. These industries have experienced extraordinary rates of change over the last several years, making them particularly attractive for this study. Broadband technology advances have initiated a convergence of several industries: media and broadband, data communications and mobile, and information technology and telecom, to name a few. The emergence of the Internet combined with the growing numbers of telecommuters has meant increasing demand for access technologies with greater bandwidth. Yet, there has been no clear winner as to who will provide the best, most cost effective access technology; competition remains intense between cable, wireless, DSL, and satellite networks. In parallel, substantial changes in regulations have occurred, such as the 1996 Deregulation Act passed in the US and widespread privatisation witnessed in Europe, including British Telecom, Teledanmark, France Telecom, and Deutsche Telekom. As a

result, many of these companies have had to become far more customer oriented than during the period of regulation.

Overall, the environment in the network related industries can be characterized as chaotic compared to its regulated past. To cope with this environmental turbulence, companies in these industries have resorted to a number of strategic programs including internal research and development, joint ventures, vertical partnerships, technology licenses, product market licenses, acquisitions, internal corporate venture and corporate venture capital activities. Corporate venture capital investments were initiated as a way to gain access to innovations in the marketplace for items such as security, e-commerce software to improve their services, or optical components and other networking hardware to improve their network operations. Out of the 300+ firms we identified in these industries, approximately 15% had started a corporate venture capital activity of some sort as of early 2001.

Research design: The research design is a multiple case study, which allows for "replication logic" (Yin, 1984). The cases are seen as a series of independent studies that support or validate the emerging insights or propositions that we developed. Along with the gathering of information on the corporate venture capital programs, we incorporated the impact of company and industry level forces. The corporate venture capital program was considered the unit of analysis.

This research concerns the study of 6 corporate venture capital programs of 6 different firms who are active either in telecommunications (6/6), wireless (6/6) cable (5/6) or satellite (4/6)[4]. All firms are publicly held, even though some of them still have minority stakes held by their governments. The average length of the CVC programs has been around 4 years.

Table 1 provides some descriptive information on the six companies in the study sample and Table 2 focuses on the key strategic characteristics of the sampled firms. Of the six cases, three, Alpha, Beta and Gamma are so far considered successful (still active and operating, with returns, as reported in the interviews, that have met or exceeded the corporate hurdles); Lamdba has been considered successful on financial grounds but has been "put on hold" with no further proposals being accepted; Epsilon has been shut down; and Gamma is still active with results falling far short of expectations.

Alpha Ventures has been in existence since 1997 and over time has consistently increased the size of its fund due to its financial success. The scope of its investments has been in telecommunications, the Internet, multi-media, e-commerce and security. It has offices in Europe, US, and Israel. Furthermore, it has invested in private venture capital funds. Its portfolio includes 48 investments of which approximately 58% have some

relationship with an Alpha business unit. There has been greater attempt through more formalized procedures to increase this percentage as much as possible in the future.

Beta Ventures has been in operation since 1997 as well but has a more modest commitment to corporate venturing than Alpha. However, the returns to its program have also significantly exceeded expectations (not in financial terms but in aiding the business units.) Beta Ventures operates two funds: one in its home country with another corporate partner, and the other in Silicon Valley that it uses as a technology scout for new ideas and technologies in the wireless and Internet space that could be leveraged in their home country in Europe. Its portfolio includes 9 reported investments of which 100% have a relationship with one of Beta's business units.

Gamma Ventures has been in operation since 1992 and has operated two funds that have been very successful and exceeded expectations. Both funds have included outside investors. Out of the six corporate venture capital programs, it is the most independent, mimicking a private venture capitalist with carried interest. Gamma Ventures is located in its home country with 6 investment professionals. While its primary focus is said to be financial, approximately 50% of their reported 33 investments had a relationships with the Gamma organization.

Delta Ventures has been in operation for 6 years. The first four were limited to investing in external venture funds in Europe, the US, and Israel in order to "learn and explore." Approximately two years ago, it started direct investments and one year ago it created its own dedicated venture capital program with another corporate sponsor focused mainly on its home country. Its attention is primarily on very early stage companies that could gain from accessing its "incubator" and "convergence services." However, to date, out of the twenty investments done, which include those from the outside funds, only 4 had any relationship with the Delta's business units. Results to date have been somewhat below expectations.

Epsilon Ventures was in operations for 3 years. During the middle of 2001 it was reorganized into another division (effectively shut down). The program experienced uncertainty during 1999 and 2000 due to significant top management turnover. During early 2000 there was agreement from top management to commit funds ex-ante and to enact a carried interest program; however, over a one-year period, nothing was implemented. Many of the investment managers chose to leave. Despite these uncertainties, of the 15 investments that were made in e-commerce, mobile internet and broadband, approximately 8 had some relationship with Delta's business units.

Lambda Ventures had been in operations for 6 years investing in venture capital funds before starting on their own about 2.5 years ago. So far

without any ex-ante commitment of funds, the program had invested $85 million; however, it was recently put on hold due to the significant uncertainty in its base businesses (especially since it committed so much to its 3G licenses.) Its venture program was highly specialized focusing on "mobile content" or those technologies that were complementary to the business units. Ten out of the fourteen investments had a relationship with one of Lambda's business units.

Further data in Table 3 substantiates these general conclusions about the overall success of each of the programs. For Alpha, Gamma and Lambda who stated that their programs were successful financially, Table 3 shows that they had more IPOs (typically 10% of total portfolio) and more acquisitions (between 10% and 30% of total portfolio). Table 3 also shows the link between status and resource combinations and transfers. Indeed, for all 9 investments that went public, 90% had a relationship with a business unit. Furthermore, for the 17 investments that resulted in acquisition, 12 of them had a relationship with a business unit. While not statistically significant, these results further confirm the resource combinations and transfer – CVC performance link.

Data collection: We collected data through interviews, questionnaires, observations and secondary sources. The primary source of data collection was semi-structured interviews with the respondents. To facilitate the company interviews, in most cases an initial contact was established by an introductory letter sent to a senior partner of the fund management team followed by a telephone call approximately one week later to set up the meetings.

Among the six participating companies, we conducted interviews at the company site and over the telephone. The 25 interviews conducted were taped and transcribed. The interviews lasted 90 minutes on average, although a couple lasted more than three hours. During both site visits and conference presentations we kept a record of our impressions and observations, which provided additional data to the research (see e.g. Eisenhardt, 1989).

An interview guide was used to conduct the semi-structured interviews. The guide contained both specific questions regarding the CVC programs and some open-ended questions concerning the management of the venture investments or the portfolio. The guide had two main sections, one covering general information on the corporate venture capital program and the other covering the company's subjective assessment of the success of the program to date, the obstacles in the process and the process itself as shown in Table 4.

Table 1. Descriptive Data on the Case Studies

Name of Company (sales EUR million, age)	Experience in CVC	Fund Size	Status of Program	Combinations and Transfers of Reported Investments[a]
Alpha (EUR49,190, 148 years)	3.5 years of direct investing	$250 million	Active; however substantial employee turnover	28/48 58%
Beta (EUR30,818, 130 years)	4 years of direct investing	$30 million	Active	9/9 100%
Gamma (EUR5,319, 146 years)	9 years of direct investing	Latest fund $25 million	Active	16/33 48%
Delta (EUR12,859, 149 years)	6 years of direct and indirect investing	$85 million	Active; however performing under expectations	4/20 20%
Epsilon (EUR6,120, 147 years)	3 years of direct investing	No limit given	Shut down, company has reorganized	8/15 53%
Lambda (EUR2,200, 146 years)	6 of indirect investing and 2.5 years of direct investing	$85 million so far but no limit given at outset	Active but at the moment on hold	10/14 70%

[a] Combinations and transfers refer to the actual number and percentage of deals that involved some combination and transfer of resources between a business unit at the investor company and the target company (i.e. a relationship was created). For instance, in alpha company, 28 deals out of the 48 concluded involved such resource transfers, or 58% of the deal total.

Table 2. Strategic Dimensions of the Sampled CVC Programs

Parameters	Alpha	Beta	Gamma	Delta	Epsilon	Lambda
CVC Objectives	Strategic	Strategic	Financial	Strategic	Strategic	Strategic
Industry Focus (relatedness)	High	High	High	High	High	Complementary
Geographical Focus	World	North America + Europe	World	World	World	World
Investment Stage	All	Early	All	Early	All	All
CVC Program Independence	Low	Low	High	Low	High	High
Venture Involvement	Low	High	High	Low	High	High
Resource Transfer:						
To Firm	Yes	Yes	Yes	Yes	Yes	Yes
From Firm	Yes	Yes	No	Yes	Yes	Yes
Post-mortem	Articulated Not Codified	Articulated Codified	Articulated, Not Codified	Articulated Codified	Articulated Codified	Articulated Not Codified

Table 3. Status of Investments as of December 2002

	Resource Combinations and Transfers	Alpha		Beta		Gamma		Delta		Epsilon		Lambda	
Went Public	Yes	4	100%	0		4	75%	0		0		1	100%
	No		0%				25%						0%
Acquired	Yes	4	75%	1	100%	5	60%	1	100%	2	50%	4	75%
	No		25%		0%		40%		0%		50%		25%
Alive and Private	Yes	37	57%	8	100%	23	44%	15	20%	12	50%	8	63%
	No		43%		0%		56%		80%		50%		37%
Bankrupt	Yes	3	0%	0		1	0%	4	0	1	100%	1	100%
	No		100%				100%		100%		0%		0%
Number of Reported Investments		48		9		33		20		15		14	

Table 4. Semi-Structured Interview Guide

Information on the CVC Program	Assessment of the CVC Program
Organization, Motive, Management	Overall View of the Program
Regulatory	Experience of the Team and the Individual
Decision Making Process	Resource Transfer (from Corporate to Target)
Independence of CVC Teams	Resource Transfer (from Target to Corporate)
Compensation of CVC Teams	Intended Source of Value Creation
Intended Sectors to Invest in	Post-Mortem Analysis
Percentage of Start Ups	Performance Measurement

Data analysis: The data analysis process consisted of two different stages, which were carried out over two different time periods. During the first period (first half of 2001), the interviews were conducted, transcribed and analysed in order to get a better understanding of the motivations, processes and outcomes of the corporate venture capital programs in the six firms studied. Using these interviews and the secondary sources regarding corporate venture capital programs, we developed in-depth case studies for each of the six sites. During the second phase (second half of 2001), we used a cross case analysis (see e.g. Eisenhardt, 1989) to create the insights. We use two cross case analysis tactics: clustering by perceived performance, portfolio size, and those that had been liquidated through IPO or acquisition versus those that had not, and selecting pairs of cases to understand their similarities and differences (see e.g. Eisenhardt, 1989.) These tactics allowed us to come up with the emerging propositions on effecting resource combinations and transfers.

REALIZING RESOURCE COMBINATIONS AND TRANSFERS

The evidence from this study certainly supports extant research on the motives behind corporate venture capital programs (see e.g. Maula 2001). All of the respondents indicated how important it was for the corporation to leverage their existing networks by adding new services or technologies. Furthermore, they stated how the start-ups could benefit by gaining access to substantial corporate resources, such as research and development, distribution and sales. For example, one of the CVC units, Beta, defined corporate venture capital as follows:

> "A structure created within major industrial groups to invest in and consult with innovative new companies, which have, through limited dimensions, great potential

> for future growth, and, in any case, the potential to develop synergies with the core business of the group."

Nevertheless, we also found substantial differences among CVC programs in how these combinations and transfers were realized. Despite the critical role of the CVC unit acting as a broker we observed, similar to the alliance (Doz, 1996; Madhok and Tallman, 1998) and internal corporate venturing literature (McGrath et al., 1995; Thornhill and Amit, 2001) the following major obstacles in effecting resource combinations and transfers: lack of recognition, commitment and proper incentives of the business units, tenuous relationships between the corporation and start-ups, and frictions between business units and the CVC organization. Furthermore, we found that these obstacles were not specific to one phase in the venture investment process. Rather they were overlaying the core process (see e.g. Burgelman, 1983 on internal corporate venturing.) As a result, we focused on the overlaying obstacles and how they could be overcome rather than the core process of search, due diligence, negotiation and management. Each of these obstacles is discussed in more detail below.

Lack of recognition: Similar to lack of comprehension (McGrath et al., 1995) and awareness (Thornhill and Amit, 2001) in the internal venturing literature and the lack of recognition in the alliance literature (Madhok and Tallman, 1998), we observed in our fieldwork that value-creating benefits have to be recognized before any cooperation between the business unit and venture is started. For investment opportunities that originated externally, the corporate venture capitalist plays an important broker role in linking the start up managers with the business units. To facilitate the emergence of a common understanding of the value creation benefits of the venture, we observed that a person or team from the business unit was involved in the due diligence process. The more stable CVC programs have developed a well-honed due diligence process, which typically includes such topics as financial, synergy (technical and commercial) and legal evaluations, and get the involvement from the business unit as early as possible. For example, in Alpha Ventures, after significant honing, the process was described as follows:

- Review the business plan of the venture
- Bring people in to review it (experts within Alpha Ventures and Alpha Corporate, typically R&D)
- Use contacts within Alpha Business Units (e.g. Mobile) to establish possible partnerships (approximately 60% of the due diligence time)

Delta Ventures, in contrast, developed an ex-post "opportunity recognition" mechanism to deal with the perceived tendency of business units to otherwise decline projects with the slightest potential for sales cannibalization.

> "The board wanted to have the decision making process separated from the business units for fear that they would 'nix' (sic) each investment. This allowed us to invest in something that was clearly in competition with the business units. Indeed, one of the unwritten objectives of [Delta Ventures] was to create new business areas that were competing with the existing business units."

Based on these observations, we argue through the following proposition that involving the business units in the due diligence process at least sets the stage for resource combinations and transfers:

> *Proposition 1*: Resource transfers or combinations in corporate venture capital programs are more likely to occur when business units are involved in the due diligence prior to the investment.

Lack of incentives: Even if there is recognition of the potential value benefits of resource combinations or transfers, there may not be sufficient incentives of the business units to engage in any form of relationship. Similar to Block and Ornati (1987) in internal corporate venturing, we found that incentives and compensation were not correlated with realizing resource combinations or transfers. None of the business unit managers in the sample were remunerated specifically to encourage resource combinations or transfers with the start up ventures. Furthermore, we observed, similar to alliance literature (Khanna, 1998), that incentives were linked to private rather than common benefits. For example, we found that more successful transfers occurred with investments beyond the seed and start-up phases, i.e. second and later rounds of financing. As some of the respondents mentioned, these ventures already had a prototype or a product that was ready for market introduction, reducing significantly the required time commitments and incubation services the business unit manager were willing to provide. For example, based on the immediately recognized payback, Alpha had successfully invested in a start-up called Intershop, a developer of a leading e-commerce engine that was quickly incorporated into their ISP business

unit's e-commerce offering. Based on these observations, we can make the following proposition:

> *Proposition 2*: Resource transfers or combinations in corporate venture capital programs will more likely occur with later stage companies (second round and later) than early stage companies.

Lack of commitment: Even if there is recognition and incentives behind combining and/or transferring resources, similar to observations made in the internal venturing literature (Knight, 1989; Thornhill and Amit, 2001) and in the alliance literature (Doz, 1996; Madhok and Tallman, 1998) there still may not be sufficient commitment of the business units to engage in any form of relationship. Many of the investment managers stated the benefits were simply too small for the business unit managers to really care. From our interviews, we discovered that the more successful venture investments originated from the business units. In these investments, at least a relationship with the venture had already been established resulting in the recognition of the opportunity, the incentives and commitment to work with the venture. Furthermore, there was no perception that the venture was being "forced" onto the business unit by the CVC unit. Based on these observations, we can make the following proposition:

> *Proposition 3*: Resource transfers or combinations in corporate venture capital programs are more likely to occur when the investment idea originates from the business units.

However, many of the investments did not originate from the business units. In these cases, the processes used by the CVC units varied. One of the successful and all three unsuccessful programs did not seek a formal commitment from the business units; the respondents stated either that opening the door was good enough and/or that they might have been investing in "disruptive technologies," which would have been immediately refused by the business units. However, Alpha and Beta, two of the more successful operations obtained an informal agreement or a letter of intent prior to the investment to ensure some form of business unit commitment to working with the venture. Alpha in particular was the most interesting. Their previous process was similar to Delta's where opening the doors to the business units was considered good enough to start the process. However the number of relationships with the business units was falling below expectations. Two years into its program, Alpha decided to change its

processes to include more formal business unit commitment resulting in a significant change in business unit cooperation. As a result of these observations, we can make the following proposition:

> *Proposition 4*: Resource transfers or combinations in corporate venture capital programs are more likely to occur when the business units formally commit (e.g. a letter of intent of sponsorship) their involvement to the CVC units prior to making the investment.

Tenuous relationships between the ventures and the corporation (including both the CVC program and business units): Even if recognition, incentives and commitment are achieved on the part of the business units, similar to findings in the internal corporate venturing (Thornhill and Amit, 2001) and alliance literature (Madhok and Tallman, 1998; Khanna, 1998), the relationship between the entrepreneur and the corporation whether it be the CVC unit or the business units still may end up being tenuous.

We heard many times that the entrepreneur may perceive heavy corporate involvement as an attempt to appropriate their know-how or expertise. However, some companies we interviewed argued that the fear of appropriation could be partly placated by showing at least a willingness to sign non-disclosure agreements. As one of the respondents at Beta stated:

> "It is first based on mutual trust but if they (the venture firms) require a more formal document, then we will revert to a standard non-disclosure agreement."

However, others argued that NDAs during the screening stage were more harmful than good. First, they stated that signing an NDA prior to reviewing business plans would permanently compromise whole areas of investments for them. Considering that on average more than 95% of the business plans received for investment consideration were not interesting opportunities, systematic use of NDAs at the screening stage would severely censor the opportunity pool with nothing tangible in return. Hence, many CVC units stated that they would engage only in post-screening NDAs so as to reduce this potential shortcoming. Secondly, they argued that NDAs in the end were a weak protective mechanism given the entrepreneurs' difficulty in enforcing them. NDAs were not the only way for building trust between the two parties. They mentioned as well that the frequency of interactions during the total investment process to create more of a personal bond between the entrepreneur, CVC investment manager and business unit

representatives was also very important. Based on these observations, we make the following proposition:

> *Proposition 5*: Resource transfers or combinations in corporate venture capital programs are more likely to occur when trust has been established between the parties, through a willingness to sign post-screening non-disclosure agreements and/or frequent interactions with both the CVC investment manager and business unit representatives.

Even if trust were established between the three parties, we found that the entrepreneurs still feared being overwhelmed with too much help[5] from the corporate venture capital or business units with services and products that they truly did not need. As one respondent stated, "remember the [name of parent] way is not always best, it can kill creativity." Indeed, in one of the less successful operations, Gamma, a formal structure called "the convergence group," had been established to focus on "the merging of markets, services and technologies such as media and broadband, mobile and internet and IT and telecoms." This convergence group consisted of members from the portfolio companies, research and development and the business units. While in theory this structural solution sounded beneficial to the three parties and indeed may work in internal corporate venturing, the respondents acknowledged that the additional layer was not only unnecessary but also led to substantial delays in developing new services. Thus, based on this observation, we can make the following proposition:

> *Proposition 6*: Resource transfers or combinations in corporate venture capital programs will more likely occur if the venture companies do not perceive that the level and nature of the support is forced upon them.

Poor relationship between the CVC and business units: While the relationship between the entrepreneurs and the corporation may be strong, the relationships within the corporation or between the CVC and business units may not be, an area that has not been fully covered in the alliance literature (e.g. relationship between business units and business development) or in the internal venturing literature (e.g. relationship between business units and new ventures division.) Thus, rather than observing a smooth moderating function of the CVC unit in all cases, we observed an additional potential obstacle for realizing resource combinations and transfers.

First, we observed that the credibility of the CVC unit staff was seen to be very important in initiating the resource combination and transfer process. Some CVC programs were considered "business development units" who consisted mainly of corporate staff either from mergers and acquisitions or from corporate strategy. As mentioned by Alpha, the CVC program was used more as a career stepping stone for fast trackers. In other CVC programs, such as Gamma, the professionals consisted of former business unit operating managers where the positions were considered an end rather than another rung on the corporate ladder. As one of the respondents at Gamma stated:

> "This is a venture capital firm. The people are not here on a rotational basis. This is a career move for them."

We found that permanent staff which originally came from the business units carried more credibility with the business unit representatives, due to their previous personal ties as well as their commitment to the venture success, rather than to their next career move. Consequently, we can make the following proposition:

> *Proposition 7*: Resource transfers or combinations in corporate venture capital programs will more likely occur if the internally sourced CVC investment managers were former business unit managers with significant operational experience.

Some of the less successful corporate venture capital programs including Delta and Epsilon incorporated in the same venture investment process both external investments and internal ventures that did not "fit" into the organization. Thus, while centralized, the unit would apply the same processes to (1) internal investments that were ready to be spun off because they did not fit with the business units' strategy nor received any additional funding from R&D, and/or (2) external investments that either leveraged the existing assets of the business units and/or (3) external investments that were considered "disruptive" to an existing business unit. Respondents from the two programs acknowledged this form of organization and process led to greater suspicion and confusion amongst the business unit managers. As a result, we found that the business unit managers were less willing to get involved in the whole investment process. Consequently, we can make the following proposition,

> *Proposition 8*: Resource transfers or combinations in corporate venture capital programs are more likely to occur when the CVC unit has a separate and distinct process responsible for ventures that seek to combine or transfer resources.

We also observed that the business units often envied the rewards earned by the corporate venture capital programs, especially for the ventures forwarded by them. For example at Alpha, one of the respondents mentioned the following:

> "Envy from the Alpha business lines exists, especially since Alpha Ventures has had great success with generating profits with their targeted ventures."

Indeed, some of the respondents argued that the business unit may not make the effort to combine or transfer resources when they know that the returns (in terms of capital gains) were going to the CVC program, not themselves. In two of the less successful cases, the business units actually saw the advantage of setting up their own business unit-level fund, thus by-passing the CVC unit entirely. For example, at Delta, a relatively young program, this was seen as one of their major problems.

> "The relationship with business units was not particularly good. Delta Ventures was supposed to be used as a vehicle to encourage internal and external ventures that were primarily not connected with the businesses but there were outbreaks within the company. For example, the head of the network division stated that they wanted to start their own CVC fund themselves."

We contend that these difficulties arose more often amongst the corporate venture capital programs, which had not yet established a level of perceived sustainability with the business units. Beta and Gamma, two of the more successful units tended to be more independent from corporate than the others, had separate funds, and top management commitment, as a result, tended to be better accepted by the business units as sustainable entities. Based on this we can make the following proposition.

> *Proposition 9*: Resource transfers or combinations in corporate venture capital programs are more likely to

occur when the corporate venture capital unit was perceived by the business units to be sustainable.

In total, we make nine propositions that overcome the overlaying obstacles to realizing resource combinations and/or transfers within the core process of search, due diligence, negotiation/approval, and management. Figure 1 provides a model highlighting how the obstacles overlay several steps of the core process and where the nine propositions generally appear.

DISCUSSION AND CONCLUSIONS

Corporate venture capital programs have been for a long time characterized as short-term, uncommitted, under funded and unsuccessful as they often arise at the tail end of an IPO boom, only to be cancelled during the bust. However, since recent evidence has shown that CVC programs with a "strategic overlap" perform at least as well as independent venture capital funds, a deeper look into the processes of how this performance is achieved is warranted.

This paper contends that "strategic overlap" means the potential for combining and transferring resources between the ventures and the business units of the corporation. Based on in-depth clinical research of six European telecom operators' CVC programs, we observed that CVC unit typically recognized the value creating potential through resource combinations and transfers but often suffered from implementation. Following these observations, we offer nine propositions to contend with these overlaying implementation problems along the venture investment process of search, due diligence, approval, negotiation and management: the business units' lack of recognition, commitment and incentives, tenuous relationships among the corporation, venture and the CVC unit.

By examining the mechanisms along the venture investment process by which resources may more likely be combined and transferred, we are taking a much more dynamic view than the traditional resource based perspective. Clearly resource endowments are a necessary but not a sufficient condition to realize resource combinations and transfers. Indeed, there is a growing recognition in the literature that many of the "dynamic capabilities" that underlie a company's ability to create new value are based not only on its positions (i.e. the actual asset stocks of the business unit and venture) but more importantly on its processes (see e.g. Teece, Pisano and Shuen, 1997). We take a similar position based on our observations of corporate venture capital programs in the rapidly changing network related industries. Given

the fact that all programs recognized the potential of "leveraging the core" and often invested in ventures that could have a relationship with the business units, the value add came from overcoming the obstacles in the processes.

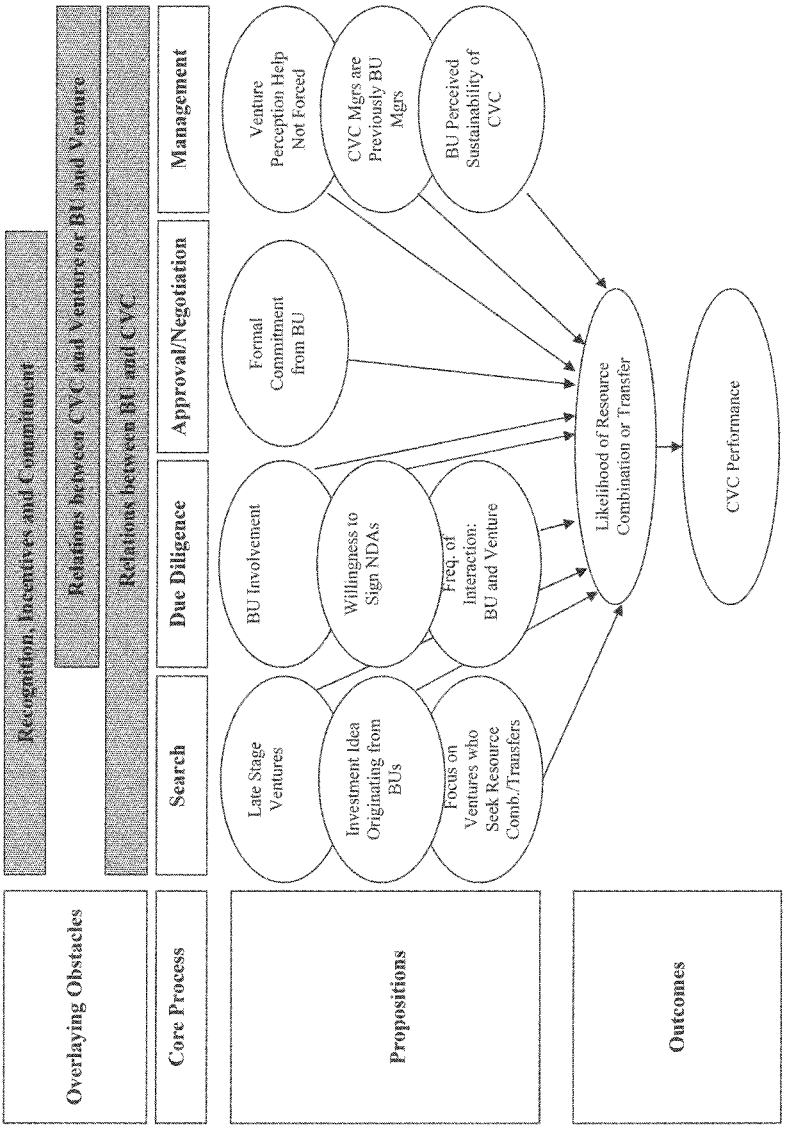

Figure 1. Model of Resource Combination and/or Transfer in Corporate Venture Capital Programs

While further substantiating the dynamic capabilities view of the firm, we have also contributed to this stream of literature. First, this study is the first one that has explored the corporate venture capital process along similar dimensions as Burgelman (1983) and McGrath et al (1994) for internal corporate ventures and Madhok and Tallman (1998) and Doz (1996) for alliances. Secondly, we are building on Maula's (2001) excellent work on the structural components of resource combinations and transfers by adding the element of time through the phases of the venture investment process. Thirdly, while the core process in external corporate venturing may be similar to developing internal ventures and forging strategic alliances, some of the overlaying obstacles have not been fully developed. For example, in alliance and internal venturing literature, only the obstacles concerning the two main parties, the venture and the corporation, have been developed. However, in corporate venture capital, another player, the corporate venture capital unit, takes on a crucial role. However, rather than helping remove some of the obstacles found in the alliance and internal venturing literature, this additional party more likely adds to them. Finally, this paper contributes more fully to building a theory of strategic corporate venture capital that has to date been missing in the CVC literature. As such, we have been careful to define the boundaries (those programs only focused on combining and transferring resources across any period of time in any type of industry), the constructs (that can be later tested through confirmatory factor analysis) and their relationships (on the likelihood of resource combinations and transfers and CVC performance) (see e.g. Bacharach, 1989 for a review of theory building).

If we cannot formally reject these propositions through survey based empirical testing, significant implications can be provided for management of corporate venture capital programs. If the purpose of the program is indeed to "leverage the core assets of the organization" then the search process may be better focused on second-stage or later investments and to those that originate from the business units suggestions. Furthermore, the value creation potential for an investment would be much higher if the business unit were involved in the due diligence process and were willing to sign a letter of sponsorship. Involvement may also require more frequent contacts with the venture thus increasing the level of trust between the business and/or CVC unit and the venture. As the business units see the benefits of that commitment (i.e. through ventures with marketable products and services), their understanding, support and perceived sustainability of the program may increase, thus improving their relationship with the CVC unit. While we can only speculate at this time, early successes may indeed lead to a snowball effect of increased recognition, incentives, and commitment and better relationships among the three parties involved. This

snowball effect would certainly further substantiate another dimension of the dynamic capabilities view of the firm: path dependence (see e.g. Teece, Pisano and Shuen, 1997). Clearly, survey based empirical research would be required to substantiate these potential complementarities or path dependence effect.

Several limitations from this study can be highlighted. First, and most importantly, we focused on corporate venture capital programs with the "potential of creating synergies with the core business of the group" as one of the respondent's defined it. However, there were cases in the sample where the investments were not made to ensure resource combinations and transfers. Some of the venture investments were intended to hedge substitute technologies and create competing business units, not to leverage existing ones. Others included internal ventures intended to be spun off. While we proposed the primary purpose of CVC should be to realize resource combinations and transfers, we did not provide alternative processes for those other activities for which a corporate venture capital unit could be responsible. Clearly, more research is required to further understand the mechanisms that would lead to greater success in these types of CVC programs. Secondly, since this study was conducted on a single industry, we cannot make further generalizations until empirical testing is conducted on a wider sample of sectors. Despite these limitations, the paper sheds new light on how corporate venture capital programs may be able to better realize resource combinations and transfers to enhance CVC performance overall.

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NOTES

[1] By performance, we are referring to the traditional metric used in the venture capital industry: internal rate of return rather than other perhaps less quantifiable metrics that may be used (e.g. learning from the new venture, change in culture, incremental increase in business unit performance etc.)

[2] Maula (2001) did not provide a correlation between the perceived value added and actual performance of these ventures (i.e. market valuations post IPO). Hence, we can only speculate that CVC's outperform IVC's due to realizing resource combinations and transfers. However, we have at least some supporting evidence from other studies on related topics. For example, Sapienza (1992), Sapienza and Gupta (1994) showed a high correlation between perceptual value added measures and venture performance for traditional venture capital investments. Similar findings have been shown in strategic alliances (Saxton, 1997, Weaver and Dickson, 1998), and joint ventures (Lyles and Salk, 1996).

[3] It is still unknown, however, whether there is any significant difference in the internal rates of return for those ventures that formed relationships and those that did not. This question is a topic of future research.

[4] Each firm in the sample was in general active in more than one network related industry segment, and as such appears in more than one category.

[5] Indeed, Szulanski (1995) found in his study of transfer of best practices within firms that "excess motivation" of the source may be detrimental to any successful transfer.

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5

CORPORATE VENTURE CAPITALISTS AND INDEPENDENT VENTURE CAPITALISTS: WHAT DO THEY KNOW, WHO DO THEY KNOW, AND SHOULD ENTREPRENEURS CARE?

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INTRODUCTION

The availability of the specialist form of risk capital provided by venture capital firms to young high potential businesses has been viewed as critical in supporting a vibrant modern 'information economy' (Bank of England, 2001; European Commission, 1997; 1998; Kortum and Lerner, 2000; NVCA, 2002). The scale and sophistication of the US venture capital industry has been cited as one reason for the US economy's exceptional ability to turn innovative ideas from universities and research laboratories into new world-class companies, such as Intel Corporation, Cisco Systems, Microsoft, Oracle, Sun Microsystems, Genentech, Federal Express, Amazon.com, and Yahoo! (Black and Gilson, 1998; European Commission, 1998; Gompers and Lerner, 2000b; Gompers and Lerner, 2001). New innovative ventures are frequently started by highly technically skilled

founders who may have little managerial expertise. Such firms may reach their full commercial potential when aided by venture capital firms, who are able to provide active managerial support in addition to financing (Barney et al., 1996; Gorman and Sahlman, 1989; Hellmann and Puri, 2002; Macmillan et al., 1989; Sapienza, 1992; Sapienza et al., 1996). Acknowledging the value of the experienced equity investors in guiding young firms in their early growth stages, Warne (1988) has described their role succinctly as "capital and consulting".

While the nature of the value-added provided by independent venture capitalists for their portfolio companies has been studied extensively (Barney et al., 1996; Cyr et al., 2000; Ehrlich et al., 1994; Elango et al., 1995; Gorman and Sahlman, 1989; Hellmann and Puri, 2002; Hsu, 2002; Macmillan et al., 1989; Sapienza, 1992; Sapienza et al., 1994; Sapienza et al., 1996; Seppä and Maula, 2002; Steier and Greenwood, 1995), there has been little research to examine whether different types of venture capitalists differ in terms of their ability to deliver value-adding services. A particularly important distinction in the venture capital community, we believe, is the one between independent and corporate venture capitalists (Hellmann, 2002). During recent years, corporate venture capitalists have emerged as a significant force affecting the venture capital community, often advancing strategic agendas that may differ from those of 'traditional', or independent venture capitalists (Gompers and Lerner, 2000a; Hellmann, 2002; Maula, 2001). Recent empirical studies also suggest that the value-adding contributions made by corporate venture capitalists (CVCs) to the commercial success of their portfolio firms may be different from those of traditional venture capitalists (Gompers and Lerner, 2000a; Hellmann, 2002; Kelley and Spinelli, 2001; Maula, 2001; Maula et al., 2003; Maula and Murray, 2002). However, so far, there have been no studies to rigorously compare the distinct contributions of each of these two types of investors when they are simultaneously present as co-investors in a single firm. Our study seeks to make such a comparison by comparing the value-added provided by independent and corporate venture capitalists to their portfolio firms.

To make the proposed comparison, we draw eclectically on the 'resource-based view' (Barney, 1991; Wernerfelt, 1984), the 'social capital theory' (Coleman, 1988; Nahapiet and Ghoshal, 1998) and the 'knowledge-based view' (Grant, 1996; Kogut and Zander, 1992) frameworks in order to develop hypotheses of the value-adding benefits of corporate and independent venture capital investors for their portfolio firms. Our basic argument is that the resources controlled by independent and corporate venture capital investors are *different but complementary*, and that this impacts their ability to add value to their portfolio companies. Specifically,

we propose that the differences in the nature and relevance of the value-added services provided by the two types of venture capitalists to their portfolio firms should be reflected in their different social networks and knowledge and experience bases. We empirically test this proposition by constructing nine related hypotheses to identify and test the differences in the value-added provided by these two types of investors.

The hypotheses are tested using primary data from 91 matched pairs of dyads between U.S. technology-based new firms and their most important venture capital and corporate venture capital investors. We employ both univariate and multiple regression analyses to test our hypotheses. The findings confirm our original assumption that the value-adding contributions of corporate venture capital and independent venture capital investors are quite different, but also complementary, in the sense that they mutually reinforce the portfolio company's chances of commercial success.

To our knowledge, this is the first rigorous empirical study to compare the importance of various value-added forms of CVC and VC investors. The study also contributes to the growing literature on resource-based theory by demonstrating that differences in resource-profiles of investors are reflected in their capability to support their portfolio companies. Recognizing the different and complementary roles of the two types of investors has also implications for emerging theoretical research that models the portfolio company's choice between corporate venture capital and independent venture capital investors (Hellmann, 2002).

The rest of the paper is structured as follows. We first introduce the literature to which this study contributes. We then lay out our hypotheses. This is followed by the method section and empirical analyses. Finally, we discuss our findings and the implications for various stakeholders.

LITERATURE REVIEW

Value-Adding Contributions of Independent and Corporate Venture Capitalists

'Classic' venture capitalists (Bygrave and Timmons, 1992; Reynolds et al., 2002) specializing in the earliest stages of investment (i.e. seed, start-up and early growth finance) are commonly obliged to deal with talented but inexperienced entrepreneurial teams. The ability of the venture capitalist to impart critical knowledge and experience in addition to finance may be instrumental in the portfolio firm's subsequent success or even survival (Gorman and Sahlman, 1989; Hellmann and Puri, 2002; Macmillan et al., 1989; Sapienza, 1992; Sapienza et al., 1994; Sapienza et al., 1996). From the

perspective of the portfolio firm, this ability to provide value-adding services constitutes an even more important selection criterion than their willingness to provide funding for the firm (Smith, 2001). Such services may take many forms, and these have been studied both from the perspectives of the venture capital firm and the portfolio firm. Focusing on the venture capital firm's perspective, MacMillan et al. (1989) reported that activities attracting the highest degree of venture capitalists' involvement were: (1) serving as a sounding board to the entrepreneur team, (2) helping the firm obtain alternative further sources of equity financing, (3) interfacing with the investor group, (4) monitoring financial performance, (5) monitoring operating performance, and (6) helping their portfolio firms attract alternative sources of debt financing. Quite similarly, Gorman and Sahlman (1989) documented a ranked order of the forms of assistance as follows: (1) help with obtaining additional financing, (2) strategic planning, (3) management recruitment, (4) operational planning, (5) introductions to potential customers and suppliers, and (6) resolving compensation issues. Focusing on the portfolio firm's perspective, the studies by Sapienza et al. (1994; 1996) and Rosenstein et al. (1993) have identified both 'strategic', 'interpersonal', and 'financial' roles of venture capitalists. Strategic and interpersonal roles included acting as a 'sounding board' to top management, acting as a finance and business advisor, and recruiting or replacing the CEO. The financial roles included monitoring financial performance as well as helping raise additional funds.

Summarizing from the results of earlier studies, the most value-adding services of independent venture capitalists, other than the initial provision of capital, are likely to involve arranging additional financing, supporting strategic decision making, and recruiting key executives. All these services serve to ensure that the young firm can respond rapidly and effectively to the entrepreneurial opportunities that the firm has identified.

While the value-added of independent venture capitalists has been studied extensively, there is significantly less research on the value-added provided by corporate venture capitalists. This may be due to the highly cyclical nature of the corporate venture capital community – at least three 'waves' of CVC activity have occurred during the past 20 years (Gompers and Lerner, 2000a; Maula, 2001). Further, in contrast to the transient nature of CVC specialist teams in large corporations, the average managing partnership of a VC firm is considerably more stable (Gompers and Lerner, 2000a). Among the few studies quantitatively examining the performance implications of the participation of corporate venture capital investors, Gompers and Lerner (2000a) and Maula and Murray (2002) found that young companies co-financed by a corporate investor operating in a strategically related industry were more likely to result in an initial public

offering (IPO) and to receive higher valuations in their IPOs. In addition to the performance effects of CVC involvement, research focusing on the value-added mechanisms and contingencies influencing the creation of value-added has recently emerged (Maula, 2001). In his study, Maula (2001) developed a theory-based model of three main mechanisms through which portfolio companies receive value-added from their corporate venture capital investors. Maula identified resource acquisition, knowledge acquisition, and endorsement as each being important. Resource acquisition refers to the investee firm's preferential access to tangible resources such as distribution channels or the production capacity of the corporate investor. Knowledge acquisition concerns the portfolio firm's ability to gain advantage from access to the private information held by the corporation related to salient technology, markets and competition data. Endorsement refers to the increased credibility and commercial status conferred on the young firm by its public affiliation with a large corporation. The model was validated using primary data from U.S technology-based new firms.

Summarizing, the few extant studies on the value-adding contributions of corporate venture capitalists appear to suggest slightly different value-adding contributions than for independent venture capitalists. These studies on the value-added of corporate venture capitalists appear to emphasize knowledge-based learning benefits and endorsement benefits stemming from the parent corporation of the corporate venture capital fund. In the following, we briefly review relevant theories that can be used to study and better comprehend such differences.

Value-Adding Contributions in the Light of Social Capital and Knowledge-Based Perspectives

In the present study, we follow the resource based logic (Barney, 1991; Wernerfelt, 1984) in arguing that physical, social, and knowledge resources of specific investor types influence the nature and quality of the value-added that they are able to make available to their portfolio companies. In the resource based-view, the term 'resource' has often been used very broadly. For instance, Barney (1991) defined resources as "all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness". Prior research on the value-added of both independent venture capitalists (Gorman and Sahlman, 1989; Macmillan et al., 1989; Sapienza et al., 1996) and corporate venture capitalists (Maula, 2001) indicates that the majority of the value-added of independent and corporate venture capitalists is linked to

their membership of valuable networks (social capital) or their ownership of private and not easily imitable knowledge and experience (knowledge-based view). We therefore ground our analysis in these two particular theoretical perspectives in order to identify and explain differences in the value-added services provided by independent and corporate venture capitalists.

First, we consider the value-added to portfolio companies originating from the social capital of their investors (Adler and Kwon, 2002; Gabbay and Leenders, 1999; Nahapiet and Ghoshal, 1998). In their influential paper, Nahapiet and Ghoshal (1998) defined social capital as "the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit". Although this definition of social capital can be considered somewhat problematic because it defines the concept on the basis of its outcomes, this definition is applicable to our study given that we are specifically focusing on the different types of resources that portfolio companies can access through their investors. When using this theoretical lens to predict differences in the value-added provided by independent and corporate venture capital investors, we assume that there are clear differences in the social networks in which these two types of investors participate. That is, differences in *whom they know*. These differences, we argue, should be reflected in the genesis, application and relevance of their value-added services.

Second, in attempting to understand the nature of investor support, we also examine the value-added provided by investors on the basis of their knowledge resources (Eisenhardt and Santos, 2001; Grant, 1996; Kogut and Zander, 1992; Spender, 1996). The knowledge-based literature considers knowledge as the strategically most significant asset of the firm (Grant, 1996). Proponents of the knowledge-based view have argued that heterogeneous knowledge bases, which both contribute to and are sustained by unique capabilities among firms, are the main determinants of sustained competitive advantage and superior corporate performance (DeCarolis and Deeds, 1999; Kogut and Zander, 1993). When using this theoretical lens to predict differences in the value-added provided by independent and corporate venture capital investors, we assume that there are differences in the knowledge base and capabilities of these two types of investors. That is, differences in *what they know*. These differences should be reflected in the nature of their value-added to portfolio firms.

There is a growing stream of research examining the influence of the backgrounds, experience, skills, and networks of entrepreneurial teams on the strategies and performance of new ventures (Aldrich et al., 1987; Anderson and Jack, 2002; Birley, 1985; Hite and Hesterly, 2001). Recently, the analysis of the performance impacts of such resources has been extended

to the context of venture capitalist-portfolio firm relationship (Dimov, 2002; Freeman, 1999; Hsu, 2002; Lindsey, 2002; Podolny, 2001; Seppä and Maula, 2002). Examining the career histories of the investors and thus their stocks of appropriate knowledge and experience, Dimov (2002) showed that VC partners' education, functional expertise, and prior experience in particular industries strongly determined whether the VC firm was prepared to invest in individual portfolio companies at certain development stages and from particular industries. Recent research has also shown that the networks of venture capitalists influence their value adding capability (Hsu, 2002; Lindsey, 2002; Seppä and Maula, 2002). Focusing on investors' knowledge and network resources, we attempt to compare systematically the value-added provided by corporate venture capital and independent venture capital investors. By so doing, we attempt to contribute to the emerging literature on the value added of corporate venture capital (Gompers and Lerner, 2000a; Kelley and Spinelli, 2001; Maula, 2001) and the relative roles of independent and corporate venture capital investors (Gompers and Lerner, 2000a; Hellmann, 2002; Maula and Murray, 2002). In the following, we lay out our specific hypotheses on how venture capital investors' knowledge and social resources might be reflected in their value-adding services provided to portfolio firms.

HYPOTHESES

Value-Added Based on Social Capital

Social capital to attract financing. One of the common roles of equity investors is helping the growing company obtain new financing when needed (Gorman and Sahlman, 1989; Macmillan et al., 1989; Sapienza et al., 1996). Because of the staged nature of venture capital financing, companies typically will need to seek several rounds of investments before they are commercially mature and sufficiently profitable for a liquidity event (Gompers, 1995; Sahlman, 1990). Independent venture capitalists are financial professionals who seek new investment opportunities by cultivating a broad network of commercial partners and allies in the financial markets. This network will include investment bankers and other venture capitalists who will frequently act as co-investors in syndicated multi-stage deals. The end purpose of these associations is exclusively financial gain measured by fund rates of return (Burgel, 2000). In comparison, corporate venture capitalists often prioritize strategic goals, e.g. gaining a 'window on new technologies', above financial goals (Chesbrough, 2002; Ernst & Young, 2002; Kann, 2000; Keil, 2002; Sykes, 1990; Winters and Murfin, 1988). As

a consequence, corporate venture capitalists may possess smaller and less valuable social networks within the financial services community. Also, the generally more limited entrepreneurial deal making experience of corporate venture capitalists causes them to prefer to invest via syndication with independent venture capitalists (Birkinshaw et al., 2002; Ernst & Young, 2002). For example, Intel Capital as one of the largest and most established CVC operations will not invest in a young company unless one of the core business units considers the investment valuable for the corporation's strategic goals (Corporate Executive Board, 2000). An attractive financial return is necessary but not sufficient for Intel's involvement (Intel Capital, 2003). Similarly, Intel Capital has a policy of not investing in a portfolio company unless a venture capitalist is also prepared to invest. Given their relatively greater experience of investing in young privately held companies, the venture capital firm commonly acts as the lead investor and takes primary responsibility for assessing the valuation and determining the financial structure of the syndicated deal. Therefore, we hypothesize that independent venture capitalists will have a more dominant role in helping to arrange additional financing for portfolio firms.

> *Hypothesis 1:* VCs are more valuable in helping portfolio companies obtain additional financing than CVCs.

Social capital to attract key executives. As a condition of initial and follow-on finance, risk capital investors place demanding requirements on their portfolio companies to grow rapidly into positions of economic strength and, ideally, market dominance. These exceptional performance expectations often require that highly experienced career managers can be recruited to complement or replace the existing members in the entrepreneurial team. Accordingly, a critical and often cited role of venture capitalists is to help in the identification and hiring of key executives in order to realize the growth plans of their portfolio companies (Gorman and Sahlman, 1989; Hellmann and Puri, 2002; Rosenstein et al., 1993; Sapienza et al., 1996). For instance, Hellmann and Puri (2002) found that VC backed start-ups were faster to hire a marketing VP and replace the founder CEO compared to companies without VC backing. Gorman and Sahlman (1989) found that a typical venture capitalist had replaced three portfolio company CEOs during their career as a venture capitalist. In reality, venture capitalists as 'hands on' investors will almost invariably dismiss ineffective or under-performing managers (Bruton et al., 1997). Further, Cyr et al (2000) found that VC-backed companies were more likely to have a VP of human resources at the time of an IPO compared to ventures without VC backing. Whereas

independent venture capitalists work with a wide network of people outside of their own organizations, the experience and contacts of corporate venture capitalists may be more defined by and focused on their own corporation's activities. Certainly, CVC employees are more likely to be recruited from within the ranks of the corporate than from outside the company (Birkinshaw et al., 2002). We therefore hypothesize that independent venture capitalists are likely to be viewed by portfolio firms as more informed about managerial labor markets and, thus, more valuable in helping to identify and recruit key management.

> *Hypothesis 2:* VCs are more valuable in helping portfolio companies recruit new employees than CVCs.

Social capital to attract business partners. Venture capitalists may be admired for their commercial acumen and financial knowledge. However, they are likely to have relatively less authority in areas that directly relate to the core business of the portfolio firm. As financial services professionals, they are likely to be less credible in endorsing the technological and commercial quality of the venture (Maula, 2001; Stuart et al., 1999). It may well be that only the name of an internationally respected corporate partner as an investor is sufficient to attract additional business partners for the portfolio company (Kelley and Spinelli, 2001; Maula, 2001). In biotechnology, for example, it is often difficult for an outsider investor to assess with sufficient confidence the potential of a new technology (Stuart et al., 1999). In such cases, the investment by a respected "big pharma" corporation may effectively signal the attractive prospects of the start-up to less informed outsiders (Stuart et al., 1999). As such, the signals from the actions of the corporate investor help reduce information asymmetries that may limit the future prospects of the start-up company (Spence, 1974). Robert Young, the CEO of Red Hat Linux, commented after receiving corporate venture capital investments from Intel and Netscape: "The significance of closing this round with Intel and Netscape was that it made Linux-based operating systems safe for the major application vendors, including Oracle, Corel, and Computer Associates. They would now be willing to sell their applications to their customers running on Red Hat Linux." (Young and Rohm, 1999). Thus, we hypothesize that corporate venture capitalists are better at helping their portfolio companies to attract business partners.

> *Hypothesis 3:* CVCs are more valuable in helping portfolio companies attract new business partners than VCs.

Social capital to attract new domestic customers. A major problem facing virtually all start-ups is that no-one, including would-be customers, really knows anything about them. Accordingly, no-one wants to be the first to use their products. As Moore (1995) observed, buyers from large corporations are profoundly risk-averse. They will invariably insist that some one else is "the guinea pig" customer for a new company's products or services. Thus, small firms commonly suffer "a liability of alienness" – as no substantial business customer wishes to trade with them until they have a credible track record of successful business deals (Burgel et al., 2001). This is a *Catch 22* situation. They cannot sell to large firms or other important customers - regardless of the quality of their technology and products - until they can demonstrate a track record. But they cannot gain a track record until they sell to large firms or other important customers. Corporate venture capitalists are among the few organizations that have the market power to resolve this impasse. Their portfolio companies can be given access to the corporation's worldwide sales and marketing channels (Maula, 2001). The corporate investor can also become a publicly visible supplier, purchaser, or advocate of the company's products. The young firm may initially be unknown but the fact that Intel Capital, Johnson & Johnson Development Corporation or Nokia Venture Partners is an investor and user of the company's products or services conveys a huge endorsement benefit to the young and erstwhile 'invisible' company (Maula, 2001; Stuart et al., 1999). Therefore, we hypothesize that corporate venture capitalists are better at helping their portfolio firms gain wider market credibility thereby attracting customers in their domestic market.

> *Hypothesis 4:* CVCs are more valuable in helping portfolio companies attract new domestic customers than VCs.

Social capital to attract new foreign customers. The majority of early-stage venture capital investors typically operate locally in order to better cultivate and exploit dense networks (Lerner, 1995; Sorenson and Stuart, 2001). The parochial nature of risk capital investors pertains even in world class centers of innovation (Florida and Kenney, 1988; Saxenian, 1994). In contrast, the parent corporations of CVC investors are typically global in scale. As a consequence, the support from corporate venture capitalists in helping portfolio firms attract new customers is likely to be even more effective when focusing on foreign customers will little information on the new firm. Many corporate venture capital operations are specialist units of established businesses with a multi-national presence,

brand identities and reputations. Therefore, we expect that the involvement of corporate venture capital investors is relatively more effective in helping portfolio firms internationalize and attract foreign customers.

> *Hypothesis 5:* CVCs are more valuable in helping portfolio companies obtain new foreign customers than VCs.

Value-added Based on Knowledge

Knowledge of markets. While venture capital firms may specialize on a range of technologies related to a specific sector, their specialism as financial professionals rarely includes a deep contemporary technical or market expertise comparable to major corporations in specific industry sectors. Most venture capital firms are generalists investing in relatively broad industry or technology sectors. VC firms often contract detailed specialist technical or market services as and when required. In contrast, corporations typically enjoy deep specialist knowledge across a range of related sectors as a consequence of their competitive positioning and the accumulation of technical and technological competencies. They can be expected to have a profound and dynamic understanding of technological developments in their key product markets. In addition, they frequently spend large amounts of money on market research in national, regional and global markets. This cumulative information, combined with their extensive existing customer relationships, enables a different and more profound understanding of contemporary and future market needs than that generally is available to a start-up firm developing a novel product for an, as yet, un-established markets. In order to deal pragmatically with complex market environments, technology-based new firms frequently start by servicing highly specialist niche markets (Roberts, 1991). As a result, they can sometimes lack a broader or dynamic perspective of market and customer needs. Access to the depth of market understanding of the large corporation may be invaluable for a rapid growth oriented, technology-based new firm (Dube, 2000; Maula and Murray, 2002).

> *Hypothesis 6:* CVCs are more valuable in providing portfolio companies with information on customer needs and trends than VCs.

Knowledge on competition. Large corporations primarily focus on competing against other large corporations usually within the same industry

and strategic groups (McGee and Thomas, 1986). They frequently ignore or are unaware of novel competitive threats posed by high potential start-up businesses exploiting new technologies and/or business models (Christensen, 1997; Christensen and Rosenbloom, 1995). Traditionally trained corporate managers may have little direct understanding or interest in the world as seen by a new firm. This has made corporations sometimes insensitive and inappropriate partners to small firms, or inexperienced backers of new enterprises (Clayton et al., 1999). As Penrose (1959) famously noted, small and large firms are as different as caterpillars and butterflies. In contrast, the role of venture capital managers centers on the nurturing and growth of firms which, although economically small today, might become the industry leaders of tomorrow. As noted, when considering the actual development of the young firm's business strategy, it has been found that one of the most important forms of value-added provided by independent venture capitalists is in assisting the development of the strategic perspective. This role includes giving business advice and acting as a sounding board to management (Sapienza et al., 1994; Sapienza et al., 1996). Therefore, we hypothesize that independent venture capitalists are more likely to provide start-ups with information on the nature and consequences of likely competitive response in their product/market space, given that this is a critical building block of a growth oriented strategy.

> *Hypothesis 7:* VCs are more valuable in providing portfolio companies with information on competition than CVCs.

Knowledge of technology. The over-riding goal of the majority of corporate venture capitalists is to add strategic value to their corporate parent organization (Ernst & Young, 2002; Kann, 2000; Keil, 2002; McNally, 1997; Sykes, 1990). Given that most corporations active in corporate venture capital are from technology intensive industries, knowledge of future technology trends (sometimes termed a 'technology road map') is likely to be one of the core benefits they can also provide for their portfolio companies. Both parties can gain reciprocally from detailed technical knowledge and novel insights held by either the corporation or the highly focused young firm. As investors, corporations generally have an ability to undertake technical 'due diligence' on new technological innovations or novel applications in their areas of technical and market competence with a level of rigor and depth of resources unavailable and inaccessible to even the largest private venture capital firm (Corporate Executive Board, 2000; Ernst & Young, 2002). Therefore, we hypothesize that corporate venture

capitalists are likely to be seen as stronger in the technology related knowledge they provide for their portfolio companies.

> *Hypothesis 8:* CVCs are more valuable in providing portfolio companies with information on new technologies than VCs.

Knowledge of organizing. Independent venture capitalists have typically followed, monitored, and guided numerous start-ups from firm formation and the initial investment to the eventual liquidity event at which these professional investors will exit the business (Gorman and Sahlman, 1989). Accordingly, they have learnt to support the entrepreneurs in organizing the firm appropriately in different stages of growth. For instance, Hellmann and Puri (2002) found that independent venture capitalists played an important role in professionalizing the organizations of entrepreneurial ventures leading to accelerated adoption of stock option plans, faster hiring of a marketing VP, and replacing the founder with an outside CEO. In contrast, many of the corporate career managers recruited internally into the CVC divisions have their backgrounds exclusively in the corporate world (Birkinshaw et al., 2002). Accordingly, they view start-ups and their commercial environments largely from a more limited corporate perspective. Importantly, very few professional managers within the corporate labor pool are likely to have extensive senior operational experience in the resource scarce environments of a start-up. Therefore, we hypothesize that independent venture capitalists have greater and wider experiences with which to help portfolio companies survive and manage early growth.

> *Hypothesis 9:* VCs are more valuable in helping portfolio companies organize for early growth than corporate VCs.

DATA AND METHODS

Data

The hypotheses were tested using data from a survey administered to CEOs and founders of CVC financed, U.S. technology-based new firms in December 2000. CVC backed companies were identified from the Venture Economics database. A technology-based new firm was defined as a firm less than 6 years old (Robinson and McDougall, 2001; Shrader, 2001; Zahra et al., 2000) and operating in one of the following sectors: biotechnology,

medical/health science, internet specific, communications, computer software and services, computer hardware, or semiconductors/other electronics. We also required that the venture had received funding from at least one independent venture capitalist. Companies that had been acquired, had gone public, or had subsequently ceased operation were excluded. A further sampling condition was that the most recent investment in the portfolio company had been made within the last two years in order to ensure that the relationship was still active. Finally, we excluded ventures that were found to be originally spin-offs from the corporation currently acting as a corporate investor. This exclusion was made in order to limit the research to the perspectives of a new and independent ventures that had accepted corporate venture capital financing from organization with which they had had no previous association.

The sampling frame consisted of the entire population of 810 privately-held technology-based new firms fulfilling the selection criteria at the time of the survey (November 2000-January-2001). Of the 135 questionnaires received, 91 met all sample selection criteria and were sufficiently complete. This translates to a response rate of 17 %, which can be considered acceptable given that it was requested that the four-page questionnaires be completed by CEOs. In this population, the average age of the firms was just over three years, with an average of $55 million external investment. With average revenues of less than $5 million per year, the CEOs of these companies were likely to be under very strong investor pressure to grow their business rapidly.

Non-response bias was analyzed by comparing the age, geographic location, and industry sectors between the respondent and the non-respondent firms. We conducted further response bias analysis by comparing statistically the number of employees and the revenues of early and late respondents. For all tests, no significant biases were detected.

Several methods were used to ensure the validity and reliability of the data. First, we pre-tested the four-page survey instrument with several CEOs and CVC investors. In the instrument, previously validated constructs and measurement items were used whenever possible. Multi-item constructs were used for most primary variables in order to enhance content coverage. In all but one case, our multi-item constructs achieved construct reliabilities of .74 or higher, thus indicating good internal consistency.

Measures

Ten constructs are used to test the hypotheses. In pair-wise univariate comparisons we compare the activity of the two types of investors in nine areas of value-added. In the regression analyses, we test the roles of these nine types of value-added in explaining the overall value-added and satisfaction in the two types of relationships.

The overall value-added was measured using a multi-item scale measuring the overall satisfaction of the key informants. The construct was operationalized using three measurement items: "This investor has provided us valuable value adding support in addition to the financing", "The value adding support provided by this investor has been critical for our success", and "We are very happy about having this investor." The Cronbach's alpha inter-item reliability coefficient for this construct is .87. To ensure the reliability of the construct a follow-up survey measuring the CVC relationships was administered for the original respondents six months after the original survey. The original value-added construct and the 6 months lagged construct were highly correlated ($r = .576$, $p \leq .001$) suggesting good reliability for this construct. Furthermore, a one-way ANOVA, using firm identity as the independent variable, revealed that between firm-variance was significantly greater than within-firm variance ($p \leq .001$), indicating significant agreement between the original and the lagged ratings. Together, these tests provided additional evidence of construct validity.

The forms of value-added were divided in two groups: social capital based forms of value-added and knowledge-based forms of value-added. In the first group, the value-added forms were related to the support in attracting five types of resources: 1) additional investors; 2) key employees; 3) partners; 4) domestic customers; and 5) foreign customers. All of these constructs were defined using four indicators. Cronbach's alpha inter-item reliability coefficients for these constructs varied between .74 and .93.

In the second group, the value-added forms were related to the advice based on four types of knowledge: 1) markets; 2) competition; 3) technology; and 4) organization. All of these constructs were defined using two indicators. For market knowledge of VCs, the reliability was only .63. For all the others, the reliabilities ranged between .77 and .92.

RESULTS

We first tested the hypotheses using pair-wise comparisons of the value-added forms between most important VC and CVC investors of the sample companies. The results are presented in Table 1. In general, the

results offer considerable support our hypotheses. Independent venture capitalists were found to be viewed as better at helping portfolio companies obtain new financing, recruiting key employees, and helping develop the organization. In contrast, corporate venture capitalists appear to be stronger helping startups attract new domestic and foreign customers, and helping start-ups develop their technology. Of the nine hypotheses, only two (H3 and H7) were not supported.

Using multiple regression analysis, we tested whether the value-added forms contribute differently to the overall value-added in the two types of relationships. The regression results are presented in Table 2. While the Chow test was not statistically significant, there are significant differences in the importance of individual forms of value-added.

Whereas pair-wise comparison indicated that VCs were perceived by their portfolio firms as having a more visible role in attracting further financing, the regression analysis showed that this activity is a significant determinant also in the CVC relationships. However, while recruiting key employees was seen as a significant component of value-added to the portfolio firms from the VC relationships, it was insignificant in CVC relationships. Attracting additional investment partners was not a significant contribution to either type of relationships. The results were the same for domestic customers. Attracting foreign customers was not significant determinant of value-added in VC relationships but was just significant in CVC relationships.

Table 1. Differences in provision of various value-added forms between VCs and CVCs

Form of Value-added	Independent venture capitalists	Corporate venture Capitalists	Pairwise t-test of difference	Significance level (1-tailed test)
SC Finance	**6.03**	4.54	9.152	.000***
SC Employees	**5.01**	3.91	6.714	.000***
SC Partners	4.44	4.32	0.671	.504
SC Domestic customers	3.91	**4.24**	-1.726	.088+
SC Foreign customers	2.90	**3.58**	-3.421	.001***
K Markets	3.93	**4.48**	-2.982	.004**
K Competitors	3.99	3.81	1.037	.303
K Technology	3.02	**3.76**	-3.452	.001***
K Organization	**4.54**	2.76	8.231	.000***

Significantly higher value-added contributions bolded

Concerning the differences in the importance of knowledge-based value-added, market knowledge was not a significant determinant in either

types of relationships. However, in VC relationships, competitor knowledge was weakly significant. Technological knowledge was not significant in VC relationships, but was significant in CVC relationships. Finally, organizing knowledge was very significant in VC relationships but not significant in CVC relationships. Thus, the findings of the multivariate analysis broadly confirmed those of the univariate analyses

Table 2. Regression results on overall value-added by VCs and CVCs

Form of value-added	Independent venture capitalists	Corporate venture capitalists
SC Finance	.150 *	.196 *
SC Employees	.451 ***	.127
SC Partners	.006	.083
SC Domestic customers	-.091	.064
SC Foreign customers	.069	.151 +
K Markets	.069	.120
K Competitors	.164 +	.110
K Technology	.100	.238 *
K Organization	.228 **	-.094
Adjusted R^2	.587	.557

*** p < .001, ** p < .01, * p < .05, + p < .10, one-tailed tests, Standardized coefficients

DISCUSSION

In this paper, we have set out to examine how differences in the social capital and competencies of independent venture capitalists and corporate venture capitalists are similarly reflected in the specific nature of the value-added they provide for their portfolio companies. We first tested how portfolio company recipients perceived the relative value of a range of key resources provided by corporate or independent venture capitalists. We then examined the importance of each of these areas of support to the overall value-added provided by both types of investor. We found that independent VC investors seem to better satisfy the needs of entrepreneurs when assisting with arranging finance, recruiting key employees, advising on competition, and developing the organizational resources of the growing enterprise. CVC investors are comparatively more effective than VCs in attracting foreign

customers and providing advice on the technologies employed by the portfolio firms.

The value-added forms provided by independent venture capitalists can collectively be termed "enterprise nurturing". The cumulative experience of the venture capitalists, many of whom have advised literally dozens of entrepreneurs on the challenges of enterprise formation and early-stage growth, represents a potentially enormously valuable resource. Venture capitalists particularly command considerable respect as they advise with the authority of direct experience in the relevant investment stages and industry sectors. Accordingly, they can help the young firm to avoid many of the mistakes to which new businesses are particularly vulnerable. Corporate venture capitalists have greater credibility as advisers in value-added services, which more directly relate to the trading and commercial environment of the new business. We term this skill set "commerce building". Here the emphasis is not focused on the structure and organization of the new enterprise but on its ability to forge revenue-generating opportunities from its contractual relationships with both customers and suppliers. In these production/product/market areas, the corporate VCs have demonstrably greater experience and authority than the independent VCs.

Our results indicate that the theoretical lenses of social capital-related and knowledge-related sources of value-added are both valuable in explaining the actions and benefits or limitations of different classes of investors. Social capital and knowledge-based perspectives enable us to see with more precision how, and why, different types of investor may be more or less effective in assisting the young firm to grow successfully during the critical early stages of the its development. The value of nurturing or commerce building should not be seen as based on attributes related to a single theory. Both skill sets heterogeneously employ both social capital and knowledge-based assets. The key conclusion from the research is that corporate venture capitalists and independent venture capitalists have different but strongly complementary value-added profiles - each of which are of significant use to the recipient portfolio firm.

Practical Implications

A clear practical implication of this study is that careful investor selection is extremely important for the founder-managers of a high growth potential new enterprise. Venture capital provided by corporations or independents should not be seen as perfect substitutes. As documented by Smith (2001), start-ups often do have some choice in the matter of investor selection. Depending of the specific array of needs of the start-up company,

an optimal "value-added portfolio" may be constructed by specifically selecting both independent venture capital investors and corporate venture capitalists based on these investors' ability to each provide complementary support and advice in their respective areas of strength. For corporate venture capitalists and independent venture capitalists, understanding of the strengths and weaknesses in their value adding capability is important for successful investment activity. Given that both types of investors are also seeking to build successful companies albeit for different objectives, co-operative syndication may equally further their own interests more efficiently than if they invested in isolation.

Implications for Research

We believe that this is the first paper to systemically compare and contrast the value-added provided by independent venture capitalists and corporate venture capitalists. The key finding that these two types of investors provide different but complementary value-added has important implications for research that seeks to understand how entrepreneurs choose their investment partners. In the first theoretical paper examining this investor choice, Hellmann (2002) made the basic assumption that value-added contributions of independent venture capitalists and corporate venture capitalists are similar. As an extension to his basic model, Hellmann tests for the implications of potential complementarities in the value-added of the two types of investors. He demonstrates that this assumption had implications for the optimal syndicate structure. The findings of this paper that different types of investors can bring complementary value-added suggest that this condition should not be treated as an extension. Rather, it should be the basic assumption in future research modeling the investor choice behavior of the firm.

This paper has demonstrated that independent venture capital investors and corporate venture capital investors have different stocks and types of social capital and knowledge to offer to their portfolio companies. This has been the first paper to empirically examine these differences in their contributions with reference to specific forms of value-added. It examines the main types of social capital and knowledge-based resources offered by both types of investors and estimates their overall value-added to the entrepreneurs. These two theories usefully indicate the more effective providers of specific forms of support or advice to the portfolio company. Yet, given that both independent and corporate venture capitalists each have and employ social capital and knowledge based resources, the two theories do not conclusively discriminate between the actions of either provider. In

future research, it would be interesting to examine whether there are differences in the factors that influence the perceived usefulness of the value-added contributions of the two types of investors.

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6

CORPORATE VENTURE CAPITAL ORGANIZATIONS IN GERMANY: A COMPARISON

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INTRODUCTION

There is little recent empirical research on corporate venture capital organizations (CVCs) and most of the relevant literature focuses on the Anglo-American market. One reason for the dearth of empirical data on the German CVC market (Opitz 1990; Rauser, 2002; Schween, 1996; Witt and Brachtendorf, 2002; Mackewicz and Partner, 2003) is that CVCs are comparatively rare and new in Germany. Consequently, studies on German CVCs are based on an extremely small number of cases. The studies that do exist tend to portray the German market as less successful than more mature markets, such as those in the United States (Schween, 1996). Another body of literature compares CVCs with independent venture capital organizations (VCs) (Gompers and Lerner, 1998; Maula, Autio and Murray, 2005 in this volume; Siegel, Siegel and MacMillan, 1988; Weber and Dierkes, 2002). The differences between CVCs and classic VCs raise interesting research questions, especially when one investigates their strategic and financial success.

This study looks at two aspects:

1. We compare newly gathered data on goals, decision-making processes, fund structure, and attainment of strategic and financial goals of 20 German CVCs with information on 52 German independent VCs as well as other German, European and American CVCs (to the extent that comparable data are available).
2. We analyze fundamental goals and their effect on the strategic and financial success of CVCs. The intention is to find out whether a prioritization of financial goals, a mixed approach pursuing both financial and strategic goals, or a distinctly strategic focus is the most promising approach for CVC programs.

The patterns that emerge from our data in conjunction with data on German VCs as well as European and American CVCs contribute to a better understanding of what strategies offer CVC organizations the greatest chance of success.

PAST RESEARCH ON CORPORATE VENTURE CAPITAL

Interest in CVCs has fluctuated markedly in the past decades. Gompers and Lerner (1998) identified three major parts, the most recent of which began in the late 1990s. The abundance or lack of research on CVCs is a reflection of the economic importance of this sector over time.

A flurry of new studies has appeared over the last three years (Birkinshaw, van Basten, Batenburg and Murray, 2002; Chesbrough, 2002, 2000; Gompers and Lerner, 1998; Kann, 2000; Keil, 2000; Maula and Murray, 2001*a*, 2001*b*; Maula, Autio and Murray, 2005, in this volume; Poser, 2002; Rauser, 2002; Thornhill and Amit, 2001; Weber and Dierkes, 2002; Weber and Weber, 2002). The recent publications on which we focus allow us to take a closer look at the performance of CVCs and the potential success factors, including the relationship between goals and organizational structures and processes.

Gompers and Lerner (1998), who analyzed over thirty thousand transactions by corporate and other venture organizations in the American market, found that corporate venture investments in entrepreneurial firms appear to be at least as successful as those backed by independent venture capital organizations. They suggest that, "the presence of a strong strategic focus is critical to the success of CVCs. . . . Corporate programs without a strong strategic focus appear to be much less stable, frequently ceasing operations after only a few investments, but strategically focused programs

appear to be as stable as independent organizations." (Gompers and Lerner, 1998, p. 34). Siegel, Siegel and MacMillan (1988) investigated the decision-making autonomy and fund structure, and the performance of CVCs. They showed that CVCs that act like classic VCs achieve higher ROI than CVCs that are more closely linked to the strategies of the parent company, and they are just as strategically successful for the parent company. The authors therefore concluded that an excessively strong emphasis on the parent company's strategic criteria could lead to serious problems with the pursuit of CVC activities (Siegel et al., 1988, p. 246).

The findings of these two major studies suggest that CVCs are caught in a contradiction, or are at least walking a tightrope. While one study recommends that CVCs take a strong strategic focus because it is critical to success (Gompers and Lerner, 1998), the other warns that too strong a focus on strategic elements harms both the strategic and the economic success of the CVC program (Siegel et al.,1988). The two studies were conducted ten years apart, and it is possible that the market changed substantially during this period. Furthermore, the studies took different approaches – the former interviewed ´managers in VCs, the latter analyzed data on portfolio companies. Nevertheless, their results are sufficiently comparable and provide a good basis for further research. The goal of our contribution is to see which of these seemingly contradictory assessments applies to the German market.

To a certain extent, Chesbrough (2002) manages to reconcile the two approaches by arguing in favour of an investment strategy based on the objective – strategic or financial - and the degree to which the operations of the investing company and the start-up are linked –loosely or tightly. He distinguishes four investment approaches, which have to be aligned with the long-term business strategy of the corporation and its operational capabilities: (1) Driving Investments, which are characterized by a strategic rationale and tight links between start-up and the operations of the investing company, (2) Enabling Investments, which are primarily made for strategic reasons but do not establish a close connection between the venture and the mother company's own operations, (3) Emergent Investments, which are primarily inance-driven, but which in the future may have a strategic potential for the parent company, (4) Passive Investments, which provide financial returns only (Chesbrough, 2002, p. 6).

Turning to the German literature, the three known studies on corporate venture capital and their success in Germany, apart from our own (Weber and Dierkes, 2002; Weber and Weber, 2002), were conducted by Schween (1996), and more recently by Witt and Brachtendorf (2002) and Mackewicz and Partner (2003). A limitation that all empirical studies in this field are faced with is the small number of CVCs in Germany. Schween

(1996) investigated the goals, investment criteria, and organizational form of German CVCs in a sample of only 12 cases. His main findings were that 10 of the 12 companies (83%) stressed strategic goals, with two companies (17%) stating that they pursued strategic and financial goals simultaneously. The dominance of the strategic goals was also reflected in the priority given to the investment criteria that were mentioned. Financial criteria ranked fourth after three strategic ones. The strategic and financial success of these CVC programs was modest. Only two of the 12 CVCs (17%) were satisfied with their strategic goals, a figure corresponding to an arithmetic mean of 2.0. The financial goals showed virtually the same result – an arithmetic mean of 1.9 (Schween, 1996, p.247).

Witt and Brachtendorf (2002) tried to examine why so few companies have so far succeeded in driving their growth agenda through corporate venturing (Stringer, 2000). On the basis of 21 personal interviews, they showed that a high number of German CVCs do not follow the recommendations for organizational structures and processes that have been generated by the international research on successful CVC programs. Witt and Brachtendorf (2002) find that the CVCs in their sample are "much too dependent on the parent company" (p.11), their fund structure as well as in terms of their decision making processes. Another key finding of the study is that the top managers of the CVCs have insufficient entrepreneurial experience and that their remuneration packages are inappropriate in light of the risks involved and the market conditions. The authors conclude that there is a relatively low consistency between international recommendations and their implementation.

Mackewicz and Partner (2003) studied 31 CVCs and found that 15% of them pursue strategic goals exclusively and 33% have primarily strategic goals, which means that 48% have a strong strategic focus. The authors found that 30% emphasize financial goals (of which 3% report that they pursue financial goals exclusively; and 27% indicate "primarily"). A fifth of the sample (21%) pursues both goals in equal measure. The authors point out – in line with Siegel et al. (1988) - that the ambition to pursue different, often conflicting goals with one and the same CVC unit bears substantial potential for conflict, inefficiencies and ultimately, failure to reach either strategic or financial goals. Mackewicz and Partner (2003) therefore recommend a focused strategy and structure for CVC organizations. They distinguish between six groups, based on the core goals that are listed as most important by the CVCs' ("Innovators", "Salespeople", "Observer", "Renewer", Entrepreneurs", and "Investors"). These core goals vary especially with regard to (i) interaction with the parent company, (ii) maturity of the venture, (iii) investment horizon, and (iv) partnerships with external investors. Mackewicz and Partner (2003) assign these typologies to

what they consider are appropriate organizational forms (e.g. business unit, joint fund, external VC unit, fund of fund), based on the necessary degree of dependence on the parent company and the core goals of the CVC program. The authors emphasize the importance of maintaining consistency between goals and organizational structures and processes: "the goals and organization form must be aligned" (Mackewicz and Partner, 2003, p.39). However, they do not specify which approach is likely to be the most successful one.

Birkinshaw et al. (2002) undertook an extensive international CVC survey.[1] They clustered the CVCs in four groups of venture units according to their overriding strategic investment objectives (p. 25): (1) The External Financials, who invest in external business opportunities primarily to deliver financial returns to the parent company, (2) The External Strategics, who invest in external business opportunities for strategic reasons, (3) The Internal Growths, who invest in internal investment opportunities for growth, and for other internal reasons, and (4) The Internal Spin Outs, who invest in internal investment opportunities as a means of leveraging intellectual property and spinning out businesses that do not fit. Among their main findings were that venture units have to be both independent and attached, but for very "young" venture units, "independence is more important than integration" (Birkinshaw et al., 2002, p. 34). Furthermore, they concluded that, "there is a clear (and significant) trend that equates greater independence in funding with superior performance" (Birkinshaw et al., 2002, p.33). The authors do not establish a consistent connection between goals, structures and processes, although they do point in that direction. They note, for example, that "if the venture unit is attempting to develop strategic options for its parent company, it should – all else being equal – not create strong linkages to its business units" (Birkinshaw et al., 2002, p.33).

The three types of categorizations presented in the literature are brought together and related to the categorization used in our paper as a basis for our study on German CVC practices (see Figure 1). The horizontal axis in Figure 1 represents the overall corporate investment objectives (strategic vs. financial). This axis is identical with the dimension of Chesbrough (2002) and corresponds in kind with the dimension presented by Mackewicz and Partner (2003) ("kind of goal"). Birkinshaw et. al. (2002) use a variety of dimensions to differentiate their four investment groups. One of their dimensions, "reason for establishing a venture unit" to a degree corresponds with our classification.

The vertical axis represents the degree to which the organizational structures and processes of the CVCs operate independently. This axis corresponds with the "link to operational capability"-dimension (loosely vs. tightly) of Chesbrough (2002), with the "closeness to the parent company"-

dimension (high vs. low) introduced by Mackewicz and Partner (2003) as well as with the "autonomy level of venture unit" suggested by Birkinshaw et. al. (2002).

Birkinshaw's division into external and internal investment objectives is somewhat different. Of the four groups presented, only the External Financial's seem to be comparable to our (as well as to Chesbrough's) fourth category (Passive Investments). Birkinshaw's second, third and fourth group of venture units are all mainly strategically driven, and therefore form a kind of subgroup of mainly strategically oriented investments. Of the six typologies presented by Mackewicz, the "Investors" correspond to our fourth category; the "Renewer", "Entrepreneurs" and "Observer" can be broadly placed in our third category. Chesbrough's (2002) four groups corresponds most closely to our four categories.

PROPOSITIONS

Based on the findings of both Gompers and Lerner (1998), that CVC programs with a strong strategic focus - unlike those that lack such a focus - appear to be stable and the findings of Siegel et al. (1988), that CVCs focusing on financial goals achieve higher ROIs and are strategically just as successful as strategically oriented ones, our proposition is that a clear investment focus – either mainly financial or mainly strategic - will be more successful than an indifferent mixed investment approach. (The terminology, "primarily" financial or "primarily" strategic as opposed to "strictly" is used to point out that CVCs – unlike VCs - always need to keep their natural "second" objective – strategic or financial respectively - in mind).

> *Proposition 1*: The clearer the focus of the CVCs, the more financially and strategically successful the CVC program is likely to be.

Additionally, one observes the following: (i) the success rates of classic, experienced VCs, which only focus on financial goals, tend to be higher than those of CVCs, (ii) in the long run any investment can only be considered a strategic success if it is also financially tenable or successful; (iii) any unit within a corporate structure has to contribute financially to the profit of an organization to justify its existence in the long run. At the same time, CVC units are – one way or the other – connected to the parent organization and as a result have take the interests of that parent organization into consideration. We therefore conclude that on the whole a primarily

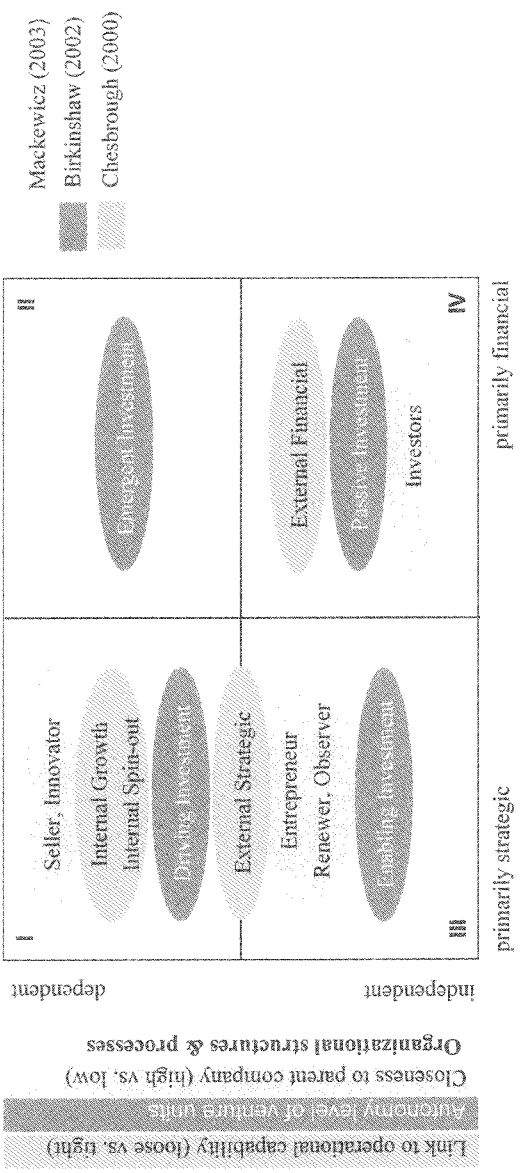

Figure 1. Comparison of CVC investment categories

financial approach is even more successful and promising than the primarily strategic approach – both in financial and strategic terms.

Both Siegel et al. (1988) and Birkinshaw et al. (2002) found that independent CVCs were financially more successful than dependent ones. Birkinshaw et al. (2002) explained that "young" venture units need to "create distance between themselves and their parent companies, through a separate fund, a high level of decision-making autonomy, strong links to the VC community, and incentives based on carried interest and bonuses" (p. 4). Mackewicz and Partner (2003) also report that experts considered organizational independence the most important factor in the success of CVCs, although their study neither tests nor proves this claim. It is possible to examine the claim's validity on the basis of our data by focusing on two characteristics used by Siegel at al. (1988) and Birkinshaw et al. (2002) to represent organizational (in)dependence: decision-making autonomy and fund structure.

> *Proposition 2a*: The greater a CVC's decision-making autonomy, the more successful the CVC unit will be.

> *Proposition 2b*: The greater the parent company's financial commitment to its CVC unit, the more successful the CVC unit is likely to be.

Figure 2 presents an overview of the kinds of CVCs that are considered to have the highest potential and hence, are most likely to be successful in the long term. It demonstrates that CVCs with a relatively independent organizational structures and a mainly financial approach are expected to have the highest potential, for the reasons mentioned above. The least successful CVCs are those that aim for financial goals while remaining dependent on their parent company. The reason for this is that it consider impossible to adopt a finance-driven approach while continuing to depend on the mother company at the same time.

METHODS

Sample and Design

The propositions are examined by using data from two parts of a comprehensive study we have conducted in Germany. In the first part a standardized questionnaire was sent to all the CVCs operating in Germany in 2001 that had existed long enough to be able to report on their strategic and

financial goal attainment. The sample of 34 CVCs included only those that had been founded in 2000 or earlier (the average founding year was 1997).

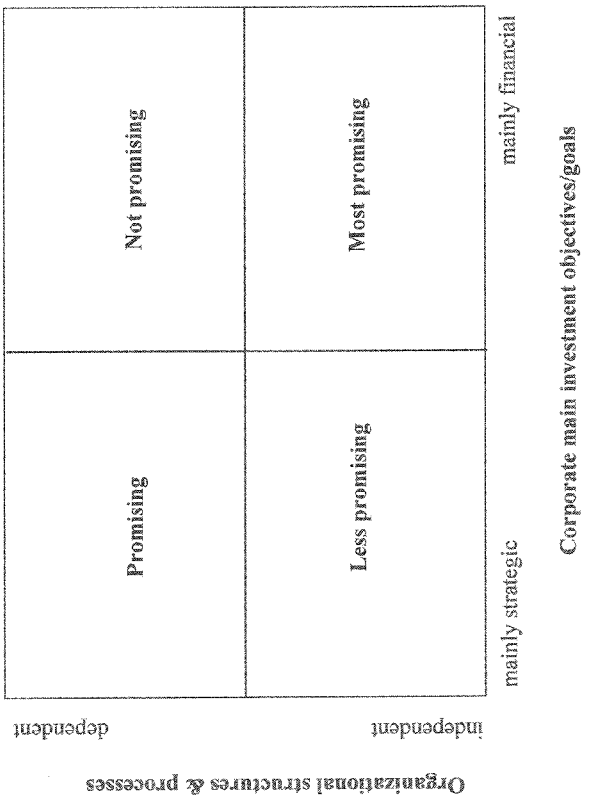

Figure 2. Potential of the four CVC investment categories

Twenty of the companies responded, which represents a high return rate of 62.5% for a mailed questionnaire survey. The second part of the study was a standardized follow-up telephone interview conducted in February 2002 with the CVCs that had participated in the first part. One of the CVCs in the sample had left the market by the time the follow-up telephone interviews were conducted, so the data for the second part of the study is based on the remaining 19 organizations. Such a standardized approach essentially eliminates the interview bias and increases the quality of the data.

The validity and reliability of the data were verified in a number of ways. First, the five-page questionnaire was pre-tested with several investment managers in the first part, and the same pre-testing was

conducted in the second part with regard to the telephone interviews. The data from the two surveys were combined. Because of the small number of cases, a highly quantitative statistical analysis of the dataset was inappropriate. Instead, other national and international studies were drawn upon and incorporated into the mainly descriptive statistical analysis. This comparative data put our results into perspective.

To compare CVCs with the traditional independent VCs in Germany, the same questionnaire was sent in 2001 to all the German VCs focusing on early stage financing. Out of the 216 such companies in Germany at the time, 68 returned a complete questionnaire (response rate of 31.5%). Some key characteristics of this sample were compared with the Statistics of the German Private Equity Association (BVK), which contain almost all German VCs. This was done to understand how this sample differs from or represents the overall German market. It turned out that the 68 VCs of our sample have larger funds, bigger portfolios and higher sums invested than the BVK average. This suggests that the respondents represent the bigger and probably more important VCs in the market, which de facto was the case.[2] The average founding year was 1995, two years earlier than the CVCs we investigated.

Measures

The following measures build on those we found in existing comparable research, including some we adopted from Siegel et al. (1988) and Schween (1996). Where necessary new measures were added to cover items not yet appropriately dealt with in existing literature.

1. *Significance of financial versus strategic goals*: used as a measure of profit versus the strategic orientation and ambitions of CVCs. We measured the significance of these two types of goals on a 5-point scale ranging from 1 (*exclusively financial goals*) to 5 (*exclusively strategic goals*), adopted from Schween (1996).
2. *Value of investment criteria*: used as a measure of profit versus the strategically driven investment decisions of CVCs. The answers indicate which aspects are important when deciding to invest in potential portfolio companies. At the same time, they are used to control the previous question. A total of 29 criteria, scored on a 6-point scale ranging from 1 (*no importance*) to 6 (*very important*). Some of them are adopted from MacMillan et al. (1985), others from Schween (1996). The eight additional criteria that focus specifically

on corporate venture capitalists are mostly self-constructed and have therefore not been tested before.

3. *Decision-making autonomy*: used as an indicator for of the degree to which the corporate venture capital unit operates independently. Independence is interpreted as delivering fact-based decisions based on objective criteria rather than internal politics. To measure it we used four categories adopted from Schween (1996) as well as other categories we developed ourselves. Important decisions such as those concerning investments are made (a) within the CVC unit and without the parent company, (b) in close consultation and in concert with the parent company, (c) within a committee in the parent company as proposed by the CVC unit, or (d) in accordance first with (a), thereafter (c), depending on the sum to be invested.
4. *Financial commitment by the parent company*: used as an indicator for long-term commitment to the asset class. A long-term commitment that cannot easily be revoked by the parent company (in an separate fund) in turn provides independence for the venture capital unit. This is important in order to establish the unit as an independent, respected player in the market. We measured the financial commitment in two categories: (a) a clearly defined fund or freely accessible financial resources providing for a relatively long period; (b) no clearly defined fund or no financial resources providing for a relatively long period; instead, ad hoc decisions recorded as an outflow on the balance sheet.
5. *Strategic success or attainment of strategic goals*: used as a measure of strategic performance/success. Strategic success is very individual and hence difficult to measure with objective criteria (Mackewicz and Partner 2003). The measurement is based on Schween's 5-point scale of satisfaction (1996). This 5-point scale ranges from 1 (*not at all attained*) to 5 (*completely attained*). To this scale we added a a sixth category "too early to tell", to account for the short time the CVC units had existed and the lack of exits in the portfolio. Two arithmetic means were calculated as an additional measure of this variable to make them comparable to two other datasets (Schween 1996 and Siegel et al. 1988).
6. *Financial success or attainment of financial goals*: used as a measure of financial performance/success. It is measured quantitatively to make it as objective and comparable as possible. The CVC's internal rate of return (IRR) was examined with a 5-point scale ranging from an IRR smaller than 0% to an IRR of above 30%. To this scale we added a sixth category "too early to tell", to account for the short time the CVC units had existed and the lack of exits in the portfolio. Unfortunately, there no data that allow us to draw a comparison with

the German VCs or the American CVCs. An arithmetic mean was calculated to approximately compare the findings to those of Schween (1996) as well as Siegel et al. (1988).

Methodology

The 20 CVCs analyzed in the first part of the study included all the major players in the German market. We compared our dataset with the data of a recent survey by Mackewicz and Partner (2003) who surveyed almost all German CVCs (31). The comparison demonstrates that our dataset sufficiently represents the German CVC market. With € 80 million per CVC, the average amount invested by CVCs in our dataset is similar to the data presented by Mackewicz and Partner (2003) with € 77 million.[3] Mackewicz and Partner (2003) report an average of 24 portfolio companies per CVC, while our data suggests 19 portfolio companies per CVC. These figures are skewed by the very large numbers of investments made by a few companies. The median score, which is perhaps a better indication of the norm, suggests that our typical CVC has invested € 13 million and has 9 companies in its portfolio. This is due to the fact that the German CVC market includes several CVCs that have fewer than four companies in their portfolio. Unfortunately, no comparative data on medians was available.

Our study is limited by two factors. First, the CVC market in Germany is still comparatively young. Secondly, the slump that hit the so-called "Neuer Markt" (German stock exchange for young technology companies) in 2001 has considerably reduced the existing perspectives of VCs. These two circumstances meant that some of the interviewees could not yet answer questions about their strategic and their financial success, due to the fact that they had not been around long enough and/or market conditions had prevented them from capitalizing on their investments.

RESULTS

The results of the two surveys as well as the new data generated in this study are presented in such a way as to allow them to be compared with the findings of other studies on German and American CVCs. The first part of the comparison concerns the investments themselves (volume, stage, industry, geography) to get an understanding of the German venture market as such, by juxtaposing our data on German CVCs and VCs. The second part looks at organizational, structural and strategic aspects of the CVC market to help answer our questions regarding the CVCs' goals, structures

and performance. Where possible, the new results are again compared with the findings of one international as well as other German and American studies.

Investment Facts

Fund volume

Only 25% of the CVCs that were surveyed have a clearly defined, limited fund at their disposal, half of what's available to the classic VCs (52%). Having said that, it is difficult to provide exact figures regarding the funds CVCs' have at their disposal, as in most cases there is no clearly defined fund. The five CVCs that do have a clearly defined fund size, on average state a volume of € 143 million. Due to the small sample, this figure is not representative. The average fund volume of classic VCs is twice as high (€ 255 million).

Number of portfolio companies

The CVCs we surveyed have an average of 19 companies in their portfolio and a median score of 9 companies. This is more or less comparable to the classic VCs, with an average of 22 portfolio companies and a median of 10.5.

Investment focus – by sector

The results indicate that 50% of all CVC investments are undertaken in three investment sectors (see Table 1). The IT-Software sector comes first at 23% of the investments, followed by communication technology (17%) and in third place biotechnology/chemistry (10%). Compared to the VCs, similarities and differences become apparent. CVCs are about three times more involved in Multimedia/Internet than VCs. They invest significantly less in sectors such as medical equipment/diagnostics as well as engineering/materials.

Investments focus – by company stage

Our study included only VCs that focus on early stage investments. These VCs invest about 90% of their current fund in one of the first three investment stages: seed, start-up, early and expansion stage (see Table 1). Only 6% of the VCs indicate that they also invest in other stages like second

round, later stage or bridge financing, while CVC's do not invest in other stages at all.

CVCs put priority on seed investments with an average of 35% invested capital. Classic VCs invest only 25% in seed stages. For them, start-up investments seem to be most important with 38% of their capital allocated there (only 30% for CVCs). Both put similar emphasis on expansion/early stage (CVCs: 28%, classic VCs 30%).

Investments focus – by region

Both VC groups have a clear national focus. CVCs invested 69% and classic VCs 76% of their capital in Germany (see Table 1). The remainder was invested within Europe (9% and 12% respectively) and outside Europe (21% and 11% respectively).

Organizational, structural and strategic aspects

The second part of this study looks at the organizational, structural and strategic aspects of the German CVC market. We collected information on the following elements: strategic goals, investment criteria, fund structure, decision-making autonomy, and attainment of strategic and financial goals (performance).

Strategic and financial goals

Of the 19 CVCs we surveyed, 42% stated that they primarily pursued strategic goals, while 21% pursued primarily financial goals. Strategic and financial goals were pursued equally by 37% of the CVCs (see Table 2). The results of our study differ quite markedly from those presented by Schween (1996), who found that 10 of the 12 companies (83%) stressed strategic goals, with two companies (17%) stating that they pursued strategic and financial goals simultaneously. Mackewicz and Partner (2003) reported that 48% pursued strategic goals "primarily or exclusively", and 30% focused on financial goals "primarily or exclusively". Unfortunately, neither Siegel et al. (1988) nor Birkinshaw et al. (2002) posed the question this way. Therefore, the new data can only be compared directly to other German CVC studies.

Table 1. Investment by sector – comparison by VC-types

	Corporate VCs *in % (n = 20)*	***Classical VCs*** *in %(n = 52)*
1. Sector		
IT-Hardware	5	7
Communication technology	17	18
IT-Hardware	5	7
IT-Software	23	24
Medical Equipment/Diagnostics	1	7
Biotechnology/Chemistry	10	13
Engineering/Materials	1	7
Consumer goods	0	2
Trade/E-Commerce	6	5
Financial Services/Other Services	4	3
Multimedia/Internet	14	4
Energy/Environment	2	1
Other Sectors	2	2
2. Company Stages		
Seed-Stage	35	25
Start-up-Stage	30	38
Expansion/Early Stage	28	30
Other stages	0	6
n.a.	7	1
3. Regions		
Germany	69	76
Other Europe	9	12
Outside Europe	21	11

Table 2. Goals of Corporate Venture Capital organizations

Goals	Schween (1996) (in %)	Weber/Weber (2002) in (%)	Mackewicz and Partner (2003) in (%)
Exclusively strategic	25	-	15
Primarily strategic	58	42	33
Strategic and financial	17	37	21
Primarily financial	0	21	27
Exclusively financial	0	0	3
Total	100	100	99

Nevertheless, indirect comparisons with the international data are possible. Siegel et al. (1988) asked a somewhat similar question, which led them to conclude that the objective considered most important by CVCs is return on investment (mean 3.38).[4] Of the objectives related to strategic benefits, the most important was exposure to new technologies and markets (mean 3.12). Birkinshaw et al. (2002) explored seven distinct reasons for establishing a venture unit. On a scale from 1 to 5, the most important reason was "to learn from and develop strategic relationships with portfolio companies" (3.6), and the second most important was "to increase demand for our products and services" (2.7). Both are clearly strategic goals. Investing in external start-ups for financial returns occurred less frequently(2.3)[5].

Investment criteria

The CVCs in our survey ranked "product's uniqueness and degree of innovation" as the most important investment criterion (mean: 5.4 on a scale from 1 to 6). The German VCs we studied indicated that they considered this criterion equally equally important as "expected return" and "industry experience". "Management's ability to attract highly qualified employees" was ranked second (5.3) by the CVCs. The "expected return" was ranked a close third along with "industry experience" and the management team's "quality of leadership" (5.2) (see Table 3).

The top three priorities listed by the VCs were very similar, with "quality of management team" listed second and "management's ability to attract highly qualified employees" listed third. Overall, the six most important investment criteria were all ranked in a very similar way by the German CVCs and VCs. This suggests that no major differences exist among these groups when it comes to selecting investment opportunities (Weber and Dierkes, 2002).

Table 3. Investment criteria of CVCs and independent VCs

Investment criteria (by average level of significance)	Weber/Weber (2002) [a] CVCs (n = 20)	Weber/Weber (2002) [a] VCs (n = 52)	Schween (1996) [b] VCs (n = 12)	Siegel (1988) [c] – CVCs (n = 52)
Product's uniqueness or innovativeness	1 (5.4)	1 (5.4)	3 (4.0)	7
Management's ability to attract and retain highly qualified employees	2 (5.3)	3 (5.0)	-	13
Expected return at point of exit; 10-fold increase in investment in 5 to 10 years	3 (5.2)	1 (5.4)	7 (2.6)	9
Industry experience; management team's knowledge of the market	3 (5.2)	1 (5.4)	2 (4.2)	2
Quality of management team's leadership	3 (5.2)	2 (5.1)	3 (4.0)	6
Completeness of the management team	4 (5.1)	6 (4.7)	-	-
Potential, size, and growth of the market	5 (5.0)	5 (4.8)	1 (4.6)	5
Ability to evaluate and react well to risk	-		1 (4.6)	3
Management team with whom the "chemistry is right"/Personality compatible with mine	6 (4.9)	3 (5.0)	-	22
Management's ability to communicate	6 (4.9)	4 (4.9)	4 (3.8)	8
Demonstrable acceptance of the product in the market	6 (4.9)	5 (4.8)	2 (4.2)	19
Management team's complementarities	6 (4.9)	5 (4.8)	3 (4.0)	-
Entrepreneur's capability of sustained effort	-	-	3 (4.0)	1
Ability to take criticism	-	-	3 (4.0)	15
Thoroughly familiar with the product	-	-	4 (3.8)	4
Ability to build, convey, or retain an image of the corporation as an innovator [d]	7 (4.5)	-	-	-
Reputation of the portfolio company's partners or customers	8 (4.4)	10 (4.0)	-	-
Management's experience with new ventures	9 (4.3)	10 (4.0)	-	-
Track record relevant to the venture	-	-	-	10
Potential strategic business partners or alliances for the corporate mother [d]	9 (4.3)	-	2 (4.2)	-
Expected time until product is ready for the market; prototype exists	10 (4.2)	7 (4.5)	7 (2.4)	14
Patent protection of the products	11 (4.0)	8 (4.4)	5 (3.6)	-
Potential pool of ideas for the parent company [d]	11 (4,0)	-	-	-
Current valuation	12 (3.9)	8 (4.4)	-	-
Important market for the parent company [d]	-		4 (3.8)	11
Same market as that of the parent company [d]	-		6 (3.0)	
No expectation of relevant competition in first 3 yrs	17 (2.9)	13 (3.2)	5 (3.6)	18

Note: The numbers in this table indicate the ranking of the criteria.

a) Average values on a scale ranging from 1 (*unimportant*) to 6 (*very important*).

b) Average values on a scale ranging from 1 (unimportant to 5 (very important)

c) Average values on a scale ranging from 1 (*irrelevant*) to 4 (*essential*).

d) Refers only to CVCs.

By contrast, the results presented by Siegel et al. differs substantially from ours. This may be due in part to different criteria being questioned, which makes it difficult to compare the results. It is interesting to note that in Siegel et al. (1988), a management-related criterion "entrepreneur's capability of sustained effort" ranked first, while it is listed as a product-related criterion in Weber and Dierkes (2002). Siegel et al. (1988) rank "industry experience" second and "ability to evaluate and react well to risk" third. Financial criteria ranked ninth. Schween's study (1996) also showed that the CVCs put less emphasis on financial criteria, ranking them seventh. The most important criteria, according to Schween, were "potential size and growth of the market" (4.6) along with "ability to evaluate and react well to risk" (4.6).

Fund structure

As much as 63% of the CVCs we surveyed had their own fund or freely accessible financial resources providing for a relatively long period; 37% stated that they did not invest from a clearly defined fund.
Siegel et al. (1988) divided their answers into three categories. 48% of the CVCs in their study explained that a separate pool of funds is specifically earmarked for venture capital investment on a onetime basis, another 27% invested out of a separate pool of funds, specifically earmarked for VC investments on a periodic basis. Of the CVCs surveyed 19% fund their deals on an ad hoc basis. The first two categories correspond more or less to our first category and are hence partially comparable. If one considers this to be a valid comparison, a higher percentage (75%) of American CVCs have a relatively independent money source at their disposal than their German counterparts.

In Birkinshaw et al. (2002), 58% CVC units either have a closed fund established solely by the parent company or a separate pot of money set aside for corporate venturing. In 35% of the cases, the money is provided on the basis of internal review – meaning that investments have to pass a review committee (Birkinshaw et al., 2002, p. 14). These figures are relatively similar to ours.

Decision-making autonomy

In only 16% of the organizations in our German sample were investment decisions made within the CVC unit independently of the parent company, or independently but only up to a certain deal size; in 16% of all cases, decisions were taken together with the parent company. The

remaining 68% made suggestions to the parent company, which then took the decisions alone.

Again, the precise formulations of the questions differed between the studies, but nevertheless a comparison seems meaningful. Similar to the German results, Siegel et al.'s study (1988) found that the majority of the CVCs surveyed were given little autonomy to select which ventures should be funded. Fewer of the American venture professionals (51%) than Germans (68%) indicated that formal approval from corporate management was required for all deals. Fifteen percent of the CVCs in the American sample required approval for deals over a designated size. Only 11% did not need any approval. In Germany, only one of the CVCs had that level of independence.

Birkinshaw et al. (2002) also found that large investment decisions had a strong parent-company influence. Even on small investments "the norm is for the corporate venture unit's decisions to be ratified by or made in consultation with the parent company" (p. 16). This suggests that in the countries they investigated the situation of decision-making autonomy is similar to the one found in Germany.

Attainment of strategic goals

Responses related to performance must be reviewed with care, given the self-report nature of this study and the subjectivity involved in rating one's own performance. A total of 58% of the German CVCs stated that they had "completely" or "largely" attained their strategic goals; 37% reported that their goals had been only "partially attained" or "largely unattained". None responded that strategic goals were "not at all attained". A total of 5% of the CVCs explained that their CVC unit was not in business long enough in order to draw such conclusions (see Table 4).

Converting these values into an arithmetic mean (scored on a scale from 1 [not at all attained] to 5 [completely attained])[6] to make them comparable to the data presented by Schween (1996) results in an arithmetic mean of 2.78. Schween (1996) found an arithmetic mean of 2.0 for "overall satisfaction with the attainment of strategic goals" (p.189).

For 21% of the German CVCs, attainment of strategic goals consisted in their CVC activities having helped them develop new strategic fields of business. The remaining 79% of the CVCs did not report such success. According to 84%, their activities had strengthened existing areas of the parent company's business, especially via the transfer of know-how (88%) as well as via partnerships and/or cooperative arrangements between business units of the parent company and the corporate venture (56%) (Weber and Weber 2002).

Table 4. Attainment of strategic goals

Reported level of attainment	Companies in the sample (%)
Completely attained	21
Largely attained	37
Partially attained	32
Largely unattained	5
Not at all attained	0
Still too early to tell	5
Total	100

It is difficult to compare the new findings with those published by Siegel et al. (1988) for three reasons: (i) they surveyed different goals (called objectives) which can be categorized into strategic and financial goals; (ii) they did not examine the degree to which goals had been attained, but rather the general level of satisfaction relative to the CVCs' objectives, which is even more subjective; and (iii) they used a different scale, which is not comparable to the one presented above, because it ranges from 1 (unsatisfactory) to 4 (outstanding). We therefore calculated a second mean from our dataset, which happened to be the same mean of 2.78, to obtain an approximate value, making it to a degree comparable to Siegel et al. as well. The objective with which the American CVCs were most satisfied was "exposure to new technologies and markets" with a mean of 2.8, followed by "return on investment" (mean of 2.47). Also, the objectives "opportunities to manufacture and market new products" and "acquisition candidates" were more than satisfactory (mean of 2.41 and 2.30). The only objective that was assessed to be less than satisfactory was "opportunity to improve manufacturing processes" (mean of 1.75). A comparison of these results with our data suggests that the level of attainment/satisfaction in the American companies tends to be slightly lower than our German second mean of 2.78.

Attainment of financial goals

Just under half (47%) of the CVCs in the study claimed to have an IRR above 0 and hence at least somewhat attained their financial goals, 21% were not successful (see Table 5). Again, due to the youth of the German CVC market, about one third (32%) reported that it was still too early for them to tell and that no exits had occurred yet. Converting these values into an arithmetic mean comparable to Schween (1996) and Siegel et al. (1988)

(scored on a scale from 1 (not at all attained) to 5 (completely attained))[7], one arrives at 2.45. This result is very close to the mean financial goal attainment of 2.47 reported by Siegel et al. (1988). The arithmetic mean reported by Schween (1996) was 1.9, which is significantly lower.

Table 5. Attainment of financial goals

IRR [a] (in percentages)		Companies in the sample (%)
> 30	Completely attained	0
21–30	Largely attained	21
11–20	Attained	10
0–10	Largely not attained	16
< 0	Not at all attained	21
< 0	"Too early to tell" or "no exits yet"	32
Total		100

a) Internal rate of return, an expression of the level of attainment

PROPOSITION EXAMINATION

Having presented and compared the investment statistics as well as the results in terms of organizational, structural and strategic aspects with other national and international datasets, we can now examin our propositions.

> *Proposition 1*: The clearer the focus of the CVC is, the more financially and strategically successful the CVC program is likely to be.

Only 25% of the CVCs that pursued strategic goals "primarily or exclusively" reported that they had attained their financial goals. 43% percent of the CVCs with a mixed approach pursuing financial and strategic goals equally. All the CVCs that had pursued primarily financial goals stated that they had attained their financial goals. Of the CVCs with primarily or exclusively strategic goals, 63% largely or completely attained them. Among the CVCs that pursued primarily financial goals, 75% attained their strategic goals. Only 29% of the CVCs with a mixed approach reported that they had attained their strategic goals. These results support our proposition that those CVCs with a largely financial approach are by far the most successful. The mixed approach is financially more successful than the primarily or exclusively strategic approach. Our proposition is supported as far as the strategic goal attainment is concerned.

> *Proposition 2a*: The greater a CVC's decision-making autonomy, the more successful the CVC unit will be.

Of the three CVCs that made their investment decisions - at least up to a certain deal size - independently of the parent company, two stated that they were financially successful and that they had largely or completely attained their strategic goals (see Table 6). Among the CVCs that did not make their investment decisions on their own and instead submitted proposals to the parent company, only 44% reported that they were financially successful and 50% were strategically successful. These findings seem to support our proposition.

> *Proposition 2b*: The greater the parent company's financial commitment to its CVC unit the more successful the CVC unit will be.

Of the CVCs that had their own funds or freely accessible money, 62% responded that they had largely or completely attained their strategic goals. The CVCs that had no fund or freely accessible money of their own reported nearly as frequently that they had attained their strategic goals (50%) (see Table 6). As for the attainment of financial goals, this second group did much better than the first, with 83% stating that they were financially successful as opposed to 31% of the CVCs that had a fund of their own. Surprisingly, these observations do not support our proposition but suggest the opposite to be true.

DISCUSSION

The new survey of German CVCs produced comprehensive data on goals, investment criteria, decision-making autonomy, fund structure, and goal attainment for the first time in six years. This update was urgently needed because the CVC market in the period under study has nearly tripled in size, though the number of such organizations is still miniscule compared to that in the United States (approximately 300). Comparing our CVC results to our own German VC data (see also Weber and Dierkes, 2002), to other German CVC studies, conducted by Schween (1996) and Mackewicz and Partner

Table 6. Goals, organizational structures/process, and goal attainment

	GOALS	STRUCTURES AND PROCESSES		PERFORMANCE	
		Own fund?	**Who decides?**	**IRR**	**Attainment of strategic goals?**
1	Financial	no	gremium in corp. mother	21-30%	Completely
2	Financial	yes	gremium in corp. mother	21-30%	Largely
3	Financial	yes	CVC unit - up to a certain amount	11-20%	Largely
4	Financial	no	gremium in corp. mother	11-20%	Partially
5	Financial	no	in agreement with corp. mother	0-10%	Partially
6	strat=fin	no	gremium in corp. mother	21-30%	Completely
7	strat=fin	yes	VC without corp. mother	0-10%	Largely
8	strat=fin	yes	gremium in corp. mother	<0%	Partially
9	strat=fin	yes	gremium in corp. mother	no exits	Partially
10	strat=fin	yes	CVC unit - up to a certain amount	no exits	too young/tendency positive
11	strat=fin	yes	gremium in corp. mother	no exits	too young/tendency positive
12	strategic	yes	gremium in corp. mother	21-30%	Partially
13	strategic	yes	gremium in corp. mother	<0%	Largely
14	strategic	no	gremium in corp. mother	0-10%	Partially
15	strategic	yes	in agreement with corp. mother	<0%	Completely
16	strategic	yes	gremium in corp. mother	<0%	largely NOT
17	strategic	yes	in agreement with corp. mother	no exits	Largely
18	strategic	yes	gremium in corp. mother	no exits	Largely
19	strategic	no	gremium in corp. mother	no exits	Largely

(2003), to the information reported by Siegel et al. (1988) concerning the American CVC market, as well as to international data presented by Birkinshaw et al. (2002) gives us a better understanding of the German CVC market.

A comparison of our data with those generated in Germany several years earlier by Schween (1996) allowed us to understand whether the German CVCs have changed the priorities of their goals and investment criteria over time and, above all, whether they are operating more successfully today than they were six years ago[8]. To examine the CVCs' success and the factors influencing their success, we compare our data with the international study by Mackewicz and Partner (2003) to see where

significant similarities or differences emerge between the CVCs in Germany and abroad.

1. Strategic and financial goals
   Since 1996, the priority has clearly shifted from strategic to financial goals. In 1996, 83% of the surveyed CVCs still stated that they were pursuing exclusively or primarily strategic goals, whereas today that figure stands at 42% in our dataset and at 48% in Mackewicz and Partner's (2003) dataset (see Table 2). The remaining 17% of the CVCs in the 1996 survey stated that they pursued a mixed approach of strategic and financial goals. Our dataset puts this figure at 37%, while Mackewicz and Partner (2003) suggest a figure of 21%. It seems especially noteworthy that 21% of the CVCs surveyed in our study and even 27% of the CVCs in Mackewicz' study stated that they were pursuing primarily financial goals (+ 3% of those CVCs who exclusively pursue financial goals). There were no such responses in 1996. These results suggest that the investment priorities of CVCs are converging with those of the classic independent German VCs (Weber and Dierkes, 2002).
2. Investment criteria
   A look at the most important investment criteria highlights the shift towards financial goals over strategic ones. Financial criteria were still more or less neglected in 1988 (US) and 1996 (Germany), whereas they have become one of the three most important criteria today (see Table 3) – about on a par with the priority they receive among the classic independent VCs in Germany (Weber and Dierkes, 2002). This means that in the last six years German CVCs have undergone a change, both in terms of their goals (see above) and oftheir investment criteria.
3. Attainment of strategic goals
   The attainment of strategic goals has definitely improved over the past six years. Whereas 17% of the CVCs surveyed in 1996 stated that they had largely or completely attained their strategic goals, this figure stands at 58% in 2002. The arithmetic mean for the attainment of strategic goals has risen within the past six years from 2.0 (Schween 1996) to 2.78 in our study, which may be explained by the shift in goals and investment criteria from a more strategic orientation towards a primarily financial approach. This in turn could be interpreted as a learning process, which seems a plausible enough explanation, since in 1996 the German CVC market was still in its infancy and one would expect some kind of learning curve. This seems particularly likely given the high percentage of investment

managers in the CVC units who came from the corporation with little or no VC investment experience (Weber and Dierkes 2002). The high percentage of CVCs pursuing a mixed strategy (37%) might be explained as being not yet that far advanced, in other words: they are on their way on the learning curve from a strategic to a financial approach.

4. Attainment of financial goals
   The CVCs have also greatly improved in terms of attaining their financial goals in the past years. In 1996 only 17% of the surveyed CVCs stated that they had attained their financial goals, whereas in 2002 just under half (47%) claimed to have done so (see Table 5). The arithmetic mean reported by Schween (1996) was 1.9; today's mean is 2.45. It is striking that only 25% of the strategy-oriented CVCs have achieved their financial goals, compared to 100% of the financially oriented CVCs do so. The increased attainment of financial goals can partially be attributed to the changes in the CVCs' goal structure towards financial goals. This development can equally be interpreted as part of a learning process. The CVCs are likely to have learned from the more established and experienced independent VCs and to have been able to transfer their knowledge and adopt their learning to the specific needs of the respective corporate environment.

We can thus answer the second question raised in the introduction by saying that CVCs emphasizing primarily financial or primarily strategic goals seem to be more successful than those following a mixed approach. Maybe this result indicates that it is extremely difficult to sensibly structure and manage a program with two, sometimes conflicting, goals. Intuitively, it makes sense that a financially driven CVC that follows market incentives cannot at the same time fully pursue the strategic preferences of the corporate. A portfolio company that does not generate a return on investment in the medium term but represents a high strategic value in the long run would be an example of such a conflict.

The results further indicate that the primarily financial approach seems to be financially and strategically more successful than the primarily strategic approach (see Table 6). Our results therefore confirm the conclusions drawn by Siegel et al. (1988), that an approach that primarily takes financial goals into consideration tends to be the most successful, both strategically and financially. The observations by Gompers and Lerner (1998) are partially challenged, at least as far as the German CVCs are concerned.

Birkinshaw et al. (2002), Witt and Brachtendorf (2002), and Mackewicz and Partner (2003) found that a CVC's organizational

independence is particularly important for its financial and strategic success. The empirical evidence that more independent CVCs are more successful is partially supported by our data. However, the sample is not only small but in this dimension also very unbalanced. The 16 CVCs (84%) with relatively little decision-making autonomy are financially as well as strategically less successful compared to the 3 CVCs with that have a higher degree of decision-making autonomy (see Table 6 and proposition 2a). The 13 CVCs (68%) that reported having their own fund or freely accessible money are comparably successful in strategic terms but – contrary to our expectations – significantly less successful in financial terms. Hence, only the finding that a high level of decision-making autonomy – as an indicator for independence - is a critical success factor for the corporate venture unit can be supported.

German CVCs tend to be more dependent on their corporate mother than their American counterparts, even 14 years later (the time difference of the two studies). This is reflected in the fact that they have fewer dedicated funds at their disposal (63% vs 75% US) and in a lower degree of investment decision-making autonomy. The question arises as to why this is the case, given that the recommendations generated over the years by theoretical and empirical research point in the direction of giving greater autonomy in order to maximize success. One might conclude that either the German CVCs believe that this is a potentially more successful approach or there is a need for change, but the corporations are still too deeply entrenched in the system and what we might call the German way of doing business. Another reason may be that the corporate structures and internal politics make it difficult to introduce a market-oriented incentive scheme for venture units that would allow for an appropriate alignment of goals and structures. It is not possible to provide a comprehensive and satisfactory answer at this stage. Further empirical research on this point is necessary to validate this proposition for Germany on the basis of a larger dataset

This study offers two contributions to the literature on CVC and has several implications for future research. It provides an extensive picture of CVC programs and the way they are currently being managed. It is the first empirically grounded analysis of CVCs since 1996, the point at which the CVC market in Germany began to gain any significance at all. We were therefore able to describe the recent developments practice in depth and to provide a comparison of German practice with the one in the United States in terms of a number of key characteristics and developments.

Secondly, by questioning the priority CVCs have thus far placed on strategic goals, or a mix of both strategic and financial goals, this investigation suggests that (i) mixed strategies are not as successful as strategies that either focus on financial or on strategic aspects; (ii) an

emphasis on financial goals appears to be more successful than an emphasis on strategic goals.

For future research, it would be interesting to expand this study with a longitudinal study. It would then be possible to follow the goals, structures, processes, and success of the CVC market in general and of individual organizations in particular. Such a longitudinal study should also continue to compare CVCs and classic VCs, to gain further insight about which strategies work best and why.

Research on the interface between the parent company and the CVC unit as a facilitator between the parent company and the portfolio company could provide further insight into additional success factors. For instance, structuring all inter- and intra-organizational processes of the units involved – such as communication and compensation practices – strictly in line with the primary goals of the parties involved, could enhance the competitive advantage of the parent company through innovative ideas of portfolio companies. It could increase the success of the portfolio company by allowing it to benefit from the vast resources and knowledge of the parent company. This would ultimately lead to the CVC's success and support its acceptance in the organization.

NOTES

[1] Most of the CVCs surveyed are located in North America (including Canada) and Europe.
[2] For a detailed comparison of this sample with the BVK statistic, see Weber and Dierkes (2002).
[3] Reliable information on fund volume in both cases was difficult to attain as most CVCs do not operate out of a clearly determined funds.
[4] However, Siegel et al (1988) note: "the high standard deviation for this objective indicates that there is not high consensus as to the importance of this objective. In fact, nearly 42% of the respondents listed return on investment as less than essential" (p. 235).
[5] The low rating of this answer could be surprising. We believe it is due to the fact that Birkinshaw et al. (2002) formulated their question in such a narrow way: „investment in independent start-ups / external business ideas *purely* (italic emphasis by the authors) as financial investments" (p. 15), and hence, consider it comprehensible.
[6] The category "still too early to tell" was not included in the arithmetic mean.
[7] The category "still too early to tell" was not included in the arithmetic mean.
[8] This comparison is not based on a panel. It is a comparison between aggregate data based on different samples.

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